

Quanergy Solutions Introduces Q-Vision F540: A Revolutionary 3D LiDAR Sensor for Industrial Applications



San Jose, October 1, 2024 — Quanergy Solutions, Inc., a leading provider of 3D LiDAR solutions for physical security and industrial automation, proudly announces the launch of the Q-Vision™ F540 3D iToF LiDAR sensor. The Q-Vision solid-state family of sensors extends beyond Quanergy's acclaimed mechanical M-Series line to optimize automation processes across industries such as logistics and warehouse management, construction, and agriculture with our cutting-edge solid-state technology. The F540 delivers exceptional environmental and vibration performance for both off-road and indoor industrial vehicles, including forklifts, Autonomous Guided Vehicles (AGVs), Autonomous Mobile Robots (AMRs), coupled with its exceptional imaging quality, edge compute intelligence and highly accurate volumetric measurements.

The Q-Vision F540 offers an advanced low-noise point cloud and high resolution, allowing developers to detect objects and critical features—such as pallet pockets, shelves, tables, and doorways—at longer ranges with superior precision compared to existing solutions. This increased accuracy and clarity enable faster and safer operations, enhancing the efficiency and economic return of automation processes.

Key Capabilities for Industrial Automation

The Q-Vision F540 is an essential tool for delivering reliable situational awareness in AGVs and AMRs, supporting a wide range of critical applications, including:

- **Pallet pocket detection**
- **Collision avoidance**
- **Object classification**
- **Navigation**

With 75% more data points than leading competitors, the F540 redefines industry standards in high-resolution 3D LiDAR technology. Its advanced on-sensor Image Signal Processing (ISP) significantly reduces noise, delivering a crisp and reliable 3D point cloud that streamlines and accelerates engineering workflows. *(Insert image here)*

"The Q-Vision F540 provides capabilities that were once either challenging or prohibitively expensive to achieve in industrial mobility applications, especially for outdoors operations" said Enzo Signore, CEO of Quanergy Solutions. "By integrating advanced sensor technology with on-sensor ISP, we offer unmatched clarity and reliability, empowering developers to design more innovative and efficient autonomous systems."

Addressing Industry Challenges

The Q-Vision F540 is designed to overcome key obstacles that have traditionally hindered the widespread adoption of 3D LiDAR in AGV and AMR markets. It directly addresses issues such as:

- Limited field of view (FoV) and low resolution in existing iToF cameras
- Lack of plug-and-play functionality, requiring extensive software development
- Absence of developer-friendly software tools
- High costs associated with off-board point cloud processing
- Data transport challenges with edge compute for at-sensor insights
- Inability to perform in challenging environmental conditions, such as bright sunlight or specific indoor lighting, and able to withstand high shock and vibration
- Short-range performance limitations (dead bands)
- Inability to read barcodes or QR codes

"Q-Vision F540 is one of the most exciting sensors I have seen come on the market in a long time," said Greg Cole, Robotics Chief Technology Officer and Innovator. "Baked into its very core is empathy for the challenges of autonomous navigation and perception. The solid state technology gives it a really robust construction, and the combination of depth and RGB data with the edge computing just makes it such a flexible platform to build on. I'm really excited to see what people can do with this".

In addition to resolving these issues, the F540's on-sensor software tackles common iToF LiDAR challenges, including:

- Reducing the interference of stray light from reflective surfaces
- Outdoor operation under sunlight
- Eliminating false data from distances beyond sensor's set operating range
- High dynamic range adaptation
- The ability for multiple sensors to operate in the same space without disturbing each other's data
- Motion blur

These capabilities, combined with low cross-sensor interference, allow the F540 to be deployed effectively in environments with multiple robots operating simultaneously. The sensor's wide field of view ensures comprehensive situational awareness, while its high angular resolution enhances precision in object detection.

Enhanced Configuration Options

The Q-Vision F540 will initially be available in two configurations, including an integrated 2-megapixel RGB camera capable of reading text and barcodes, making it a versatile solution for various industrial automation needs.

Seamless Integration for Developers

Quanergy's Q-Vision F540 supports an extensive range of industry-standard programming languages and tools, including C, C++, Python, MATLAB, ROS1/2, OpenCV, and PCL. This ensures seamless integration into existing development environments and makes it easier for developers to adopt the sensor into their automation systems.

The accompanying SDK supports the development of both host computer applications and on-sensor applets. Example projects for both is included to facilitate faster development.

See Q-Vision 540 live at Automate, Chicago. October 8-10 booth #131.

For more information about Quanergy's groundbreaking Q-Vision F540 3D LiDAR sensor, visit www.quanergy.com.