

# Technology Fact Sheet

## 3D-MLI Sensor™

The IEE 3D Modulated Light Intensity (MLI) sensor is a first-of-its-kind vision application, offering the ideal technology for collecting real-time distance images of objects.

### Key Features

- The sensor does not require two cameras or specific processing to generate 3D imaging
- Lighting conditions and temperature do not influence the measurements
- Data is processed by an embedded algorithm
- Standard auto-calibration and self-check

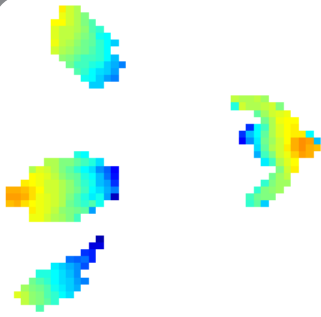
### Measurement Principles

- An active, non-scanning light source emits amplitude modulated near infrared light (NIR)
- The light source sends a homogeneous illumination into the camera's field of view
- The phase difference between the emitted and reflected light is then measured by the sensor



### Hardware Characteristics

Imager technology	3D time-of-flight
Silicon process	CMOS with CCD
Pixel resolution	61 x 56
Field of view	130° x 100° or C-mount optics
Imager lens	Optimized to the requirements of 3D sensing
Band pass filter	Ready for off-the-shelf optics, with narrower field of view
Illumination	940nm
LED lens to distribute light according to FOV	850nm
Illumination field	60°
Housing dimensions (W x D x H)	(54mm x 104mm x 144mm) with optics or (54 x 104 x 144) w/o optics
Illumination type	LED array
Eye safety	Class 1 eye safety (IEC 60825-1)
Frame rate	Up to 10 Hz
Ambient light	0 to full sunlight
Non ambiguity	7.5m @ 20MHz modulation
Distance accuracy	+/- 2cm @ 1.5m @ 20MHz modulation frequency
Operating temperature	-20°C to +50°C full operation, storage up to 110°C
Supply voltage	Power supply: 90-220V to 12V, 50 to 60Hz
Interface	USB2.0 full speed



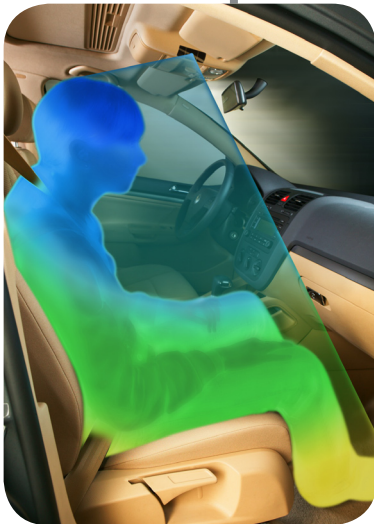
Vision sensor bird's-eye view of 4 people

## Software Characteristics

Operating system	The graphical user interface (GUI) supports Microsoft® operating systems Win2000® professional SP4 WinXP® home SP2 and WinXP® professional SP2 Windows Vista 32bit
Distance calculation	The graphical user interface provides distance extraction from raw image data
Display options	The graphical user interface provides the following display options: <ul style="list-style-type: none"> <li>• Color coded distance image</li> <li>• Grey value amplitude image</li> <li>• Rotating 3D display</li> <li>• 2D image from external USB-Cam and IP-Cam</li> </ul>
Data storage	Possibility to record, archive and retrieve data

## Applications

The innovative 3D-MLI Sensor™ offers a variety of applications for increased security, automation and marketing intelligence in different markets:



- Occupant Classification for smart airbag technology in automotive markets
- Patient Surveillance for medical environments
- Precision People Counting, Single Person Detection and Child Detection for commercial and public infrastructure such as airports and banks
- Luggage Classification for airports and public transportation
- Parcel and Object Detection for industrial automation

## About us

IEE is an innovative developer of specialized sensing systems. Our sensing technologies are dedicated to the following markets: Transport, Public & Commercial Infrastructure, Consumer Electronics, Automation & Logistics and Medical & Healthcare.

IEE was founded in 1989 and is headquartered in Luxembourg. We operate in Europe, the US and Asia, and employ over 1,200 people worldwide. 26% of our workforce is engaged in Research and Development.

For more information, please visit [www.iee.lu](http://www.iee.lu).

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