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Global Six- Dimensional Force Sensors for Robots Market Research Report 2026(Status and Outlook)

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Abstracts

Six-Dimensional Force Sensors is a special force sensor that can simultaneously measure three forces (FX, FY, FZ) and three moments (MX, MY, MZ) in a neutral coordinate system. It is widely used in robot control, mechanical experiments, scientific research and other fields, and is also one of the commonly used sensors in industrial robots.The six-dimensional force sensor originated from the aerospace industry and is used to measure the aerodynamic characteristics of aircraft, including lift, drag, lateral force, pitch moment, yaw moment and roll moment. Since the orthogonal three-directional forces and three-directional moments need to be measured simultaneously, the six-dimensional force sensor came into being. With the public's knowledge of the comprehensive mechanical measurement advantages of the six-dimensional force sensor and the rapid development of technology, the application field of the six-dimensional force sensor has gradually expanded to detection, prevention, control, teaching, measurement, protection and other scenarios.Since Musk proposed the concept of humanoid robots in 2021, the six-dimensional force sensor market has ushered in rapid development. According to the latest research data from QYR, the global sales of six-dimensional force sensors will be nearly 60,000 sets in 2024, of which China's sales will be about 17,000 sets, a year-on-year increase of more than 40%. It is estimated that by 2030, the global market sales will reach 820,000 sets, and China's sales will reach 300,000 sets, with a compound annual sales growth rate of 60% from 2025 to 2030. At present, the global six-dimensional force sensor industry market is dominated by ATI Industrial Automation, Schunk, Advanced Mechanical Technology, etc., occupying the global core market. Chinese manufacturers such as Yuli Instruments, Kunwei Technology, and Xinjingcheng have also ushered in explosive growth. In 2024, the world's top five manufacturers will account for more than 60% of the market.According to different measurement principles, they can be divided into photoelectric, strain, capacitive, piezoelectric and other types. Among all force sensors,

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strain force sensors are the most widely used, and their usage accounts for more than 80% of the total force sensors. At present, companies that use strain force sensors include ATI Industrial Automation, Schunk, ME-Me?systeme, Sintokogioand almost all players in China.At present, six-dimensional force sensors are widely used in collision tests, wheel hubs, seats and other parts tests in the automotive industry, as well as in many scientific and technological fields such as aerospace vehicles, biomechanics, medical fields, scientific research experiments, robots and industrial automation. Among downstream applications, the application scale of industrial automation (including traditional robots) accounts for the largest proportion, but the application scale of humanoid robots grows fastest. According to the latest data from QYR, the global compound annual growth rate of humanoid robots from 2025 to 2030 will reach 104%. In the long run, the mass production of humanoid robots will be a major source of growth for the six-dimensional force sensor market. The application scenarios of six-dimensional force sensors in traditional robots include force control, force feedback, quality inspection, and dynamic control; the application scenarios in humanoid robots include force control, swing stability control, and safety control. Six-dimensional force sensors can improve the refinement and flexibility of humanoid robot hand operations and the stability of foot walking. They are mainly installed at the end parts of wrists and ankles, and have become the standard of high-performance humanoid robots.Dimensional force sensors are the highest-dimensional force sensors. With their advantages of high precision, high sensitivity, high bandwidth, and high reliability, they can provide the most comprehensive force information and improve sensing accuracy. They play a vital role in many high-tech fields. With the continuous advancement of technology and the continuous expansion of downstream application fields, the six-dimensional force sensor market will usher in broad development prospects.

The global Six- Dimensional Force Sensors for Robots market size was estimated at USD 240.0 million in 2025 and is projected to grow at a compound annual growth rate (CAGR) of 43.80% during the forecast period.

This report offers a comprehensive and in-depth analysis of the global Six- Dimensional Force Sensors for Robots market, covering all critical facets from a broad macroeconomic overview to detailed micro-level insights. It examines market size, competitive landscape, emerging development trends, niche segments, key drivers and challenges, as well as conducts SWOT and value chain analyses.

The insights provided enable readers to understand the competitive dynamics within the industry and formulate effective strategies to enhance profitability and market

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positioning. Additionally, the report presents a clear framework for evaluating the current status and future outlook of business organizations operating in this sector.

A significant focus of this report lies in the competitive landscape of the global Six-Dimensional Force Sensors for Robots market. It offers detailed profiles of major players, including their market shares, performance metrics, product portfolios, and operational status. This enables stakeholders to identify leading competitors and gain a nuanced understanding of market rivalry and structure.

In summary, this report serves as an essential resource for industry participants, investors, researchers, consultants, and business strategists, as well as anyone planning to enter or expand their presence in the Six- Dimensional Force Sensors for Robots market.

Global Six- Dimensional Force Sensors for Robots Market: Market Segmentation Analysis

This research report provides a detailed segmentation of the market by region (country), key manufacturers, product type, and application. Market segmentation divides the overall market into distinct subsets based on factors such as product categories, end-user industries, geographic locations, and other relevant criteria.

A clear understanding of these market segments enables decision-makers to tailor their product development, sales, and marketing strategies more effectively to meet the unique needs of each segment. Leveraging market segmentation insights can significantly enhance targeted approaches, optimize resource allocation, and accelerate product innovation cycles by aligning offerings with the specific demands of diverse customer groups.

Key Company

ATI Industrial Automation
Schunk
Advanced Mechanical Technology
Sunrise Instruments (SRI)
Kistler
Robotiq
Epson
Nordbo Robotics

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ME-Me?systeme
Wacoh-Tech
Kunwei Beijing Technology
Shenzhen Xinjingcheng Sensing Technolog
Robotous
FUTEK
Blue Point Touch (Beijing) Technology
Bota Systems
FANUC
Changzhou Right Measurement and control system
Hypersen Technologies
Sintokogio
Anhui Zhongke Mi Point Sensor
Nanjing Bio-inspired Intelligent Technology
Aidin Robotics
OnRobot
Guangzhou Haozhi Industrial
Anhui Bioforcen Intelligent Technology
Chongqing Luban Robotics Technology Research Institute
Shenzhen Jia'an Intelligent Technology
Torque Sensor Technology (Shenzhen)
Keli Sensing Technolgy(Ningbo)

Market Segmentation (by Type)

Strain Gauge Type
Piezoelectric/Capacitive Type
Others

Market Segmentation (by Application)

Industrial Robots
Medical Robots
Humanoid Robots
Others

Geographic Segmentation

North America (USA, Canada, Mexico)

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Europe (Germany, UK, France, Russia, Italy, Rest of Europe)
Asia-Pacific (China, Japan, South Korea, India, Southeast Asia, Rest of Asia-Pacific)
South America (Brazil, Argentina, Columbia, Rest of South America)
The Middle East and Africa (Saudi Arabia, UAE, Egypt, Nigeria, South Africa, Rest of MEA)

Key Benefits of This Market Research:

Industry drivers, restraints, and opportunities covered in the study
Neutral perspective on the market performance
Recent industry trends and developments
Competitive landscape & strategies of key players
Potential & niche segments and regions exhibiting promising growth covered
Historical, current, and projected market size, in terms of value
In-depth analysis of the Six- Dimensional Force Sensors for Robots Market
Overview of the regional outlook of the Six- Dimensional Force Sensors for Robots Market:

Customization of the Report

In case of any queries or customization requirements, please connect with our sales team, who will ensure that your requirements are met.

Chapter Outline

Chapter 1 mainly introduces the statistical scope of the report, market division standards, and market research methods.

Chapter 2 is an executive summary of different market segments (by region, product type, application, etc), including the market size of each market segment, future development potential, and so on. It offers a high-level view of the current state of the Six- Dimensional Force Sensors for Robots Market and its likely evolution in the short to mid-term, and long term.

Chapter 3 makes a detailed analysis of the market's competitive landscape of the market and provides the market share, capacity, output, price, latest development plan, merger, and acquisition information of the main manufacturers in the market.

Chapter 4 is the analysis of the whole market industrial chain, including the upstream

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and downstream of the industry, as well as Porter's five forces analysis.

Chapter 5 introduces the latest developments of the market, the driving factors and restrictive factors of the market, the challenges and risks faced by manufacturers in the industry, and the analysis of relevant policies in the industry.

Chapter 6 provides the analysis of various market segments according to product types, covering the market size and development potential of each market segment, to help readers find the blue ocean market in different market segments.

Chapter 7 provides the analysis of various market segments according to application, covering the market size and development potential of each market segment, to help readers find the blue ocean market in different downstream markets.

Chapter 8 provides a quantitative analysis of the market size and development potential of each region and its main countries and introduces the market development, future development prospects, market space, and capacity of each country in the world.

Chapter 9 shares the main producing countries of Six- Dimensional Force Sensors for Robots, their output value, profit level, regional supply, production capacity layout, etc. from the supply side.

Chapter 10 introduces the basic situation of the main companies in the market in detail, including product sales revenue, sales volume, price, gross profit margin, market share, product introduction, recent development, etc.

Chapter 11 provides a quantitative analysis of the market size and development potential of each region in the next five years.

Chapter 12 provides a quantitative analysis of the market size and development potential of each market segment in the next five years.

Chapter 13 is the main points and conclusions of the report.

Key Reasons to Buy this Report:

Access to date statistics compiled by our researchers. These provide you with historical and forecast data, which is analyzed to tell you why your market is set to change
This enables you to anticipate market changes to remain ahead of your competitors

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You will be able to copy data from the Excel spreadsheet straight into your marketing plans, business presentations, or other strategic documents
The concise analysis, clear graph, and table format will enable you to pinpoint the information you require quickly
Provision of market value data for each segment and sub-segment
Indicates the region and segment that is expected to witness the fastest growth as well as to dominate the market
Analysis by geography highlighting the consumption of the product/service in the region as well as indicating the factors that are affecting the market within each region
Competitive landscape which incorporates the market ranking of the major players, along with new service/product launches, partnerships, business expansions, and acquisitions in the past five years of companies profiled
Extensive company profiles comprising of company overview, company insights, product benchmarking, and SWOT analysis for the major market players
The current as well as the future market outlook of the industry concerning recent developments which involve growth opportunities and drivers as well as challenges and restraints of both emerging as well as developed regions
Includes in-depth analysis of the market from various perspectives through Porter?s five forces analysis
Provides insight into the market through Value Chain
Market dynamics scenario, along with growth opportunities of the market in the years to come
6-month post-sales analyst support

Customization of the Report

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