



TYZX | *systems that see*

DeepSea™ Stereo Vision

DeepSea G2 Embedded Vision System



The DeepSea G2 Embedded Vision System (EVS) is a self-contained, intelligent, real-time 3D sensor designed for production deployment of 3D applications in security, robotics and interactive systems. Features of the system include:

- Integrated imagers and lenses for 3D stereo vision
- DeepSea 2 ASIC stereo engine for high speed, low latency stereo processing
- Custom hardware vision primitives for image processing
- Embedded PowerPC Linux processor and Ethernet for ease of programming and connectivity

Dimensions

- 3.8cm x 28.3cm x 16.9cm (22cm baseline camera)

Power

- < 15 Watts – passive cooling

Connectivity

- 10/100 Ethernet

The G2 EVS packages for the first time the world's highest performance stereo vision processor, the DeepSea 2, together with all of the components required to deliver a true, turn-key 3D-based application. Essential features such as synchronized high dynamic range imagers, exposure control and image rectification are all provided efficiently by hardware as are convenient data representations such as ProjectionSpace™ representations of the 3D data. This keeps the frame rate fast and power dissipation low, while reserving the embedded PowerPC CPU free for user applications. Of course, the DeepSea G2 EVS is fully compatible with TYZX's SEER API so applications developed on the DeepSea Development System will easily run on the G2.

The G2 EVS is mounted via a standard 1/4-20 camera mount. Power is provided by either Ethernet (PoE) or a conventional 12 volt power brick. Communication with the G2 is provided via TCP/IP and standard Linux facilities as well as utilities supplied with SEER.

3DAWARE Applications

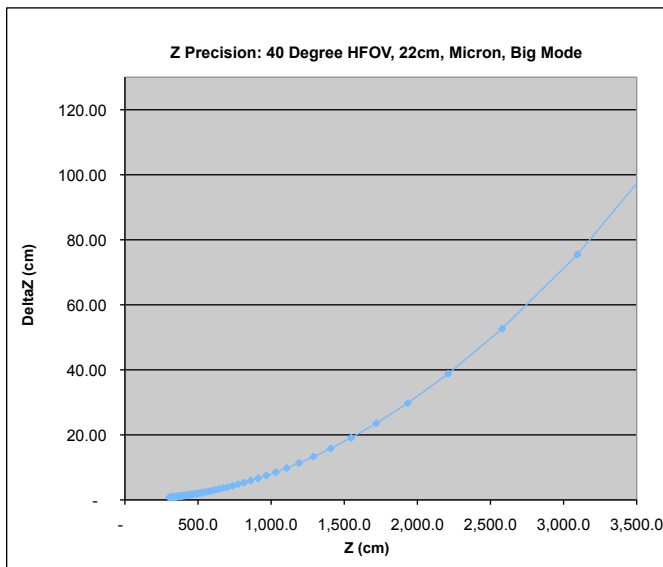
TYZX 3DAWARE enables Systems that See, Interpret and Respond to the real world. Applications include:

- Surveillance and Person Tracking
- Autonomous mobile robot navigation
- Gesture tracking
- Automotive Occupant Sensing and Collision Avoidance

And many others...

DeepSea Stereo Engine Specifications

- **Maximum Frame Rate:** 200 fps
- **Depth Imagery:** 16 bit Z, 512 x 2048
- **Depth resolution:** 52 disparities plus 5 bits subpixel localization
- **Rectification:** hardware, 8 bit bilinear interpolation
- **Minimum hardware latency:** 13 scan lines



Example System Performance¹

- **Configuration:**
 - 22cm Baseline, 512 x 372 40° FOV
- **Useful Operating Range:**
 - 2.7m to 35m
- **Range Resolution:**
 - 0.01m @ 3m to 1.1m @ 38m
- **Spatial Resolution:**
 - 0.004m @ 3m to 0.05m @ 38m
- **Imaging:**
 - Micron MT9V022 CMOS imagers
 - Full Frame shutter
- **Dynamic Range:** 10 bit; 80dB - 100dB HyDy mode
- **Frame Rate (application dependent):**
 - 30fps
- **Configuration Options:**
 - Color or Monochrome
 - 22cm, 14cm, 8cm, 6cm or 3cm baseline
 - 40° HFOV , 62° HFOV, 83° HFOV
 - With or without IR cutoff filter
 - With or without Power over Ethernet

About TYZX

TYZX is a 3D vision company providing a platform of hardware, software and services for building products that see and interact with the world in three dimensions. TYZX delivers high volume, cost-effective 3D vision solutions to industry leaders in automotive, consumer electronics, robotics and security markets. Founded in 2002 and based in Menlo Park, Calif., TYZX is privately funded. For more information, visit www.tyzx.com or email info@tyzx.com

¹Textured object

Protected by U.S. Patents: 6,215,898; 6,456,737; 6,661,918; 7,317,830 and patents pending.

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