VL53L7CX - VL53L8CX

8x8 Time-of-Flight ranging sensors with advanced metasurface optical technology

8x8 multizone time-of-flight sensors based on the world's first optical metasurface technology with ultrawide FoV for unrivaled performance

Embedding ST in-house optical metasurface lenses, these multi-zone Time-of-Flight sensors can accurately generate an 8x8 depth map. With an ultrawide 90° (VL53L7CX) or 65° (VL53L8CX) field-of-view, these sensors improve performance under ambient light and provide low power consumption thanks to their VCSEL laser threefold more efficient than previous generations.

VL53L7CX FEATURES

- Ultrawide 90° diagonal FoV
- (60° x 60° square FoV)
- Up to 350 cm ranging
- Pin-to-pin compatible with VL53L5CX

VL53L8CX FEATURES

- 65° diagonal FoV
- Extended ranging performance under strong ambient IR (Up to 285 cm)
- Low power consumption (down to 1.65 mW)

COMMON FEATURES

- Square FoV thanks to ST in-house metasurface (DOE) lenses technology
- Parallel multizone ranging: 4x4 or 8x8 separate regions of interest
- Multi-target detection and distance measurement in each zone
- Scene motion detection algorithm
- Low power autonomous mode, with programmable wake-up triggers

ASSOCIATED TURNKEY SOLUTIONS

- Smart presence detection
- Gesture recognition
- Hand posture control

Watch our On-demand webinar

www.st.com

VL53L7CX - VL53L8CX 8x8 Time-of-Flight ranging sensors with advanced metasurface optical technology

Specially designed for applications requiring an ultrawide view, the VL53L7CX Time-of-Flight sensor offers a 90° diagonal field of view. Based on ST's FlightSense technology, the VL53L7CX incorporates a metasurface lens (DOE) placed on the laser emitter enabling the projection of a 60° x 60° square FoV onto the scene. Derived from the VL53L5CX, the pinouts and drivers of both sensors are compatible, which ensures a simple migration from one sensor to the other.
The VL53L8CX is an 8x8 multizone, Time-of-Flight ranging sensor offering enhanced performance under ambient light with reduced power consumption. Designed to provide accurate ranging up to 400 cm with a 65° diagonal FoV, the VL53L8CX integrates a powerful new generation VCSEL, and two advanced metasurface lenses.

Multizone object detection

ST's patented algorithms and innovative module construction allow the VL53L7CX and VL53L8CX to detect, in each zone, multiple objects within the FoV with depth understanding, and scene motion detection. ST histogram algorithms ensure cover window crosstalk immunity beyond 60 cm.

Compact design

These standalone, all-in-one modules are easy to integrate, supporting different power supply options. With a compact form factor, VL53L7CX and VL53L8CX sensors can be hidden behind a wide range of cover window materials

Developer resources

To evaluate these Time-of-Flight sensors, 3 different evaluation kits are available. A complete STM32 Nucleo kit, integrating an STM32 Nucleo board and the Time-of-Flight sensor expansion board, or the dedicated ToF expansion board only, or the tiny breakout board which can be integrated into prototypes for testing in a real-world environnement. All our sensors come with a Graphical User Interface (GUI) for easy evaluation.

Complete STM32 Nucleo kit

P-NUCLEO-53L7A1
P-NUCLEO-53L8A1

Time-of-Flight expansion board

X-NUCLEO-53L7A1
X-NUCLEO-53L8A1

Time-of-Flight breakout boards

SATEL-VL53L7CX
SATEL-VL53L8

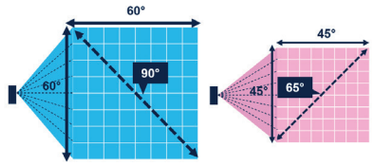
Graphical User Interface

VL53L7CX : STSW-IMG037
VL53L8CX : STSW-IMG041

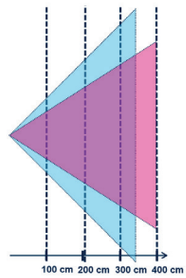
VL53L7CX and VL53L8CX features comparison

	VL53L7CX	VL53L8CX
Field-of-view	90° diag. (60 x 60°)	65° diag. (45 x 45°)
Resolution	8x8 or 4x4	
Processing mode	Histogram	
Maximum distance ranging	350 cm	400 cm
Distance ranging under ambient*	65 cm	285 cm
Minimal power consumption	4.5 mW	1.6 mW
Common features	Autonomous low power mode Scene motion detection Crosstalk immunity >60 cm	
Additional features		Auto-stop
Module size	6.4 x 3.0 x 1.6 mm	6.4 x 3.0 x 1.75 mm
Interface	I^2C	I^2C and SPI

*: Best conditions using white target (88% reflectance)



Field of view of VL53L7CX and VL53L8CX comparison



VL53L7CX and VL53L8CX ranging distance comparison.

Order code: FL2407VL53L7CX

For more information on ST products and solutions, visit www.st.com