

Infrared Sensor Market - Growth, Trends, Covid-19 Impact, and Forecasts (2023 - 2028)

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Report description:

The Infrared Sensor Market is expected to register a CAGR of 12.5% during the forecast period. Rapid technological advancements, such as connected cars, machines, and wearables, over the past decade have led to the deployment of sensors to take input from the physical environment to perform predefined functions upon detecting specific information. The emergence of micro-electromechanical systems technology has resulted in the miniaturization of mechanical and electro-mechanical elements in the field of sensors with micro-fabrication and micro-machining techniques that have aided the industry to reduce the size, power consumption, and cost of sensors.

Key Highlights

The automotive industry is emerging as a significant investor and adopter of infrared sensors. Although the automotive sector has been witnessing a recession for the last two years, the growing trend of autonomous vehicles and government regulations mandating ADAS systems are some of the major factors driving the adoption of infrared technology in the sector. Active infrared sensors act as proximity sensors and are commonly adopted for vehicle obstacle-detection systems.

Security and surveillance are other primary applications of infrared detectors, especially pyroelectric infrared sensors. The growing trend for video surveillance across the globe is providing a massive opportunity to market vendors. Recently, the Delhi government stated that it is to install 140,000 devices under the second phase of the CCTV camera project. Additionally, another 1.4 lakhs (140,000) surveillance devices will be installed in the second phase of the CCTV camera project.

The development of LIDAR technology is providing new opportunities to market vendors. Many companies, such as Sick AG, are investing in developing infrared LiDAR sensors to deliver more accurate and reliable distance sensing and measurement, especially in challenging environmental conditions in the automotive sector. Ruhr-University Bochum is also researching infrared sensors to design new and more efficient drugs by providing near-real-time information about the interaction between a drug and its target protein.

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Battling the COVID-19 pandemic, the market has witnessed an increased proliferation of IR sensors globally over the past year. It is anticipated that IR sensors, microbolometers, and thermopiles that record temperature data and relay that information back to a central medical database will scale up rapidly.

Infrared Sensor Market Trends

Near Infrared (NIR) To Hold Significant Market Share

Near-infrared (NIR) imaging is growing in demand globally, typically replacing thermal or far-infrared (FIR) vision for night vision. Cameras comprising NIR sensors can detect the wavelengths of light directly adjacent to the visible light spectrum. Unlike thermal cameras, NIR cameras can detect photons like cameras in the visible light spectrum, just at a different wavelength. More detectable photons are in the NIR spectrum at night, making NIR cameras valuable for night vision.

The European New Car Assessment Programme (Euro NCAP) has announced that it will compensate manufacturers that offer Child Presence Detection as a standard feature in new vehicles beginning in 2022 (for instance, sensing systems to monitor the safety of children left unattended in cars). Automakers and suppliers are under pressure to quickly and effectively implement sensing technologies, with the role and performance of NIR light sources gaining new significance within the vehicle. This factor is anticipated to boost the demand for the NIR sensors.

When compared to thermal vision, NIR vision has been gaining high demand. Thermal vision only detects heat. It's not good at producing crisp, clear images to facilitate semi- or full autonomy. Also, the NIR sensors have been witnessing adoption in biomedical engineering.

The development of infrared (IR) transparent electrodes (specifically in the near-infrared range) is crucial for improving the efficiency of specific optoelectronic devices and opening up applications in other emerging areas, like IR photodetectors, IR switching devices, sensors, and modulators for telecommunication. NIR (Near Infrared) applications are rising as demand for non-destructive, accurate, and rapid food quality and safety analysis is increasing. Consequently, NIR technology is continuously being upgraded to improve performance and make it more affordable for scientists and all stakeholders in the food supply chain.

Asia Pacific Market to Witness Significant Growth

Asia Pacific is the fastest-growing market for infrared sensors, owing to the established electronics industry and increasing technological advancements in economies such as China, Japan, and South Korea. Also, the region is the largest producer and consumer of consumer electronics.

Over the past few years, the region has been witnessing increasing Internet of Things (IoT) penetration and growing consumer preference toward better energy management systems. Factors such as these are driving the demand for smart home automation technology, which, in turn, boosts the demand for IR sensors. TVs, for instance, use an infrared sensor to decode the signals transmitted by remote control. According to techarch, a survey conducted in 2022 showed that smart TVs had the highest penetration rate among all the smart home devices at 73% in India, thus driving the demand for the infrared sensors market. Many enterprises in this region are spending on R&D to develop infrared sensors that could bring advancements in the packaging industry. For instance, the WG51S2, an infrared sensor developed by Yokogawa Electric Corporation, is used to measure and control the thickness of films and sheets to ensure product quality.

Far infrared (FIR) gives vehicles complete, reliable detection of the road and its surroundings. Recently, according to the Department for Promotion of Industry and Internal Trade (India), the automobile sector in India saw an equity inflow from foreign direct investments worth approximately 1.6 billion U.S. dollars. The increased versatility of infrared sensors in cameras and autonomous automobiles drives the market's growth.

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The presence of key market players in Asia Pacific, rapid industrialization, primarily in manufacturing sectors, increase in demand for better security and monitoring systems, augmented application of infrared detectors in the residential and consumer electronics sector, and rise in government initiatives in the aerospace and defense sector has fueled the market growth.

Infrared Sensor Market Competitor Analysis

The Infrared Sensor Market is highly competitive. The high expense on research and development, partnerships, collaborations, and acquisitions are the prime growth strategies adopted by the regional companies to sustain the intense competition. Key players in the market are Murata Manufacturing Co. Ltd, Teledyne FLIR Systems, Inc., Excelitas Technologies Corp, Melexis NV, Austria Micro Systems (AMS) AG, Amphenol Advanced Sensors, Advanced Energy Industries Inc., Yokogawa Electric Corporation, Sick AG, and many more.

December 2022 - General Atomics Aeronautical Systems Inc. worked with Lockheed Martin and Tactical Air Support in collaboration to conduct a flight demonstration of multi-platform infrared sensing. According to General Atomics Aeronautical Systems Inc, the test flight was carried out using GA-ASI's MQ-20 Avenger aircraft system and two F-5 Advanced Tigers equipped with Lockheed's next-generation tactical infrared and track sensors.

October 2022 - Tactical Air Support Inc. (Tactical Air) collaborated with Lockheed Martin and completed initial flight testing of TacIRSTM, a new class of embedded, long-range infrared search-and-track sensors (IRST). This step made Tactical Air's F-5 Advanced Tiger the first fighter aircraft to fly and test TacIRST as part of the company's ongoing joint developmental program. Integrating tactical air infrared search-and-track sensors is critical to the evolution of its F-5AT advanced threat replication system supporting the U.S. Air Force adversary contracts and the U.S. Navy.

Additional Benefits:

The market estimate (ME) sheet in Excel format
3 months of analyst support

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