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India Automotive Temperature Sensor Market By Vehicle Type (Passenger Cars, Commercial Vehicles), By Application (Engine, Exhaust, HVAC, Transmission, Thermal Seats, EV Battery, EV Motor), By Product (Resistance Temperature Detectors (RTD), Thermistor, MEMS, IC Temperature Sensor, Thermocouple, Infrared Temperature Sensor), By Technology (Contact, Non-Contact), By Region, Competition, Opportunities and Forecast, 2021-2031F

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Abstracts

Market Overview:

India Automotive Temperature Sensor Market was valued at USD 380.23 Million in 2025 and is expected to reach USD 545.81 Million by 2031 with a CAGR of 6.21% during the forecast period. The India automotive temperature sensor market is experiencing notable growth driven by rising demand for efficient thermal management in vehicles, integration of advanced electronics, and increasing adoption of electric and hybrid vehicles. These sensors are playing a crucial role in engine control units, battery management systems, HVAC units, and exhaust systems to enhance performance, ensure safety, and comply with emission norms. Supporting this growth, India’s expanding GDP and economic resilience are fostering increased consumer spending, with rising demand for passenger and commercial vehicles further accelerating the need for high-performance automotive sensors across various vehicle segments. For instance, India’s GDP expanded by 6.7% year-on-year in the first quarter of fiscal 2025 (Q2 CY2024), supported by early signs of rural consumption recovery despite mixed overall private consumption trends. However, industrial activity showed signs of

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deceleration, with the Index of Industrial Production (IIP) easing to 4.2% in June 2024 from 6.2% in May.

Market Drivers

Rising Demand for Precision Thermal Management in Modern Vehicles

Modern vehicles require precise thermal regulation to enhance performance, meet emission standards, and prevent overheating in critical systems. Temperature sensors play a vital role in monitoring engine heat, exhaust gases, battery packs, and air-conditioning systems. With the evolution of powertrain technologies and the inclusion of advanced driver-assistance systems (ADAS), managing temperature fluctuations has become essential for reliable and safe vehicle operation. Temperature sensors ensure that engines operate within optimal temperature ranges, protecting against thermal stress and extending component lifespan. For instance, India’s automotive sector is undergoing a pivotal shift with the Ministry of Road Transport and Highways mandating Level 1 ADAS features Advanced Emergency Braking, Driver Drowsiness Warning, and Lane Departure Warning—for new passenger vehicles with more than eight seats and select commercial vehicles starting April 2026, and for existing models by October 2026. This move aims to address India’s high road accident rate and aligns with global safety trends. The mandate is expected to drive major advancements in sensor integration, semiconductor demand, and software localization, supported by government programs.

Key Market Challenges

High Cost of Advanced Sensor Technologies

Cost continues to be a major barrier to the widespread adoption of advanced automotive temperature sensors, especially in the value-sensitive segments. High-precision sensors with features like digital output, integrated diagnostics, and resistance to harsh environmental conditions come at a premium. While these sensors are critical in ensuring safety and performance, the additional cost of integration often limits their adoption in entry-level or budget-focused vehicles. Manufacturers also face increased expenses related to sensor packaging, calibration, testing, and compliance with automotive-grade standards. Miniaturization and the use of high-performance materials like thermistors, RTDs, and semiconductor-based sensors push costs higher, particularly when deployed in high-density electronic environments like EV powertrains or engine control modules. The need for redundancy and multi-point sensing in safety-

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critical applications adds to the cost burden.

Key Market Trends

Adoption of Digital Temperature Sensors with Diagnostic Capabilities

The transition from analog to digital temperature sensors is gaining momentum in the automotive industry due to improved accuracy, faster response, and enhanced integration with electronic control units. Digital sensors can transmit data directly to microcontrollers or vehicle networks without the need for signal conversion, reducing noise interference and improving measurement reliability. Built-in diagnostic features allow these sensors to monitor their own performance, detect anomalies, and trigger alerts in case of malfunction. This is particularly valuable in applications such as battery thermal management, ADAS systems, and powertrain control, where early fault detection can prevent system failures. Digital sensors also enable real-time data logging and remote monitoring in connected vehicle ecosystems, supporting predictive maintenance strategies. The ability to configure threshold limits and access sensor status through onboard diagnostics aligns with the increasing focus on vehicle safety and system transparency.

Key Market Players

Robert Bosch GmbH

Continental AG

Delphi Technologies

Denso Corporation

Sensata Technologies, Inc.

NXP Semiconductors

Panasonic Corporation

Microchip Technology Inc.

Valeo SA

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Balluff Automation

Report Scope:

In this report, the India Automotive Temperature Sensor Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

India Automotive Temperature Sensor Market, By Vehicle Type:

Passenger Cars

Commercial Vehicles

India Automotive Temperature Sensor Market, By Application:

Engine

Exhaust

HVAC

Transmission

Thermal Seats

EV Battery

EV Motor

India Automotive Temperature Sensor Market, By Product:

Resistance Temperature Detectors (RTD)

Thermistor

MEMS

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IC Temperature Sensor

Thermocouple

Infrared Temperature Sensor

India Automotive Temperature Sensor Market, By Technology:

Contact

Non-Contact

India Automotive Temperature Sensor Market, By Region:

North

South

East

West

Competitive Landscape

Company Profiles: Detailed analysis of the major companies presents in the India Automotive Temperature Sensor Market.

Available Customizations:

India Automotive Temperature Sensor Market report with the given market data, TechSci Research offers customizations according to the company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional market players (up to five).

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