Helios2+ Time of Flight (ToF) IP67 3D Camera

Get an IP67 "factory tough", high-performance 3D camera with the accuracy and precision you need powered by LUCID's 3D ISP core and Sony's DepthSense IMX556 Time-of-Flight (ToF) sensor. With the Helios2+ camera delivering two new features – High Dynamic Range (HDR) and High-Speed modes – over the original Helios2, the Helios2+ provides unmatched depth data clarity and high-speed 3D imaging for 24/7 operation in harsh industrial environments.

Sensor	Resolution	Frame Rate
Sony DepthSense IMX556 CMOS	0.3 MP 640 x 480 px	30 FPS (Normal) 10 FPS (HDR) 103 FPS (High-Speed)

Model SKUs	Chroma	Working Distance	IP Rating	GigE Vision Connector	Included Accessory
HTP003S-001	Mono	0.3 m to 8.3 m	IP67	M12	M8 GPIO IP67 Cap

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_{avg} <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 (Normal modes)* 10 FPS @ 0.3 MP (HDR modes)* 103 FPS @ 0.3 MP (High Speed modes)* *See below FPS charts for more info

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

*Listed specification testing in progress and is subject to change

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
Coord3D_C16Y8	Depth Map Z plane, 16 bits + Intensity, 8 bits, unsigned
Coord3D_CY16	Depth Map Z plane + Intensity, 16 bits for each channel, 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	HDR: Auto Manual 3 settings: 62.5 µs, 250 µs, or 1000 µs
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 High Speed ToF, 3 Modes: (1) 625 mm, (2) 1250 mm, (3) 2500 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	

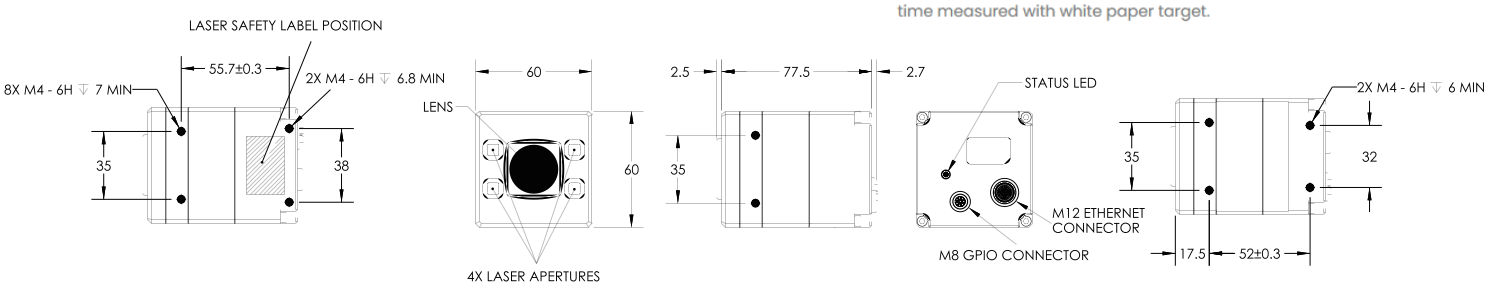
Helios2+ Accuracy (Normal Modes)

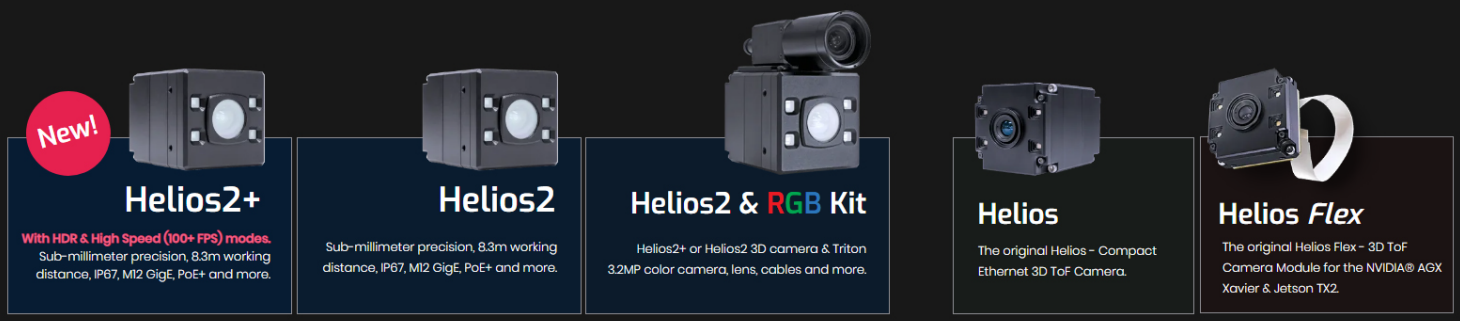
Distance (m)	Accuracy
1250mm Mode (up to 1.25m)	± 4 mm
3000mm Mode (up to 3.0m)	± 10 mm
4000mm Mode (up to 4.0m)	± 10 mm + 0.25% of depth
5000mm Mode (up to 5.0m)	± 4 mm + 0.1% of depth
6000mm Mode (up to 6.0m)	± 10 mm + 0.5% of depth
8300mm Mode (up to 8.3m)	± 4 mm +0.2% of depth

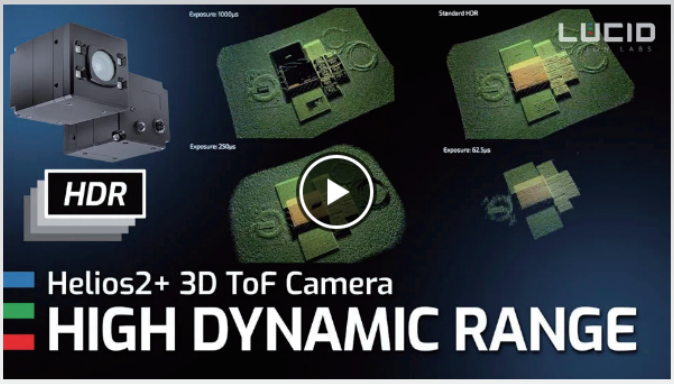
Helios2+ Precision (Normal Modes)

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

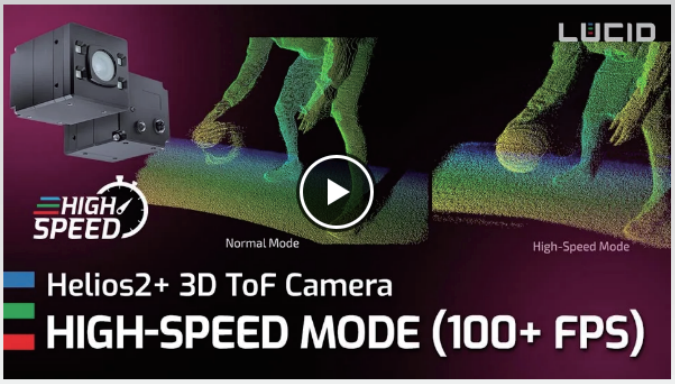
*0.5 m distance precision measured with 250 µs exposure time, all other distances using 1000 µs exposure time measured with white paper target.







The Helios2+ **High Dynamic Range** mode fuses multiple exposures in the phase domain to provide accurate depth information in high contrast, complex scenes, containing both highly reflective and low reflectivity objects.



The Helios2+ **High-Speed mode** enables depth perception using a single phase measurement to realize faster acquisition speed and higher framerates. This allows 3D imaging of moving objects without distortion at the expense of accuracy and distance range.

FeelSoBene

서울특별시 강남구 영동대로 324, 타워크리스탈빌딩 5층 507호
TEL 070-4044-0118 / FAX 070-4044-1116
Sales - roychoi@feelsobene.com / hug@feelsobene.com
Technical Support - fsd.support@feelsobene.com
Homepage - www.feelsobene.com