LeddarTech®

Enabling efficient active safety solutions for large vehicles and trucks with optical detection and ranging

Large vehicles of all types (i.e. buses, tractor-trailors, dump trucks, etc.) can significantly benefit from new ADAS and active safety features that support drivers 24/7, making the roads safer for all.

Such systems require highly efficient, versatile sensor technology that is able to cover all key areas around the vehicle. They have to provide sufficient range, a large field-of-view, and reliable detection of vehicles, pedestrians, and obstacles in any environmental conditions.

Leddar technology improves the cost-performance ratio of optical detection and ranging, overcoming key challenges of large vehicle ADAS.

More than 2 million large commercial trucks and heavy-duty vehicles are sold each year around the world. While they account for only 4% of all registered vehicles in the U.S., they are involved in 11% of all motor vehicle crash deaths.

Tractor-trailers are particularly involved, generating more than 7 out of 10 fatalities in large truck accidents. Most victims are not truck occupants, but rather occupants of other passenger vehicles, pedestrians, bicyclists or motorcyclists.

Optical detection and ranging is recognized as one of the key sensing technologies being leveraged to implement active safety features on vehicles and support autonomous driving solutions. LeddarTech is leading the way in optical time-of-flight solutions, providing automotive OEMs and subsystem manufacturers with the patented Leddar detection and ranging sensor modules for integration in critical ADAS (Advanced Driver Assistance Systems) applications.

Most fatalities from truck accidents are passengers of other vehicles, pedestrians, or bicyclists.

Leddar: Highly-efficient, optimized optical detection and ranging for ADAS
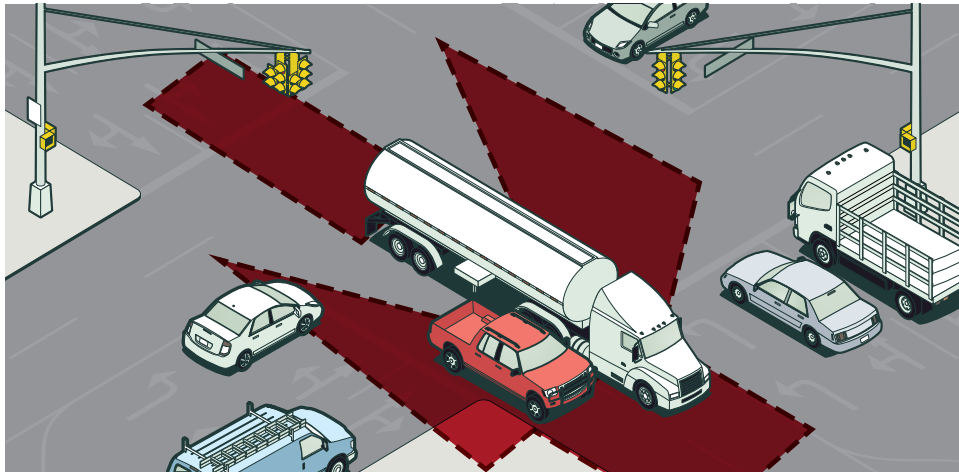
Trucks and other large vehicles have to deal with significant blindspots

Heavy-duty vehicles have significant blind spots, amplified by their height and size. They are also at significant risk of forward collisions, as a loaded truck takes 20-40 percent farther than cars to stop—and even longer in wet conditions. Reduced overhead clearance also increases the occurance of collisions with structures and overpasses.

Implementing Leddar sensing capabilities on large vehicles assists drivers with enhanced situational awareness up to 360°, and enables active safety features, such as collision warning, blind spot monitoring, or overhead clearance alerts. Leddar also provides redundant sensing functions when deployed as part of a sensor fusion system.

Leddar sensors accurately detects, locates, and measures objects and people in the most demanding environments. By digitizing full signal waveforms and processing them through advanced proprietary algorithms, Leddar provides higher sensitivity and increased detection range, delivering an unbeatable cost-performance ratio for your application.
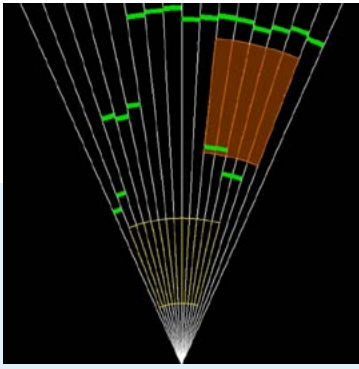
Applications

- Forward/rear collision warning
- Blind-spot monitoring/Lane change assistance
- Parking assistance
- Adaptive cruise control/Traffic jam assistance
- Overhead clearance alert
- Cross-traffic alert

Leddar Benefits

- Cost-effective, fixed-beam optical detection with no moving parts
- Narrow to wide field-of-view
- Multi-segment configurations for precise multi-object detection/ localization/classification
- Short- to long-range capabilities
- Reliable operation in all lighting and environmental conditions

Overhead clearance measurement based on Leddar optical sensing technology provides drivers with advanced warnings, eliminating accidents due to improper evaluation or distraction.
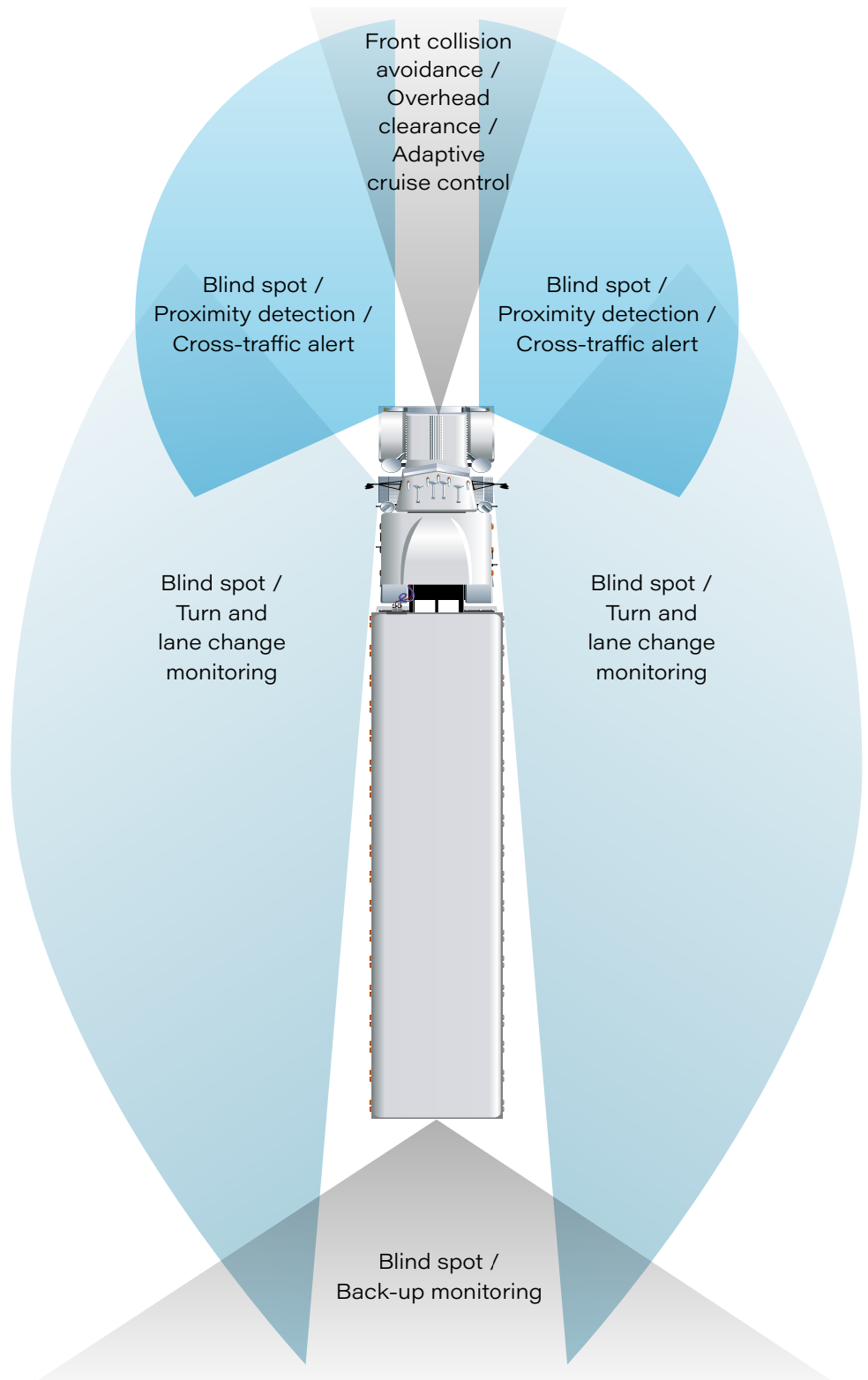
Enabling your active safety and ADAS solutions

Leddar technology provides unique benefits for vehicular applications, with its robust detection in adverse environmental conditions, immunity to ambient light for reliable day and night performance, rapid acquisition rate, large illumination area, lateral discrimination of objects, and simultaneous acquisition capabilities in multiple independent segments.

The core Leddar intelligence is embedded into ICs which serve as the base for developing a wide variety of sensor configurations, with tailored optical combinations providing short to long ranges, narrow to wide field-of views, and a single or multiple detection segments to perfectly fit the specific requirements of your automotive application.

With its unique approach to active optical sensing, enabling multi-object detection and real-time tracking capabilities with an unbeatable cost/performance ratio, Leddar is the technology of choice for many up-and-coming ADAS and active safety solutions for large trucks and heavy-duty vehicles.

360° collision avoidance coverage with Leddar sensing technology

Front collision avoidance /
Overhead clearance /
Adaptive cruise control

Blind spot /
Proximity detection /
Cross-traffic alert

Blind spot /
Proximity detection /
Cross-traffic alert

Blind spot /
Turn and
lane change
monitoring

Blind spot /
Turn and
lane change
monitoring

Blind spot /
Back-up monitoring

Sample sensor configurations

The table below presents two examples, based on the Leddar M16 sensor module, of the many possible Leddar configurations available for deployment in mainstream ADAS applications.

	Long-range Automotive Leddar	Mid-range Automotive Leddar
Detection range: vehicles	Front-facing vehicles: 65 m Rear-facing vehicles: 150 m	Front-facing vehicles: 15 m Rear-facing vehicles: 40 m
Detection range: pedestrians	65 m	12 m
Field of view	20°	90°
Detection segment number	16	16
Operating temperature	-40° C to + 105° C	-40° C to + 105° C
Typical applications	Front/rear collision warning Adaptive cruise control Automatic emergency breaking Traffic jam assistance	Blind spot monitoring Cross-traffic alert Lane change assistance Parking assistance

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NORTH AMERICAN AFFORDABLE ADAS PRODUCT INNOVATION AWARD

Winner of Frost and Sullivan Best Practices Award

New Product Innovation in the Affordable ADAS Industry

The prestigious awards identify companies that have successfully introduced new and innovative products into their markets, with emphasis on product quality and customer value.

Frost & Sullivan recognized Leddartech offering's distinct benefits over other sensor technologies in the ADAS domain, highlighting the key advantage of Leddar in cost-performance ratio. LeddarTech enables automotive manufacturers with an affordable, versatile sensing technology which can be integrated into a variety of vehicular ADAS applications and support the development of autonomous vehicles.

Ask us about Leddar sensing technologies for large vehicles and trucks: leddartech.com/en/contact-us

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