

Global Encoders for Robots Market Growth 2026-2032

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Abstracts

The global Encoders for Robots market size is predicted to grow from US\$ 1395 million in 2025 to US\$ 3049 million in 2032; it is expected to grow at a CAGR of 11.9% from 2026 to 2032.

Encoders for robots are precision feedback devices used to measure the position, speed, direction, and angular displacement of robot joints, motors, wheels, or linear axes. They convert mechanical motion into electrical signals and send this feedback to robot controllers or servo drives, enabling accurate motion control, repeatability, synchronization, and safety. In robotics, common encoder types include optical encoders, magnetic encoders, absolute encoders, incremental encoders, rotary encoders, and linear encoders. They are widely used in industrial robots, collaborative robots, service robots, mobile robots, surgical robots, warehouse automation systems, and humanoid robots.

Global production capacity is approximately 15 million units.

In 2025, global sales reached approximately 12.3 million units, with an average price of around US\$ 116 per unit, gross margin around 34%.

The encoders for robots market has strong long-term growth potential because robot performance depends heavily on accurate motion feedback. The market is supported by the global shift toward automation, labor-saving production, smart manufacturing, and higher robot density in factories and warehouses. High-end applications will continue to favor optical and absolute encoders with excellent precision, while cost-sensitive and harsh-environment applications will increasingly adopt magnetic encoder solutions. Competition will focus on accuracy, reliability, compact design, safety certification, digital connectivity, and integration with servo systems. As robots become smarter, smaller, and more widely deployed, encoder demand is expected to grow steadily.

Market Trend

The encoders for robots market is moving toward higher resolution, miniaturization, durability, and intelligent feedback. As robots become more compact and multi-axis systems become more common, demand is increasing for small-size absolute encoders, hollow-shaft encoders, and integrated motor-feedback solutions. Optical encoders remain important in high-precision robots, while magnetic encoders are gaining share due to better resistance to vibration, dust, oil, and harsh industrial environments. Smart encoders with digital communication, condition monitoring, and safety functions are also becoming more popular in collaborative robots and smart factories. Robotics is one of the fastest-growing application areas for motion-control encoders.

Market Drive

The main market driver is the rapid expansion of robotics in automotive manufacturing, electronics assembly, logistics, medical equipment, semiconductor production, and general industrial automation. Robots require accurate position and speed feedback to achieve repeatable, high-speed, and safe movement, making encoders essential components in servo motors and robot joints. Growth in collaborative robots, autonomous mobile robots, humanoid robots, and surgical robots is further increasing encoder demand. In addition, Industry 4.0, smart factories, and predictive maintenance are pushing manufacturers to adopt encoders with higher accuracy, digital interfaces, and diagnostic capabilities. Rising automation investment in Asia, Europe, and North America continues to support long-term market growth.

Upstream and Downstream

The upstream side of the encoders for robots market includes optical components, magnetic sensors, encoder ICs, glass or metal code discs, bearings, housings, connectors, PCBs, precision machining parts, and signal-processing chips. Key encoder suppliers include HEIDENHAIN, Renishaw, Tamagawa Seiki, Omron, SICK, Broadcom, Baumer, POSITAL, K?bler, Dynapar, RLS, and Encoder Products Company. Downstream customers include robot manufacturers, servo motor suppliers, automation system integrators, and end users in automotive, electronics, logistics, healthcare, and semiconductor industries. Typical downstream companies include FANUC, ABB Robotics, Yaskawa, KUKA, Universal Robots, Epson Robots, St?ubli, Kawasaki Robotics, and mobile robot manufacturers.

LP Information, Inc. (LPI) ' newest research report, the "Encoders for Robots Industry Forecast" looks at past sales and reviews total world Encoders for Robots sales in 2025, providing a comprehensive analysis by region and market sector of projected Encoders for Robots sales for 2026 through 2032. With Encoders for Robots sales broken down by region, market sector and sub-sector, this report provides a detailed analysis in US\$ millions of the world Encoders for Robots industry.

This Insight Report provides a comprehensive analysis of the global Encoders for Robots landscape and highlights key trends related to product segmentation, company formation, revenue, and market share, latest development, and M&A activity. This report also analyzes the strategies of leading global companies with a focus on Encoders for Robots portfolios and capabilities, market entry strategies, market positions, and geographic footprints, to better understand these firms' unique position in an accelerating global Encoders for Robots market.

This Insight Report evaluates the key market trends, drivers, and affecting factors shaping the global outlook for Encoders for Robots and breaks down the forecast by Type, by Application, geography, and market size to highlight emerging pockets of opportunity. With a transparent methodology based on hundreds of bottom-up qualitative and quantitative market inputs, this study forecast offers a highly nuanced view of the current state and future trajectory in the global Encoders for Robots.

This report presents a comprehensive overview, market shares, and growth opportunities of Encoders for Robots market by product type, application, key manufacturers and key regions and countries.

Segmentation by Type:

Incremental Encoder

Absolute Encoder

Segmentation by Sensing Technology:

Optical Encoders

Magnetic Encoders

Capacitive Encoders

Inductive Encoders

Segmentation by Motion Measurement:

Rotary Encoders

Linear Encoders

Segmentation by Application:

Industrial Robot

Collaborative Robot

Service Robot

This report also splits the market by region:

Americas

United States

Canada

Mexico

Brazil

APAC

China

Japan

Korea

Southeast Asia

India

Australia

Europe

Germany

France

UK

Italy

Russia

Middle East & Africa

Egypt

South Africa

Israel

Turkey

GCC Countries

The below companies that are profiled have been selected based on inputs gathered from primary experts and analysing the company's coverage, product portfolio, its market penetration.

Heidenhain

Renishaw

Tamagawa Seiki

Omron

SICK

FAULHABER

Rockwell Automation

Inovance

Broadcom

Nikon

Maxon Motor

Baumer

RLS

HCFA

KingKong Technology

Yuheng Optics

POSITAL

Encoder Products Company

ZeroErr

K?bler

Dynapar Encoders

SIKO

Hengstler

Guangzhou Haozhi Industrial

Balluff

Key Questions Addressed in this Report

What is the 10-year outlook for the global Encoders for Robots market?

What factors are driving Encoders for Robots market growth, globally and by region?

Which technologies are poised for the fastest growth by market and region?

How do Encoders for Robots market opportunities vary by end market size?

How does Encoders for Robots break out by Type, by Application?

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