AEye Unveils 4Sight™, a Breakthrough LiDAR Sensor That Delivers Automotive Solid-State Reliability and Record-Breaking Performance

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Dublin, CA – June 9, 2020 – AEye, Inc, an artificial perception pioneer today announced 4Sight™, a groundbreaking new sensor family built on its unique iDAR™ platform. 4Sight redefines LiDAR performance while establishing a benchmark for the next generation of LiDAR sensors and intelligent robotic vision systems. Debunking previous assumptions that high performing long-range 1550nm LiDAR could not achieve both solid state reliability and lower cost, 4Sight delivers on all three – performance, reliability and price.

The first 4Sight sensor to be released in July is the 4Sight M. The 4Sight M is designed to meet the diverse range of performance and functional requirements to power autonomous and partially automated applications. 4Sight family of sensors has been developed and tested over the last 18 months in conjunction with a wide range of customers and integrators in automotive, trucking, transit, construction, rail, intelligent traffic systems (ITS), aerospace and defense markets. 4Sight leverages the complete iDAR software platform, which incorporates an upgraded visualizer (which allows you to model various shot patterns) and a comprehensive SDK so it is fully extensible and customizable.

“The primary issue that has delayed broad adoption of LiDAR has been the industry’s inability to produce a high-performance deterministic sensor with solid state reliability at a reasonable cost,” said Blair LaCorte, President of AEye. “We created a more intelligent, agile sensor that is software definable to meet the unique needs of any application – the result is 4Sight.”

Some of the unique features of the 4Sight M are:

LiDAR Performance

- Software definable range optimization of up to 1,000 meters (eye- and camera-safe)
- Up to 4 million points per second with horizontal and vertical resolution less than 0.1°
- Instantaneous addressable resolution of 0.025°

Integrated Intelligence

- Library of functionally-safe deterministic scan patterns that can be customized and fixed or triggered to adjust to changing environments (highway, urban, weather, etc.)
- Integrated automotive camera, boresight aligned with AEye’s agile LiDAR – instantaneously generating true color point clouds. Parallel camera-only feed can provide cost-effective redundant camera sensor.
- Enhanced ground plane detection to determine topology at extended ranges

Advanced Vision Capabilities

- Detection and classification of objects with advanced perception features such as intraframe radial and lateral velocity
- Detection through foliage and adverse weather conditions such as rain and fog through the use of dynamic range, full-waveform processing of multiple returns
- Detection of pedestrians at over 200 meters
- Detection of small, low reflective objects such tire fragments, bricks or other road debris (10x50cm at 10% reflectivity) at ranges of over 120 meters

Reliability

- Shock and Vibration – designed and tested for solid-state performance and reliability. 4Sight has proven in third-party testing to sustain mechanical shock of over 50G, random vibration over $12G_{rms}$ (5-2000Hz), and sustained vibration of over 3G for each axis.
- Automotive-grade production:
    - Automotive-qualified supply chain utilizing standard production processes and overseen by global manufacturing partners
    - Designed for manufacturability using a simple solid-state architecture consisting of only 1 scanner, 1 laser, 1 receiver, and 1 SoC
    - Common hardware architecture and software/data structures across all fully autonomous to partially automated applications (ADAS) – leveraging R&D and economies of scale

Price

- 4Sight can be configured for high-volume Mobility applications with SOP 2021 at an estimated 2x-5x lower price than any other high-performance LiDAR, additionally for ADAS applications with SOP 2023 4Sight is designed to be priced 1.5x to 3x lower than any other long or medium range LiDAR.

- 4Sight series production packaging options include roof, grill, and behind the windshield, software optimized depending on the placement

“In my work with automotive OEMs, the value delivered by the 4Sight sensor surpasses anything I have seen in the automotive industry,” said Sebastian Bihari, Managing Director at Vektor Partners. “By starting with understanding the data a perception system needs, AEye has developed a simpler more responsive design for efficiently capturing and processing perception data. In doing this, 4Sight establishes standards for the industry that will take years for others to achieve.”

In addition to setting new standards for performance, reliability and price, the 4Sight M is also extremely power efficient. 4Sight’s groundbreaking system attributes such as time-to-detect, agile scanning, shot energy optimization, power optimization of returns, and boresight camera/LiDAR data generation, greatly reduces the processing and bandwidth typically required for full perception stacks. When implemented in a vehicle, AEye’s expects 4Sight sensors to be nearly power neutral in relation to a vehicle’s perception stack power budget.

Given the current constraints in travel, AEye is also announcing another industry-first innovation in the launch of Raptor – a unique high-performance web-based remote demo platform. Raptor will enable participants to engage in a real-time interactive test drive with an AEye engineer. From the comfort of their own home or office, AEye’s customers and partners will have the ability to see what a truly software-defined sensor can do and witness the record breaking 4Sight M performance in real time and to customize the demo to meet their specific use cases. Please contact 4sight@aeye.ai to schedule a demo.

About AEye

AEye is an artificial perception pioneer and creator of iDAR™, a perception system that acts as the eyes and visual cortex of autonomous vehicles. Since the demonstration of its solid-state LiDAR scanner in 2013, AEye has pioneered breakthroughs in intelligent sensing. The company is based in the San Francisco Bay Area, and backed by world-renowned investors including Kleiner Perkins Caufield & Byers, Taiwania Capital, Hella Ventures, LG Electronics, Subaru-SBI, Aisin, Intel Capital, Airbus Ventures, and others.

Media Contact:

AEye, Inc.
Jennifer Deitsch
jennifer@aeye.ai
925-596-3945