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Global Robots and Dexterous Hand Operational Force Intelligent Testing Equipment Market 2026 by Manufacturers, Regions, Type and Application, Forecast to 2032

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Abstracts

According to our (Global Info Research) latest study, the global Robots and Dexterous Hand Operational Force Intelligent Testing Equipment market size was valued at US$ 0.15 million in 2025 and is forecast to a readjusted size of US$ 3.50 million by 2032 with a CAGR of 14.6% during review period.

A dexterous hand is a high-degree-of-freedom robotic end effector that simulates the functions of a human hand. It represents a crucial research direction within the embodied intelligence industry chain and is often referred to as the 'last mile' in robotic applications. However, its high cost, susceptibility to damage, and significant engineering challenges have hampered the global robotics industry. The Dexterous Hand Full Operation Force Dynamic Detection Platform integrates multiple force sensing technologies, a six-axis collaborative robotic arm, and an intelligent control system. It enables precise dynamic detection of eight core operational forces in a dexterous hand, covering the performance evaluation needs of various dexterous hand movements. This device employs high-precision force sensors and real-time feedback technology to construct a dynamic detection system for the operational force implementation efficiency of a dexterous hand. It integrates core functional modules such as fingertip force, gripping force, and retrieval force, achieving quantitative evaluation of operational mechanical performance. Its static force detection accuracy error is ?±1%FS, dynamic force detection repeatability error is ?±1.5%FS, and response time is ?10ms. It achieves industry-leading levels in accuracy, speed, and reliability, solving the core bottlenecks of 'inaccurate, incomplete, and slow measurement' in the industrialization of dexterous hands. It is a Dexterous Hand Full

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Operation Force Dynamic Detection Platform. On December 22, 2025, Kailong High-Tech's intelligent detection equipment for dexterous hand manipulation force was launched for the first time. Downstream customers, including Wuxi Lingzhang Robotics Technology Co., Ltd., China Machinery Worldwide Certification & Inspection Co., Ltd., and Hubei Jingchu Humanoid Robotics Co., Ltd., have already established partnerships. It is estimated that 3 units of the Robots and Dexterous Hand Operational Force Intelligent Testing Equipment will be signed globally in 2025, with an average price of approximately US$50,000 per unit and a gross profit margin of approximately 50%.

As robotics enters the era of 'embodied intelligence,' dexterous hands and tactile sensing technology have become core indicators for measuring a robot's actual operational capabilities. Intelligent force detection equipment enables robots to achieve force feedback, adaptive grasping, and flexible control in complex environments, thus attracting widespread attention in precision assembly in electronic manufacturing, collaborative production lines, human-robot collaboration scenarios, and medical surgical robots. Global manufacturing demands higher requirements for quality control, flexible production, and safe interaction of automated equipment, making force/torque sensing-based intelligent detection equipment an indispensable module in robot end-effector control systems. However, dexterous hand force detection technology still faces challenges in terms of cost, accuracy, and anti-interference. High-precision multi-degree-of-freedom force/torque sensors require high stability in complex environments, complex system integration, and adaptation to robot control algorithms. Furthermore, the cost and maintenance difficulty of detection equipment are higher than traditional sensors, which to some extent inhibits rapid penetration into the low-to-mid-end market. In addition, the lack of unified industry standards leads to poor compatibility between different brands, reducing downstream procurement efficiency. In conclusion, technological barriers, quality consistency, and supply chain stability will continue to be key risks restricting the industry's accelerated expansion. Downstream demand is expanding from traditional industrial automation to more personalized and high-precision application scenarios. High-value-added market segments, represented by collaborative dexterous hands, service robots, medical robots, and humanoid robots, are placing higher demands on the flexible force feedback capabilities of intelligent manipulative force detection equipment. This is driving product evolution towards high precision, multi-dimensional perception, real-time feedback, and the integration of intelligent algorithms. Simultaneously, as the integration of AI and vision technologies into robot operating systems matures, manipulative force detection equipment is upgrading from simple hardware components to intelligent sensing modules, becoming a core component of the robot system's perception layer.

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This report is a detailed and comprehensive analysis for global Robots and Dexterous Hand Operational Force Intelligent Testing Equipment market. Both quantitative and qualitative analyses are presented by manufacturers, by region & country, by Type and by Application. As the market is constantly changing, this report explores the competition, supply and demand trends, as well as key factors that contribute to its changing demands across many markets. Company profiles and product examples of selected competitors, along with market share estimates of some of the selected leaders for the year 2025, are provided.

Key Features:

Global Robots and Dexterous Hand Operational Force Intelligent Testing Equipment market size and forecasts, in consumption value ($ Million), sales quantity (Units), and average selling prices (K US$/Unit), 2021-2032

Global Robots and Dexterous Hand Operational Force Intelligent Testing Equipment market size and forecasts by region and country, in consumption value ($ Million), sales quantity (Units), and average selling prices (K US$/Unit), 2021-2032

Global Robots and Dexterous Hand Operational Force Intelligent Testing Equipment market size and forecasts, by Type and by Application, in consumption value ($ Million), sales quantity (Units), and average selling prices (K US$/Unit), 2021-2032

Global Robots and Dexterous Hand Operational Force Intelligent Testing Equipment market shares of main players, shipments in revenue ($ Million), sales quantity (Units), and ASP (K US$/Unit), 2021-2026

The Primary Objectives in This Report Are:

To determine the size of the total market opportunity of global and key countries
To assess the growth potential for Robots and Dexterous Hand Operational Force Intelligent Testing Equipment
To forecast future growth in each product and end-use market
To assess competitive factors affecting the marketplace
This report profiles key players in the global Robots and Dexterous Hand Operational Force Intelligent Testing Equipment market based on the following parameters - company overview, sales quantity, revenue, price, gross margin, product portfolio, geographical presence, and key developments. Key companies covered as a part of

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this study include Kailong High-Tech, etc.
This report also provides key insights about market drivers, restraints, opportunities, new product launches or approvals.

Market Segmentation

Robots and Dexterous Hand Operational Force Intelligent Testing Equipment market is split by Type and by Application. For the period 2021-2032, the growth among segments provides accurate calculations and forecasts for consumption value by Type, and by Application in terms of volume and value. This analysis can help you expand your business by targeting qualified niche markets.

Market segment by Type

Static Force Testing

Dynamic Force Testing

Market segment by Equipment

Embedded Module

Standalone Unit

Market segment by Sales

Direct Selling

Distribution

Market segment by Application

Industrial Robotics

Collaborative Robots

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Humanoid Robots

Medical / Surgical Robotics

Others

Major players covered

Kailong High-Tech

Market segment by region, regional analysis covers

North America (United States, Canada, and Mexico)
Europe (Germany, France, United Kingdom, Russia, Italy, and Rest of Europe)
Asia-Pacific (China, Japan, Korea, India, Southeast Asia, and Australia)
South America (Brazil, Argentina, Colombia, and Rest of South America)
Middle East & Africa (Saudi Arabia, UAE, Egypt, South Africa, and Rest of Middle East & Africa)

The content of the study subjects, includes a total of 15 chapters:

Chapter 1, to describe Robots and Dexterous Hand Operational Force Intelligent Testing Equipment product scope, market overview, market estimation caveats and base year.

Chapter 2, to profile the top manufacturers of Robots and Dexterous Hand Operational Force Intelligent Testing Equipment, with price, sales quantity, revenue, and global market share of Robots and Dexterous Hand Operational Force Intelligent Testing Equipment from 2021 to 2026.

Chapter 3, the Robots and Dexterous Hand Operational Force Intelligent Testing Equipment competitive situation, sales quantity, revenue, and global market share of top manufacturers are analyzed emphatically by landscape contrast.

Chapter 4, the Robots and Dexterous Hand Operational Force Intelligent Testing Equipment breakdown data are shown at the regional level, to show the sales quantity, consumption value, and growth by regions, from 2021 to 2032.

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Chapter 5 and 6, to segment the sales by Type and by Application, with sales market share and growth rate by Type, by Application, from 2021 to 2032.

Chapter 7, 8, 9, 10 and 11, to break the sales data at the country level, with sales quantity, consumption value, and market share for key countries in the world, from 2021 to 2026.and Robots and Dexterous Hand Operational Force Intelligent Testing Equipment market forecast, by regions, by Type, and by Application, with sales and revenue, from 2027 to 2032.

Chapter 12, market dynamics, drivers, restraints, trends, and Porters Five Forces analysis.

Chapter 13, the key raw materials and key suppliers, and industry chain of Robots and Dexterous Hand Operational Force Intelligent Testing Equipment.

Chapter 14 and 15, to describe Robots and Dexterous Hand Operational Force Intelligent Testing Equipment sales channel, distributors, customers, research findings and conclusion.

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