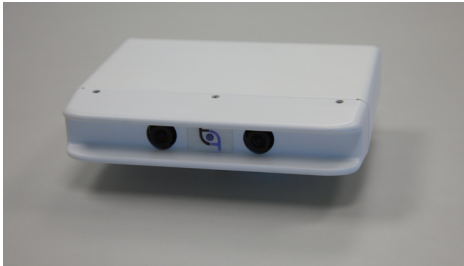




TYZX | *systems that see*

DeepSea™ Stereo Vision

DeepSea G3 Embedded Vision System



6cm Baseline G3 EVS

The DeepSea G3 Embedded Vision System 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:

- Integral imagers and lenses for 3D stereo vision
- DeepSea 3 Processor
 - Precision Rectification and image re-sampling
 - High speed, low latency Census stereo correlation
 - ProjectionSpace™ engine
- Optional frame-rate, range-based background model
- Embedded PowerPC Linux processor and Ethernet for ease of programming and connectivity

The G3 packages the DeepSea 3 custom chip, 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 computed efficiently by hardware, as are powerful data representations such as ProjectionSpace™. The result is low latency and fast frame rate with low power dissipation.

As with the DeepSea G2, the embedded PowerPC CPU is available for user applications. The DeepSea G3 Vision System is fully compatible with TYZX's SEER API, so applications developed on the DeepSea Development System or G2 will run easily on the G3.

The G3 EVS mounts on a standard 1/4-20 camera mount. Power is provided by either by Ethernet (PoE) or by a conventional 12-volt power brick. Communication with the G3 is provided via TCP/IP, standard Linux facilities, and utilities supplied with SEER.

Compared to other 3D sensors, the TYZX G3 EVS is:

- **Less detectable and more rugged:** Unlike LADAR and RADAR systems, the TYZX G3 EVS uses passive 3D sensor technology for a low detectability profile. The TYZX G3 EVS has no moving parts, which increases reliability and lowers support requirements. Full daylight operation is supported; dark operation can be supported with IR imagers.
- **Smarter and more accurate:** The DeepSea 3 ASIC in the G3 EVS includes TYZX's ProjectionSpace processor, which converts raw 3D point-cloud data into actionable data for Obstacle Detection/Obstacle Avoidance (ODOA) and other applications in real time. The TYZX G3 EVS' embedded Linux CPU is user-programmable for hosting applications such as ODOA, person-following, and path-planning. The DeepSea 3 also features improvements in TYZX's highly regarded stereo-correlation engine, extending both resolution and accuracy.
- **Faster:** The TYZX G3 EVS processes up to 60 fps of image data. Performing ProjectionSpace in hardware further reduces application latency.
- **Smaller:** A compact form factor and ASIC integration make the TYZX G3 EVS small and lightweight. The TYZX G3 EVS enclosure measures only 3.8 cm x 18.7 cm x 14.5 cm and weighs only 675 grams.
- **Capable of operating on less power:** In standard configurations, the TYZX G3 EVS uses less than 12 Watts of 12v DC power. The TYZX G3 EVS's low power requirements help extend battery life on unmanned systems. The TYZX G3 EVS can also operate on Power over Ethernet (PoE), eliminating the need for a dedicated power cable.

TYZX DeepSea G3 EVS Specifications

| | |
|--------------------------------|---|
| Dimensions | 3.8cm x 18.7cm x 14.5cm |
| Temperature Range | -40°C to +85°C |
| Weight | 675 g |
| Power | 12W typ.; 12 vdc or PoE class III |
| Imagers | Aptina MT9v022/MT9v024 Color or Monochrome Full Frame Shutter |
| Frame rate | 60 fps |
| Image size | 752x480 |
| Lens options | 40°, 62°, 80° Horizontal FOV |
| Stereo Baseline options | 3cm, 6cm, 8cm, 14cm |
| Stereo Processor | TYZX DeepSea 3 |
| Correlation | 64 disparity + 4 bit subpixel 10 bit or 12 bit pixel Census Algorithm |
| CPU | Freescall PowerPC 8347 @ 400MHz |
| Memory | 256 MBytes |
| Operating System | Linux 2.6 Kernel |

About TYZX, Inc.

TYZX is a 3D vision company that provides 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 the automotive, consumer electronics, robotics and security markets. TYZX, a privately held company, is backed by investments from Microsoft co-founder Paul Allen and corporate partners.

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

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