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Lightdiction LBA-C-100 Laser Beam Analyzer

Lightdiction LBA-C-100 Laser Beam Analyzer User Manual

Contents

Lightdiction LBA-C-100 Laser Beam Analyzer

Specifications

Parameter	Min	Typ	Max
Optical power (*) (**)	0.1W	–	100W
Resolution on divergence	–	0.01 mrad	–
Typical accuracy (+/-)	–	0.02 mrad	–
Divergence measured (FWHM)	0.1 mrad	–	10 mrad
Input beam diameter	–	–	22mm
Wavelength detected	400nm	–	1000nm
L x W x H msys	105 x 75 x 59	–	153 x 110 x 70
Typical Power consumption (USB 3.0)	–	2W	–

Product Usage Instructions

Download and Install the Software

The latest version of the software can be found at: **Download Software**.
To install the software, download and run the setup file LBA_vX.XX_setup.exe (X.XX is the version of the software).

Setting Up the LBA-C-100

Step 1: Place the LBA-C-100 in front of the laser output you want to measure. Adjust the height using the holder if needed.

Step 2: Connect the LBA-C-100 to your PC using a USB 3.0 port.

Step 3: Create a beam pattern, set it to low power, and enable it. Move the LBA-C-100 in front of your laser until you see a part of the 9 spots pattern.

FAQs

Q: What are the typical applications of the LBA-C-100?
A: The typical applications include lens collimating of laser sources, divergence measurements, and accurate RGB alignments during manufacturing or before shows.

Q: What are the requirements for using the LBA-C-100?
A: The LBA-C-100 requires a USB 3.0 port and a computer with Windows 10 or 11 installed.

The LBA-C-100 is a beam analyzer designed to handle high continuous power while measuring beam parameters like the divergence or RGB alignment of laser sources.
A PC interface enables to do a live measurement while focusing or aligning the beams safely.

FEATURES

- COMPACT AND ROBUST DESIGN
- VERY-HIGH RESOLUTION
- HANDLES HIGH CONTINUOUS POWER
- EASY SETUP
- EASY PC INTERFACE
- LIVE MEASUREMENTS OF ALIGNMENTS AND DIVERGENCES
- POWER AND COMMUNICATION THROUGH USB

TYPICAL APPLICATIONS

- LENS COLLIMATING OF LASER SOURCES
- DIVERGENCE MEASUREMENTS
- ACCURATE RGB ALIGNMENTS WHEN MANUFACTURING, OR BEFORE SHOWS

PRESENTATION OF THE DEVICE

TECHNICAL SPECIFICATIONS

Parameter	Comment	Min	Typ	Max
Optical Specifications				
Popt	Optical power (*) (**)	0.1W	–	100W
RF	Resolution on divergence	–	0.01 mrad	–
	Typical accuracy (+/-)	–	0.02 mrad	–
F	Divergence measured (FWHM)	0.1 mrad	–	10 mrad
D	Input beam diameter	–	–	22mm
l	Wavelength detected	400nm	–	1000nm
Mechanical / Housing Specifications				
L x W x H	Length x Width x Height (mm) – Without the holder With the holder		105 x 75 x 59 153 x 110 x 70	
msys	Weight – without the holder with the holder		600g 800g	
Electrical Specifications				
PUSB	Typical Power consumption (USB 3.0)	–	2W	–

1. The sensor of the LBA-C must remain below 75°C while operating. It may be need to dissipate heat from the case with a fan when using the device with high power beams for a long period.
2. A correct alignment should be done before setting the laser projector to maximum power. The user must follow the alignment procedure described in the User Manual to prevent damage to the system.

REQUIREMENTS

The LBA-C Laser Beam Analyzer requires the following to work:

- USB 3.0 port
- Computer with windows 10 or 11 installed

HOW TO USE THE LBA-C-100

DOWNLOAD AND INSTALL THE SOFTWARE
The latest version of the software can be found here: **https://lightdiction.com/en/Downloads#lba**
To install the software, simply download and start the setup file "LBA_vX.XX_setup.exe" (X.XX is the version of the software).

SHOOT THE LASER BEAM ON THE LBA-C-100
Place the LBA-C-100 in front of the of the laser output to measure, as shown on the following picture. Use the holder to adjust the height if necessary.

Then connect the USB cable to the LBA-C-100 and to your PC, using a USB 3.0 (or over) port.
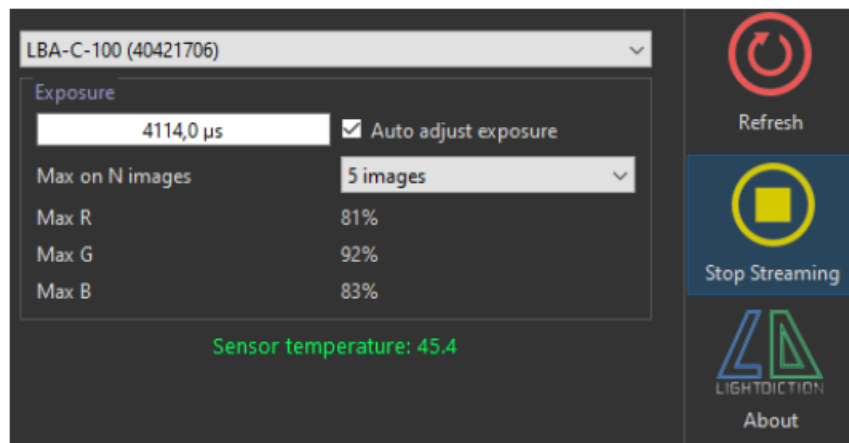
Start your "Lightdiction – Beam Analyzer" software. Select the LBA-C-100 sensor from the list, then start Streaming.

The sensor should remain below to 75°C at any time.
Create a beam pattern, set it to low power and enable it. Move slightly the LBA-C-100 in front of your laser until you see a part of the "9 spots pattern".
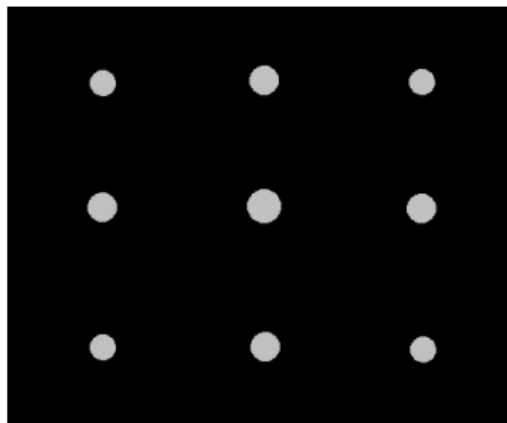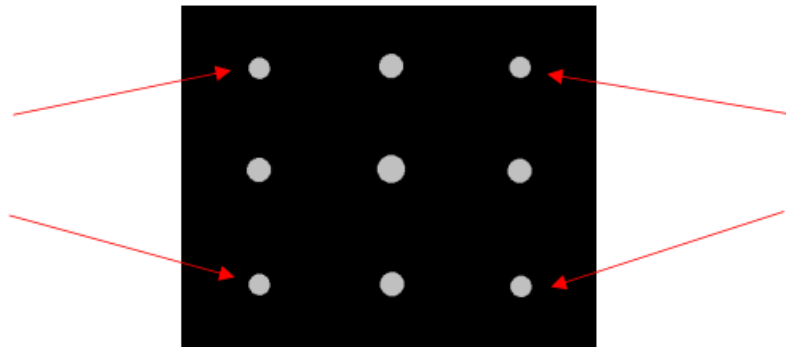

The 4 corner spots you see here are the images of your laser projected at "infinity".
Once you start to see the pattern, click and drag on one of the spots to move and resize the region of interest on it.
Then you can increase the power of your laser.
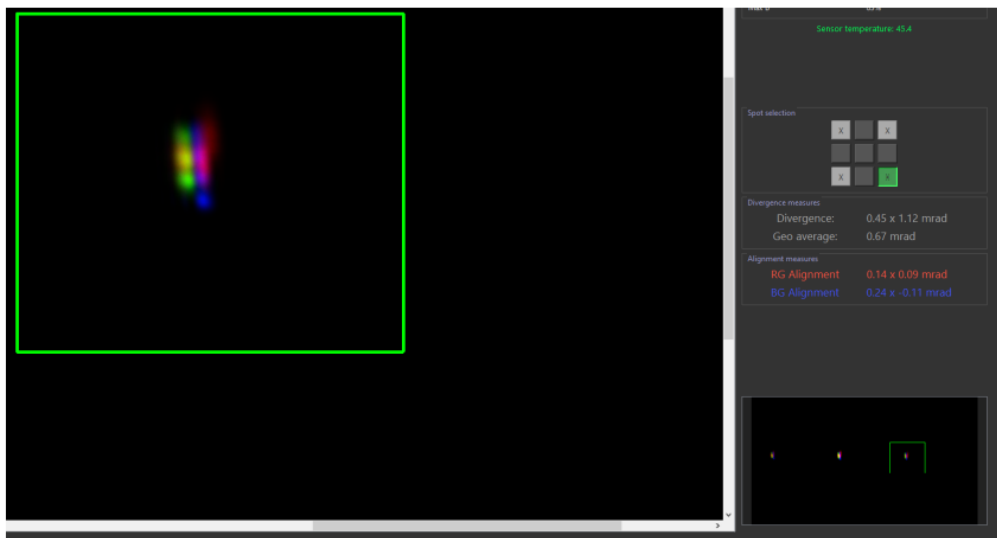
MEASURE THE DIVERGENCE AND COLOR ALIGNMENT

The "9 spots pattern" detected by the sensor looks similar to this:

Only a part of this pattern can be seen at once on the sensor, but the measure should be done on any of the 4 corners of the pattern.
Click on one of the corners and drag to create a Region of Interest around the corner you want to measure.

Then, choose the corner currently selected by your ROI on the Spot selection:
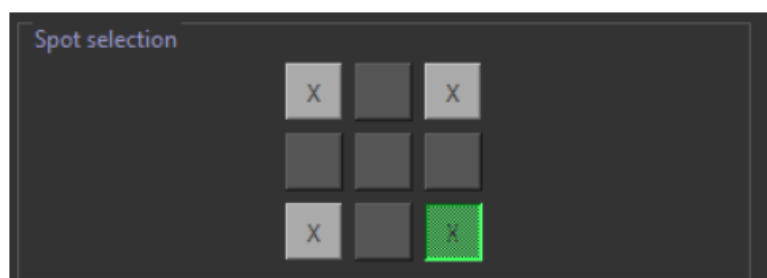
This will calculate a chromatic compensation in real time.

That's it!
You can now read the divergence measured on the right of the screen. The Geo average is the square root of the product of X and Y divergences.
The value measured is FWHM (Full Width Half Max).
Also, you can see the misalignment between red, green and blue beams.

The spot you see here being the image of your laser spot at "infinity", you just have to superimpose all 3 colors to

optimize the alignment.

LIST OF ALL COMMANDS

Command	Description
Select LBA sensor	Select your LBA-C-100 device.
Refresh (tool bar)	Refresh the list of Sensors that can be used by the software.
Start / Stop Streaming (tool bar)	Toggle Start / Stop streaming with the sensor.
About (tool bar)	Some information about the software and the current version.
Exposure value	Sets the exposure value of the sensor (shutter). A higher value will result in more brightness.
Auto exposure	Enable this option the adjust automatically the exposure inside the Area of Interest (measurement area).
Moving average	Select the number of frames used to measure. The corresponding frames are averaged before measuring.
Max R / G / B	Maximum value measured currently by the sensor. If the value is close to 100%, the sensor is saturating. The exposure value should be reduced. At the opposite, if the value is too low, the measure is incorrect. The exposure should be increased.
Divergence X Y	FWHM values of the divergence measured in the ROI.
Geo average	Geometrical average of the divergence measured (square root of the product of X and Y divergences).
RG alignment	Alignment of red beam relatively to green beam.
BG alignment	Alignment of blue beam relatively to green beam.
RB alignment	Alignment of red beam relatively to blue beam.

PRECAUTIONS AND RECOMMANDATIONS ON USE

- Do not put the laser to the maximum power if the LBA-C-100 is not correctly placed in front of the laser projector (if the 9-spot pattern cannot be seen).
- Check that the input lens is clean before shooting high power lasers through it, or it may burn the lens.
- Never attempt to open the LBA-C-100 cover. This would void the warranty, ruin the alignment and could present a danger for the next uses.

COMMON ISSUES

Issue	Cause	Solution
The device is recognized and opened by the software, but I can't see the beam.	The sensor is not currently streaming	Start Streaming by clicking on the button
The device is recognized and opened by the software, but I can't see the beam.	The LBA-C-100 is not aligned currently in front of the beam.	Follow the alignment procedure on II / 2.
There are black lines scrolling on the spot seen by the sensor.	This is a rolling shutter effect because the laser beam is not "On" 100% of the time.	Try adjusting the frame rate of your laser, or try outputting 100% of the time. You can stop streaming when there is no black lines scrolling to measure the divergence at a fix value.
The divergence on white is lower than with R, G or B only.	FWHM measure is relative to the maximum power.	The max on white being higher, it is completely possible to measure a lower FWHM divergence, nothing is wrong.

PLEASE READ CAREFULLY:

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REVISION HISTORY

Date	Information	Version
30.11.2023	Spot selection for improved measurements	1.1
19.11.2023	Initial information	1.0

Documents / Resources

Lightdiction LBA-C-100 Laser Beam Analyzer [pdf] User Manual
LBA-C-100 Laser Beam Analyzer, LBA-C-100, Laser Beam Analyzer, Beam Analyzer, Analyzer

References

- **Downloads - Lightdiction - Laser Shows, Laser Harp in Paris, France, internationally**
- **User Manual**