# 3.3.4.1.2 Large Format USB & GigE Cameras

| LT665 | SP504S |
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### Features

- Large 1" imager format
- High resolution
- High speed
- 54dB true dynamic resolution

### Features

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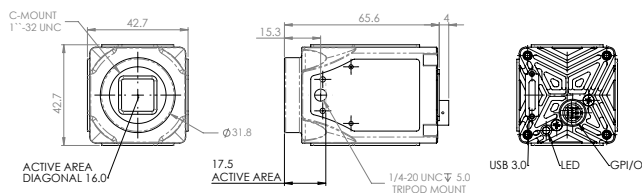- 44.6 dB true dynamic resolution

| | LT665 | SP504S |
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| Model | LT665 | | SP504S | |
|---|---|---|---|---|
| Format | 1" | | APS-H | |
| Wavelengths [1] | 190 - 1100nm | | 340 - 1100nm | |
| Active area | 12.5mm x 10mm | | 23mm x 23mm | |
| Beam sizes [2] | 46µm - 9.9mm | | 45µm - 23mm | |
| Pixel spacing | 4.54µm x 4.54µm | | 4.5µm x 4.5µm | |
| Number of effective pixels | 2752 x 2192 | | 5120 x 5120 | |
| Dynamic range | 54 dB | | 44.6 dB | |
| Linearity with power | ±1% | | ±1% | |
| Accuracy of beam width | ±2% | | ±2% | |
| Frame rates [3] | 27 fps at full resolution (12 bit mode) | | 4.5 fps (10 bit mode) [4] | |
| Shutter duration | 31µs to multiple frames | | 10µs – 400 ms | |
| Gain control | 0.8 dB to 56 dB | | N/A | |
| Trigger | Hardware/Software trigger & strobe out | | Hardware/software & strobe out | |
| Photodiode trigger (Optional) [5] | Si response: SP90408 | | Si response: SP90408 | |
| Saturation intensity | 1 µW/cm² | | 1.68mW/cm² at 633nm [7] | |
| Lowest measurable signal | 0.3nW/cm² | | 0.25nW/cm² at 633nm [7] | |
| Damage threshold [8] | 50W/cm² / 1J/cm² with all filters installed for < 100ns pulse width | | 50W/cm² / 1J/cm² with all filters installed for < 100ns pulse width | |
| Ambient operating temperature | 0 - 40° C recommended to connect to heat sink | | 10° C - 40° C | |
| Dimensions | 43mm x 43mm x 65mm | | 68mm x 68mm x 62.6mm | |
| Imager recess | 17.5mm | | 12.7mm | |
| Image quality at 1064nm | Pulsed with trigger sync - excellent Pulsed with video trigger - good CW - good | | Pulsed with trigger sync - excellent Pulsed with video trigger - good CW - good | |
| Operation mode | Quad Tap interline transfer CCD | | CMOS, Global shutter | |
| PC interface | USB 3.0 | | GigE (POE) | |
| OS supported | Windows 7 (64) and Windows 10 | | 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-LT665 | **SP90378** [9] | BGP-G-SP504S | **SP90618** [10] |
| BeamGage Standard | BGS-USB3-LT665 | **SP90377** [9] | N/A | N/A |
| **Accessories** | | | | |
| LBS-400 to SM2 Adapter | | | | **SP98000** |
| LBS-100 to SM2 Adapter | | | | **SP98001** |

Notes:
(1) The camera's natural response is from 340nm through 1100nm. To measure effectively below 340nm, please make use of one of our UV converters. Otherwise the sensitivity is too low and the measurement accuracy may degrade. Without UV converter, long term intensive irradiation at UV wavelengths, may cause permanent damage to the imager due to UV ablation.
(2) The maximal beam size refers to "Flat-top" laser beams. For Gaussian beams, reduce maximum beam size by 1/3.
(3) Highly dependent on PC processor and graphics adapter performance.
(4) Value is for 2x2 binning. When in full frame format, the maximum frame rate is 2 fps.
(5) For more information please see "Optical Camera Trigger" catalog page.
(6) Camera set to full resolution at maximum frame rate at 633nm CW wavelength. Camera set to minimum useful gain and 1ms exposure time for saturation test and maximum useful gain and 35ms exposure time for lowest signal test.
(7) Values derived from camera EMVA data for Saturation Capacity at minimum exposure and Absolute Sensitivity at maximum exposure. When in the default configuration, the Saturation Intensity is 0.42 mW/cm² and the Lowest Measurable Signal is 0.05 nW/cm².
(8) 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 of 5W/cm² for beam size 5mm, 10W/cm² for 2mm beam and >30W/cm² for 1mm beam.
(9) Comes with USB 3.0 cable, Power with Trigger cable and 3 ND filters.
(10) Comes with Cat6 cable, Power with Trigger cable, SM2 adapter, and 3 ND filters:ND1, ND2, ND3 (ND3 mounted in camera)

## LT665



## SP504S

**Beam Analysis**

mks | Ophir   01.01.2024   | **229**