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STMicroelectronics reveals latest FlightSense™ multi-zone distance sensor with camera-like field of view

- *Sensors bring lifelike situational awareness to numerous types of smart equipment*
- *Industry-best 90-degrees field of view enhances privacy-protected multi-zone ranging, object-detection, and scene-mapping*

Geneva, Switzerland, July 5, 2023 – STMicroelectronics (NYSE: STM), a global semiconductor leader serving customers across the spectrum of electronics applications, has revealed a new FlightSense™ multi-zone distance sensor with 90° field of view – the industry's best and 33% larger than the previous generation. The optical sensors bring lifelike situational awareness to applications like home automation, domestic appliances, computers, robots, and smart equipment used in stores, factories, and more.

"*Our FlightSense technology inside Time-of-Flight multi-zone sensors enables sophisticated scene understanding with low demands on system power and processing*," said Alexandre Balmefrezol, Executive Vice President and General Manager of the Imaging sub-group within ST's Analog, MEMS and Sensors Group. "*Extending the field of view now gives users even greater flexibility while maintaining accuracy, resolution, and simplicity*."

Unlike camera sensors, which are sometimes positioned for these tasks, Time-of-Flight (ToF) sensors like ST's new VL53L7CX announced today do not capture images and thus ensure full privacy for users. The VL53L7CX extends the field of view to an unprecedented 90° (diagonal) for enhanced peripheral sensing, almost equivalent to that of a camera. This enhances the performance of presence detection and system activation, such as activating a screen or waking an appliance like an oven or coffee machine.

ST's FlightSense multi-zone sensors have powerful capabilities including 3D scene mapping and simultaneously measuring distance to multiple objects in multiple zones. The multi-zone capability and the motion indicator allow use in applications like people detection and tracking, over-shoulder warning, occupancy detection, and storage/parking management.

The new sensor also enhances the performance of applications like smart waste-management for tracking full and empty bins. It can also improve floor sensing, cliff prediction, obstacle avoidance, and small-object detection for robots. Further applications include keystone correction in projectors and extended hand tracking for gesture recognition using the STGesture™ software pack.

Further technical information
The new VL53L7CX has native 64-zone (8 x 8) sensing and can measure distance to multiple objects in each zone, up to 350cm. ST-patented histogram algorithms allow multi-target detection and measurement within the field of view, as well as smudge immunity above 60cm. The linearity is consistent when measuring distance to objects as close as 2cm.

In low-power mode, the sensor consumes just 5.4mW. In addition, the VL53L7CX can operate in autonomous mode that allows the host system to power down and wake only when a threshold value is reached. Thresholds include distance to nearest object, signal rate, and detection of motion. The new sensor is pin-to-pin and driver compatible with the previous-generation device, VL53L5CX.

ST provides extensive design-in support to help users accomplish the maximum with these sensors and enjoy a fast time to market with low design risk. These include the VL53L7CX Expansion board (X-NUCLEO-53L7A1) and a development pack that includes the VL53L7CX board with an additional STM32F401 Nucleo™ board. The SATEL-VL53L7CX, a small-outline PCB for easy integration and fast prototyping, is also available.

A full set of software is available to make user development easier, including the Ultra Lite Driver, Linux driver, and STGesture™ code examples. The X-CUBE-TOF1 software pack for fast STM32 microcontroller programming contains application code examples and is compatible with the STM32CubeMX tools.

The VL53L7CX is in production now and available in a 6.4mm x 3.0mm x 1.6mm miniature optical LGA16 package, from $3.60 for prototyping.

A webinar dedicated to Time-of-Flight sensing is available, which describes the VL53L7CX, its features, opportunities for product innovation, and resources to assist hardware and software development.

For further information and to replay the webinar, please go to https://content.st.com/enhanced-tof-sensors-based-on-optical-metasurface-technology.html?icmp=tt31620_gl_lnkon_mar2023.

About STMicroelectronics

At ST, we are over 50,000 creators and makers of semiconductor technologies mastering the semiconductor supply chain with state-of-the-art manufacturing facilities. An integrated device manufacturer, we work with more than 200,000 customers and thousands of partners to design and build products, solutions, and ecosystems that address their challenges and opportunities, and the need to support a more sustainable world. Our technologies enable smarter mobility, more efficient power and energy management, and the wide-scale deployment of the Internet of Things and connectivity. We are committed to achieving our goal of becoming carbon neutral by 2027. Further information can be found at www.st.com.

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