

Global Automotive LIDAR Market: Analysis by Technology (Solid-State LIDAR and Mechanical LIDAR), By Range (Short & Mid-Range and Long Range), By Application (Autonomous and Semi-Autonomous), By Region Size & Forecast with Impact Analysis of COVID-19 and Forecast up to 2028

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Abstracts

The automotive LIDAR system illuminates the intended target and uses a sensor to measure the reflected pulses to determine the distance between two vehicles. When traffic conditions rapidly change, LIDAR is used in automotive systems to autonomously adjust vehicle speed and brake systems. It is primarily used in fully autonomous or semi-autonomous vehicles to provide assistance features like adaptive cruise control, lane-keeping assistance, lane-departure warning, and collision warning and avoidance systems. In 2022, the global automotive LIDAR market was valued at US\$555 million, and is probable to reach US\$3.10 billion by 2028. Also, global automotive LIDAR market volume was 412.09 thousand units and is expected to reach 10.71 million units in 2028.

Driven by the growing demand for intelligent vehicles at lower costs, LIDAR sensors' adoption is accelerating. Moreover, the exponential rise in the global market can be attributed to the growth in the integration of AI-enabled functionalities, the growing ecosystem of Automotive IOT, and rising customer traction toward sophisticated features in the vehicles. The global automotive LIDAR market is projected to grow at a CAGR of 33.18%, during the forecast period of 2023-2028.

Market Segmentation Analysis:

By Technology: According to the report, the global automotive LIDAR market is segmented into two technology: Solid-State LIDAR and Mechanical LIDAR. Solid-State LIDAR segment acquired majority of share in the market in 2022, owing to its affordability, it is used in multiple locations, including the front, rear, and sides of a vehicle & combines data received from each of the sensors to provide an extended Field of View (FOV). Whereas, Mechanical LIDAR segment is expected to have the highest CAGR in the future as a large field of view (FOV) that is typically 360 degrees can be achieved with mechanical LIDAR by utilizing high-grade optics and a rotating assembly. The mechanical component results in a bulky implementation, but it offers a high signal-to-noise ratio (SNR) over a large field of view (FOV).

By Range: According to the report, the global automotive LIDAR market is segmented into two range: Short & mid-range and Long range. Short & mid-range segment acquired majority of share in the market in 2022, as it detects objects within 25 meters and is well-suited for slow-moving vehicles. Whereas, the Long range segment is expected to have the highest CAGR in the future as long-range LIDARs are suitable for faster-moving navigating vehicles and detecting objects within mid to long ranges.

By Application: According to the report, the global automotive LIDAR market is segmented into two applications: Autonomous and Semi-autonomous. Autonomous segment acquired majority of share in the market in 2022, owing to the adoption of level 4 and level 5 autonomous cars for sharing services, across the world. Whereas, Semi-autonomous segment is expected to have the highest CAGR in the future as LIDAR sensors are extensively used in Level 1, 2, and 3 vehicles that require moderate to low assistance from drivers in channelizing vehicle's direction & braking.

By Region: According to this report, the global automotive LIDAR market can be divided into four regions: North America, Europe, Asia Pacific, and Rest of the World. North America automotive LIDAR market enjoyed the highest market share in 2022, primarily owing to because this region is typically dominated by automotive OEMs such as General Motors, and Ford Motor Company, paired with some established Asian as well as European automotive OEMs. The growing demand for Electric vehicles is influencing the growth of the US automotive LIDAR market.

Global Automotive LIDAR Market Dynamics:

Growth Drivers: The increasing inclination of automotive manufacturers toward manufacturing autonomous vehicles has accelerated the demand for automotive LIDAR sensors for enhancing safety requirements. The burgeoning advancements in

autonomous vehicle technologies such as sensors, radars, and microprocessors, among others, have led to a surge in the adoption of autonomous vehicles, particularly from Level 1 to Level 3. Further, the market is expected to increase due to rising disposable income, increasing demand for electric vehicles, rapid urbanization, etc.

Challenges: Weather conditions tend to have a strong impact on the overall performance of the LIDAR devices, thus, being a key impediment to the ability of LIDAR integrated system to sense the nearby obstacles. For instance, usage of LIDARs against direct sun results into poor performance of the LIDAR since LIDAR signals tend to disperse under direct sunlight. The other challenge that automotive LIDAR market faces is high cost of LIDAR, availability of alternatives, etc.

Trends: A major trend gaining pace in automotive LIDAR market is integration of artificial intelligence. The integration of AI in LIDAR technology is a trend in the automotive LIDAR market because it can significantly enhance the capabilities and performance of LIDAR systems used in autonomous vehicles. Artificial Intelligence will lead to the growth in automotive LIDAR by using machine learning algorithms to analyze and interpret LIDAR data, AI can help vehicles make more informed and accurate decisions in real-time. More trends in the market are believed to augment the growth of automotive LIDAR market during the forecasted period include growing automotive semiconductor market, scope of multiple LIDAR fitment across all levels of automation, rapid technology advancements in autonomous LIDAR, growing deployment of LIDARs in level 3 automation, etc.

Impact Analysis of COVID-19 and Way Forward:

The COVID-19 pandemic has had a major influence on the automotive LIDAR market, as governments in several nations imposed lockout and trade restrictions, disrupting automotive part exports. As a result, lower automobile production owing to temporary plant shutdowns is projected to have a negative impact on demand for LIDAR sensors in the automotive sector. The industry of semi-autonomous and autonomous vehicles is projected to resurrect in the near future. Recognizing the benefits of contactless and driverless transportation in a world of physical distance, several logistics, delivery, and food delivery companies have begun to use autonomous cars, including LIDAR as a vital component.

Competitive Landscape and Recent Developments:

Global automotive LIDAR market is fragmented, with more than 60 private and public

LIDAR companies at varying stages of development. These players must compete to build solid supply chains and form strategic partnerships to ultimately land a partnership with an OEM. Key players of global automotive LIDAR market are:

Aeva Technologies, Inc

Continental AG

Luminar Technologies, Inc.

Ouster, Inc.

Velodyne LIDAR, Inc.

DENSO Corporation

Innoviz Technologies Ltd.

Valeo S.A.

Livox Technology Company Limited

Innovusion

Cepton, Inc.

Hesai Technology Co Ltd

RoboSense (Suteng Innovation Technology Co., Ltd.).

Over 100 LIDAR system companies have been established since its invention, but most of them are still in the product design stage, with Valeo being the market leader so far. In China, RoboSense, DJI Livox, Huawei and Hesai are the key companies. The key players are constantly investing in strategic initiatives, such as new product launches, introducing their products to emerging markets and more, to maintain a competitive edge in this market. For instance, in 2022, Mercedes-Benz AG announced to equip Luminar's Iris LIDAR technology in its Level 3 semi-autonomous passenger cars to enhance vehicle safety standards & integrate automated driving systems. Also, in 2021,

Volvo announced the installation of LIDAR sensors from Luminar Technologies, Inc., in its XC90 model. It also added that LIDAR sensors would be a standard safety benchmark in all its fully electric flagship vehicles in the forthcoming years.

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