OAK-D-S2

Overview

The OAK-D S2 is the Series 2 version of the OAK-D. The main difference is that OAK-D S2 has a smaller enclosure and is therefore lighter. OAK-D S2 also doesn't have a barrel jack for supplying power, it only has a USB-C connector for both power and communication.

Hardware Specification

This OAK camera uses USB-C cable for communication and power. It supports both USB2 and USB3 (5Gbps / 10Gbps).

Camera Specification:

You can select either FF or AF colour camera

| Camera Specs	Colour Camera	Stereo Pair
Sensor	IMX378 (PY004 AF, PY052 FF)	OV9282 (PY003)
Shutter	Rolling	Global
DFOV/HFOV/VFOV	81° / 69° / 55°	89° / 80° / 55°
Resolution	12MP (4056x3040)	1MP (1280x800)
Focus	AF: 8cm - ∞, FF: 50cm - ∞	FF: 19.6cm - ∞
Max Framerate	60 FPS	120 FPS
F-Number	1.8 ±5%	2.0 ±5%
Sensor Size	1/2.3"	1/4"
Effective Focal Length	4.81mm	2.35mm
Distortion	< 1% AF, < 1.5% FF	< 1%
Pixel Size	1.55μm x 1.55μm	3.0μm x 3.0μm

RVC2 inside

This OAK device is built on top of the RVC2. Main features:

- **4 TOPS** of processing power (1.4 TOPS for AI - RVC2 NN Performance)
- **Run any AI model,** even custom-architectured/built ones (models need to be converted)
- **Encoding** H.264, H.265, MJPEG - 4K/30FPS, 1080P/60FPS
- **Computer Vision** warp/dewarp, resize, crop ia ImageManip node, edge detection, feature tracking. You can also run custom CV functions
- **Object Tracking** 2D and 3D tracking with ObjectTracker node
- **Stereo Depth** perception with filtering, post-processing, RGB-depth alignment and high configurability

Dimensions and Weight
Weight: 72g
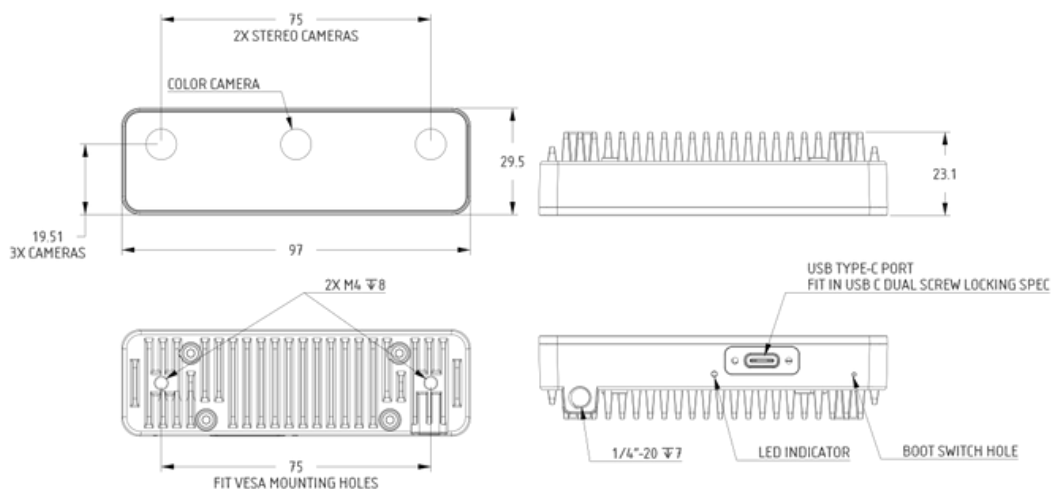
Stereo depth perception

This OAK camera has a baseline of 7.5cm - the distance between the left and the right stereo camera. Minimal and maximal depth perception (MinZ and Max) depends on camera FOV, resolution, and baseline- more information here.

- Ideal range: 70cm - 8m
- MinZ: ~20cm (400P, extended), ~35cm (400P OR 800P, extended), ~70cm (800P)
- MaxZ: ~15 meters with a variance of 10% (depth accuracy evaluation)

Extended means that StereoDepth node has Extended disparity mode enabled.

Integrated IMU

This OAK camera has an integrated BNO085, a 9-axis IMU (Inertial Measurement Unit). See IMU node for the API details on how to use it.

Note: due to supply chain issues, most of the OAK camera that were manufactured between Q2 2021 and Q2 2023 have integrated BMI270 - 6-axis IMU instead.

Datasheet

- Datasheet

3D Models

- Board STEP files here
- Enclosure STEP files here