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Global Integrated Temperature and Pressure Sensor for Automotive Supply, Demand and Key Producers, 2026-2032

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Abstracts

The global Integrated Temperature and Pressure Sensor for Automotive market size is expected to reach $ 717 million by 2032, rising at a market growth of 4.2% CAGR during the forecast period (2026-2032).

An Integrated Temperature and Pressure Sensor for Automotive is a vehicle-grade integrated sensor used to measure both pressure and temperature in automotive systems. It typically integrates a pressure sensing element, a temperature sensing element, signal conditioning circuitry, a housing, and an electrical interface within the same sensor module. The sensor monitors gases, liquids, oils, or refrigerants in systems such as the engine, fuel system, intake and exhaust system, thermal management system, air conditioning or heat pump system, and new energy vehicle fluid circuits. It converts pressure and temperature changes into analog or digital signals that can be recognized by the electronic control unit, supporting vehicle control, fault diagnosis, safety protection, and energy efficiency management. In 2025, global production of Integrated Temperature and Pressure Sensors for Automotive reached 69.95 million units, with an average selling price of USD 7.5 per unit.

Integrated Temperature and Pressure Sensors for Automotive are compound integrated products within the automotive sensor industry. Their core value lies in integrating pressure measurement and temperature measurement into a single module, thereby reducing installation space, wiring interfaces, and the number of input channels required by vehicle control units. These sensors also improve real-time monitoring capabilities in engines, fuel systems, intake and exhaust systems, thermal management systems, air conditioning and heat pump systems, and new energy vehicle fluid circuits. Industry demand is mainly driven by automotive electrification, stricter emission regulations,

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more precise engine control, increasingly complex thermal management systems, and growing requirements for heat pump systems and battery safety monitoring in new energy vehicles.

In terms of product structure, Integrated Temperature and Pressure Sensors for Automotive can be classified by application system into engine system sensors, fuel system sensors, intake and exhaust system sensors, thermal management and air conditioning system sensors, and new energy vehicle battery and heat pump system sensors. By pressure sensing technology, they can be divided into piezoresistive, capacitive, piezoelectric, fiber optic, and other types, with MEMS silicon piezoresistive, ceramic piezoresistive, and related integrated packaging solutions remaining the mainstream technologies in mass-production automotive applications. By market fitment type, OEM fitment accounts for the majority of demand, while the aftermarket mainly comes from replacement parts, spare parts channels, and branded service networks. In terms of application structure, internal combustion engine vehicles continue to generate baseline demand from engine, fuel, intake and exhaust, and air conditioning systems, while new energy vehicles are driving growth in refrigerant circuits, heat pump systems, battery pack thermal safety, and coolant circuit applications.

From a regional perspective, European, Japanese, and U.S. suppliers still maintain strong advantages in high-reliability automotive sensors, pressure chips, ASICs, packaging design, and OEM qualification. China, Mexico, Eastern Europe, and Southeast Asia are taking on more localized manufacturing demand from vehicle and component production. The Chinese market is growing relatively quickly, supported by rising new energy vehicle output, increasing thermal management complexity, and the expansion of local Tier 1 suppliers. However, high-end pressure chips, automotive-grade ASICs, and certain high-precision packaging capabilities still involve foreign-invested and joint-venture supply chains. The competitive landscape is relatively concentrated. Leading companies typically have capabilities in pressure sensing element design, signal conditioning chip matching, automotive-grade packaging, automated calibration and testing, and long-term OEM qualification, while smaller suppliers are more active in the aftermarket, low-pressure lines, non-core operating conditions, or local substitution projects.

In terms of cost structure, the main costs of Integrated Temperature and Pressure Sensors for Automotive include pressure sensing elements, temperature sensing elements, ASICs or signal conditioning circuits, plastic or metal housings, connectors, seals, automated assembly, combined temperature and pressure calibration, reliability testing, and automotive quality management. Among these, chips and sensing

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elements, packaging structures, and calibration testing are the key factors affecting cost and yield. Manufacturing processes generally include automated assembly, welding or bonding, packaging, leak testing, combined temperature and pressure calibration, and final inspection. A typical single production line has an annual capacity of 1.5 million to 3 million units, while highly automated lines operated by leading suppliers can reach 3 million to 5 million units per year. Industry gross margins are generally 20% to 35%, with higher margins for high-precision, high-temperature and high-pressure, refrigerant-compatible, and new energy vehicle thermal management products, while standardized aftermarket replacement products usually have lower margins.

Overall, the Integrated Temperature and Pressure Sensor for Automotive industry is developing from single-parameter measurement toward multi-parameter integration, digital output, miniaturized packaging, and system-level adaptation. Future growth will mainly come from the penetration of heat pump systems in new energy vehicles, the application of new refrigerants such as CO? and R290, more refined engine and emission control, upgrades in vehicle electrical and electronic architecture, and local supply chain substitution. At the same time, industry entry barriers are rising. Competition is no longer limited to hardware price, but increasingly centers on automotive-grade reliability, long-term stability, combined temperature and pressure calibration capability, software compensation algorithms, OEM platform qualification cycles, and global delivery capability.

This report studies the global Integrated Temperature and Pressure Sensor for Automotive production, demand, key manufacturers, and key regions.

This report is a detailed and comprehensive analysis of the world market for Integrated Temperature and Pressure Sensor for Automotive and provides market size (US$ million) and Year-over-Year (YoY) Growth, considering 2025 as the base year. This report explores demand trends and competition, as well as details the characteristics of Integrated Temperature and Pressure Sensor for Automotive that contribute to its increasing demand across many markets.

Highlights and key features of the study
Global Integrated Temperature and Pressure Sensor for Automotive total production and demand, 2021-2032, (K Units)
Global Integrated Temperature and Pressure Sensor for Automotive total production value, 2021-2032, (USD Million)
Global Integrated Temperature and Pressure Sensor for Automotive production by region & country, production, value, CAGR, 2021-2032, (USD Million) & (K Units),

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(based on production site)
Global Integrated Temperature and Pressure Sensor for Automotive consumption by region & country, CAGR, 2021-2032 & (K Units)
U.S. VS China: Integrated Temperature and Pressure Sensor for Automotive domestic production, consumption, key domestic manufacturers and share
Global Integrated Temperature and Pressure Sensor for Automotive production by manufacturer, production, price, value and market share 2021-2026, (USD Million) & (K Units)
Global Integrated Temperature and Pressure Sensor for Automotive production by Type, production, value, CAGR, 2021-2032, (USD Million) & (K Units)
Global Integrated Temperature and Pressure Sensor for Automotive production by Application, production, value, CAGR, 2021-2032, (USD Million) & (K Units)

This report profiles key players in the global Integrated Temperature and Pressure Sensor for Automotive market based on the following parameters - company overview, production, value, price, gross margin, product portfolio, geographical presence, and key developments. Key companies covered as a part of this study include Bosch, Sensata Technologies, DENSO, Schaeffler, TE Connectivity, Valeo, Amphenol, Shanghai Baolong Automotive, Shenzhen Ampron Technology, Wuhan Fine MEMS, etc.

This report also provides key insights about market drivers, restraints, opportunities, new product launches or approvals.

Stakeholders would have ease in decision-making through various strategy matrices used in analyzing the World Integrated Temperature and Pressure Sensor for Automotive market

Detailed Segmentation:

Each section contains quantitative market data including market by value (US$ Millions), volume (production, consumption) & (K Units) and average price (US$/Unit) by manufacturer, by Type, and by Application. Data is given for the years 2021-2032 by year with 2025 as the base year, 2026 as the estimate year, and 2027-2032 as the forecast year.

Global Integrated Temperature and Pressure Sensor for Automotive Market, By Region:

United States

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China

Europe

Japan

South Korea

ASEAN

India

Rest of World

Global Integrated Temperature and Pressure Sensor for Automotive Market, Segmentation by Type:

Absolute Pressure Type

Gauge Pressure Type

Differential Pressure Type

Global Integrated Temperature and Pressure Sensor for Automotive Market, Segmentation by Sensing Technology:

Piezoresistive Type

Capacitive Type

Piezoelectric Type

Fiber Optic Type

Others

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Global Integrated Temperature and Pressure Sensor for Automotive Market, Segmentation by Market Fitment Type:

OEM

Aftermarket

Global Integrated Temperature and Pressure Sensor for Automotive Market, Segmentation by Application:

Fuel Vehicles

Electric Vehicles

Companies Profiled:

Bosch

Sensata Technologies

DENSO

Schaeffler

TE Connectivity

Valeo

Amphenol

Shanghai Baolong Automotive

Shenzhen Ampron Technology

Wuhan Fine MEMS

Bridgeport Intelligent Technology (Hangzhou)

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Shanghai Sinotec

TEMB Intelligent Technology

Key Questions Answered:
1. How big is the global Integrated Temperature and Pressure Sensor for Automotive market?
2. What is the demand of the global Integrated Temperature and Pressure Sensor for Automotive market?
3. What is the year over year growth of the global Integrated Temperature and Pressure Sensor for Automotive market?
4. What is the production and production value of the global Integrated Temperature and Pressure Sensor for Automotive market?
5. Who are the key producers in the global Integrated Temperature and Pressure Sensor for Automotive market?
6. What are the growth factors driving the market demand?

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