



OAK-1-PoE



Overview

The OAK-1-PoE baseboard offers full 802.3af, Class 3 PoE compliance with 1000BASE-T speeds. The OAK-1-PoE (SJ2096POE) baseboard has one on-board camera which implements RGB vision, piped directly into the OAK-SoM-Pro for depth and AI processing. The data is then output to a host via USB 3.1 Gen1 (Type-C) or via 1000BASE-T ethernet connection. The OAK-1-PoE board exposes boot selection switches, allowing the end user to boot the OAK-SoM-Pro module from USB or the on-board eMMC or NOR flash.

Hardware specifications

This OAK camera uses Power-over-Ethernet (PoE) for communication and power. It offers full 802.3af, Class 3 PoE compliance with 1000BASE-T speeds (1 Gbps) and has a micro SD (uSD) card connector. A PoE injector/switch is required to power the device. It also features IP67 rated enclosure.

Camera Specification:

Camera Specs	Colour Camera
Sensor	IMX378 (PY004 AF, PY052 FF)
Shutter	Rolling
DFOV/HFOV/VFOV	81°/69°/55°
Resolution	12MP (4056x3040)
Focus	Auto-Focus: 8cm - ∞
Max Framerate	60 FPS
F-Number	1.8 ±5%
Sensor Size	1/2.3"
Effective Focal Length	4.81mm
Distortion	< 1% AF, < 1.5% FF
Pixel Size	1.55µm x 1.55µm

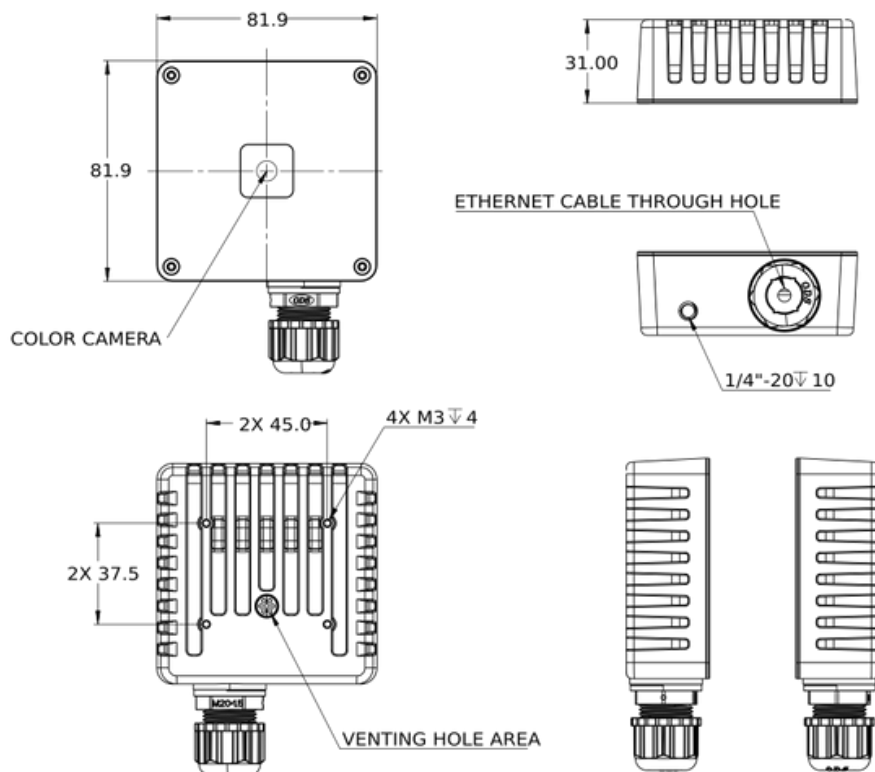
RVC2 inside

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

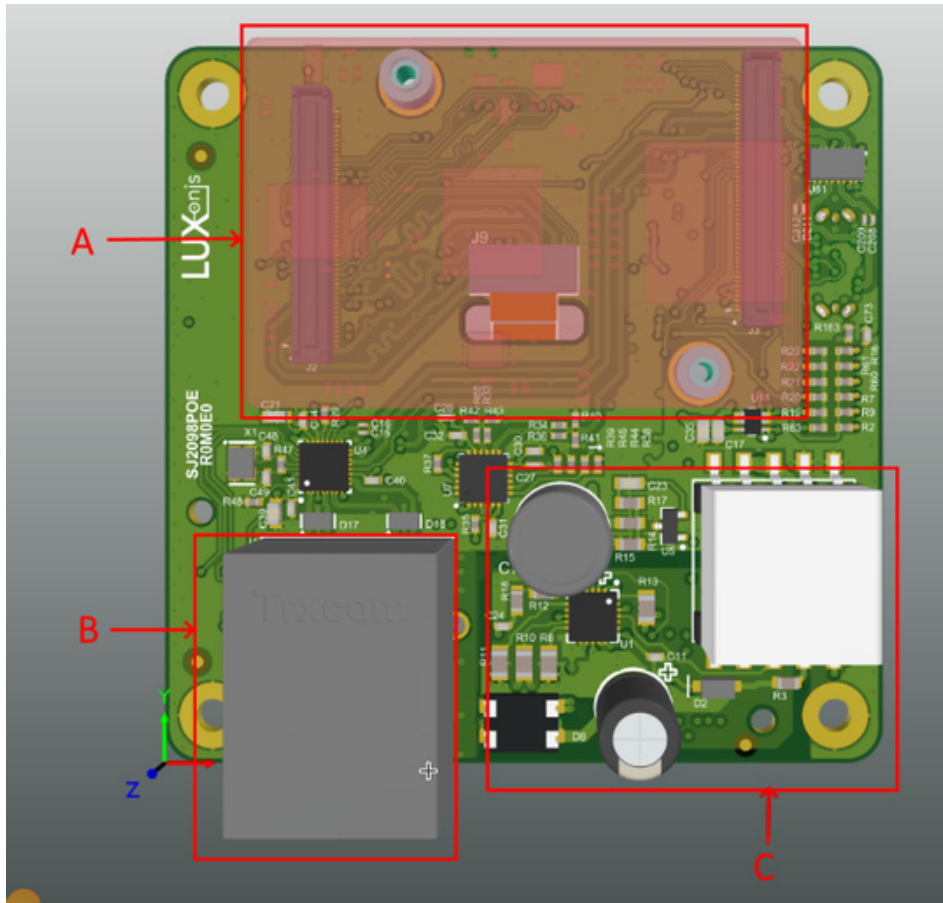
- **4 TOPS** of processing power (1.4 TOPS for AI - RVC2 NN Performance)
- **Run any AI model**, even custom-architected/built ones (models need to be converted)
- **Encoding** H.264, H.265, MJPEG - 4K/30FPS, 1080P/60FPS
- **Computer Vision** warp/dewarp, resize, crop in ImageManip node, edge detection, feature tracking. You can also run custom CV functions
- **Object Tracking** 2D tracking with Object Tracker node

Dimensions and Weight

- Width: 82 mm
- Height: 114 mm
- Length: 32 mm
- Weight: 294 grams

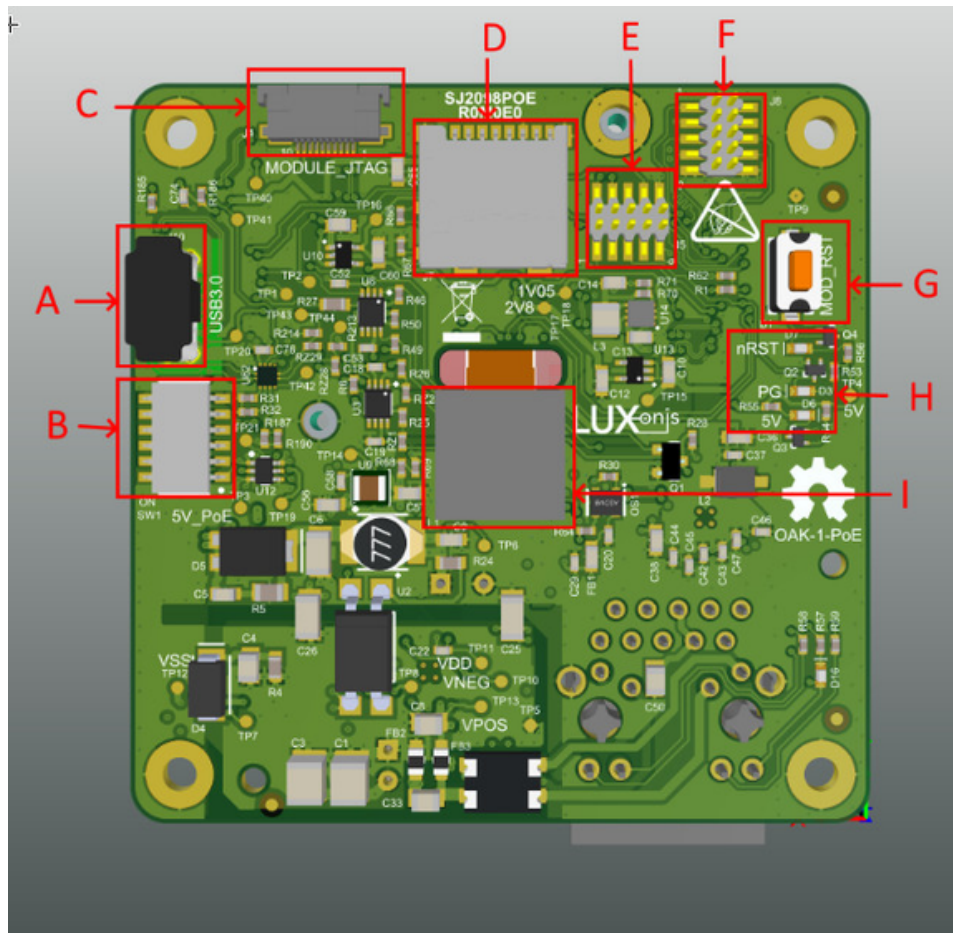


Board Layout



- A. BW2099 Module
- B. RJ-45, 1000BASE-T, PoE Connector
- C. Power Over Ethernet (PoE)

Board Layout



- A. USB 3.1 Type C
- B. Boot Selection Switch
- C. BW2099 Module Jtag
- D. BW2099 uSD
- E. BW2099 module aux IO header
- F. BW2099 Quad SPI header
- G. Module Reset Button
- H. LED Indications
- I. IMX378 12 MP Camera

Power Usage

Power usage for OAK-1-PoE ranges between 1.94 W (standby) and 4.56 W (max consumption). More information on the power usage is below:

- Standby: 1.94 W
- Normal operation (running python depthai_demo.py): 4.20 W
- Max consumption power (running python depthai_demo.py -s left right color disparity rectified_left depth): 4.56 W

Getting Started

! Note

For more information on how to start with POE devices, see guide [Getting started with OAK PoE devices.](#)

This OAK PoE camera accepts power input from the 802.3af, Class 3 PoE circuitry. It can also accept power through the on-board USB C connector - which is not exposed through the enclosure, so enclosure needs to be removed.

Booting can be accomplished from either the USB interface or from the eMMC or NOR flash on the OAK-SoM-Pro, and boot selection is configured with the DIP switch bank near the USB connector.

Interfacing with the OAK-SoM-Pro is also possible with PoE Board connector pads J5 and J8, which expose OAK-SoM-Pro auxiliary I/O and BW2099 Quad SPI, respectively. These headers are Amphenol/FCI 20021121-00010T1LF or equivalent. Please refer to the schematics for pinout information.

- The reset button resets the OAK-SoM-Pro only.
- The 5V LED indicates 5V power is present on the BW2098POE.
- The PG LED indicates "power good" from the OAK-SoM-Pro.
- The "RUN" LED indicates that the OAK-SoM-Pro is not in reset.

Caution should be taken when handling any PoE circuit board. Do not directly touch the circuitry as potentials up to and exceeding 57V may exist. Always use electronics handling best practices.



Datasheet

- [Datasheet](#)

3D models

- Board STEP files [here](#)
- Enclosure STEP files [here](#)

Other Datasheets

- [Altium Design Files](#)
- [Assembly Drawing](#)
- [Assembly Outputs](#)
- [Fabrication Drawing](#)
- [Fabrication Outputs](#)
- [Schematic](#)