



| Sensor                      | Resolution          | Frame Rate |
|-----------------------------|---------------------|------------|
| Sony DepthSense IMX556 CMOS | 0.3 MP 640 x 480 px | 30 FPS     |

| Model SKUs  | Chroma | Working Distance | IP Rating | GigE Vision Connector | Included Accessory |
|-------------|--------|------------------|-----------|-----------------------|--------------------|
| HLT003S-001 | Mono   | 0.3 m to 8.3 m   | IP67      | M12                   | M8 GPIO IP67 Cap   |

## Specifications

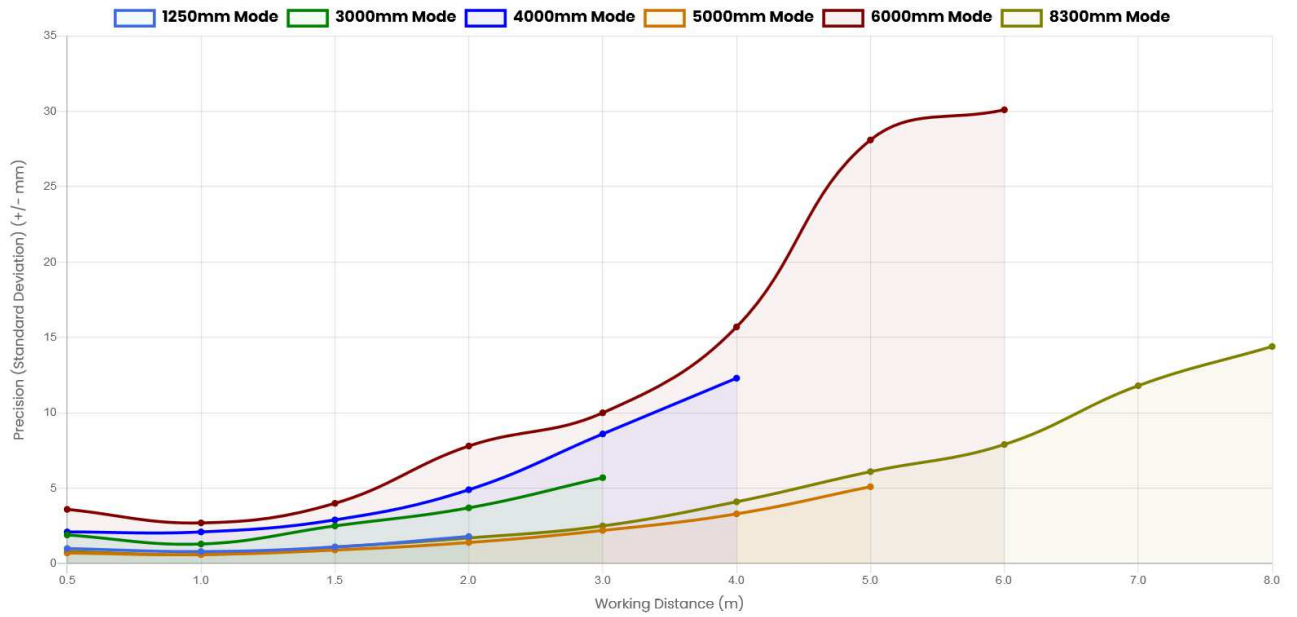
| Interface and Power Information |  |
|---------------------------------|--|
| Digital Interface               | 1000BASE-T GigE, M12 X-coded, PoE                |
| GPIO Interface                  | 8 pin M8 connector                               |
| Opto-Isolated I/O Ports         | 1 input (2.5V-24V and 10.5V-24V), 1 output       |
| Non-Isolated I/O Ports          | 2 bi-directional                                 |
| Power Requirement               | PoE+ (IEEE 802.3at) or 18-24 V through GPIO      |
| Power Consumption               | 12-24Vdc, P <sub>avg</sub> <12W, <30W peak power |

| Sensor Properties |   |
|-------------------|---|
| Sensor Model      | Sony DepthSense IMX556PLR CMOS            |
| Shutter Type      | Global                                    |
| Sensor Size       | 8 mm (Type 1/2")                          |
| Resolution        | 640 x 480 px, 0.3 MP                      |
| Pixel Size        | 10.0 μm (H) x 10.0 μm (V)                 |
| Framerate         | 30 FPS @ 0.3 MP (for all operating modes) |

| Physical Properties  |  |
|----------------------|--|
| Dimensions           | 60 x 60 x 77.5 mm  |
| Weight               | 398 g  |
| Ingress Protection   | IP67 (For IP67 protection Helios2 must be used with IP67 cables) |
| Ambient Light Filter | Yes, integrated on-camera  |
| Lens Field of View   | 69° x 51° (nominal)  |
| Illumination         | 4 x VCSEL laser diodes, Class 1, @ 850nm                         |

| Standard and Certifications    |   |
|--------------------------------|---|
| Standard                       | GigE Vision v2.0, GenICam 3D  |
| Compliance                     | CE, FCC, RoHS, REACH, WEEE, Eye Safety Class 1 IEC/EN 60825-1:2014                                |
| Operating Temperature          | -20° to 50°C (Case Temperature)   |
| Shock and Vibration            | DIN EN 60068-2-27, DIN EN 60068-2-64  |
| Industrial EMC Immunity        | DIN EN 61000-6-2  |
| OS Support                     | Windows and Linux   |
| Software Support               | Arena SDK, C++, C, C#, Python   |
| Pixel Formats                  |   |
| Range Data                     |   |
| Coord3D_ABCY16                 | 4-ch point cloud XYZ + Intensity, 16 bits per channel, unsigned                                   |
| Coord3D_ABC16                  | 3-ch point cloud XYZ, 16 bits per channel, unsigned   |
| Coord3D_C16                    | Depth map Z plane, 16 bits, unsigned  |
| Intensity Image                |   |
| Mono8                          | 8 bit per pixel monochrome raw image  |
| Mono12Packed                   | 12 bit per pixel monochrome raw image   |
| Mono12p                        | 12 bit per pixel in bit stream, monochrome raw image  |
| Mono16                         | 16 bit per pixel monochrome raw image   |
| Confidence Data                |   |
| Confidence16                   | Confidence map, 16 bits   |
| Imaging Properties             |   |
| Exposure Control               | Manual, 3 settings: 62.5 $\mu$ s, 250 $\mu$ s or 1000 $\mu$ s                                     |
| Gain Control                   | Manual, 2 settings: High or Low   |
| Synchronization                | Software trigger, hardware trigger, PTP (IEEE 1588)   |
| Output Format                  | Binary .PLY file (via Arena SDK)  |
| Camera Features                |   |
| User Sets                      | 1 default and 2 custom user set   |
| Working Distance               | 0.3 m to 8.33 m   |
| Operating Distance Modes       | 6 Modes: (1) 1250 mm, (2) 3000 mm, (3) 4000 mm, (4) 5000 mm, (5) 6000 mm, (6) 8333 mm             |
| Accuracy                       | See Performance Tab   |
| Precision (Depth Noise)        | See Performance Tab   |
| Communication Channels         | 5 Channels. Allows users to operate up to 5 Helios2 cameras without interference between cameras. |
| Flying Pixel Filter            | Yes   |
| Intrinsic parameters available |   |

# Performance



## Helios2 Accuracy

| Distance (m)              | Accuracy                 |
|---------------------------|--------------------------|
| 1250mm Mode (up to 1.25m) | ± 4 mm                   |
| 3000mm Mode (up to 3.0m)  | ± 10 mm                  |
| 4000mm Mode (up to 4.0m)  | ± 10 mm + 0.25% of depth |
| 5000mm Mode (up to 5.0m)  | ± 4 mm + 0.1% of depth   |
| 6000mm Mode (up to 6.0m)  | ± 10 mm + 0.5% of depth  |
| 8300mm Mode (up to 8.3m)  | ± 4 mm + 0.2% of depth   |

## Helios2 Precision

| Distance (m) | 1250mm Mode | 3000mm Mode | 4000mm Mode | 5000mm Mode | 6000mm Mode | 8300mm Mode |
|--------------|-------------|-------------|-------------|-------------|-------------|-------------|
| 0.5*         | 1.0 mm      | 1.9 mm      | 2.1 mm      | 0.7 mm      | 3.6 mm      | 0.8 mm      |
| 1            | 0.8 mm      | 1.3 mm      | 2.1 mm      | 0.6 mm      | 2.7 mm      | 0.6 mm      |
| 1.5          | 1.1 mm      | 2.5 mm      | 2.9 mm      | 0.9 mm      | 4.0 mm      | 1.1 mm      |
| 2            | 1.8 mm      | 3.7 mm      | 4.9 mm      | 1.4 mm      | 7.8 mm      | 1.7 mm      |
| 3            |             | 5.7 mm      | 8.6 mm      | 2.2 mm      | 10.0 mm     | 2.5 mm      |
| 4            |             |             | 12.3 mm     | 3.3 mm      | 15.7 mm     | 4.1 mm      |
| 5            |             |             |             | 5.1 mm      | 28.1 mm     | 6.1 mm      |
| 6            |             |             |             |             | 30.1 mm     | 7.9 mm      |
| 7            |             |             |             |             |             | 11.8 mm     |
| 8            |             |             |             |             |             | 14.48 mm    |

\*0.5 m distance precision measured with 250 μs exposure time, all other distances using 1000 μs exposure time measured with white paper target.

## Test Conditions:

- Target: White paper mounted on bar attached to motion stage
- Helios2 positioning: mounted on tripod, laser distance meter used to measure distance from case front to stage zero position
- Camera setting: Coord3D\_C16 Pixel Format, bilateral filtering OFF, camera warmed up for 20 minutes.
- Imaging environment: Room light on during testing, black material used to minimize reflections off floor
- Motion stage moved in 50mm steps, for each step measure depth over 10×10 pixel ROI at image center, repeat 32 times at each position
- Accuracy measured as difference between camera's average measured depth across the ROI and 32 images and the ground truth depth (stage zero distance + stage position)

## Drawings

### Helios2 Camera Drawings

