



Inner Vision LiDAR

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A cutting-edge LiDAR solution that features high accuracy, high sensitivity and high resolution



***Beyond
Imaging***

FMCW LiDAR

Frequency Modulated Continuous Wave LiDAR with higher sensitivity and long-range detection.

Tunable VCSEL

Santec's advanced electronically pumped Vertical Cavity Surface Emitting Laser with long coherence length and variable scan rate

Dual Mode

3D LiDAR & 2D tomographic image data output modes available

NEW

Inner Vision LiDAR

Beyond OCT Imaging

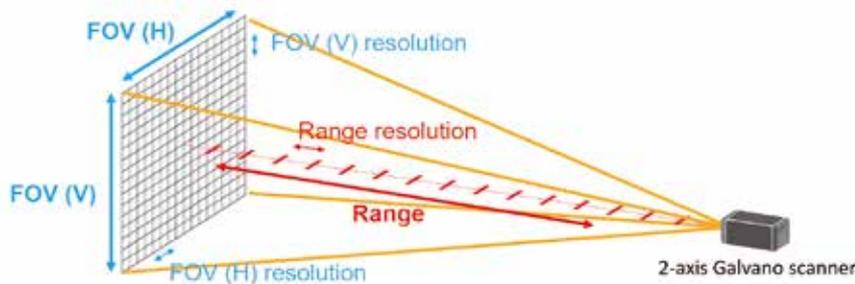
The **Inner Vision LiDAR** (Light Detection and Ranging) system combines Santec's Swept Source OCT (SS-OCT) technology with the High-Speed Scanning Laser (HSL) series to go beyond OCT imaging and provides FMCW (Frequency-Modulated CW) LiDAR solutions. Santec is the pioneer for scanning lasers and SS-OCT technology with cutting-edge performance in our OCT systems.

The **Inner Vision LiDAR** system can be used for various applications, not only in the medical and industrial fields where SS-OCT systems have already been used but also in other fields, including mobility, robotics and 3D mapping etc.

With our experienced team, we can provide great solutions to any integration and customization needs with continuous support.



Performance



Inner Vision LiDAR	Unit	Specification (Typical)		
Center Wavelength	nm	1060±15		
Detection Range	m	>1	>5	>200*
Range Resolution	mm	>0.06	>0.3	>12
Scan Rate (per point)	kHz	>50	>10	>1
Output Power	mW	>5		
Field-of-View (FOV) (maximum)	°	> 20 (H) x 20 (V) (variable)		
Lines (maximum)	-	> 1000 (H) x 1000 (V) (variable)		
FOV Resolution	°	≥ FOV/Lines		
Frame Rate	Hz	≤ $\frac{\text{Scan Rate}}{\text{H Lines} \times \text{V Lines}}$		
Data Sampling Rate	GS/s	1		
Data Output Style	-	3D Point Cloud (X,Y,Z), Density (OCT Data)		

*Coming soon

*Please note, these specifications are subject to change. Please contact to us for the details.

Features

FMCW LiDAR Detection

- Santec's extensive SS-OCT technology allows for sophisticated FMCW detection based on coherent heterodyne detection.
- FMCW detection has longer-range detection and higher sensitivity with lower optical power than TOF (Time-of-Flight) detection which is based on direct pulsed laser detection.
- FMCW LiDAR is immune to solar light, ambient light (from surroundings) and light from other LiDAR sensors

Tunable VCSEL Swept Source

Santec's HSL-1 (based on an electrically pumped Vertical Cavity Surface Emitting Laser) delivers high performance, including long coherence length (single-mode lasing), variable scan speed with low signal noise.

Dual Mode (FMCW LiDAR & SS-OCT)

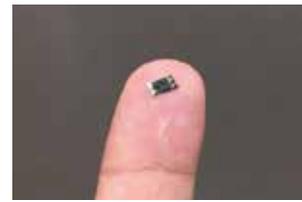
- The Inner Vision LiDAR system can simultaneously output FMCW LiDAR data as a 3D point cloud (X, Y, Z) and SS-OCT data as a set of 2D density plots.



Bench Top Model



OEM Model



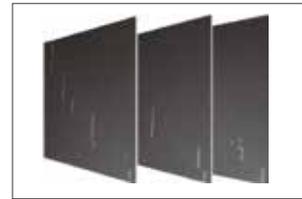
Tunable VCSEL Chip



Camera Image



LiDAR Data (depth map)



OCT Data (density plots)

With our experienced team and software support, we can provide great solutions and work to meet requirements for any customization needs with continuous support.

Applications

- Industrial non-invasive inspection
- Transportation
- Robotics
- 3D Mapping and 3D modeling
- Object detection and tracking
- Security systems
- Biomedical imaging





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