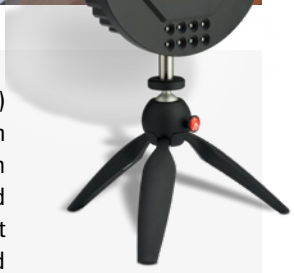
HYDRA3D EVALUATION KIT



Based on **Teledyne e2v's Hydra3D**, a three-tap Time-of-Flight CMOS image sensor, the Hydra3D Evaluation Kit (EK) is a camera module with a near infrared light source and optics aimed at showing the sensors ability to perform distance measurements based on pulsed Time-of-Flight technology from short to mid-range distances. The Evaluation Kit has been designed to be highly flexible so customers can evaluate the sensor in multiple configurations and operation cases. It's available in three versions with different optics and illumination sources. One comes without the illumination source and then two include it, one with a short-range [0.5-5m] and a 60° x 45° field-of-view, and one with a mid-range [1-10m] and 40° x 30° field-of-view.

HYDRA3D EK CHARACTERISTICS		
Versions	EV3E0M5B-CU3HG10-U	EV3E0M5B-CU3HG20-U
Pixel Type / Size-Square	Three-tap global shutter – gated global shutter / 10 µm	
Time-of-Flight Technology	Pulsed phase shift (3 phases)	
Resolution Depth Image	832 x 600 pixels	
Optical Format	2/3" (10.3 mm diagonal)	
Illumination Source	VCSEL @ 940 nm	VCSEL @ 940 nm
Illumination Optics	60° x 45°	40° x 30°
Distance Range	Short range [0.5-5 m]	Mid-range [1-10 m]
Accuracy[1]	<1% (total range)	<1% (total range)
Temporal Noise[2] (RMS)	<2 cm (total range)	<3 cm (total range)
Frame Rate	31 fps	25 fps
Output Data	Distance + amplitude (16 bits) or raw images	

1. Accuracy gives the gap between the measured value and the actual value
2. Temporal noise gives the RMS precision of measurement from frame to frame which represents the repeatability of the system. Results with 95% reflectivity Lambertian target and unprocessed data.

EK FEATURES

- Embeds the Hydra3D ToF CMOS sensor
- 3D Real-time Time-of-Flight processing based on phase shift principle
- Generic USB 3 platform with microprocessor & FPGA
- USB 3 interface with Software Development Kit (x86 and x64)
- VCSELs lighting module

EK PACKAGES

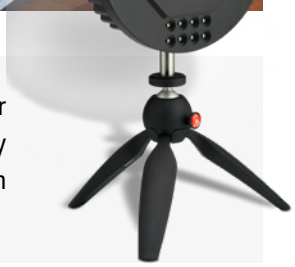
- Evaluation Kit including illumination and optics
- Cable to connect the Evaluation Kit to the illumination board
- HIROSE connector for power source
- USB 3 cable

ORDER CODE – HYDRA3D EK

EV3E0M5B-CU3HG10-U: Short-range version
EV3E0M5B-CU3HG20-U: Mid-range version
EV3E0M5B-CU3HE00-U: A version without the illumination source

HYDRA3D REFERENCE DESIGN



Teledyne e2v's **Hydra3D Reference Design** has been designed to be a working reference to support our customers' system development by enabling them to save valuable time and resources and significantly improve their time-to-market. It contains the schematics of the PCB and the source code of the Evaluation Kit including FPGA and embedded software.

REFERENCE DESIGN CONTENT

GENERAL DOCUMENTATION

- Evaluation Kit documentation
  - EK user manual (including architecture)
  - EK registers mapping
- Sensor documentation
  - User manual
  - Programming guide

SOFTWARE

- SDK software (C++, Matlab)
  - Installer binaries
  - Documentation
- ToF application software: 3D Depth map GUI
  - Installer binaries
  - Documentation

HARDWARE PCB

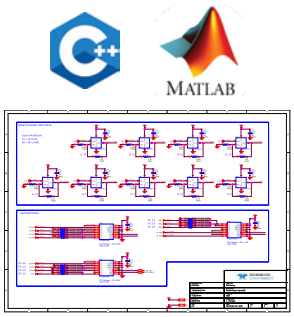
(Sensor + FPGA + Interface + Illumination)

- EK schematics in PDF
- EK BOM
- EK manufacturing files[1] (ODB++)

1. Manufacturing files not included

FPGA / FIRMWARE

- EK FPGA receiver source code (Xilinx)
- EK Embedded SW source code
  - Xilinx MicroBlaze CPU
  - Binary packages generator for platform upgrade



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