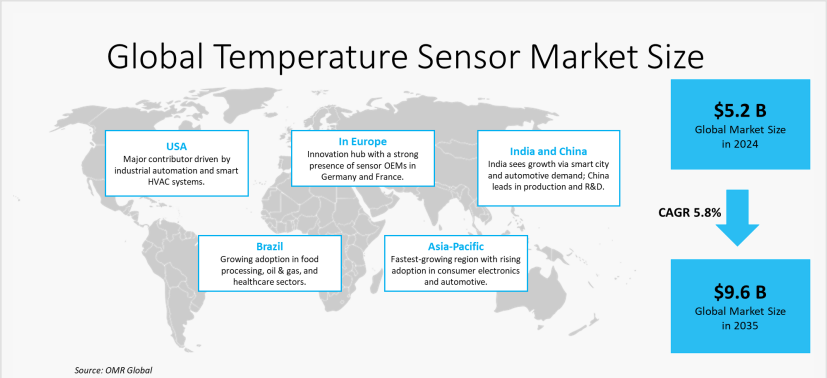
Next-gen industrial systems boost temperature sensor market, set to grow from $5.2B in 2024 at 5.8% CAGR through 2035.

Rising demand for precision monitoring in industrial automation is accelerating growth in the global temperature sensors market.



Temperature Sensor Market

INDORE, INDIA, June 6, 2025 /EINPresswire.com/ -- [Temperature sensor market](https://www.omrglobal.com/industry-reports/temperature-sensor-market) was valued at $5,253.0 million in 2024 and is projected to grow at a CAGR of 5.8% during the forecast period (2025-2035). Temperature sensor market is experiencing rapid growth driven by increasing demand for accuracy in temperature measurement in numerous industries. Rising industrial automation has promoted the extensive use of sensors for real-time monitoring. The healthcare industry is playing a large role in driving demand, particularly driven by increasing utilization of wearable devices and diagnostic equipment. The automotive segment is fitting vehicles with temperature sensors to improve the performance of engines and protect riders. Increasing the focus on energy efficiency in the components of air conditioning systems is contributing to positively affecting market demand. In consumer electronics, the use of temperature sensors is diminishing battery life, as reliability problems with devices. Environmental monitoring efforts globally are increasing sensor deployment at weather stations and in agricultural uses. Sensors have grown smaller, more precise, and cheaper with technological improvements. Smart home and IoT device growth is fueling demand for temperature-sensing solutions. Governments are enforcing strict regulations on food safety and industrial processes, favoring the use of sensors. The oil and gas sector heavily depends on precise temperature information for operational safety. Increased investments in infrastructure development are facilitating the integration of sensor-based systems.

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Market Trends

Increasing Demand in Healthcare and Wearable Devices

Temperature sensor market is growing tremendously, led primarily by increasing demand in the healthcare industry and the emerging wearables adoption. In healthcare, precise temperature tracking is needed for patient treatment, specifically in hospitals, intensive care units, and post-operative recovery. The emphasis on remote patient monitoring and telehealth services further drives the demand for good temperature sensors. Wearable health products have also seen a steep rise in demand, especially those that track vital signs such as body temperature. This aligns closely with the global focus on personal health and fitness. Smartwatches and fitness trackers embedded with temperature sensing capabilities are gaining popularity with consumers who want to know their real-time health metrics. For instance, Fitbit, a popular wearables brand. The Fitbit Sense smartwatch is equipped with a skin temperature sensor that enables individuals to track their health, especially in the case of sickness or a health shift.

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Growing Adoption in Smart Buildings and Energy Management

The temperature sensor market is expanding at a fast pace, fueled primarily by the increasing need for intelligent buildings and energy management systems. As buildings adopt increasingly energy-efficient and intelligent systems, temperature sensors play a key role in measuring and optimizing HVAC systems. Temperature sensors provide real-time temperature adjustment, saving energy and decreasing operating costs. Increased focus on environmental sustainability and the need to attain high levels of energy efficiency have further increased demand for improved temperature sensing technology. Smart city development and promotion of green buildings through government policies have also influenced the market to expand. Temperature sensors provide automatic building control, resulting in enhanced occupant comfort and productivity. IoT connectivity enables predictive maintenance and easy energy monitoring to achieve maximum system life. Wireless and discreet sensor technologies are gaining widespread acceptance to ease of setup and minimum maintenance requirements. Digitalization of facility management is among the drivers for this trend.

Regional Outlook

Strong Presence of Key Market Players in North America

The North America temperature sensor market is experiencing strong growth owing to several important factors. The use of modern technologies in industrial automation is one prime factor for market growth. The rising growth in industrial safety measures, demand for accurate temperature monitoring systems has seen a remarkable surge. The automobile industry in the region is playing a vital role in adopting temperature sensors, particularly in hybrid systems and electric vehicles. Some other rapidly emerging applications are in the healthcare segment, where

temperature sensors play an important role in patient care and diagnostics. Increased use of smart home and building automation technology is among the factors adding to the demand for temperature control devices. Another area that is adding to the increased demand for temperature-sensitive quality systems is the fast-growing food and beverage sector in the region. The increasing demand for wearable devices and personal health monitoring equipment benefits the market. Government regulations on energy efficiency and emission control are compelling businesses to spend more on temperature-measuring technologies. Pharmaceutical and perishable product cold chain logistics are increasing demand. The high density of semiconductor manufacturing bases in North America has compelled additional thermal management solution adoption.

Asia-Pacific Holds Major Market Share

The Asia Pacific temperature sensor market is experiencing high growth as a result of several factors. Industrialization in emerging economies such as China and India has created a high demand for temperature monitoring systems. Growth in the automotive, consumer electronics, and healthcare sectors is also driving market growth. Increased demand for smart home appliances and connected devices is also driving the application of temperature sensors. The area is going through a move towards automation of manufacturing, and this is growing the use of sophisticated sensing technologies. Government efforts favoring industrial growth and digitalization are beneficial to the market. In addition, growing awareness of energy efficiency and environmental monitoring is driving the use of sensors in a variety of applications. Enhanced sensor technology has made the new devices smaller, precise, and affordable. The IoT device boom is generating new avenues for application areas to incorporate temperature sensors. In addition, increasing disposable income is fueling consumer expenditure on smart appliances that frequently depend upon such sensors. For instance, Yokogawa Electric Corp. is a prominent Asia Pacific corp. providing sophisticated temperature sensor solutions, popularly applied throughout the industrial automation and process control industries.

Market Segmentation and Growth Areas

Contact Temperature Sensors Segment is Expected to Dominate the Market, Holding the Largest Share

Temperature sensor market is witnessing significant growth owing to escalating demand for contact temperature sensors. They are also extensively used across industrial, auto, health care, and consumer electronics applications involving accurate measurement of temperature. Contact temperature sensors function by being placed in physical contact with the item whose temperature should be sensed. Their ease of use, affordability, and ease of integration make them an option for industry by industry. Increasing demands for efficient thermal management of electrical equipment continue to propel the application of these sensors even further. Technological innovations have enabled contact temperature sensors to respond faster and with improved accuracy. HVAC, food processing industries, and manufacturing use these sensors

extensively for working safety and to comply with government regulations. Furthermore, the motor vehicle industry also uses them for engine and battery temperature monitoring. For instance, One of the well-known companies supplying contact temperature sensors is Honeywell International Inc. The company has a wide variety of sensors that consist of thermocouples and RTDs (Resistance Temperature Detectors) for standard and harsh environments. Their sensors are famous for accuracy, durability, and compatibility with complex applications. Honeywell sensors are also used in medical equipment to provide patient safety and accurate diagnosis.

The Consumer Electronics Segment is Expected to Capture a Significant Share of the Market

Temperature sensor market is undergoing massive expansion, especially being driven by expanding customer use within electronics. Sensors are key in maintaining the functioning and security of devices, with the control of temperature. While devices are making devices thinner, faster, with innovative-edge technology, it has grown paramount to have them at operational temperatures to avert overheating to extend longevity. Companies are embedding temperature sensors in wearables, tablets, smartphones, and computers to make them rich in features and easy to use. Owing to the requirements of low power consumption and thermal stability in consumer products, the demand for accurate and sensitive sensors has grown exponentially. Miniaturization of sensors allowed sensors to be easily integrated into thin and light electronic devices. Supporting this demand are the expansion in smart home solutions and the Internet of Things (IoT). Customers require electronic products that exhibit high performance despite varying environmental conditions. Temperature sensors help make that a reality with the provision of real-time heat data to management systems. For instance, Texas Instruments, a high-flying brand in the consumer electronics industry with a wide line of temperature sensors. Their solution is extensively adopted in personal electronics for thermal regulation and power control, enabling optimized operation and improved battery life.

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Market Limitations and Challenges

- High Cost of Sophisticated Sensors

The use of sophisticated temperature sensing technologies, such as fiber optic and infrared sensors, is likely to be expensive. High expense may deter adoption, particularly in small and medium-sized businesses, as cost-conscious applications.

- Calibration and Accuracy Issues

Temperature sensors also need to be calibrated from time to time for precision. Physical conditions like electromagnetic interference, mechanical strain, or exposure to corrosive chemicals can cause measurement drift that can affect the reliability of a sensor.

Market Players Outlook

The major companies operating in the global temperature sensor market include ABB Group, Analog Devices, Inc., Honeywell International Inc., Robert Bosch GmbH., and STMicroelectronics N.V. among others. Market players are leveraging partnerships, collaborations, mergers, and acquisition strategies for business expansion and innovative product development to maintain their market positioning. One of the companies to provide temperature sensor products is Texas Instruments Inc. The company offers different temperature sensing solutions, such as analog and digital temperature sensors, for applications in the automotive, industrial, and consumer electronics markets.

Recent Developments

• In December 2024, Yokogawa Electric Corp. announced the release of OpreX™ Subsea Power Cable Monitoring, a system for monitoring cables used in the transmission of electricity generated at offshore wind power facilities. By utilizing Yokogawa's fiber optic temperature sensor, OpreX Subsea Power Cable Monitoring can constantly monitor the temperature of subsea power cables and pinpoint abnormalities. This allows condition-based maintenance, where maintenance is carried out with the best possible timing, minimizing the cost and workload of performing routine inspections and maintenance, as well as the highest possible efficiency of operation.
• In October 2024, Sensirion launched its most cost-effective temperature sensor yet. The STS4L is the latest addition to Sensirion's STS4x temperature sensor series and is the ideal solution for cost and space-sensitive applications. The adapted accuracy specifications it offers top performance and industry-leading lead times. STS4L is a fully digital, highly cost-efficient temperature sensor that is designed to meet the needs of cost and space-sensitive applications, offering accuracy of ±0.4°C. It features enhanced signal processing, three distinctive I^2C addresses, and communication speeds of up to 1 MHz.
• In October 2024, Mitsubishi Electric Corp. launch of a new MelDIR-brand 80×60-pixel thermal-diode infrared sensor (MIR8060C1) with a 100°×73° field of view, more than double that of the company's existing thermal-diode infrared sensors,* to accurately and efficiently identify people and objects. The expanded field of view will reduce the number of sensors required to effectively monitor large areas, contributing to the safety, security, and convenience of solutions for monitoring elderly care facilities and building air-conditioning systems, counting people, and measuring body temperatures.
• In June 2024, ABB introduced a new version of its NINVA™ TSP341-N non-invasive temperature sensor, providing safer and easier temperature measurement for use in chemical, oil, and gas applications. The new NINVA is the global first SIL2-certified non-invasive temperature transmitter and hence the safest non-invasive temperature measuring sensor available. Applying the piping's surface temperature to make an estimate of the process temperature, NINVA gives the same level of precision and performance as a device that takes an invasive measurement without the risk and lifecycle costs involved in specifying, installing, and maintaining it.

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Some of the Key Companies in the Temperature Sensor Market Include-

- ABB Ltd.
- Amphenol Corp.
- DENSO Corp.
- Emerson Electric Co.
- Endress+Hauser AG
- Infineon Technologies AG
- Kongsberg Gruppen ASA
- Microchip Technology Inc.
- Mitsubishi Electric Corp.
- NXP Semiconductors N.V.
- Okazaki Manufacturing Co.
- OMRON Corp.
- Renesas Electronics Corp.
- Sensirion AG
- Siemens AG
- TDK Corp.
- TE Connectivity Corp.
- Texas Instruments Inc.
- Yokogawa Electric Corp.

Temperature Sensor Market Segmentation Analysis

Global Temperature Sensor Market by Material
- Contact Temperature Sensors
  - Thermocouples
  - Resistive Temperature Detectors
  - Thermistors
  - Temperature Sensor ICs
  - Bimetallic Temperature Sensors
- Non-Contact Temperature Sensors
  - Infrared Temperature Sensors
  - Fiber Optic Temperature Sensors

Global Temperature Sensor Market by Connectivity
- Wired
- Wireless

Global Temperature Sensor Market by End-User
- Chemicals
- Oil & Gas

- Consumer Electronics
- Energy & Power
- Healthcare
- Automotive
- Food & Beverages
- Aerospace & Defense

Regional Analysis
- North America
  - United States
  - Canada
- Europe
  - UK
  - Germany
  - Italy
  - Spain
  - France
  - Rest of Europe
- Asia-Pacific
  - China
  - India
  - Japan
  - South Korea
  - ASEAN Economies (Singapore, Thailand, Vietnam, Indonesia, and Other)
  - Australia and New Zealand
  - Rest of Asia-Pacific
- Rest of the World
  - Latin America
  - Middle East and Africa

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