

OAK-D W — DepthAI Hardware Documentation 1.0.0

documentation

OAK-D W



Overview

The **OAK-D W** is a **Wide Field of View** (FoV) version of the [OAK-D S2](#).

Looking for the **Normal FOV** OAK-D S2? You can find it [here](#).

Hardware specifications

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

Camera module specifications

[Wide FOV IMX378](#)

[Wide FOV OV9782](#)

For the wide FOV version you can select **either** 120° DFOV IMX378 (12MP) **or** 150° DFOV color OV9782 (1MP) color camera.

Camera Specs	Color camera	Stereo pair
Sensor	OV9782 (PY058)	OV9282 (PY059)

Camera Specs	Color camera	Stereo pair
DFOV / HFOV / VFOV	150°/128°/80°	150°/128°/80°
Rectified Depth FOV	N/A	106°/97°/70°
Resolution	1MP (1280x800)	1MP (1280x800)
Focus	FF: 18cm - ∞	FF: 18cm - ∞
Max Framerate	120 FPS (800P)	120 FPS (800P)
F-number	2 ±5%	2 ±5%
Lens size	1/4 inch	1/4 inch
Effective Focal Length	1.69mm	1.69mm
Distortion	< 38%	< 38%
Pixel size	3μm x 3μm	3μm x 3μm

Wide FOV lenses can only be fixed-focus.



Left: normal FOV, Right: Wide FOV

RVC2 inside

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

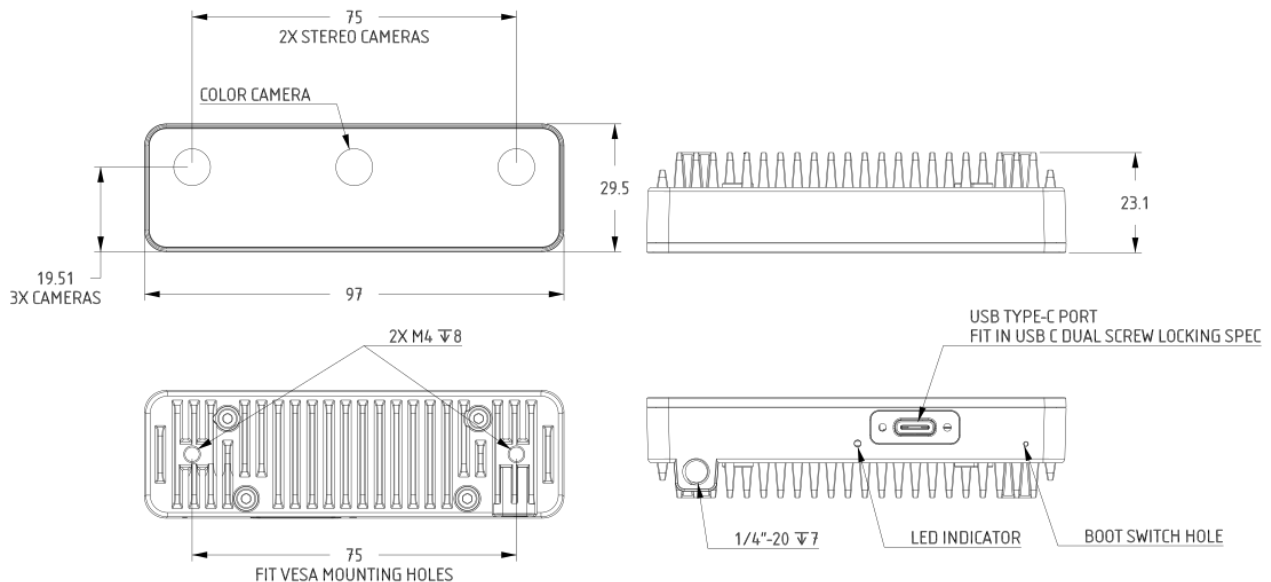
- **4 TOPS** of processing power (1.4 TOPS for AI - RVC2 NN Performance)

- **Run any AI model**, even custom-architected/built ones - models need to be converted.
- **Encoding**: H.264, H.265, MJPEG - 4K/30FPS, 1080P/60FPS
- **Computer vision**: warp/dewarp, resize, crop via ImageManip node, edge detection, feature tracking. You can also run custom CV functions
- **Stereo depth** perception with filtering, post-processing, RGB-depth alignment, and high configurability.
- **Object tracking**: 2D and 3D tracking with ObjectTracker node



Dimensions and Weight

Weight: 91g



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: 40cm - 6m
- MinZ: ~20cm (400P **OR** 800P, extended), ~37cm (800P)
- MaxZ: ~10 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.