

Global Encoders for Industrial Robot Market Growth 2026-2032

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Abstracts

The global Encoders for Industrial Robot market size is predicted to grow from US\$ 991 million in 2025 to US\$ 2176 million in 2032; it is expected to grow at a CAGR of 12.0% from 2026 to 2032.

Encoders for industrial robots are precision feedback devices used to measure the position, speed, direction, and angular displacement of robot joints, servo motors, rotary axes, and linear motion modules. They convert mechanical movement into electrical signals and provide real-time feedback to robot controllers and servo drives. In industrial robots, encoders are essential for motion accuracy, repeatability, path control, tool-center-point precision, safety monitoring, and multi-axis synchronization. They include optical, magnetic, inductive, absolute, incremental, rotary, and linear encoders. Rotary encoders are especially important because they measure angular motion in robot joints and rotary axes.

Global production capacity is approximately 10 million units.

In 2025, global sales reached approximately 8.6 million units, with an average price of around US\$ 118 per unit, gross margin around 35%.

The encoders are critical components in industrial robots because they directly affect positioning accuracy, repeatability, motion stability, and safety. Optical encoders remain important in high-precision robot applications, while magnetic and inductive encoders are gaining adoption in compact, rugged, and cost-sensitive systems. Future market competition will focus on higher accuracy, miniaturization, absolute position feedback, dual feedback, digital communication, functional safety, and easier integration with servo motors and robot joints. With industrial robot installations remaining at a high level

globally, the encoder market for industrial robots is expected to maintain stable growth and become increasingly important in advanced manufacturing automation.

Market Trend

The encoders for industrial robot market is moving toward higher resolution, absolute feedback, compact hollow-shaft design, dual-encoder architecture, and functional safety integration. As industrial robots are used in welding, assembly, painting, machining, semiconductor handling, and precision manufacturing, demand is increasing for encoders that can improve joint accuracy and reduce backlash-related errors. HEIDENHAIN notes that secondary encoders mounted downstream from the gear system can measure actual robot joint position and compensate for joint elasticity, zero-position error, reversal error, and machining effects. This supports the trend toward more accurate and intelligent robot motion control.

Market Drive

The main driver of the market is the continuous expansion of industrial automation and factory robot deployment. According to the International Federation of Robotics, global industrial robot installations reached about 542,000 units in 2024, with annual installations above 500,000 units for the fourth consecutive year. This growing installed base increases demand for servo motors, motion-control systems, and encoder feedback devices. Industrial robots require precise feedback to improve productivity, reduce defects, and support high-speed automated production. Demand is especially strong in automotive, electronics, semiconductor, metal processing, logistics, and general manufacturing, where accurate robot positioning directly affects production quality and efficiency.

Upstream and Downstream

The upstream side of industrial robot encoders includes optical components, magnetic sensors, inductive sensor ICs, code discs, glass scales, PCB coils, bearings, housings, connectors, cables, signal-processing chips, and precision machining parts. Downstream customers include industrial robot OEMs, servo motor manufacturers, joint-module suppliers, automation integrators, and end users in automotive, electronics, semiconductor, metalworking, packaging, and logistics. Renishaw notes that encoders provide real-time position feedback in robotic arms, including wafer-handling robots that require high stability and accuracy.

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

This Insight Report provides a comprehensive analysis of the global Encoders for Industrial Robot 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 Industrial Robot portfolios and capabilities, market entry strategies, market positions, and geographic footprints, to better understand these firms' unique position in an accelerating global Encoders for Industrial Robot market.

This Insight Report evaluates the key market trends, drivers, and affecting factors shaping the global outlook for Encoders for Industrial Robot 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 Industrial Robot.

This report presents a comprehensive overview, market shares, and growth opportunities of Encoders for Industrial Robot 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:

Articulated Robots

Parallel Robots

SCARA Robots

Others

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 Industrial Robot market?

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

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

How do Encoders for Industrial Robot market opportunities vary by end market size?

How does Encoders for Industrial Robot break out by Type, by Application?

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