



# **LBA-USB User Guide**

For LBA-USB

**Laser Beam Analyzer**  
**For Windows XP® Professional**

Software Version 4.80

**PRELIMINARY**

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## General Information

### Introduction

The Spiricon Laser Beam Analyzer Model LBA-USB, is a low cost, PC-based product for use in modern Pentium-generation personal computers with a USB interface. It provides all the essential features needed for laser beam analysis. Some of these features include:

- High-speed high-resolution false color beam intensity profile displays in both 2D and 3D
- Operates in Windows XP Professional, or higher operating systems
- Numerical beam profile analysis employing advanced patented calibration algorithms
- User selectable choices for making beam width measurement, including Second Moment methods
- Pass/fail testing available on most measured parameters
- Both Whole beam and Linear Gaussian fits to beam data
- Top Hat measurements based on the beam profile or a user defined area or line
- Signal-to-noise ratio improvement through averaging and background subtraction
- Frame summing for cumulative effect analysis
- Statistical Analysis of all measured parameters
- Beam Stability analysis
- Histogram display and results
- Post processing capabilities
- Both Drawn and Auto Aperture for isolating beam data
- Both Results and Data logging capabilities
- Flexible printing options for hard copy generation
- Two Divergence measurement techniques

**A complete LBA-USB system consists of the following equipment:**

- The Spiricon LBA-USB software
- An L070-USB, L130-USB or L230-USB camera.
- A Pentium style or compatible PC with:
  - USB 2.0 interface, either built into the computer or motherboard, or installed via PCI card
  - Pentium or Pentium Pro or equivalent processor based motherboard
  - Graphics accelerator card (support for 1024 x 768 minimum)
  - At least 512 MB of main memory, 1-2 GB recommended
  - At least 15 MB of hard disk space available, much more (>1 GB) to log data files
  - A high-resolution color monitor
  - Windows XP Professional operating system
  - A CD-ROM Drive

**Optional equipment:**

- USB 2.0 PCI interface card
- 1, 2, or 4.5 meter USB cables
- A printer with appropriate Windows compatible drivers
- LBS-100, BA-VIS, -NIR, or -BB Laser Beam Attenuator

Most laser beam energy requires attenuation before application to the camera sensor. Attenuation requirements vary greatly depending upon application. Spiricon offers optional equipment for beam attenuation. Consult your Spiricon Representative or call the Spiricon's Sales Department for further information.



## USB Camera Specifications

### Environmental

Storage Temperature	-10° C to 60° C
Storage Humidity	95% maximum (non-condensing)
Operating Temperature	0° C to 50° C
Operating Humidity	95% maximum (non-condensing)

### Power Requirements

USB 2.0 Power Consumption	~4 W
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### Physical

Weight	Approximately 312 g (11 ounces)
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### Instrument Characteristics

Trigger In	Rising LVTTTL input Max input +3 Vdc with programmable exposure delay Minimum pulse width 1 $\mu$ s
Strobe Out	LVTTTL output with programmable delay
Video Gain Adjust	1 to 23 dB User programmable
Shutter Control Outputs	User programmable
Video Black Level	User programmable Set by Ultracal
RMS – S/N	~60 dB @ Gain 1.4

**Note:** All specifications subject to change without notice.

Instrument Characteristics	USB L070	USB L130	USB L230
Spectral Response	350 – 1100 nm		
Maximum Beam Size	4.7 x 3.6 mm	6.5 x 4.8 mm	7.1 x 5.4
Pixel Spacing	7.40 $\mu\text{m}$ x 7.40 $\mu\text{m}$	4.65 $\mu\text{m}$ x 4.65 $\mu\text{m}$	4.40 $\mu\text{m}$ x 4.40 $\mu\text{m}$
Number of Effective Pixels	640 x 480	1392 x 1040	1616 x 1216
Minimum System Dynamic Range	61 dB	59 dB	59 dB
Spatial Uniformity	$\pm 0.5\%$		
Frame Rate	60 fps at full resolution 100+ fps 320 x 240	15 fps at full resolution 30 fps at 640 x 480	12 fps at full resolution 30 fps at smaller ROI
Photodiode Trigger	Optional photodiode trigger available: ESP-STC P/N SP90033		
Lowest Measurable Signal	1.14 $\mu\text{W}/\text{cm}^2$	1.00 $\mu\text{W}/\text{cm}^2$	.60 $\mu\text{W}/\text{cm}^2$
Saturation Intensity	1.14 $\mu\text{W}/\text{cm}^2$	1.14 $\mu\text{W}/\text{cm}^2$	1.14 $\mu\text{W}/\text{cm}^2$
Damage Threshold	0.15 mW/cm <sup>2</sup>		
Operation Mode	Interline transfer progressive scan CCD		
PC Interface	USB 2.0		

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