



MEMScan™ Ladar Sensor: Short-Range and NUI (~1m -12m) Applications Capabilities

The MEMScan Ladar Sensor design will provide many advantages for Short-Range and NUI applications. These advantages derive from both the inherent attributes of its time-of-flight (TOF) architecture and its proprietary LightTime engineering design approach. The following describes expected capabilities based on informed engineering estimates benchmarked against the latest available commercial NUI Game application. Exact performance specifications will require a detailed design and device testing.

Range (min-max): ~1m -12m+

Range Resolution: ~0.5cm over the entire range

FOV: ~48° x 64°

Frame Rate: 30 fps (12m max range) or 60 fps (6m max range)

Depth Image Size: 640x480

Latency: The time scale for measuring the range (distance) to each pixel is the round-trip time of light from source back to detector. There is no need for any calculations such as those in triangulation approaches that add to latency. The MEMScan distance information on each pixel becomes available practically instantaneously ($< 1\mu\text{sec}$) once it has been scanned by the laser beam. This also implies that the distance information on the entire FOV becomes available in no more than 33msec (30fps system) or 17msec (60 fps system). A quantitative comparison with other systems' latency would require detailed design information; however, it is expected that the MEMScan latency would be less (potentially far less) than in non-TOF approaches.

Range Data Noise: The TOF approach is a direct range measurement to individual pixels during beam scans in 2D. No calculation is required. Determining noise levels in the generated range data values would require detailed design information; however, it is expected that the MEMScan range data noise would be far less than in non-TOF approaches.

Form Factor and Cost: MEMScan is designed for manufacturability via silicon MEMS processing. The devices would be compact and low-cost at high volumes.