



TYZX | *systems that see*

## DeepSea™ 3D Vision

### G3 EVS Stereo Imaging Options

The TYZX G3 Embedded Vision System's imaging front-end features a precision stereo camera custom-designed, built, and tested to provide accurate, reliable real-time 3D performance. Integrated directly into the G3 EVS, TYZX Stereo Cameras deliver quality results and robust operation in the field.

TYZX Stereo Cameras feature:

- Robust design to maintain calibration in real-world conditions
- Auto ID of camera calibration and configuration, easing management by TYZX SEER software
- Factory calibration and testing

TYZX Stereo Cameras use Aptina MT9V024 CMOS imagers featuring:

- Global shutter
- 752x480 native resolution
- Dynamic Range: 10 bit pixels; 80dB - 100dB HyDy mode

To support a wide range of applications, the stereo cameras support a range of configuration options:

#### Stereo Baseline

Stereo baseline is the physical distance between the pair of stereo imagers. Increasing baseline increases a camera's range accuracy at a given distance, while increasing the minimum operating distance of the camera. Narrow baseline cameras with wide field-of-view (FOV) lenses are preferable for operations close to the camera, while longer baselines with narrower FOV are preferred for longer range operation.

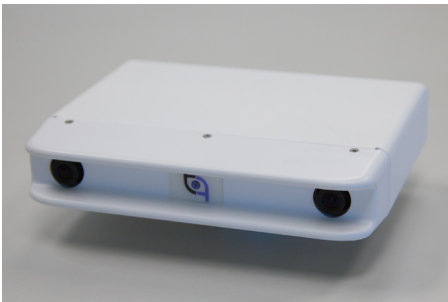
TYZX G3 EVS Stereo Cameras are available with standard baselines of 6cm or 14cm. Cameras with 3cm or 8cm baselines are available by special order.

#### Lenses

DeepSea Stereo Cameras are available with 40°, 62°, or 80° degree Horizontal Field of View (HFOV). HFOV represents the actual HFOV of the Range image. Lenses are available without IR cut off filters – useful when working with NIR illumination and the good NIR response of the Aptina imager.

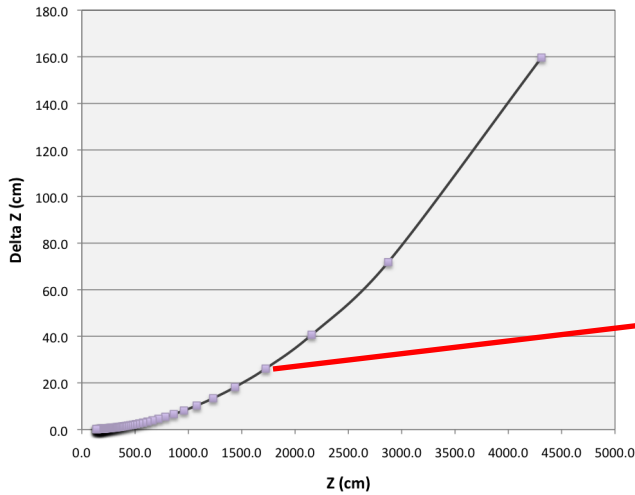
#### Color

G3 EVS Stereo Cameras are available with a color left imager and onboard real time color processing.



6cm and 14cm Baseline  
G3 EVS

Z Precision: 62° HFOV, 14cm, Aptina Full Mode



- Z:** Range measurement in cm
- $\Delta Z$ :** Range quantization based on 3+ bits fractional disparity (5 bits computed)
- HFOV:** Horizontal Field of View of Range image
- Max Z:** Conservative estimate of maximum useful range for typical applications. Computed as the Z and  $\Delta Z$  values at Disparity 4.

Example 14cm baseline camera performance

Baseline	Lens	40° HFOV		62° HFOV		80° HFOV	
		Z (cm)	$\Delta Z$ (cm)	Z (cm)	$\Delta Z$ (cm)	Z (cm)	$\Delta Z$ (cm)
3 cm	Min Z	48.4	0.06	29.3	0.04	21.0	0.03
	Max Z	762	14.4	462	8.70	331	6.20
6 cm	Min Z	96.8	0.12	58.6	0.07	42	0.05
	Max Z	1525	28.8	923	17.4	661	12.5
8 cm	Min Z	129	0.16	78.2	0.09	56.0	0.07
	Max Z	2033	38.4	1232	23.2	882	16.6
14 cm	Min Z	226	0.28	137	0.17	96.0	0.12
	Max Z	3558	67.1	2155	40.7	1543	29.1

## 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 solu-

tions 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](http://www.tyZX.com) or email [info@tyzx.com](mailto:info@tyzx.com)

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