

3.3.4.1.2 Large Format USB & GigE Cameras

SP402S

SP504S

Features

- 1.1" imager format
- High resolution
- CMOS, Global Shutter, Back Illuminated
- 67dB true dynamic resolution

Features

- 23mm x 23mm imager format
- Highest resolution
- CMOS, Global shutter
- 44.6 dB true dynamic resolution

SP402S

SP504S



Model	SP402S	SP504S
Format	1.1"	APS-H
Wavelengths ⁽¹⁾	190 - 1100nm	340 - 1100nm
Active area	12.3mm x 12.3mm	23mm x 23mm
Beam sizes ⁽²⁾	27.4µm - 12.3mm	45µm - 23mm
Pixel spacing	2.74µm x 2.74µm	4.5µm x 4.5µm
Number of effective pixels	4512 x 4512	5120 x 5120
Dynamic range	67 dB	44.6 dB
Linearity with power	±1%	±1%
Accuracy of beam width	±2% ⁽³⁾	±2%
Frame rates ⁽⁴⁾	11 fps (12 bit mode)	4.5 fps (10 bit mode)
Exposure Time	10µs - 400ms	10µs - 400 ms
Gain control	1.4 dB to 256 dB	N/A
Trigger	Hardware/Software trigger & strobe out	Hardware/software & strobe out
Photodiode trigger (Optional) ⁽⁵⁾	Si response: SP90408	Si response: SP90408
Lowest measurable signal ⁽⁶⁾	0.35nW/cm ² at 530nm	0.25nW/cm ² at 633nm
Damage threshold ⁽⁷⁾	50W/cm ² / 1J/cm ² with all filters installed for < 100ns pulse width	50W/cm ² / 1J/cm ² with all filters installed for < 100ns pulse width
Ambient operating temperature	10° C - 40° C	10° C - 40° C
Dimensions	45mm x 45mm x 22.5mm	68mm x 68mm x 62.6mm
Imager recess	4.5mm ±0.11mm	12.7mm
Operation mode	CMOS, Global Shutter	CMOS, Global shutter
PC interface	USB 3.0	GigE (POE)
OS supported	Windows 10 (64) and Windows 11	Windows 10 (64) and Windows 11
Compliance	CE, UKCA, China RoHS	CE, UKCA, China RoHS

Ordering Information

Supported software	Item	P/N	Item	P/N
BeamGage Professional	BGP-USB3-SP402S	SP90643 ⁽⁸⁾	BGP-G-SP504S	SP90618 ⁽⁹⁾
BeamGage Standard	BGS-USB3-SP402S	SP90642 ⁽⁸⁾	N/A	N/A

Accessories

LBS-400 to SM2 Adapter	SP98000
LBS-100 to SM2 Adapter	SP98001

Notes: ⁽¹⁾ Wavelength is typically specified down to 190nm, however the camera's natural response is from 300nm through 1100nm. To measure effectively below 300nm a UV converter is recommended, otherwise the measurement accuracy may degrade and long-term intensive irradiation at UV wavelengths may cause permanent damage to the imager.

⁽²⁾ The maximal beam size refers to "Flat-top" laser beams. For Gaussian beams, reduce maximum beam size by 1/3.

⁽³⁾ For SP402S camera, at NIR wavelengths above 900nm and beam width below 100µm , the accuracy would be lower.

⁽⁴⁾ Value is for 2x2 binning, dependent on PC processor and graphics card performance.

⁽⁵⁾ For more information please see "Optical Camera Trigger" catalog page.

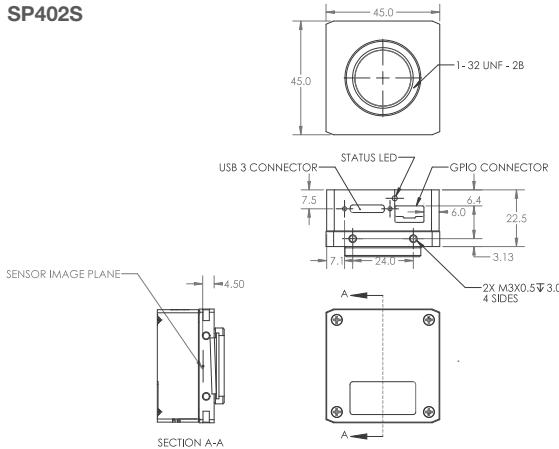
⁽⁶⁾ Camera set to full resolution at maximum frame rate, 400ms exposure time and without any ND filter.

⁽⁷⁾ This is the damage threshold of the filter glass. Assuming all filters mounted with ND1 (red housing) filter in the front. Distortion of the beam may occur with average power densities of 5W/cm² for beam size 5mm, 10W/cm² for 2mm beam and >30W/cm² for 1mm beam.

⁽⁸⁾ Comes with USB 3.0 cable, Power with Trigger cable and 3 ND filters.

⁽⁹⁾ Comes with Cat6 cable, Trigger cable, SM2 adapter, and 3 ND filters: ND1, ND2, ND3 (ND3 mounted in camera)

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