

# Gyroscopes - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2024 - 2029)

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## Abstracts

The Gyroscopes Market size is estimated at USD 4.30 billion in 2024, and is expected to reach USD 5.78 billion by 2029, growing at a CAGR of 6.10% during the forecast period (2024-2029).

Gyroscope technology has witnessed many innovations in the past decade with the introduction of MEMS-based gyroscopes. The accuracy and efficiency of the gyroscopes have also improved, as multi-axis gyroscopes are more accurate due to digital integration. The applications of gyroscopes have also expanded over the past few years, with the consumer electronics and industrial segments finding significant implications for the technology.

### Key Highlights

The rapidly growing adoption of drones and unmanned aerial vehicles (UAVs) in the defense and commercial sectors has been expected to be a significant driver in the market. An Unmanned Aerial Vehicle (UAV) is an airborne system or an aircraft operated remotely by a human operator or autonomously by an onboard computer for warfare and surveillance. Due to the increase in research and development, the adoption rate of UAVs is rising.

According to National Defense, a business technology magazine, the cost of research, development, and procurement for UAVs is expected to increase from USD 11.1 billion in 2020 to USD 14.3 billion by 2029. Additionally, it is anticipated that R&D spending will increase from USD 3.2 billion in 2020 to USD 4 billion in 2029. Procurement funding will rise from USD 7.9 billion in 2020 to approximately USD 10.3 billion by the decade's end. The market is expanding due to the increasing use of drones and UAVs.

Further, industrial automation and demand for miniaturized consumer devices, such as wearables and IoT-connected devices, among others, across regions are among the significant factors driving the MEMS Gyroscope demand in the studied market.

However, high initial costs and operational concerns are the major factors anticipated to restrain the growth of the studied market over the forecast period. Further, as an essential part of producing superior sensors, high-quality raw materials are vital for manufacturers. Metals and alloys used in manufacturing include Platinum, Copper, Silicon, Tungsten, and Nickel, and alloys, which are further categorized into type-K, type-M, type-E, type-J, and so on. Fluctuations in prices and supply of raw materials could also cause hindrances in the growth of the studied market.

The outbreak of COVID-19 across the globe significantly disrupted the supply chain and production of the studied market. Many end-user industries of the market have also been affected due to the pandemic, which in turn had a negative impact on the market. Moreover, the uncertain economic climate also impacted the demand for micro-electromechanical systems (MEMS) gyroscope technology, causing a partial business shutdown and low consumer confidence. During the pandemic, the supply chain was hampered along with logistics operations. However, due to the relaxation of the restrictions, the micro-electromechanical systems (MEMS) gyroscopes market is anticipated to pick up speed in the post-pandemic scenario.

## Gyroscope Market Trends

### Automotive to be the Fastest Growing End-user Vertical

Gyroscopes have several applications in the automotive industry. Gyroscopes, particularly MEMS, are used in vehicle roll-over prevention and airbag deployment systems. Gyroscopes are used in vehicle image stabilization systems, such as in-camera stabilization systems for dashcams or other onboard cameras. They are also utilized in-vehicle navigation systems to improve performance and accuracy. They can be used with other sensors to provide precise positioning and orientation.

Gyroscopes can also be used in vehicle control systems to assist with stability and control. They can provide information about the vehicle's angular motion, which can be used to optimize vehicle dynamics and improve safety. They are utilized as a part of inertial guidance systems in cars. These systems use gyroscopes to measure and maintain a vehicle's orientation and angular velocity, providing accurate navigation and

guidance information. Further, they form a crucial part of the electronic stability program (ESP) systems of vehicles that aid in the detection and measurement of the rate of rotation of the car. This information assists in maintaining vehicle stability and control during maneuvers.

The increased production of passenger vehicles drives the market studied. For instance, according to OICA, worldwide motor vehicle production in 2022 amounted to more than 85 million units. The passenger cars segment generated approximately 73 percent of the motor vehicle production, almost 61.59 million units. In 2021, the worldwide motor vehicle production totaled about 57.05 million.

Gyroscopes are essential in the automotive advanced driver assistance systems (ADAS). They are used in stability control systems to detect and correct deviations from the vehicle's intended path, improving safety and stability during driving. They enhance autonomous driving capabilities, strength, and safety. GPS-aided gyro systems have been developed to measure vehicle dynamics and driver assistance parameters in the automotive sector. These systems provide high-precision measurements to aid in ADAS testing and development. According to the National Safety Council, by 2026, approximately 71% of registered vehicles will be equipped with rear cameras, while 60% will have rear parking sensors. Such increasing adoption of ADAS would aid the growth of the market studied.?

Moreover, the increasing adoption of self-driving or autonomous vehicles is a primary growth factor for the ADAS market. For instance, according to Intel, global car sales are expected to reach over 101.4 million units in 2030, and autonomous vehicles will account for about 12% of car registrations by 2030. ?

### Asia Pacific Expected to Witness Significant Growth

Gyroscopes are expected to gain traction in China owing to the huge consumer electronics market, growing demand for 5G devices, and active efforts by the government to develop the economy to stay at the leading position in the world.

China is actively focusing on the integration of 5G technology in consumer electronics. According to GSMA, Mainland China is the largest 5G technology market in the world, and at the end of 2022, it accounted for over 60% of global 5G connections. According to the Mobile Economy Report by GSMA, in 2024, 5G will surpass 4G to become the

central mobile technology in China. With the advancement in network connectivity with the 5G development, the proliferation of GPS applications in smartphones and tablets increased, which created demand for gyroscopes.

The automotive, semiconductor, and consumer electronics industries in Japan are some of the most prominent and largest industries in the world. The country is home to several leading automakers such as Toyota, Nissan, Honda, Suzuki, Mitsubishi, Daihatsu, Mazda, Subaru, Hino, Isuzu, Kawasaki, and Yamaha. The growing technological advancement in the automotive industry, the rise in sales of electric vehicles, and the integration of smart control systems in autonomous and connected vehicles create demand for gyroscopes for accurate positioning and navigation.

In India, the rapid expansion of 5G is gaining momentum and will soon allow the country to reap significant technological and economic benefits. For instance, according to Ericsson's report, 5G mobile subscriptions in India will increase from 6.66 million in 2022 to 699.84 million in 2028. The introduction of 5G is expected to revolutionize industrial and economic performance in various sectors, as well as enhance access to employment opportunities. 5G mobile smartphones are gaining traction in the country which encourages market growth.

The rest of the Asia Pacific segment comprises countries such as South Korea and Taiwan and Southeast Asian countries such as Thailand, Malaysia, Singapore, Indonesia, and others. The presence of leading smartphone manufacturer Samsung Electronics and growing investment in 5G development in South Korea drives the smartphone market, which positively impacts the gyroscope demand in the region.

## Gyroscope Industry Overview

The gyroscope market is highly fragmented due to the presence of both global players and small and medium-sized enterprises. Some of the major players in the market are Murata Manufacturing Co. Ltd, STMicroelectronics NV, Honeywell International Inc., Analog Devices Inc., and Bosch Sensortec GmbH (Robert Bosch GmbH). Players in the market are adopting strategies such as partnerships and acquisitions to enhance their product offerings and gain sustainable competitive advantage.

January 2024 - Murata Manufacturing has launched a "next-generation" combined gyroscope and accelerometer sensor, offering the company's "high-precision" sensing

for machine control and more: the SCH16T-K01. The multi-device SCH16T family of six degrees of freedom (6DoF) sensors, the SCH16T-K01, is based on a new generation of Murata's 3D micro-electromechanical systems (MEMS) sensor technology.

November 2023 - STMicroelectronics introduced an AI-enabled automotive inertial measurement unit for always-aware applications up to 125°C. STMicroelectronics' ASM330LHHXG1 inertial measurement unit (IMU) for automotive applications combines in-sensor AI with enhanced low-power operation and a 125°C operating temperature range for reliability in harsh environments.

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