# LIPSedge™ T225
# 3D ToF Camera

## Technical Specification

LIPS® LIPSedge™ series - ToF Camera

***Feb. 2026***

***Revision : 1.4***

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July 2025

# Table of Contents

# Revision History

| Revision | Description | Date |
|---|---|---|
| 1.0 | Preliminary | Jul. 2025 |
| 1.1 | 1. Modification of Depth Camera Frame Rate<br>2. Modification of Camera Module Dimensions | Oct. 2025 |
| 1.2 | 1. Modification of Depth Camera Frame Rate | Nov. 2025 |
| 1.3 | 1. Modification of Depth Camera and RGB Camera Frame Rate<br>2. Modification of Camera Module Dimensions and Module Drawing | Dec. 2025 |
| 1.4 | 1. Modification of Weight<br>2. Modification of Power Consumption and Current | Feb. 2026 |

# 1. Overview

LIPSedge™ T225 3D ToF camera consists of a 640x480 resolution depth sensor and a 940nm illuminator, using short pulse technology to provide depth information.

It is designed for fast but low-power operation, delivering full resolution capture at up to 60 frames per second (fps) for raw image data.

## Features

- Integrate compute and neural network inference for low-latency and instant analytics capabilities.
- 0.3 to 6 meters detection range
- Sunlight Resistance: 80K Lux , operates in all lighting conditions (from darkness to daylight)

## Application Use-Cases

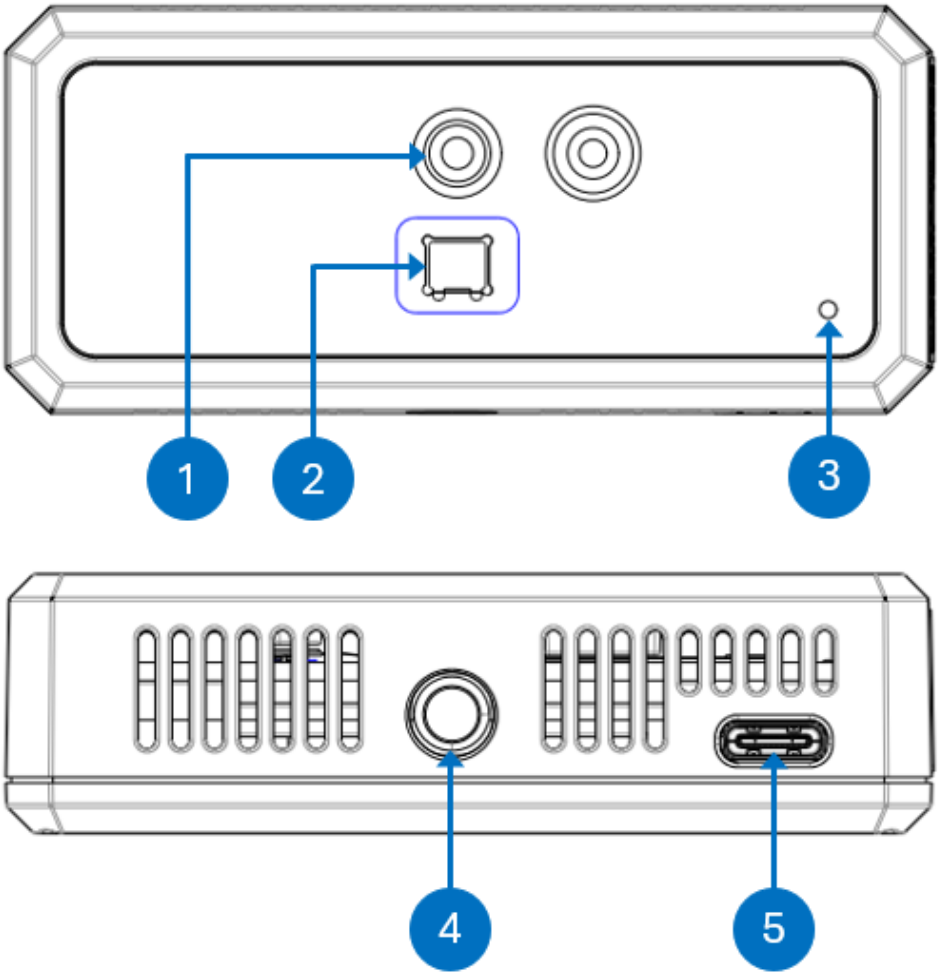
- Object Dimensioning, Packing Completeness
- Body pose and gesture recognition
- Driver monitoring, skeleton tracking
- People or Obstacle detection

# 2. Specifications

| | | |
|---|---|---|
| **Image** | | |
| Depth | Technology | iTOF |
| | Maximum Working Distance | 6 m + |
| | Minimum Working Distance | 0.3 m |
| | Frame Rate | 640 × 480 @ 60fps |
| | FoV ( H × V × D ) | 85.1° x 69° x 98.9° (Standard model) |
| | Shutter Type | Global Shutter |
| | Z Accuracy | ≤ 1% |
| **Illumination** | | |
| Illumination Type | | Infrared |
| IR Wavelength | | 940 nm |
| Illuminating Component | | Vertical-Cavity Surface-Emitting Laser (VCSEL) |
| **General** | | |
| Dimension (mm) | | 81.9 x 35.7 x 23.0 |
| Weight (g) | | 95 |
| Ambient Temperature (° C) | | 0 - 50 |
| Storage Temperature (° C) | | -20 - 60 |
| Output Interface | | USB Type-C |
| Power | | DC 5V3A |
| Supported OS | | Windows / Linux / Jetson Linux |
| Working Environment | | Indoor |

# 3. Hardware Details

## 3.1 General Characteristics




| No. | Name | Functions |
|---|---|---|
| 1. | Depth Camera | Captures depth information for distance measurement. |
| 2. | NIR illuminator | Emits IR signal for measuring depth value. |
| 3. | Power LED | Indicates the power and operational status of the device. |
| 4. | Tripod Socket | Secures the camera to a tripod / camera stabilizer. |
| 5. | USB 3.0 Interface | Connects to a USB 3.0 Type C to C Cable. |
| Note: Do NOT obscure or block the openings of the camera's optical components to ensure the optimal performance of the camera. | | |

## 3.2 Host Connectivity

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.

| 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 |
| 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 |

## 3.3 Thermal

### 3.3.1 Temperature Specification

| Items | MIN | NOM | MAX | UNIT |
|---|---|---|---|---|
| Storage Temperature | -20 | - | +60 | °C |
| Ambient Operation Temperature | 0 | - | +50 | °C |

### 3.3.2 Power Consumption and Current

| Items | Values |
|---|---|
| Average Power Consumption | 7.5W |
| Continuous Current | 1.5A |
| Peak Current | 2.8A |

# 4. Optical System

## 4.1 Camera

ToF Sensor RX :

- 640 x 480 Indirect ToF Sensor
- 1/6.3” optical time-of-flight sensor
- 3.5 x 3.5 μm pixels
- I2C slave interface for configuration and control
- SPI Master for peripheral configuration
- Dual Modulation frequency @ 100Mhz & 20Mhz

Lens for ToF camera ：

- Lens Effective Focal Length : 1.22 mm
- Lens Fno.: 1.3
- Lens FoV : (D) 98.9°×(H) 85.1°×(V) 69°
- Distortion : < 3%
- Relative Illumination 50% ：y=1.0F (Ref.)

**Table: T225 Camera sensor table**

| Items | ToF Sensor |
|---|---|
| Image | NIR/Depth |
| Lens FoV | 85.1° H * 69° V * 98.9° D |

## 4.2 Illuminators

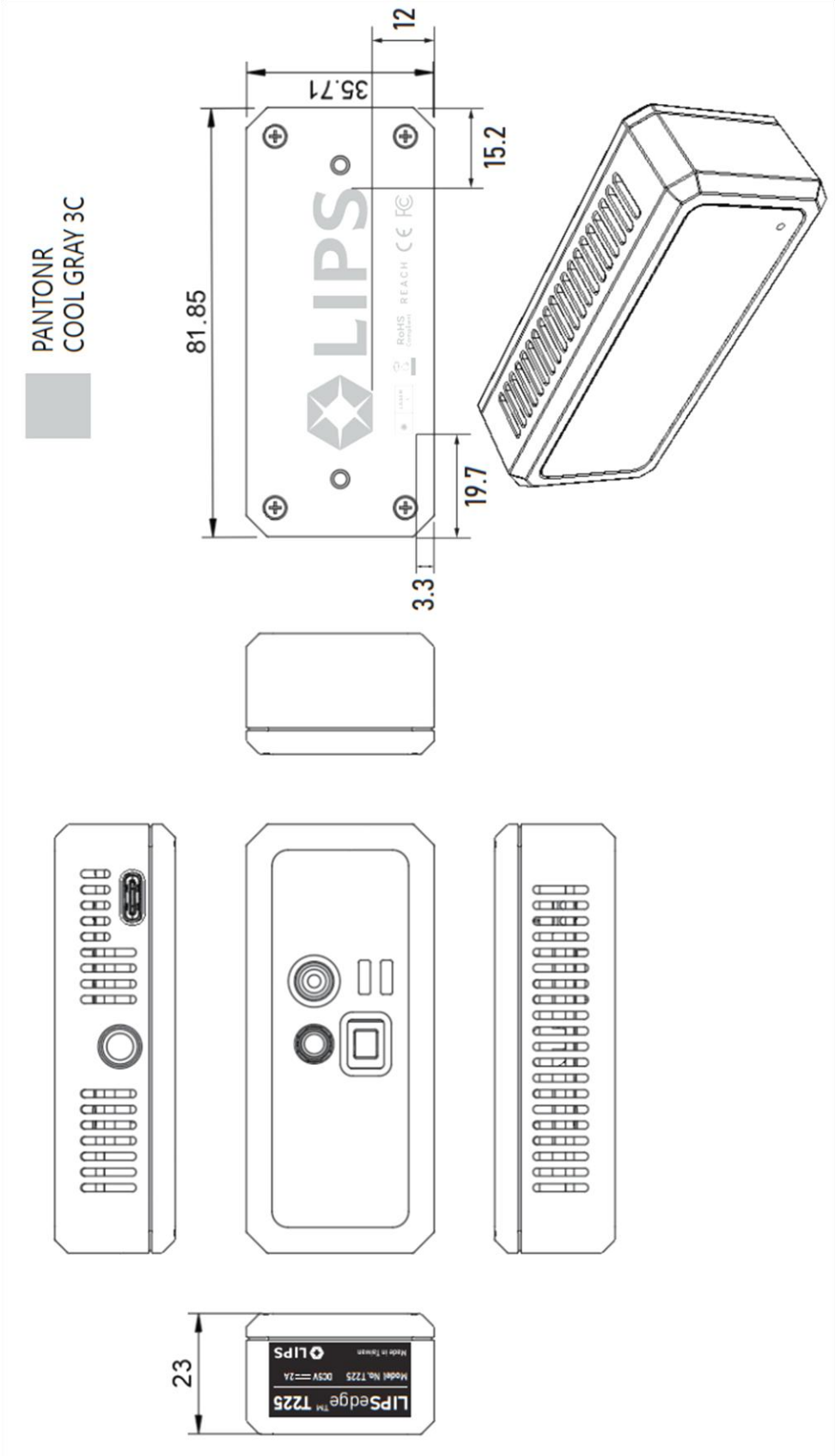
- IF current: 3.5A
- Radiant Power: 6W
- Rectangular emission FoV: 110° x 90°
- Peak wavelength: 940nm
- Modulation Frequency: 100/30 MHz(Dual), 50MHz(Single)

**Table: Illuminator parameters**

| Items | Dot Projector |
|---|---|
| Illuminating Component | Vertical-Cavity Surface-Emitting Laser (VCSEL) |
| Wavelength | 940 nm |

# 5. Mechanical Engineering

## 5.1 Mechanical Dimensions of T225



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