# RealSense Depth Module D421

Datasheet

v1.2

# Depth Module D421 Specifications

RealSense
D421 Datasheet v1.2

## 3D Vision in a Small Package

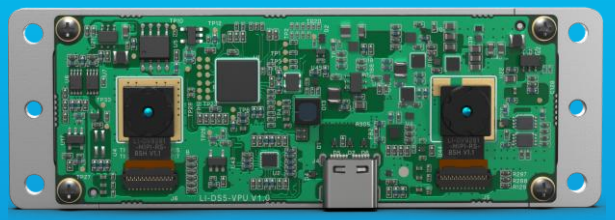
RealSense™ Depth Module D421 is our entry level stereo depth module designed to bring advanced depth-sensing technology to a wider audience at an affordable price point.

RealSense Depth Module D421 is the first all-in-one module integrating the D4 Vision Processor with the optical module on the same board. The RealSense vision processor D4 does all depth calculations onboard, making this a low power, platform-agnostic device.

Plug-and-play functionality and the integrated single board with the module and the D4 vision processor ensure easy setup and compatibility with popular development frameworks. RealSense Depth Module D421 is supported by the RealSense SDK 2.0 and compatible with a wide range of platforms and operating systems, including Windows, Linux, and Android.

| D421 Features | D421 Specifications |
|---|---|
| **Depth FOV (H × V)** | 75°±3° × 50°±3° |
| **Depth Resolution** | Up to 1280 × 720 (Global Shutter) |
| **Baseline** | 50mm |
| **Depth Frame Rate** | Up to 60 frames per second |
| **RGB** | No |
| **IR Projector** | Yes |
| **Inertial Measurement Unit** | No |
| **Filter** | IR band pass filter |
| **Recommended Range** | 0.2 m to over 2m (varies with lighting conditions and resolution) |
| **Connection Type** | USB-C |
| **Dimensions (W x H x D) Module** | 95 x 32 x 10.2 mm |
| **Use Environment** | Indoor/Outdoor |
| **Operating Ambient Temperature** | 0ºC to 35ºC |

| Property | Value |
|---|---|
| **Product Name** | RealSense™ Depth Module D421 |
| **Technology** | Active Stereo |
| **Product Code** | 82635DSD421 |
| **MMID** | 99CLKV |
| **Code-Manufacture Configuration Code** | N50469-110 |
| **Vendor ID / Device ID** | 8086 / 0x1155 |
| **Baseline** | 50mm |
| **Left/Right Imagers Type** | Global Shutter |
| **Typical Power** | 1.6W |
| **Depth FOV HD (16:9)** | 75° × 50° ±3 |
| **Connector** | USB Peripheral Type-C |
| **Dimensions (Length x Height x Depth )** | 95 x 32 x 10.5 mm |
| **Storage (Ambient) not Powered** | Short Exposure: -40°C - 70°C;<br>Sustained, Controlled: 0°C - 50°C,<br>Humidity Temperature/ RH: 40oC / 90% |
| **Weight (Nominal)** | 37.5 gr |



Module D421 Main Components

Dual IR Stereo Sensors

Vision Processor D4

IR Projector

USB Connector Type-C

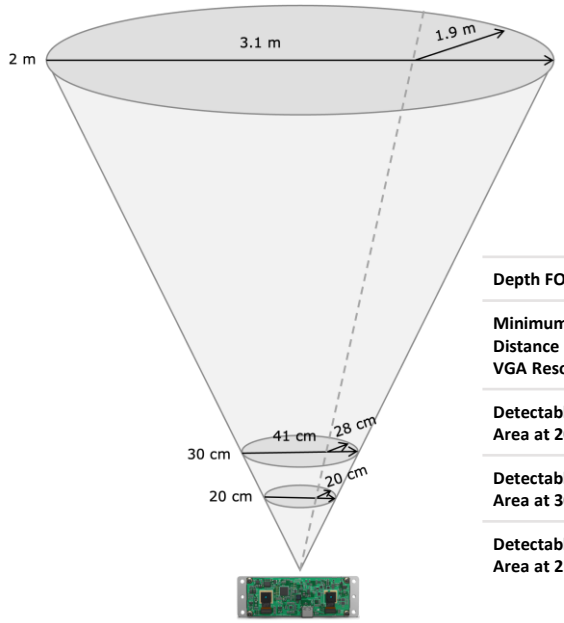
# Depth Module D421 Specifications



## D421 Streams

| Format | Resolution | Frame Rate (FPS) |
|---|---|---|
| **Z [16 bits] Depth** | 1280 x 720 | 6, 15, 30 |
| | 848 x 480 | 6, 15, 30, 60, 90 |
| | 640 x 480 | 6, 15, 30, 60, 90 |
| | 640 x 360 | 6, 15, 30, 60, 90 |
| | 480 x 270 | 6, 15, 30, 60, 90 |
| **Y8 [8 bits] Left & Right Imager** | 1280 x 720 | 6, 15, 30 |
| | 848 x 480 | 6, 15, 30, 60, 90 |
| | 640 x 480 | 6, 15, 30, 60, 90 |
| | 640 x 360 | 6, 15, 30, 60, 90 |
| | 480 x 270 | 6, 15, 30, 60, 90 |
| **Calibration [24 bits]** | 1280 x 800 | 15, 25 |
| **RealSense™ Self-Calibration** | 256 x 144 | 90 |

## Effective Detectable Depth Area




| | Specification |
|---|---|
| **Depth FOV (H × V)** | 75° × 50° |
| **Minimum Depth Distance (Min-Z) at VGA Resolution** | ~20 cm |
| **Detectable Depth Area at 20cm** | 25.7 x 18.7 cm |
| **Detectable Depth Area at 30cm** | 41.0 x 28.0 cm |
| **Detectable Depth Area at 2m** | 301.9 x 186.5 cm |

## Compatible with SDK 2.0

RealSense Depth Module D421 is supported by the RealSense SDK 2.0 using Data Distribution Service (DDS), allowing ease of integration and backward compatibility to the RealSense product family.

## RealSense SDK 2.0

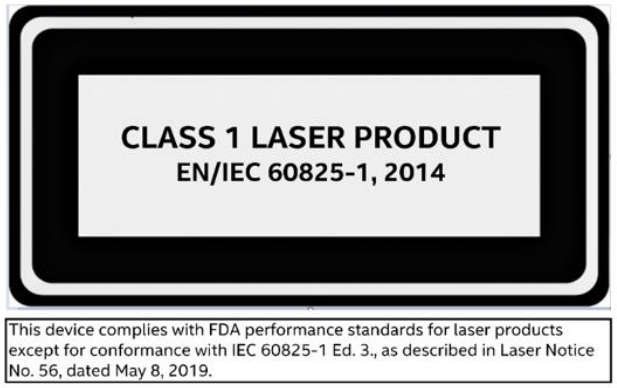
Open-source cross-platform library for all RealSense cameras and modules
Download from github

## Platforms

## Programming Languages & Wrappers

## Regulatory Compliance

This product is classified as a Class 1 Laser Product under the EN/IEC 60825-1, Edition 3 (2014) (2014) internationally.
This product complies with FDA performance standards for laser products except for conformance conformance with IEC 60825-1 Ed. 3 as described in Laser Notice No. 56, dated May 8, 2019.
2019.
U.S. FDA accession number: 2412019




FCC Supplier's Declaration of Conformity - 47 CFR § 2.1077 Compliance Information

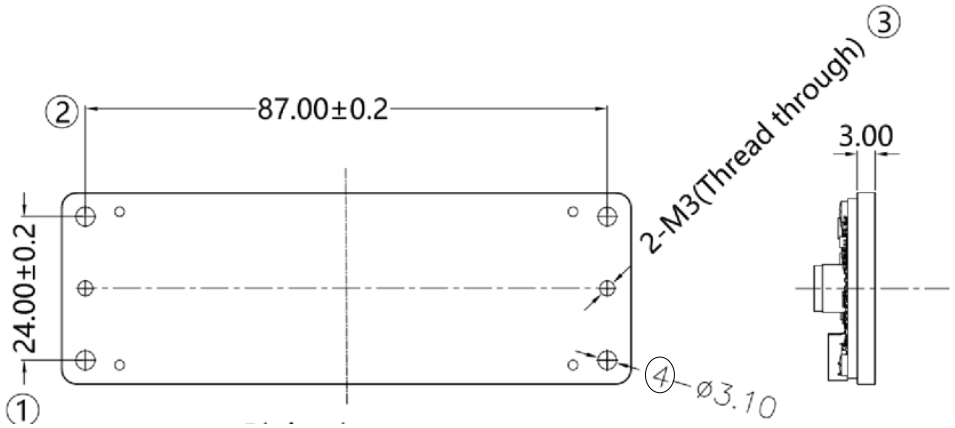
Canada
CAN ICES-3 (B)/NMB-3(B)

## Ecology Compliance

Please refer to realsenseai.com/regulatory-information/ for Material
Material
Declaration Data Sheets (MDDS).
RoHS 2.0, WEEE, Türkiye Cumhuriyeti: EEE Yönetmeliğine Uygundur
Uygundur

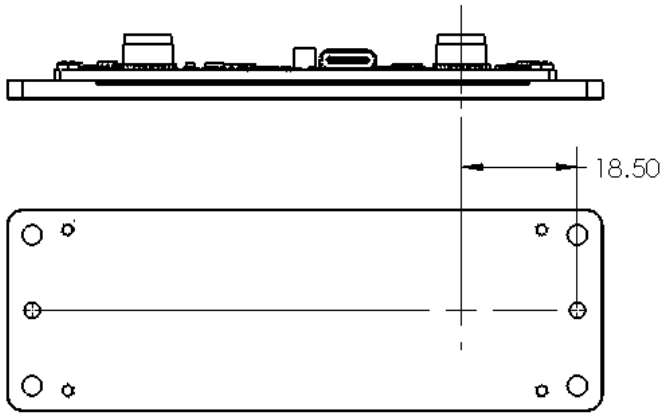
## D421 Screw Mounting/End Mounting

The stereo depth module incorporates screw holes for the module mounting. The module should be mounted on a large flat heat sink or a heat dissipating flat structure element. The module can be mounted either by the 2 threaded holes in the middle with M3 screws (#3 in the figure below) or the 4 corner non-threaded holes with nut fasteners (#4 in the figure below). The recommended torque should not exceed 5Kgf*cm.
Ensure to calibrate the module using OEM calibration (check link).




## Depth Start Point (Ground Zero Reference)

The depth origin X-Y coordinates are the X-Y centre of the left imager.
The Depth module D421 origin reference from the left centre hole to the left imager centre is 18.5mm.



# Depth Module D421 Specifications Additional Information

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