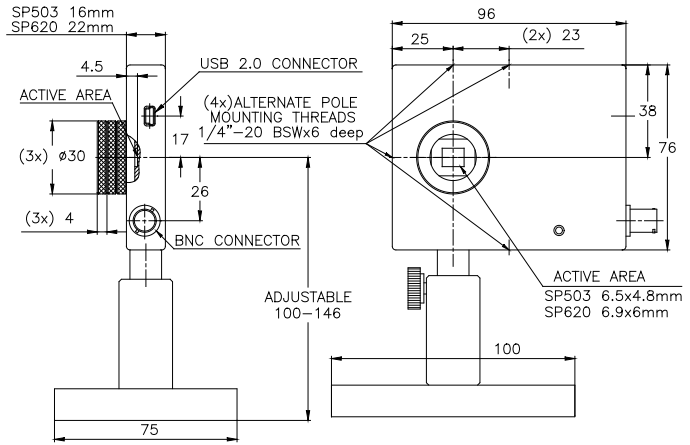


USB Silicon CCD Cameras

SP Series



SP503U, SP620U



Features

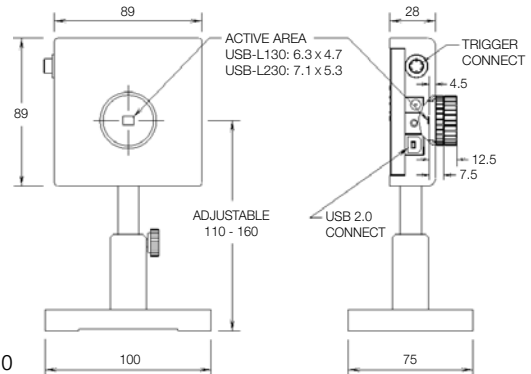
- USB 2.0 compatible
- 64dB true system dynamic range - highest in the industry
- Programmable high speed electronic shutter
- Choice of LBA or BeamStar software for sophisticated measurements
- Spectral range: 190 - 1300nm
- Gain adjustable to accommodate a wide range of input levels
- Built in pre trigger synchronizes with even the shortest laser pulses. Optical trigger available.
- Slim profile and multiple mounting options

L-series Features

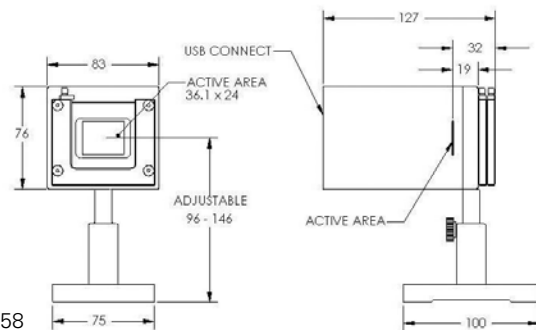
- USB 2.0 compatible
- 59dB true system dynamic range
- Frame rates up to 100Hz available
- Spectral range: 190 - 1300nm
- Available only with LBA software
- Optional optical trigger senses and synchronizes camera with laser pulses



USB L130, L230



USB L11058



USB Cameras for use with Laptop or Desktop PC

Item	Specification				
Camera	SP503U	SP620U	USB L130	USB L230	USB L11058
Application	½" format, slim profile, wide dynamic range, pulsed lasers	1/1.8" format, high resolution, wide dynamic range, pulsed lasers, CW YAG	½" format, high resolution, adjustable ROI	1/1.8" format, high resolution, CW YAG, adjustable ROI	36mm x 24mm, 35mm format, for large beams, CW YAG, Adjustable ROI
Spectral Response	190 – 1320nm ⁽²⁾	190 – 1320nm ⁽²⁾	190 – 1100nm ⁽²⁾	190 – 1320nm ⁽²⁾	190 – 1100nm ⁽²⁾
Maximum beam size	6.3mm W x 4.7mm H	7.1mm W x 5.4mm H	6.5mm W x 4.8mm H	7.1mm W x 5.4mm H	20mm x 13.5mm
Pixel spacing	9.9µm x 9.9µm	4.40µm x 4.40µm	4.65µm x 4.65µm	4.40µm x 4.40µm	9.0µm x 9.0µm
Number of effective pixels	640 x 480	1600 x 1200	1392 x 1040	1600 x 1200	4008 x 2672
Minimum system dynamic range	64 dB	62 dB	59 dB	59 dB	59 dB
Linearity with Power	±1%	±1%	±1%	±1%	±1%
Accuracy of beam width	±2%				
Frame rates	30 fps at full resolution	10Hz in 8-bit mode 6.7Hz in 12-bit mode	15 fps at full resolution 30 fps at 640 x 480	12 fps at full resolution 30 fps at smaller ROI	3.1 fps at full resolution, higher rates with binning & smaller ROI
Shutter duration	30µs to multiple frame times, automatic or manual control		10µs to multiple frame times		
Gain control	43:1 automatic or manual control with BeamStar, manual with LBA	29:1 automatic or manual control with BeamStar, manual with LBA	14:1 manual control LBA only		
Trigger	<ol style="list-style-type: none"> BNC connector accepts positive or negative trigger LED on camera indicates triggering. Will synchronize with laser repetition rates up to 1KHz. Built in pretrigger allows synchronization to even subnanosecond pulses. Same connector can provide trigger out to sync laser. Supports programmable delay on Strobe Out Same connector accepts photodiode trigger (see below) 		Supports both Trigger In and Strobe Out		
Photodiode trigger	Optional photodiode trigger available: P/N SPZ17005		Optional photodiode trigger available: ESP-LUM P/N SP90033		N/A
Saturation intensity ⁽¹⁾	1.3µW/cm ²	2.2µW/cm ²	0.5µW/cm ²	0.9µW/cm ²	0.15µW/cm ²
Lowest measurable signal ⁽¹⁾	0.5nW/cm ²	2.5nW/cm ²	0.63nW/cm ²	1.1nW/cm ²	0.17nW/cm ²
Damage threshold	50W/cm ² / 0.1J/cm ² with all filters installed for <100ns pulse width ⁽³⁾				0.15mW/cm ²
Dimensions and CCD recess	96mm x 76mm x 16mm CCD recess: 4.5mm below surface	96mm x 76mm x 23mm CCD recess: 4.5mm below surface	89mm x 89mm x 28mm CCD recess: 4.5mm below surface		83mm x 76mm x 128mm CCD recess: 18.8mm below bezel, 31.75 from ND filter holder
Image quality at 1064nm	Pulsed with trigger synch – excellent Pulsed with video trigger – good CW – poor	Pulsed with trigger synch - excellent Pulsed with video trigger – good CW – good	Pulsed with trigger synch- excellent Pulsed with video trigger – good CW – fair	Pulsed with trigger synch- excellent Pulsed with video trigger – good CW – good	Pulsed with trigger synch- excellent Pulsed with video trigger – good CW – good
Operation mode	Interline transfer progressive scan CCD				
Software supported	LBA-USB and BeamStar		LBA-USB		
PC interface	USB 2.0				
Minimum host system requirements	Pentium IV 1GHz (Dual-core & >2GHz for best performance), 1GB Memory, USB2, Operating system: Windows XP Pro, Vista-32				

- (1) Camera set to full resolution at maximum frame rate and equivalent exposure times, running CW at 632.8nm wavelength. Camera set to minimum useful gain for saturation test and maximum useful gain for lowest signal test.
- (2) May be useable for wavelengths below 350nm but sensitivity is low and detector deterioration may occur. Therefore UV image converter is recommended. For operation at 1300nm sensitivity is low and short wavelength blocking filter SPZ08242 is recommended.
- (3) This is the damage threshold of the filter glass of the filters. Assuming all filters mounted with ND1 (red housing) filter in the front. Distortion of the beam may occur with average power densities as low as 5W/cm²