

3D Time of Flight Demonstrator



FEATURES

- » 1.3 million pixels (1,280 (H) x 1,024 (V)), 10 μ m square pixels with shifted micro-lens, global shutter sensor
- » 1 inch optical format at 5:4 aspect ratio
- » USB3 interface
- » Outputs: 3D depth map and 2D B&W image and point cloud data
- » Real time software
- » Graphic user interface control
- » 24V power supply (light source)

EMBEDDED FUNCTIONS

- » Multi-integration mode
- » Wide dynamic range capabilities
- » Binning mode
- » Region of interest
- » Median filter

PERFORMANCE CHARACTERISTICS

- » Range: [0.5m – 2.5m] – [1m – 5m]
- » Field of view: 54° x 44° with Kowa-LM12HC 12.5mm f/1.4 lens @ Full resolution
- » Accuracy: <2%
- » Temporal noise min: 3-4cm (with scene and sensor parameters optimized)



INTRODUCTION

3D imaging technology initially appeared several decades ago but the first products were only commercialized in the 2000's, when many big studio movies were produced using the latest HD video cameras and released in 3D. Since then, the field has quickly evolved with better speed, accuracy and 3D imaging resolution. It has been extensively adopted in consumer markets and also in the machine vision industry.

Teledyne e2v has a successful track record in producing line scan cameras and area scan sensors for the machine vision industry and has now developed a new 3D platform based on Time-of-Flight (ToF) technology. **Teledyne e2v's** 3D ToF solution will use a specific high sensitivity and high dynamic range CMOS sensor that will support the latest industrial applications such as vision guided robotics, logistics AGV, factory surveillance and safety, handheld scanners and also a variety of outdoor applications.

DESCRIPTION

Teledyne e2v's 3D ToF demonstrator platform consists of a compact 1 inch optical format board camera system which is based on a high sensitivity sensor. This embeds multi-integration on-chip function (gated sensor), a light source (working for visible or near infrared illumination) and optics aimed at performing ToF principles within short distances and ranges, while capturing real-time 3D information at a full 1.3MP resolution. This enables:

- » The detection of 3D information at an industry leading 1.3MP depth of resolution at scalable ranges from (0.5m to 5m) to reach a large field-of-view
- » The detection of 3D information from fast moving robots
- » Obtaining 3D information in a fast response time

The 1.3MP 3D depth resolution and 1 inch optical format (in the full range), allows the accuracy and frame rate performances to be kept at the same level as existing ToF products, an industry first. This enables customers to obtain more information and increase the effectiveness and autonomy of industrial systems.

When compared to mainstream 3D solutions (which are based on stereo vision combined with a laser or on structured light), the **Teledyne e2v** ToF sensor will enable a significantly reduced SWAP-C (Size, Weight, Power and Cost) system with a larger field of view for the whole and scalable range with minimized calibration efforts.

TELEDYNE E2V'S BORA – 1.3MP TIME OF FLIGHT SENSOR

The Bora sensor is a Time of Flight CMOS image sensor, designed with **Teledyne e2v's** proprietary CMOS imaging technology, which enables a true 1.3MP depth resolution.

It is ideal for systems operating at short or mid distances and ranges. In an industry first, it features an optimized multi-integration mode and provides excellent performance in low light conditions.

Teledyne e2v will release the Bora sensors in Q3 2019. Samples are already available. For more information, please contact us.