

LIPSedge™ S205p

3D Stereo Camera

Datasheet

LIPS® LIPSedge™ series - Stereo Camera

Feb 2023

Revision 1.0.1

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Revision History

Ver.	Release Date	Description	Author
1.0	2023/02/13	First Release	Mark

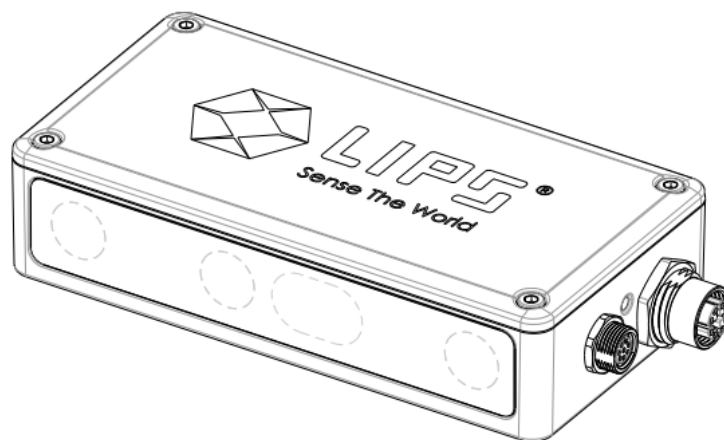
1. Overview

1.1. Features

- Stereo camera with up to 720p in RGB-D resolution
- Fuses the power of 2D and 3D image processing in a single camera
- Features CV2 CVflow® edge AI perception SoC for edge computing
- Global shuttered RGB-D sensor and built-in IMU for high-motion robotics and applications
- Supports industrial framework (OpenNI, OpenCV, ROS, Halcon, Nvidia Isaac, and more)
- Available in industrial version (GigE/PoE/IP67)

1.2. Applications

- **Workplace Safety & Access Control**
 - Facial Recognition & PPE
 - Collision Avoidance
- **VGR (Vision Guided Robotic)**
 - Surface Processing
 - Pick and place
- **Agriculture & Livestock Farming**
 - Growth and Activity
 - Analysis of Livestock
 - Plant Phenotyping
 - Green House Automation
- **3D Measurement & Inspection**
 - Object Dimensioning
 - Packing Completeness



2. Specifications

2.1. Technical Information

Image		S205p
Depth	Technology	Active Stereo
	Maximum Working Distance	10 m +
	Minimum Working Distance	0.52 m
	Baseline	95 mm
	Resolution/Frame Rate	1280x720 @ 30 FPS
	FoV(H × V × D)	87° * 58° * 95° (+/- 3°)
	Shutter Type	Global shutter
	Z Accuracy	<=1.5%
RGB	Resolution/Frame Rate	1280 x 800 @ 30FPS
	FoV (H × V × D)	90°x 65° x 98°
	Shutter Type	Global shutter
IMU Sensor		3-axis accelerator & 3-axis gyroscope
A.I. Processor for Edge Computing		Ambarella CV2® : Quad-Core ARM® Cortex® A53 up to 1.0Ghz with CVflow® Processor for Deep Learning
Illumination		
Illumination Type		Infrared
IR Wavelength		850 nm
Illuminating Component		Vertical-Cavity Surface-Emitting Laser (VCSEL)
General		
Dimension (mm)		130 * 66* 32
Weight(g)		320g (unit) / 526g (with packing)
Ambient Operating Temperature (° C)		0 – 40 (Device)
Storage Temperature (° C)		-20 ~ 70
Output Interface		M12 x Code
Power		PoE (IEEE 802.3 AF/AT)
Supported OS		Windows 10, Linux Ubuntu 18.04 /20.04 LTS

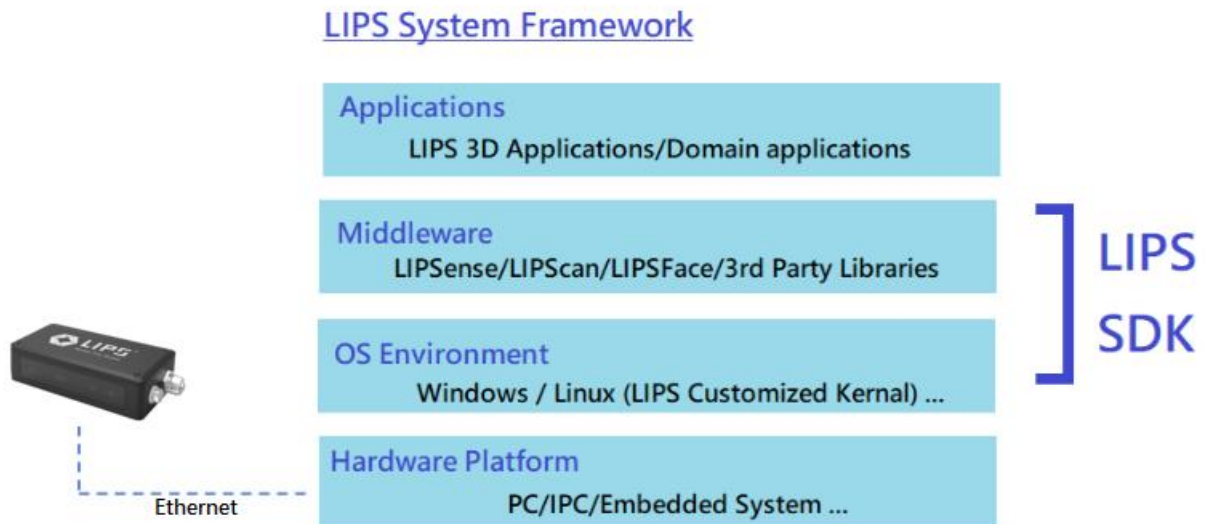
Working Environment

Indoor & Outdoor

3. System Architecture

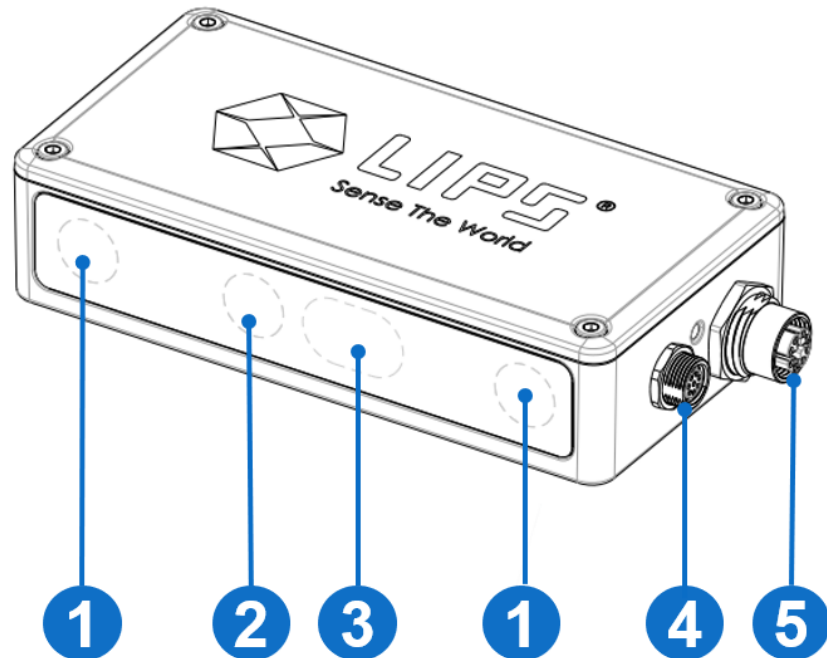
3.1. Overview

The LIPsEdge™ S205p is a 3D Depth Camera based on stereo vision to calculate depth. The stereo vision implementation consists of a left imager, right imager, and an optional infrared projector. The infrared projector projects a non-visible static IR pattern to improve depth accuracy in scenes with low texture. The left and right imagers capture the scene and send imager data to the depth imaging (vision) processor, which calculates depth values for each pixel in the image by correlating points on the left image to the right image and via the shift between a point on the Left image and the Right image. The depth pixel values are processed to generate a depth frame. Subsequent depth frames create a depth video stream.



4. Hardware Details

4.1. General Characteristics

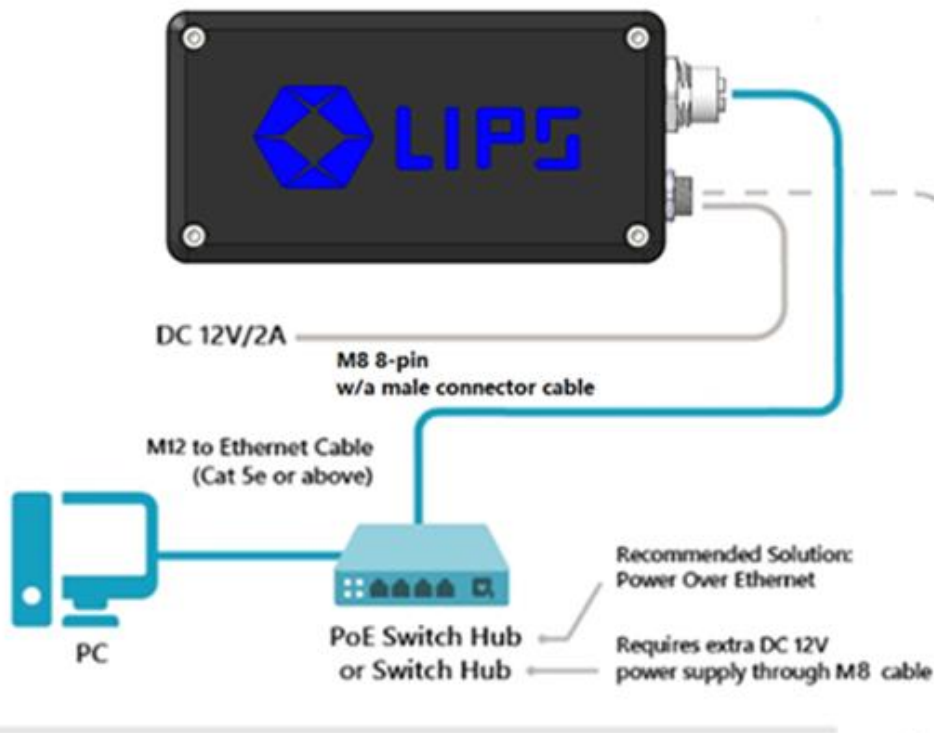


No.	Name	Functions
1	IR Stereo Sensor	Receives the IR image
2	RGB Sensor	Receives the RGB image
3	IR projector	Projects a static IR pattern on the scene
4	M8 Connector	Connects to a M8 cable for power input or Ethernet reset
5	M12 Connector	Connects to a M12 to Ethernet cable for power and data transmission

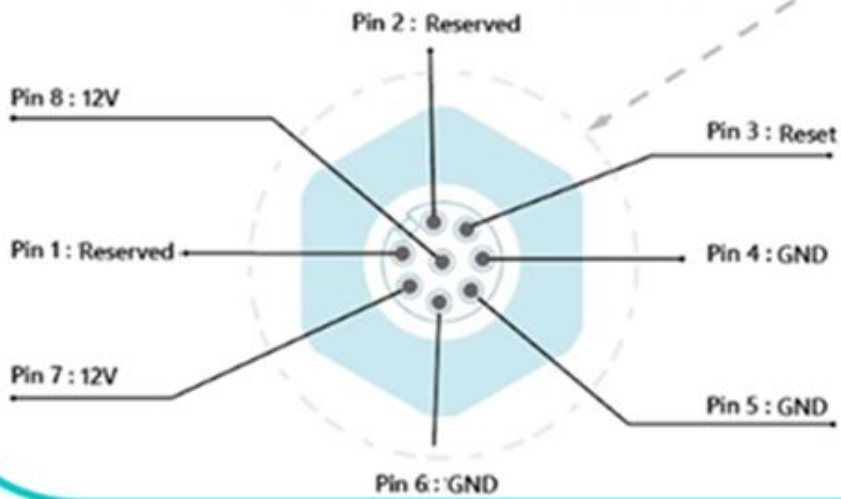
4.2. Host Connectivity

LIPSedge™ S205p has two power supply channels: M12 / PoE (Power over Ethernet) or M8 interface. We recommend using M12 / PoE as the standard scenario. For power supply / data transmission channel separation, optionally use M8 cable.

Power / Data Connection



M8 8-Pin male connector pinout



4.2.1 Power M8 A-Code Male connector

Pin no.	Description
1	Reserve
2	Reserve
3	Ethernet Reset
4	GND
5	GND
6	GND
7	DC 12V Power supply
8	DC 12V Power supply

4.3. Temperature Specification

Items	MIN	NOM	MAX	UNIT
Storage Temperature	-20	-	+70	°C
Ambient Operation Temperature	0	-	+40	°C

5. Optical System

5.1 Cameras

The **S205p** utilizes 3 (two) camera sensors to capture NIR/Depth images and RGB color images.

Table: Camera sensor table

Items	Camera 1 (sensor)	Camera 2 (sensor)	Camera 3 (sensor)
Position	Right	Left	Center
Image	NIR/Depth	NIR/Depth	RGB
Lens FoV	H:87 / V:58 / D:95	H:87 / V:58 / D:95	H:90 / V:65 / D:98

5.2 Illuminators

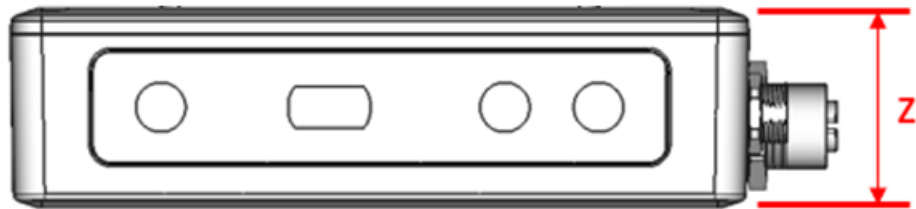
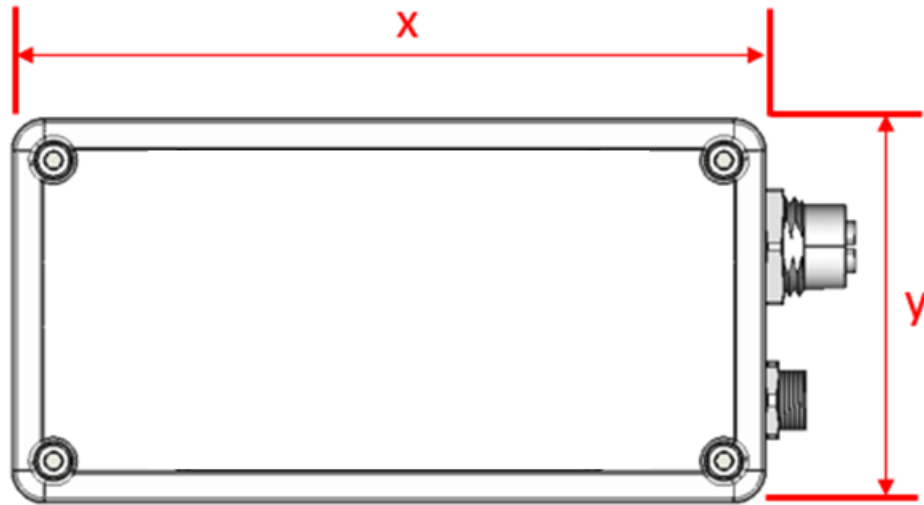
The **S205p** optical system consists of a dot illuminator (VCSEL) for structured light and a flood projector for uniform NIR image.

Table: Illuminator parameters

Items	Dot Projector
Illuminating Component	Vertical-cavity surface-emitting laser (VCSEL) + Optics
Pattern Type	Static
Wavelength	850nm

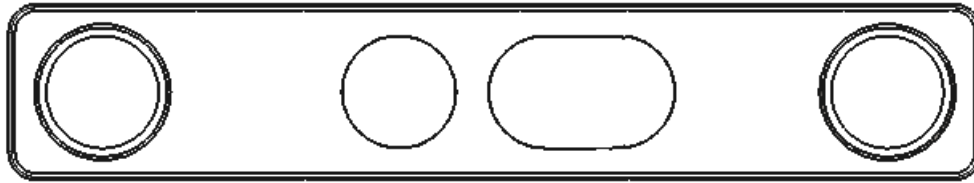
6. Mechanical Engineering

6.1. Form Factor



Dimension	MIN	NOM	MAX	TOLERANCE	UNIT
X	129.5	130	130.5	±0.5	mm
Y	65.5	66	66.5	±0.5	mm
Z	31.5	32	32.5	±0.5	mm

6.2. Cover Glass



- Main material : Glass (Gorilla Glass or Soda Lime Glass)
- Transmission >95 % in average (400 ~865 nm)
- Reflection < 1% in average (400 ~ 865 nm)
- Hardness of glass > 6.5 of Mohs scale
- Water repellent contact angle > 115 °

7. LIPSedge™ SW Architecture and SDK

LIPSedge™ series includes a comprehensive support for development including LIPS® SDK and worldwide industry Frameworks and Wrappers libraries implementation.

Please refer to our homepage and related links for more information.

7.1. SDK, Middleware and Sample Codes

LIPS-Developer: <https://www.lips-hci.com/developer-documentation>

LIPS-GitHub: <https://github.com/lips-hci/ae400-realsense-sdk/tree/ks2.43.0>

LIPS User manual: <https://www.lips-hci.com/lipssdk>



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