LIPS | Sense The World

LIPSedge™ S315

HD Active Stereo 3D Depth Camera with Edge A.I.

Datasheet

Preliminary

April 2025

Revision 1.0.0

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Table of Contents

Revision History **3**

1. Overview 4

1.1 Features 4

1.2 Application Use-Cases 4

2. Specifications 5

2.1 Technical Information 5

3. System Architecture 6

4. Hardware Details 7

4.1 General Characteristics 7

4.2 Power Consumption 7

4.3 Storage Temperature and Ambient Temperature 7

4.4 Form Factor 8

4.5 Host Connectivity – Type-C 8

4.6 Cover Glass or KEY PARTS 9

5. Optical System 11

5.1 Illuminators or KEY PARTS 11

5.2 Image and Field-of-View to Orientation 11

5.3 Left and Right Imagers : 11

5.4 Color Sensor 12

5.5 Image Formats 12

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Revision History

Ver.	Release Date	Description	Author
0.95	2024/11/25	1. Internal draft version	Mark
1.0.0	2025/4/22	1. Marketing Release (Preliminary)	Ethan

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1. Overview

1.1 Features

- High Z-accuracy (≤ 2% at 4 meters)
- Global shuttered RGB sensor
- Excellent 3D scanning performance
- for reflexive object
- Built-in IMU

1.2 Application Use-Cases

- VGR/AMR
- Dimension Measurements
- Facial Recognition
- Pick & Place Robot

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2. Specifications

2.1 Technical Information

System		
SoC	Processor	Quad core ARM Cortex-A55
Memory	RAM	1GB DDR4
	Internal Memory(eMMC)	8GB eMMC5.1
System	OS	Linux ubuntu 18.04
Image		
Depth	Technology	Active Stereo
	Ideal Working Distance	4 m +
	Minimum Working Distance	0.6 m
	Frame Rate	1280 × 720 @ 30fps ,
	FoV(H × V × D)	90° x 64° x 98° (± 2°)
	Baseline	95 mm
	Shutter Type	Global Shutter
	Z Accuracy	≤ 2% (up to 2m and 80% of FoV)
RGB	Resolution	1280 × 720 @ 30fps ,
	FoV (H × V × D)	90° x 64° x 98° (± 2°)
	Shutter Type	Global Shutter
Illumination		
Illumination Type		Infrared
IR Wavelength		850 nm
Illuminating Component		Vertical-cavity surface-emitting laser (VCSEL)
Sensors		
IMU		BOSCH BMI088
General		
Dimension (mm)		126 * 30 * 30 mm(Length × Depth × Height)
Ambient Temperature (° C)		0 - 40
Storage Temperature (° C)		-20 - 60
Output Interface		USB Type C
Power input		DC 5v from USB
Supported OS		Windows 10, Linux Ubuntu 20.04 / 22.04 LTS
Working Environment		Indoor

Note: All specifications are subject to change without prior notice.

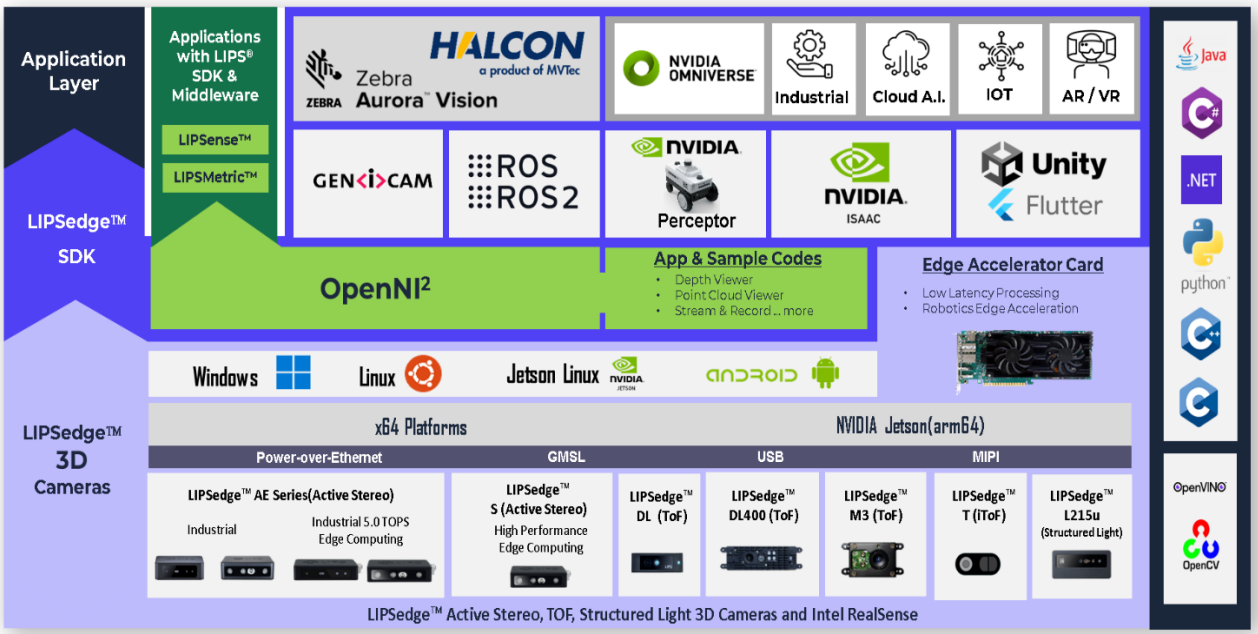
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3. System Architecture

LIPS 3D camera / SDK offers a system for developing depth-sensing applications. As the LIPS system architecture illustrates, the system is comprised of the hardware layer and the software layer.

The hardware layer oversees data capture, transfer, and processes.

In the software layer, the captured data is fetched by the LIPS SDK (Software Development Kit) on the OS environment. Depending on the project complexity, wrappers and third-party utilities may be engaged before the data is eventually presented in the application layer for business applications.

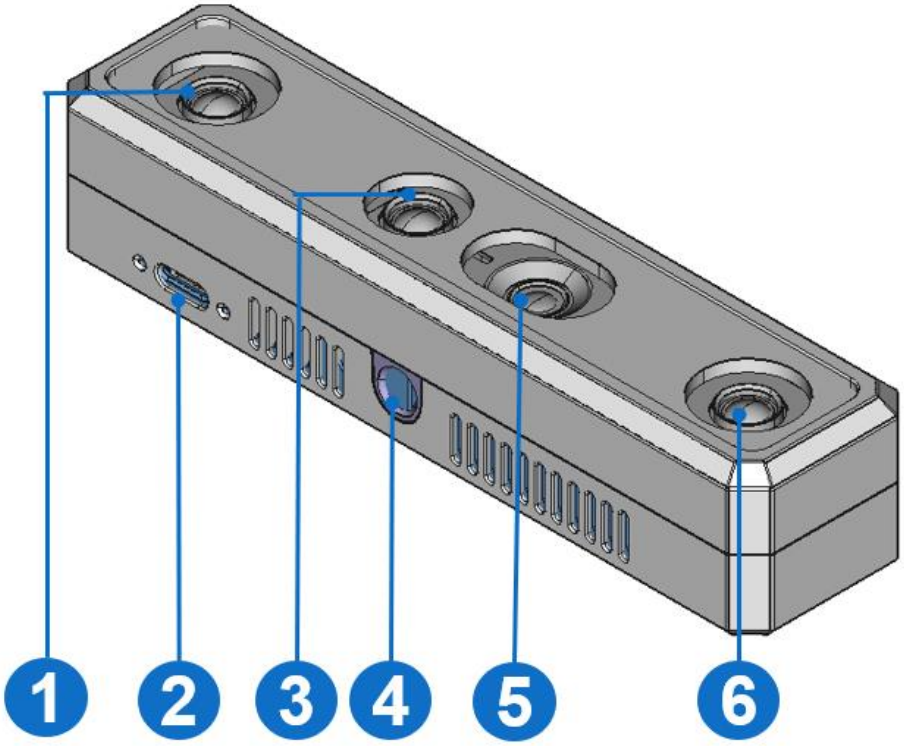


The core of the system, the LIPS SDK, is comparable to a toolbox full of software modules comprised of middleware, libraries, wrappers and API, and miscellaneous programming languages / platforms for application development. With extensive wrapper support, LIPS SDK enables developers to access bottom layer data with APIs, thus eliminating the hassle of changing third-party functions. The result is a highly effective project scoping, monitoring, and execution workflow compatible with the fast-pacing AIoT market and machine vision demands.

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4. Hardware Details

4.1 General Characteristics



No.	Name	Functions
1	IR Stereo Sensor	Receives the IR image.
2	USB 3.0 Interface	Connects to a USB 3.0 Type C Cable.
3	RGB Sensor	Receives the RGB image.
4	Tripod mount	Mounts the camera onto the tripod
5	Infrared Projector	Projecting a static infrared pattern
6	IR Stereo Sensor	Receives the IR image.

4.2 Power Consumption

Items	Values
Average Power Consumption	4.5 W (typical)

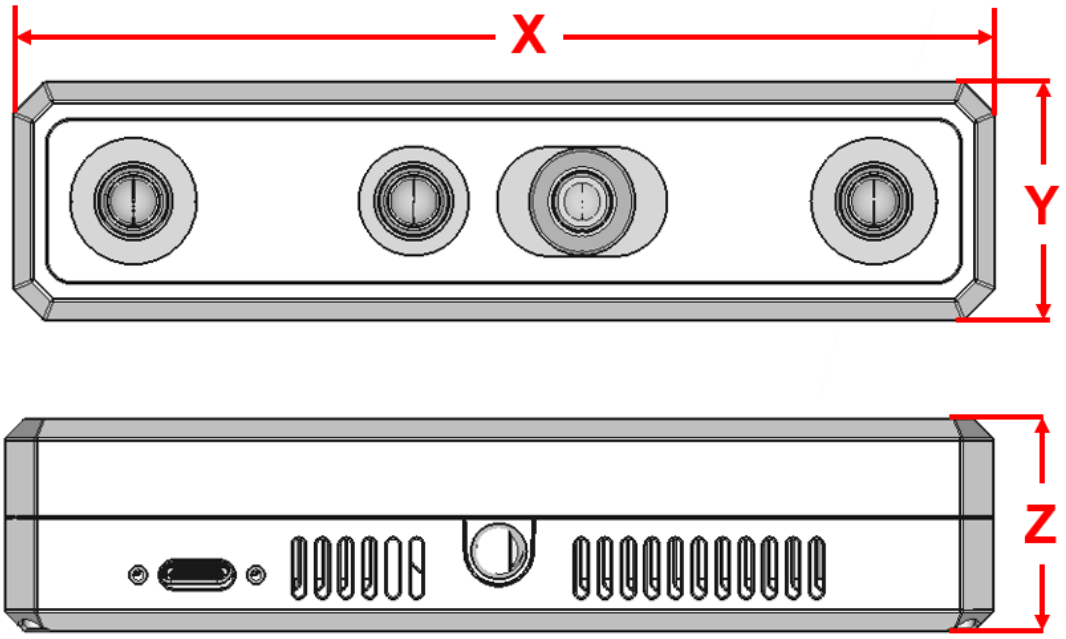
4.3 Storage Temperature and Ambient Temperature

Items	MIN	NOM	MAX	UNIT

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Storage Temperature	-20	-	+60	°C
Ambient Operation Temperature	0	-	+40	°C

4.4 Form Factor



Dimension	MIN	NOM	MAX	TOLERANCE	UNIT
X	125.5	126	126.5	±0.5	mm
Y	29.5	30	30.5	±0.5	mm
Z	29.5	30	30.5	±0.5	mm

4.5 Host Connectivity – Type-C

USB Type-C connector consists of 24 signal pins designed in a symmetrical way. The connector z-height is as low as 3 mm and enables enhanced user by allowing the USB Type-C plug to be plugged into a receptacle either right side up or upside down. Interoperability between USB Type-C and legacy USB is possible through standard legacy cable assemblies defined in USB Type-C Cable and Connector specification.

Pin	Signal	Function	Description
A1	GND	Power Delivery	Ground
A2	TX1+	USB 3.1 Gen 1 Data	First SuperSpeed TX Differential Pair Positive
A3	TX1-	USB 3.1 Gen 1 Data	First SuperSpeed TX Differential Pair Negative

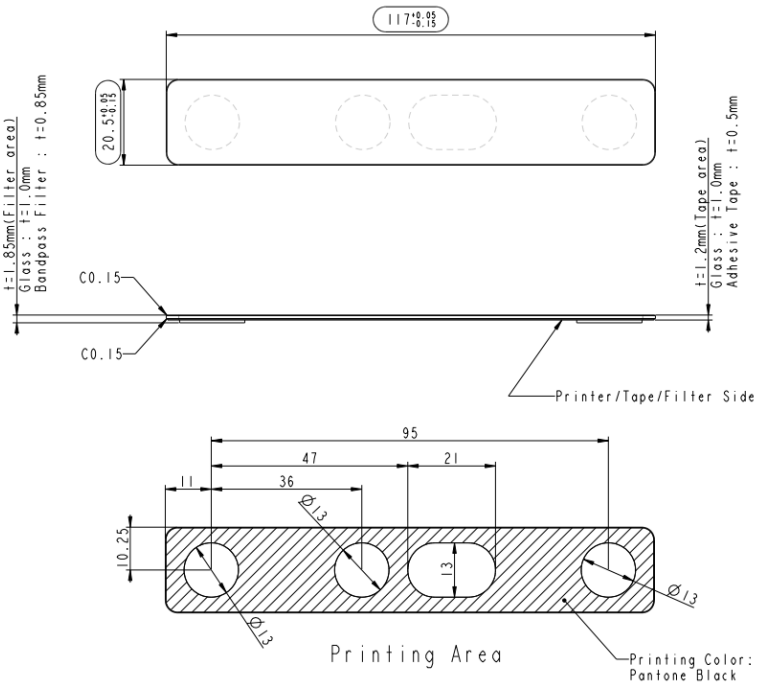
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A4	VBUS	Power Delivery	5 V
A5	CC1	Control	Configuration Channel 1
A6	D+	USB2.0 Data	USB 2.0 differential pair positive
A7	D-	USB2.0 Data	USB 2.0 differential pair negative
A8	SBU1	Sideband	Sideband Use Signal 1
A9	VBUS	Power Delivery	5 V
A10	RX2-	USB 3.1 Gen 1 Data	Second SuperSpeed RX Differential Pair Negative
A11	RX2+	USB 3.1 Gen 1 Data	Second SuperSpeed RX Differential Pair Positive
A12	GND	Power Delivery	Ground
B1	GND	Power Delivery	Ground
B2	TX2+	USB 3.1 Gen 1 Data	Second SuperSpeed TX Differential Pair Positive
B3	TX2-	USB 3.1 Gen 1 Data	Second SuperSpeed TX Differential Pair Negative
B4	VBUS	Power Delivery	5 V
B5	CC2	Control	Configuration Channel 2
B6	D+	USB 2.0 Data	USB 2.0 differential pair positive
B7	D-	USB 2.0 Data	USB 2.0 differential pair negative
B8	SBU2	Sideband	Sideband Use Signal 2
B9	VBUS	Power Delivery	5 V
B10	RX1-	USB 3.1 Gen 1.0 Data	First SuperSpeed RX Differential Pair Negative
B11	RX1+	USB 3.1 Gen 1.0 Data	First SuperSpeed RX Differential Pair Positive
B12	GND	Power Delivery	Ground

4.6 Cover Glass or KEY PARTS

- Main material : Glass(Gorilla Glass or Soda Lime Glass); t=1.0mm
- Transmission > 95% in average(400 ~ 865)AIO(0~30º)
- Reflection <1% in average(400~865nm),AIO(0~30º)
- Hardness of glass > 6.5 of Mohs scale
- Water repellent angle > 115, effectiveness >360 days

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5. Optical System

5.1 Illuminators or KEY PARTS

The optics include projecting a static IR pattern on the scene to add texture to low texture scenes.

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

5.2 Image and Field-of-View to Orientation

The LIPSedge™ AE430 / 470 utilizes 3 camera sensors to capture NIR/Depth images and RGB color images.

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

5.3 Left and Right Imagers :

Parameter	**Camera Sensor Properties**
Image Sensor	OmniVision Technologies OV9782
Active Pixels	1280 x 800
Sensor Aspect Ratio	8:5
Format	10-bit RAW
F Number	f/2.0
Focal Length	1.93 mm
Filter Type	None
Focus	Fixed
Shutter Type	Global Shutter
Signal Interface	MIPI CSI-2, 2X Lanes
Horizontal Field of View	90º
Vertical Field of View	64º
Diagonal Field of View	98º
Distortion	<= 1.5%

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5.4 Color Sensor

Parameter	Camera Sensor Properties
Image Sensor	OmniVision Technologies OV9782
Color Image Signal Processor	Discrete
Active Pixels	1280 x 800
Sensor Aspect Ratio	16:10
Format	10-bit RAW RGB
F Number	f/2.0
Focal Length	1.93 mm
Filter Type	IR Cut Filter
Focus	Fixed
Shutter Type	Global Shutter
Signal Interface	MIPI CSI-2, 1 Lane
Horizontal Field of View	90º
Vertical Field of View	65º
Diagonal Field of View	98º
Distortion	<= 1.5%

5.5 Image Formats

Format	Resolution	Frame Rate (FPS)
Depth	1280 x 720	5, 15, 30
IR Imager	1280 x 720	5, 15, 30
Color Stream from RGB camera	1280 x 800	5, 15, 30

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