LIPSedge™ AE450
3D Stereo Camera

Datasheet

LIPS® LIPSedge™ series - Stereo Camera

Mar 2025

Revision 1.0

Although every effort has been made to ensure the accuracy of this manual, errors and inconsistencies may remain. The manufacturer assumes no liability resulting from errors or omission in this manual, even if damage arises from the use of the information. All contents are subject to constant revision to improve its reliability and may be changed without prior notice.

May 2023

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Revision History

Revision	Description	Date
1.0	Initial Release	May 2023

1. Overview

LIPSedge™ AE450 is our next-generation ruggedized 3D active stereo camera which brings to heavy-duty users with upgraded depth precision and optical performances. With a built-in Intel® RealSense™ D455 module, we expand the baseline of the depth sensor to 95 mm, which minimizes the error of Z-axle measurement to as low as ≤ 2% at 4 meters.

The camera is equipped with PoE Ethernet interface featuring high-speed transmission of images and control data while minimizing the need for extra power supply and cable planning. LIPSedge™ AE450 meets the IP67 standard for ingress protection.

Features

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

Application Use-Cases

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

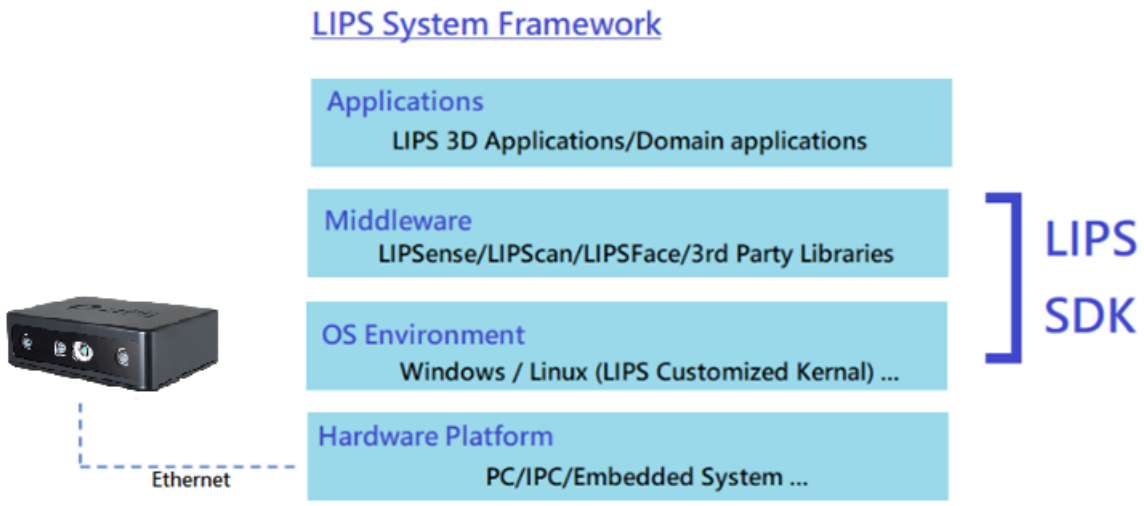
2. Specifications

Item		Description
Image Sensor		Omnivision OV9782
Pixel Size		3.0 μm * 3.0 μm
Optical Format		1 / 4"
Active Pixels		1280 * 800
Video Format		10-bit RAW RGB
Maximum Aperture		f / 2.0
Focal Length		1.93mm
Focus Type		Fixed
Shutter Type		Global shutter
Distortion		<= 1.5 %
IMU Sensor		3-axis accelerator & 3-axis gyroscope
Illumination		
Illumination Type		Infrared
IR Wavelength		850 nm ± 10 nm
Pattern Type		Static
Illuminating Component		Vertical-cavity surface-emitting laser (VCSEL) + Optics
Output		
Ethernet Interface		Gigabit Ethernet
Image		
Depth	Technology	Active Stereo
	Baseline	95 mm
	Ideal Working Distance	0.6m ~ 6m
	Minimum Working Distance	0.52 m
	Resolution	1280 x 720 @ 30 FPS
	FoV (H * V * D)	87° * 58° * 95° (± 3°)

	Z Accuracy	Under 2% of distance **Note:** The accuracy varies according to distance.
RGB	Resolution	1280 * 800 @ 30 fps,
	FoV (H * V * D)	90° * 65° * 98° (± 3°)
General		
Dimension (mm)		145 * 102 * 42
Weight		670 g
Ambient Temperature (° C)		0 – 40
Storage Temperature (° C)		-20 - 60
Power Supply		PoE (IEEE 802.3af/at), Power Wire (12V 1A, M12 Connector)
Hardware Mount		1/4” camera screw compatible (1/4 – 20 UNC)
Software		
Supported OS		Windows 10, Linux Ubuntu 18.04/20.04 LTS
Environmental		
IP Rating		IP67
Altitude Test		With reference to IEC 60068-2-13 Test M
Sine Vibration Test		With reference to IEC 60068-2-6 Test Fc
Random Vibration Test		With reference to MIL-STD-810E Method 514
Mechanical Shock Test		With reference to MIL-STD-810G Method 516.6 Procedure I fig. 516.6-10
Salt Spray Test		With reference to ASTM B-117

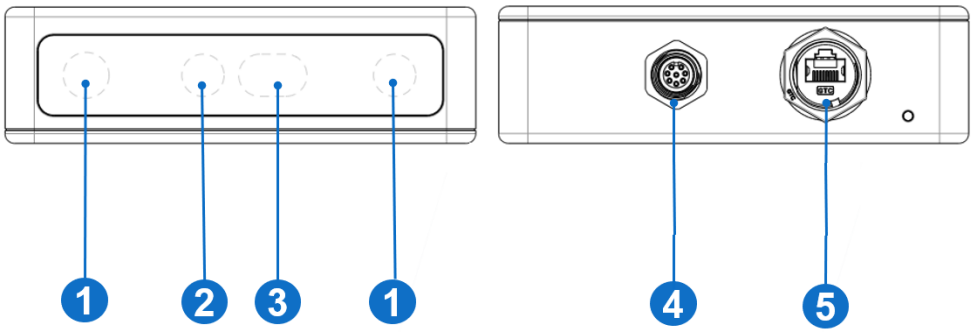
3. Description and Application Architecture

The LIPSedge ™ AE450 3D Depth Camera is based on active stereo, which projects light patterns to calculate the depth and surface information of the objects in the scene. The camera uses an Ethernet connection interface to transmit the captured data from the Near-Infrared sensor and the RGB image sensor to process the depth information.



4. Hardware Details

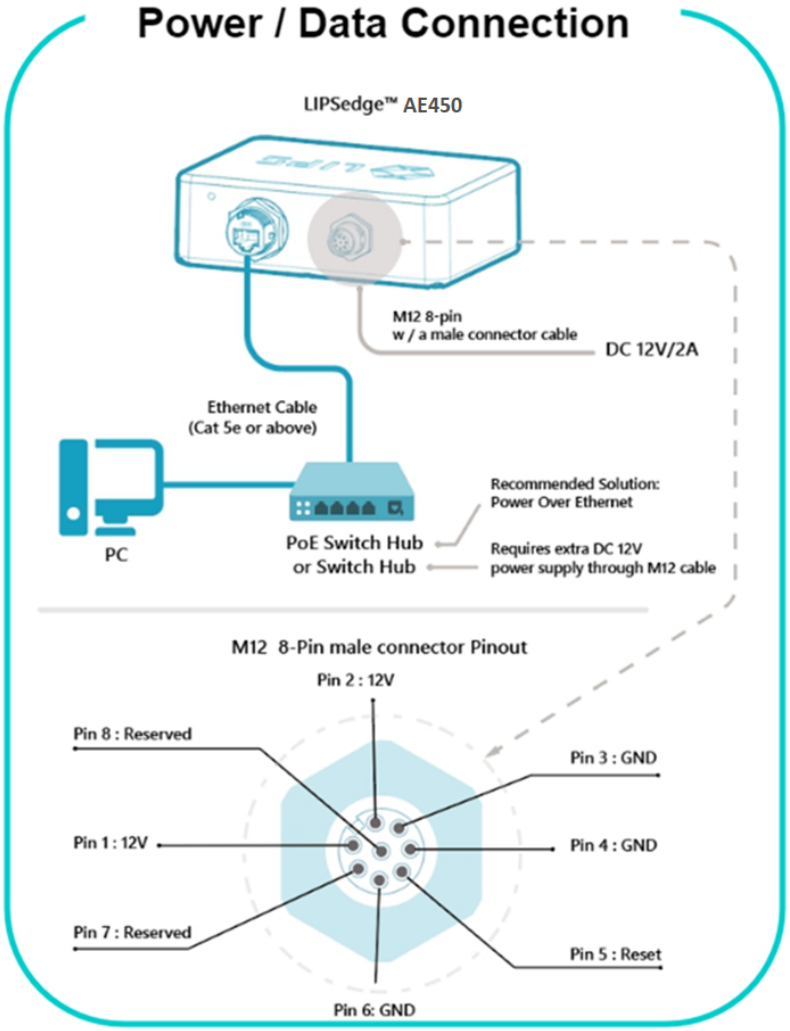
4.1 General Characteristics



No.	Name	Functions
1	**IR Stereo Sensor**	Receives the IR image.
2	**RGB Sensor**	Receives the RGB image.
3	**Infrared Projector**	Projecting a static infrared pattern
4	**M12 Connector**	Connects to an M12 cable for power input or Ethernet reset.
5	**Ethernet Connector**	Provides power and data transmission through Cat-5e ethernet cables.

4.2 Host Connectivity

LIPSedge™ AE450 has two power supply channels: Ethernet / PoE (Power over Ethernet) or M12 interface. We recommend using Ethernet / PoE as the standard scenario. For power supply / data transmission channel separation, optionally use M12 cable.



4.3 Thermal

4.3.1 Temperature Specification

Items	MIN	NOM	MAX	UNIT
Storage Temperature	-20	-	+60	°C
Ambient Operation Temperature	0	-	+40	°C

4.3.2 Power Consumption and Current

Items	Values
Average Power Consumption	12 W (typical)
Continuous current	0.6 A (typical)
Peak current	0.92 A

5. Optical System

5.1 Cameras

The LIPSedge™ AE450 utilizes 3 camera sensors to capture NIR/Depth images and RGB color images.

Table: AE450 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

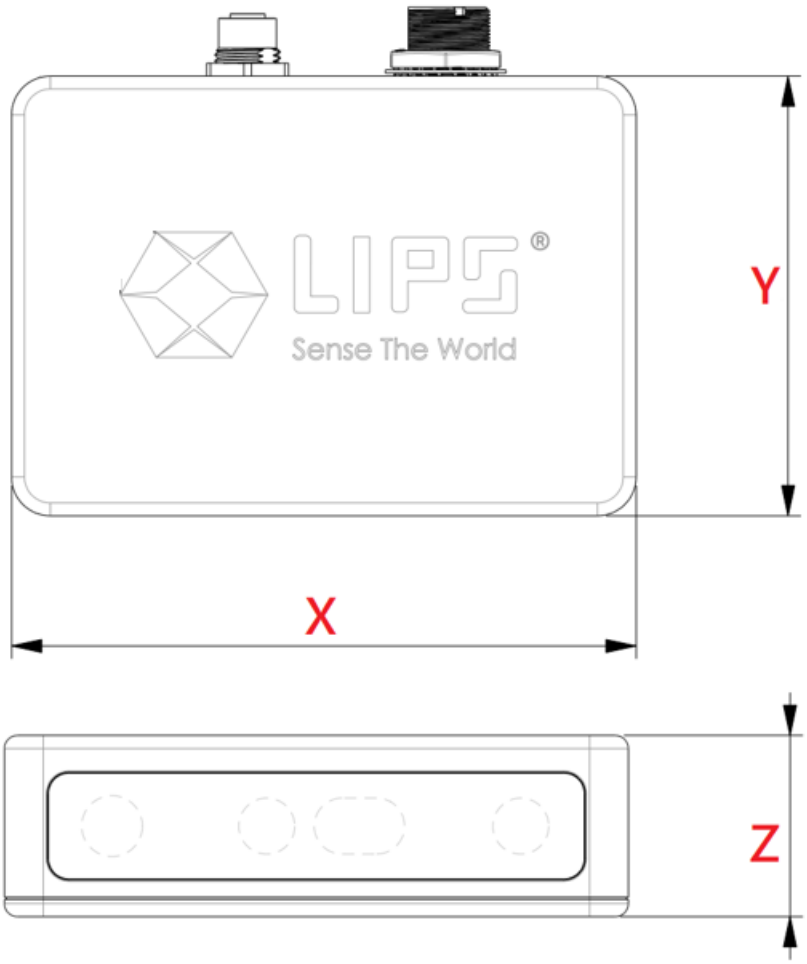
The LIPSedge™ AE450 optics include projecting a static IR pattern on the scene to add texture to low texture scenes.

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 Mechanical Dimension of AE450



Dimension	MIN	NOM	MAX	TOLERANCE	UNIT
X	144.5	145	145.5	±0.5	mm
Y	101.5	102	102.5	±0.5	mm
Z	41.5	42	42.5	±0.5	mm

7. LIPSedge™ Software 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/master
LIPS User manual: https://www.lips-hci.com/lipssdk

8. Regulatory Compliance

LIPSedge™ AE450 is classified as a Class 1 Laser Product under EN/IEC 60825-1.

"Complies with 21 CFR 1040.10 and 1040.11 except for conformance with IEC 60825-1 Ed. 3., as described in Laser Notice No. 56, dated May 8, 2019"

The product is being certified with FCC, CE, KCC (Korea) and BSMI Taiwan).

FCC Part 15:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) this device must accept any interference received, including interference that may cause undesired operation.

European Directives:

This is a Class B product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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