



This version (04 Jul 2019 23:33) was **approved** by ACozma.  
The [Previously approved version](#) (04 Jul 2019 17:57) is available.

This is an old revision of the document!

# 3D Time of Flight Rapid Prototyping Platform

The 3D Imaging Time of Flight (ToF) system is designed to give users flexibility in applying the system in various use cases for technology evaluation and rapid prototyping for both hardware design and software development. Built on industry standard 96Boards mezzanine specification it gives a small formfactor that can be easily built into proof of concepts. Depending on customer preferences and development experience, different 96Boards processor boards can be used for overall system evaluation and custom development. Experienced 3rd Parties are also provided to help customize the design to individual needs.

The 3D ToF system will operate across industrial operating specifications. Objects up to 6m in distance can be detected, and the system comes with easy to use calibration software to ensure optimal operation in the target environment. Laser operation complies with Class 1 safety operating requirements and the default operating frequency will be 940nm for improved use in challenging lighting conditions both indoor and outdoor.



The system has options of [USB](#), Ethernet or Wi-Fi to connect to a host computer, this flexibility enables evaluation across a wide range of use cases and environments. Sampling rates of up to 30fps are supported. Data is fed from the CCD Sensor to the DragonBoard 410c over MIPI-CSI interface. This data is read using V4L2 capture driver and in-turn either feeds it to native SDK or sends it to the Host SDK over Ethernet, WiFi and [USB](#) interfaces. Native/Host SDK provides this data to user applications for further use. For ease of application, the SDK also provides OpenCV, python and MATLAB wrappers such that developers can simply use these wrappers to develop application.

For more information and how to buy the system please goto the [Analog Devices AD-96TOF1-EBZ product page](#).



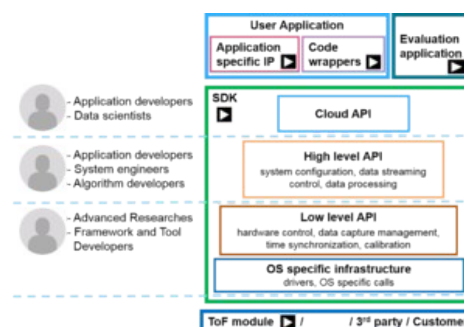
[Analog Devices Inc. AD-96TOF1-EBZ Product page](#)

## Application Development

The 3D ToF Rapid Prototyping Platform supports a wide range of operating systems and programming languages. An open- source SDK that accompanies the hardware platform enables you extract depth data from the camera on the processor and operating system of your choice. Windows, Linux and macOS support are built into the SDK as well as sample code and wrappers for various languages including Python, C/C++ and Matlab. The SDK also integrates with 3rd party technologies like ROS, OpenCV, and PCL.



[Download the ADI 3D ToF software and get started](#)



## Hardware Platform

Designed using a modular approach, the 3D ToF hardware prototyping platform enables connectivity to the 96Boards development boards suite. There is also a [DragonBoard camera connector](#) that allows it to connect to any compatible system. Data is fed from the 3D camera to the host

processor via 2 lane MIPI-CSI interface at frame rates up to 30fps. The system has full software support for data processing on the embedded processor platform as well as for USB, Ethernet or Wi-Fi to connect to a host computer, this flexibility enables evaluation across a wide range of use cases and environments.

## Range

Near: 20cm to 80cm

Medium: 80cm to 3m

Far: 3m to 6m

Accuracy: < 2.5% for all ranges

## Performance

Frame Rate: upto 30fps dependent on processor board, OS and interface to host computer

Resolution: 640 x 480 pixels

Operating Temperature: -20°C to 85°C

## Optics

Laser: 940nm VCSEL with 110° x 85° batwing profile diffuser

Receive lens FoV: 90° x 69.2°

## Connectivity

96Board mezzanine high speed and low speed expansion connector compatibility

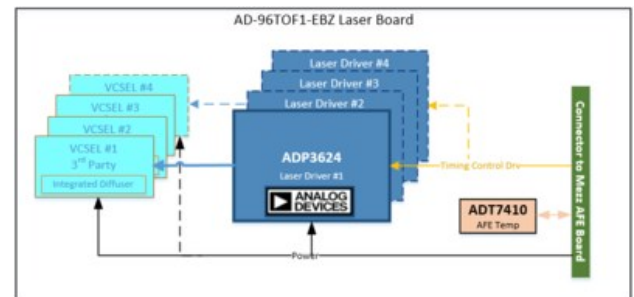
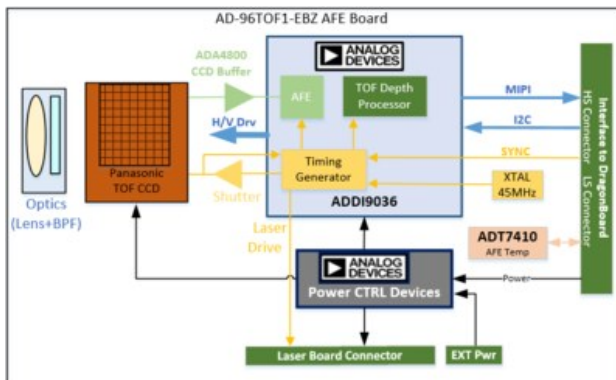
RPI camera connector to connect to any compatible processor board

## Power

5V DC Input

20W max power consumption

## Hardware Block Diagrams



[Hardware design files \(including schematics, BoM and layout\)](#)

## Laser Safety

This device complies with International Standards IEC 60825-1:2014 & 2007 for a Class 1 laser product. This device also complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007. Only use Software and Firmware updates that are specifically provided for this solution.

## Help and Support

For questions and more information please contact us on the Analog Devices Engineer Zone.



[EngineerZone Available here](#)

