

Force Sensors Market - Forecast from 2026 to 2031

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Abstracts

The force sensors market is projected to expand at a 5.61% CAGR, attaining USD 2.7 billion in 2031 from USD 1.946 billion in 2025.

The force sensors market is witnessing heightened demand driven by accelerating industrial automation across global manufacturing sectors. Increasing automotive production is integrating force sensors to enhance vehicle safety and performance features. Expanding oil & gas operations are leveraging these sensors for real-time monitoring and control of equipment. Additionally, the rising adoption of piezoelectric sensors is delivering superior precision in healthcare and chemical applications.

Force sensors convert applied mechanical forces—such as tension and compression—into electrical signals proportional to the force magnitude, serving as critical inputs for process control and equipment management. Their growing integration in heavy automotive vehicles, including construction and extraction machinery, helps prevent component fatigue failure through overload monitoring. Broadening applications in automotive and industrial automation remain primary catalysts for market expansion.

Key growth drivers include the surge in industrial automation, where force and torque sensors enable precise robotic tasks such as deburring, sanding, polishing, packing, assembly lines, and quality inspection. The advancement of Industry 4.0 has normalized the fusion of mechanics, robotics, and control systems on manufacturing floors to optimize productivity, efficiency, and costs.

The escalating need for piezoelectric force sensors across diverse industries further propels growth. These sensors offer exceptional sensitivity and accuracy, making them preferred in chemical processing, healthcare—such as blood pressure monitors, infusion pumps, ultrasound imaging, and muscle-movement detection for prosthetic control—and oil & gas operations.

High demand within the automotive sector significantly expands market size. Force sensors monitor centripetal forces during vehicle maneuvers to bolster driver safety. Rising global automobile sales and production volumes create substantial opportunities.

In the oil & gas industry, force sensors are extensively deployed for accurate measurement in drilling, wellbore stability assessment, pipeline monitoring, and equipment performance tracking. Real-time data enables informed decision-making, operational efficiency gains, and enhanced safety amid growing energy demands, new reserve exploration, and refining investments.

Geographically, North America is projected to dominate the market during the forecast period. This leadership stems from the region's concentration of major automotive manufacturers and ongoing technological advancements that drive force sensor incorporation into vehicle design, safety systems, and performance optimization. In 2022, leading North American economies—the USA, Canada, and Mexico—recorded a notable 10% year-over-year increase in commercial vehicle production.

Market restraints primarily revolve around high costs and precision limitations. Integrating multiple functionalities into compact sensors poses technical and financial hurdles, requiring extensive research and development to align with evolving demands. Additionally, repeatability issues—where successive readings may vary by 10% or more—hinder broader adoption and growth.

Prominent offerings in the sector include the HSFPAR Series from ALPS ALPINE CO., LTD, a line of compact, highly sensitive load detection sensors suitable for applications like load monitoring and water depth detection. These surface-mount or connector-equipped devices deliver reliable performance in space-constrained environments, offering versatility across systems.

Honeywell International Inc. provides the 1865 Series, advanced transducers designed for medical and specialized OEM uses. Featuring laser-trimmed compensation and compatibility with constant current or voltage supplies, these plastic-encased, solid-state piezoresistive sensors excel in scenarios involving force application via flexible membranes.

Overall, the force sensors market is advancing steadily, supported by automation trends, sector-specific precision requirements, and cross-industry integration, despite challenges related to cost and accuracy that continue to shape development priorities.

Key Benefits of this Report:

Insightful Analysis: Gain detailed market insights covering major as well as emerging geographical regions, focusing on customer segments, government policies and socio-economic factors, consumer preferences, industry verticals, and other sub-segments.

Competitive Landscape: Understand the strategic maneuvers employed by key players globally to understand possible market penetration with the correct strategy.

Market Drivers & Future Trends: Explore the dynamic factors and pivotal market trends and how they will shape future market developments.

Actionable Recommendations: Utilize the insights to exercise strategic decisions to uncover new business streams and revenues in a dynamic environment.

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Report Coverage:

Historical data from 2021 to 2025 & forecast data from 2026 to 2031

Growth Opportunities, Challenges, Supply Chain Outlook, Regulatory Framework, and Trend Analysis

Competitive Positioning, Strategies, and Market Share Analysis

Revenue Growth and Forecast Assessment of segments and regions including

countries

Company Profiling (Strategies, Products, Financial Information, and Key Developments among others.

Force Sensors Market Segmentation

By Type

Inductive Force Sensors

Capacitive Force Sensors

Piezoelectric Force Sensors

Others

By Input Type

Weight

Torque

Tension

Others

By End-User

Chemical

Oil & Gas

Power & Energy

Others

By Geography

North America

USA

Canada

Mexico

South America

Brazil

Argentina

Others

Europe

Germany

France

United Kingdom

Spain

Others

Middle East and Africa

Saudi Arabia

UAE

Others

Asia Pacific

China

India

Japan

South Korea

Indonesia

Thailand

Others

Contents

1. EXECUTIVE SUMMARY

2. MARKET SNAPSHOT

- 2.1. Market Overview
- 2.2. Market Definition
- 2.3. Scope of the Study
- 2.4. Market Segmentation

3. BUSINESS LANDSCAPE

- 3.1. Market Drivers
- 3.2. Market Restraints
- 3.3. Market Opportunities
- 3.4. Porter's Five Forces Analysis
- 3.5. Industry Value Chain Analysis
- 3.6. Policies and Regulations
- 3.7. Strategic Recommendations

4. TECHNOLOGICAL OUTLOOK

5. FORCE SENSORS MARKET BY TYPE

- 5.1. Introduction
- 5.2. Inductive Force Sensors
- 5.3. Capacitive Force Sensors
- 5.4. Piezoelectric Force Sensors
- 5.5. Others

6. FORCE SENSORS MARKET BY INPUT TYPE

- 6.1. Introduction
- 6.2. Weight
- 6.3. Torque
- 6.4. Tension
- 6.5. Others

7. FORCE SENSORS MARKET BY END-USER

- 7.1. Introduction
- 7.2. Chemical
- 7.3. Oil & Gas
- 7.4. Power & Energy
- 7.5. Others

8. FORCE SENSORS MARKET BY GEOGRAPHY

- 8.1. Introduction
- 8.2. North America
 - 8.2.1. USA
 - 8.2.2. Canada
 - 8.2.3. Mexico
- 8.3. South America
 - 8.3.1. Brazil
 - 8.3.2. Argentina
 - 8.3.3. Others
- 8.4. Europe
 - 8.4.1. Germany
 - 8.4.2. France
 - 8.4.3. United Kingdom
 - 8.4.4. Spain
 - 8.4.5. Others
- 8.5. Middle East and Africa
 - 8.5.1. Saudi Arabia
 - 8.5.2. UAE
 - 8.5.3. Others
- 8.6. Asia Pacific
 - 8.6.1. China
 - 8.6.2. India
 - 8.6.3. Japan
 - 8.6.4. South Korea
 - 8.6.5. Indonesia
 - 8.6.6. Thailand
 - 8.6.7. Others

9. COMPETITIVE ENVIRONMENT AND ANALYSIS

- 9.1. Major Players and Strategy Analysis
- 9.2. Market Share Analysis
- 9.3. Mergers, Acquisitions, Agreements, and Collaborations
- 9.4. Competitive Dashboard

10. COMPANY PROFILES

- 10.1. Honeywell International Inc
- 10.2. ALPS ALPINE CO., LTD.
- 10.3. FUTEK Advanced Sensor Technology, Inc.
- 10.4. Kistler Group
- 10.5. Variohm
- 10.6. TE Connectivity
- 10.7. FSRTEK CO., LTD.
- 10.8. Tekscan, Inc.
- 10.9. Flintec
- 10.10. WIKA Instruments India Pvt. Ltd

11. APPENDIX

- 11.1. Currency
- 11.2. Assumptions
- 11.3. Base and Forecast Years Timeline
- 11.4. Key Benefits for the Stakeholders
- 11.5. Research Methodology
- 11.6. Abbreviations

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