Ouster Announces First High-Performance True Solid-State Digital Lidar Sensor

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New solid-state lidar sensor targets ADAS and industrial automation and puts Ouster's digital lidar on a path to a $100 lidar sensor

SAN FRANCISCO--(BUSINESS WIRE)--Ouster, the only supplier of high-performance digital lidar sensors for automotive, robotics, industrial automation, and smart infrastructure announced a new high performance solid-state lidar sensor based on its digital lidar architecture. The new ES2 sensor will be the first true solid-state, high-resolution, long-range digital lidar sensor. With a $600 expected price for automotive production programs with SOP 2024 and a 200+ meter range, Ouster's new sensor offers a low-cost option for Advanced Driver Assistance Systems (ADAS) and industrial automation.

> Solid-state lidar is now digital. @Ousterlidar announced ES2 high-performance solid-state digital #lidar sensor for ADAS and industrial automation. #ADAS
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True Solid-State Digital Lidar

The addition of a solid-state sensor is the natural extension of Ouster's digital lidar approach. Leveraging the proven digital lidar architecture from its OS series spinning sensors, Ouster transferred the same core technology to design a true solid-state lidar sensor with no moving parts.

The ES2 sensor uses "electronic scanning" to sequentially fire an array of over ten thousand lasers printed onto a single chip. These lasers are paired with a custom digital detector array capable of counting trillions of individual photons every second. These laser and detector arrays are the same core technology used in Ouster's OS series spinning lidar sensors, as well as numerous consumer devices such as the iPhone and iPad Pro. With tens of thousands of lasers on the chip, each fixed on a different point in the field of view, no moving parts are required to reach the range, field of view, and resolution targets of high-performance autonomy customers.

The similarity of Ouster's product lines is a distinct advantage, as is their reliance on digital components shared by consumer electronic device supply chains. With manufacturing, calibration, and validation already running at scale for its OS series spinning sensors, Ouster's ES2 solid-state sensor will be built on the same high-volume production line already operating at its overseas manufacturing facility.

"Releasing a true solid-state digital lidar sensor is the culmination of a plan Ouster embarked on 5 years ago to make life-improving lidar technology widely available at a $100 price point. The success of our OS line of spinning sensors has proven the many benefits of digital lidar technology and we are now confident in taking the next step with the ES2. The ES2 solid-state sensor is a game changer - a truly solid-state design that leverages standard CMOS manufacturing. This is how you build a solid-state lidar sensor that can disrupt the market." said Angus Pacala, CEO of Ouster.

Industry analysts agree that Ouster's solid-state sensors are poised to disrupt the lidar market. "When you see a technology category turn from analog to digital, the transition can take some time, but the outcome is always the same. Analog products create markets, but digital products dominate them. Digital lidar is a clear path to inexpensive, widespread, and high-performance 3D imaging that is required for all types of autonomous solutions in automotive, robotics, and industrial automation," said Pierrick Boulay, part of the Photonic & Sensing team at Yole Développement (Yole).

200+ meter range is fit for highway speeds

Built to fit ADAS and higher-level autonomy performance targets, Ouster's ES2 sensor will debut with a maximum range of over 200 meters on a 10% reflective surface. With this range, Ouster's sensor redefines what is possible from a true solid-state sensor and gives automotive OEMs a better choice for highway-speed ADAS and autonomy solutions.

Aimed at $100 price barrier

Just as Ouster has brought down the cost of spinning lidar by as much as 95%, the company plans to aggressively bring down the cost of solid-state lidar. The ES2 debuts with an expected price of $600 for series production -- and Ouster's digital lidar technology provides a clear roadmap that will allow future models to break the $100 price barrier.

Automotive Grade

From the beginning, Ouster designed the ES2 sensor to meet and exceed automotive standards for performance, reliability, and

longevity. Its true solid-state design is an advantage: with no moving parts, the sensor is inherently less complex and fragile than other semi-solid state designs that rely on micro-mechanical spinning mirrors or other physical scanning mechanisms.

Ouster's ES sensors are likely to be the safest, most reliable sensors on the market due to their true solid-state, digital design. The sensors will be fully certified for cybersecurity, shock & vibration, thermal cycling, ingress protection, and more according to the most stringent industry standards, including ISO 26262 (ASIL-B), SIL-2, and ASPICE.

Available in 2022

Development of the ES2 sensor is underway at Ouster's San Francisco headquarters, and we plan to deliver samples of the product to key customers and partners in 2022. Volume production will commence in 2023, with a PPAP schedule that fits with SOP 2024 validation timelines for larger automotive and ADAS applications. In addition to automotive and ADAS applications, Ouster also plans to make the ES2 available for key customers in the robotics, industrial automation, and smart infrastructure industries.

Click to learn more about Ouster's ES2 solid-state digital lidar sensor.

About Ouster

Ouster builds high-resolution lidar sensors for the transportation, robotics, industrial automation, and smart infrastructure industries. Using its unique digital lidar architecture, Ouster's sensors are reliable, compact and affordable, while delivering camera-like image quality. Since its founding in 2015, Ouster has secured over 800 customers and $140 million in funding. Ouster is headquartered in San Francisco and led by CEO Angus Pacala and CTO Mark Frichtl. Learn more at ouster.com.

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