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Global Digital Temperature and Humidity Sensor Market Size Study & Forecast, by Technology (CMOS, MEMS, TFPT), by Packaging Type (SMT and Pin Type), by Application (Powertrain, Body Electronics, Alternative Fuel Vehicle) and Regional Analysis, 2025-2035

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Abstracts

The Global Digital Temperature and Humidity Sensor Market is valued approximately at USD 5.64 billion in 2024 and is anticipated to grow at a CAGR of 8.7% over the forecast period 2025-2035. Digital temperature and humidity sensors are critical components in modern electronics, engineered to deliver accurate environmental measurements across automotive, industrial, and consumer applications. These sensors play a pivotal role in maintaining operational efficiency and safety within systems that rely on real-time climate control and environmental monitoring. The growing demand for energy-efficient and smart sensing solutions across industries such as automotive, consumer electronics, and industrial automation is fueling market growth. Furthermore, the integration of these sensors into Internet of Things (IoT)-enabled devices and the rapid adoption of electric vehicles are significantly expanding the application scope. Continuous innovation in miniaturization and sensor precision has further transformed these devices into essential elements of modern electronics ecosystems.

The accelerated shift toward electrification and connected mobility is acting as a powerful growth catalyst for digital temperature and humidity sensors. These sensors have become indispensable in optimizing powertrain systems, ensuring battery thermal management, and enhancing passenger comfort in modern vehicles. According to the International Energy Agency (IEA), global electric vehicle sales are projected to surpass 17 million units by 2030, driving robust demand for integrated sensor systems.

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Additionally, the expanding use of MEMS and CMOS-based sensing technologies has enabled better sensitivity, faster response times, and reduced energy consumption. However, challenges related to sensor calibration and the complexity of integrating multiple sensing functionalities into compact form factors could temporarily restrain market growth during the early phase of the forecast period. Nonetheless, growing R&D investments and advancements in sensor packaging are expected to unlock substantial opportunities by 2035.

The detailed segments and sub-segments included in the report are:

By Technology:

CMOS

MEMS

TFPT

By Packaging Type:

SMT

Pin Type

By Application:

Powertrain

Body Electronics

Alternative Fuel Vehicle

By Region:

North America

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- U.S.
- Canada

Europe

- UK
- Germany
- France
- Spain
- Italy
- ROE

Asia Pacific

- China
- India
- Japan
- Australia
- South Korea
- RoAPAC

Latin America

- Brazil

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Mexico

Middle East & Africa

UAE

Saudi Arabia

South Africa

Rest of Middle East & Africa

Among the key application segments, Powertrain systems are expected to dominate the global digital temperature and humidity sensor market over the forecast period. The increasing deployment of smart sensors in advanced powertrain architectures, including hybrid and electric vehicles, is driving demand. These sensors play an integral role in regulating engine performance, optimizing combustion processes, and maintaining the thermal stability of batteries and inverters. As automotive manufacturers continue to move toward fully digitalized and sustainable vehicle designs, the incorporation of precise temperature and humidity sensors becomes essential. Moreover, the rise of alternative energy vehicles and the expanding footprint of electric vehicle infrastructure are further fueling this segment's growth, solidifying its leading position in the global market landscape.

MEMS-based sensors currently lead in revenue contribution, driven by their compact design, low power consumption, and ability to deliver high precision under varying environmental conditions. The MEMS segment has witnessed significant technological refinement, enabling manufacturers to integrate sensing, processing, and communication capabilities into single chipsets. This advantage has positioned MEMS sensors as the preferred choice for automotive, industrial, and consumer electronics applications. CMOS sensors, however, are projected to record the fastest growth during the forecast period owing to their cost-effectiveness, scalability, and suitability for mass production. Together, these technologies are shaping the next generation of adaptive sensor systems designed to meet the stringent demands of real-time monitoring and automation.

The key regions considered for the Global Digital Temperature and Humidity Sensor

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Market study include North America, Europe, Asia Pacific, Latin America, and the Middle East & Africa. North America currently dominates the market, attributed to its high adoption rate of advanced automotive technologies, robust industrial infrastructure, and strong presence of leading semiconductor manufacturers. The region's commitment to electric mobility and environmental sustainability continues to fuel technological innovation in sensor design and performance optimization. Conversely, Asia Pacific is poised to emerge as the fastest-growing region during the forecast period, driven by the expansion of automotive production hubs in China, Japan, and India. Increasing investments in semiconductor fabrication, coupled with rising demand for connected vehicles and smart electronics, are further augmenting the region's market potential. Europe follows closely, supported by stringent emission regulations and a growing emphasis on automotive electrification.

Major market players included in this report are:

Texas Instruments Incorporated

Honeywell International Inc.

Sensirion AG

Bosch Sensortec GmbH

STMicroelectronics N.V.

TE Connectivity Ltd.

Infineon Technologies AG

NXP Semiconductors N.V.

Omron Corporation

Amphenol Advanced Sensors

Renesas Electronics Corporation

Analog Devices, Inc.

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Microchip Technology Inc.

Murata Manufacturing Co., Ltd.

Maxim Integrated Products, Inc.

Global Digital Temperature and Humidity Sensor Market Report Scope:

Historical Data – 2023, 2024

Base Year for Estimation – 2024

Forecast period - 2025-2035

Report Coverage - Revenue forecast, Company Ranking, Competitive Landscape, Growth factors, and Trends

Regional Scope - North America; Europe; Asia Pacific; Latin America; Middle East & Africa

Customization Scope - Free report customization (equivalent to up to 8 analysts' working hours) with purchase. Addition or alteration to country, regional & segment scope*

The objective of the study is to define market sizes of different segments & countries in recent years and to forecast the values for the coming years. The report is designed to incorporate both qualitative and quantitative aspects of the industry within the countries involved in the study. The report also provides detailed information about crucial aspects, such as driving factors and challenges, which will define the future growth of the market. Additionally, it incorporates potential opportunities in micro-markets for stakeholders to invest, along with a detailed analysis of the competitive landscape and product offerings of key players. The detailed segments and sub-segments of the market are explained below:

Key Takeaways:

Market Estimates & Forecast for 10 years from 2025 to 2035.

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Annualized revenues and regional-level analysis for each market segment.

Detailed analysis of the geographical landscape with country-level analysis of major regions.

Competitive landscape with information on major players in the market.

Analysis of key business strategies and recommendations on future market approach.

Analysis of the competitive structure of the market.

Demand side and supply side analysis of the market.

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