OAK-1 MAX — DepthAI Hardware Documentation 1.0.0 documentation

OAK-1 MAX

Overview

OAK-1 MAX supports up to 32MP color camera resolution ([IMX582](#)) on a tiny, yet performant, device.

OAK-1 Max isn't a standard USB camera. It's a 4-trillion-operations-per-second AI powerhouse that performs your AI models on-board, so that your host is free to do whatever you need it to do.

Hardware specifications

Camera module specifications

Camera Specs	Color camera
Sensor	[IMX582](#) (PY080)
DFOV / HFOV / VFOV	71° / 45° / 55°
Resolution	32MP (5312x6000)
Focus	Auto-Focus: 20cm - ∞

Camera Specs	Color camera
Max Framerate	42 FPS
F-number	1.79±5%
Lens size	1/2 inch
Effective Focal Length	4.74mm
Distortion	< 1.5%
Pixel size	0.8µm x 0.8µm

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 via ImageManip node, edge detection, feature tracking. You can also run custom CV functions

- **Object tracking**: 2D tracking with ObjectTracker node

IMX582 RAM consumption

At highest resolution, the IMX582 image sensor produces 32MP frames, which can consume *a lot* of RAM. As OAK cameras are embedded devices, they don't have a lot of RAM to begin with. In most pipelines, even just the ColorCamera node with default pool sizes will be too large, so you need to be very cautious when it comes to RAM and we suggest reading the RAM usage documentation. For ColorCamera node, you'd likely need to change pool sizes, example here:

```
cam = pipeline.create(dai.node.ColorCamera)
cam.setResolution(dai.ColorCameraProperties.SensorResolution.THE_5312X6000) # 32MP
# Decrease pool sizes for all outputs (raw, isp, preview, video, still):
cam.setNumFramesPool(2,2,1,1,1)
```
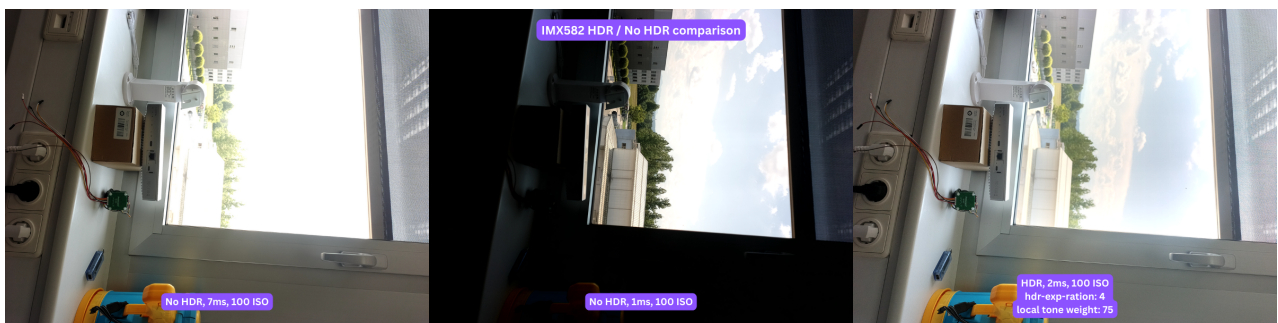
Dimensions and Weight

- Width: 36 mm

- Height: 54.5 mm

- Length: 27.8 mm

- Weight: 53.1 grams
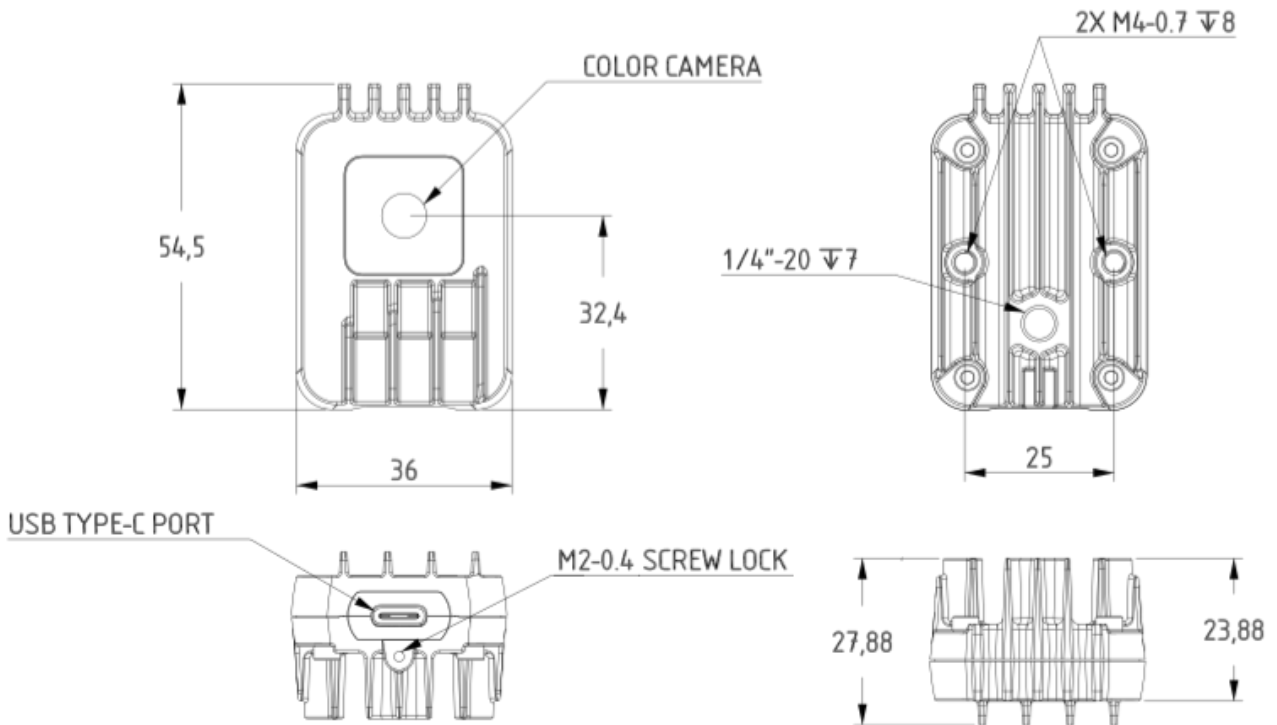
IMX582 HDR

IMX582 sensor supports on-sensor HDR, so it can be leveraged by the Robotics Vision Core 2 as well. In the comparison image below we are using OAK-1 MAX. HDR support is currently on branch camera_controls_misc and will be merged to main soon.

IMX582 HDR comparison. Click on this image for full resolution images on Google Drive. We suggest downloading images, as they are large.

For the HDR image above we used the following argument for cam_test.py:

```
python3 cam_test.py -cams rgb,c -rs -cres 12mp -fps 10 -misc hdr-exposure-ratio=4
hdr-local-tone-weight=75
```