

Global Secondary Encoders for Industrial Robot Supply, Demand and Key Producers, 2026-2032

<https://marketpublishers.com/r/G7950B8EC45FEN.html>

Date: July 2026

Pages: 152

Price: US\$ 4,480.00 (Single User License)

ID: G7950B8EC45FEN

Abstracts

The global Secondary Encoders for Industrial Robot market size is expected to reach \$ 650 million by 2032, rising at a market growth of 11.3% CAGR during the forecast period (2026-2032).

Secondary encoders for industrial robots are additional position-feedback devices mounted on the robot joint output side, usually after the gearbox or reducer, rather than only on the motor shaft. They directly measure the actual joint position and help compensate for transmission errors caused by gear backlash, torsional deformation, thermal expansion, elastic deflection, and assembly tolerance. In industrial robots, secondary encoders are commonly used together with primary motor encoders to form a dual-feedback control system. They are especially important in high-precision robots, collaborative robots, semiconductor robots, machining robots, welding robots, and applications requiring high path accuracy and repeatability. Global production capacity is approximately 5 million units.

In 2025, global sales reached approximately 2.2 million units, with an average price of around US\$ 134 per unit, gross margin around 36%.

The secondary encoders are becoming an important upgrade direction for industrial robot motion-control systems. They improve actual joint-position feedback and help overcome the limitations of motor-side encoder measurement, especially in applications requiring high accuracy, high repeatability, and stable path control. Although they increase system cost and structural complexity, their value is significant in high-end industrial robots, collaborative robots, semiconductor robots, and precision automation equipment. Future competition will focus on compact design, hollow-shaft integration, high resolution, robustness, digital interfaces, functional safety, and compatibility with

robot joint modules. The market is expected to grow with the upgrading of industrial robotics.

Market Trend

The secondary encoder market for industrial robots is moving toward higher accuracy, compact hollow-shaft structures, absolute position feedback, thin-ring designs, and easier integration into robot joints. As industrial robots are increasingly used in precision assembly, semiconductor handling, laser processing, robotic machining, and high-end welding, robot OEMs are paying more attention to actual joint-position accuracy rather than motor-side feedback alone. Optical encoders remain important in high-precision applications, while magnetic and inductive encoders are gaining adoption in compact and rugged joint designs. Dual-encoder architecture is becoming a key trend in premium industrial robots and collaborative robots.

Market Drive

The main driver of secondary encoders for industrial robots is the rising demand for higher robot accuracy, smoother motion, and better process quality. Traditional motor-side encoders cannot fully reflect errors generated by harmonic reducers, RV reducers, gear backlash, joint elasticity, and load deformation. By measuring the output-side joint position directly, secondary encoders help improve absolute positioning accuracy, trajectory control, force control, and vibration compensation. Growth in semiconductor manufacturing, electronics assembly, precision welding, robotic machining, and collaborative automation is increasing demand for dual-feedback systems. As robots move into more precise and flexible production tasks, secondary encoders are becoming more valuable.

Upstream and Downstream

The upstream side of secondary encoders includes optical gratings, glass or metal code discs, magnetic rings, inductive coils, sensor ICs, readheads, bearings, precision housings, PCBs, connectors, cables, and signal-processing chips. Downstream customers include industrial robot OEMs, collaborative robot manufacturers, robot joint-module suppliers, servo system companies, reducer manufacturers, and automation integrators. Major application industries include automotive, electronics, semiconductor, metal processing, packaging, logistics, and precision manufacturing.

This report studies the global Secondary Encoders for Industrial Robot production,

demand, key manufacturers, and key regions.

This report is a detailed and comprehensive analysis of the world market for Secondary Encoders for Industrial Robot and provides market size (US\$ million) and Year-over-Year (YoY) Growth, considering 2025 as the base year. This report explores demand trends and competition, as well as details the characteristics of Secondary Encoders for Industrial Robot that contribute to its increasing demand across many markets.

Highlights and key features of the study

Global Secondary Encoders for Industrial Robot total production and demand, 2021-2032, (K Units)

Global Secondary Encoders for Industrial Robot total production value, 2021-2032, (USD Million)

Global Secondary Encoders for Industrial Robot production by region & country, production, value, CAGR, 2021-2032, (USD Million) & (K Units), (based on production site)

Global Secondary Encoders for Industrial Robot consumption by region & country, CAGR, 2021-2032 & (K Units)

U.S. VS China: Secondary Encoders for Industrial Robot domestic production, consumption, key domestic manufacturers and share

Global Secondary Encoders for Industrial Robot production by manufacturer, production, price, value and market share 2021-2026, (USD Million) & (K Units)

Global Secondary Encoders for Industrial Robot production by Type, production, value, CAGR, 2021-2032, (USD Million) & (K Units)

Global Secondary Encoders for Industrial Robot production by Application, production, value, CAGR, 2021-2032, (USD Million) & (K Units)

This report profiles key players in the global Secondary Encoders for Industrial Robot market based on the following parameters - company overview, production, value, price, gross margin, product portfolio, geographical presence, and key developments. Key companies covered as a part of this study include Heidenhain, Renishaw, Tamagawa Seiki, Omron, SICK, FAULHABER, Rockwell Automation, Broadcom, Nikon, Maxon Motor, etc.

This report also provides key insights about market drivers, restraints, opportunities, new product launches or approvals.

Stakeholders would have ease in decision-making through various strategy matrices

used in analyzing the World Secondary Encoders for Industrial Robot market

Detailed Segmentation:

Each section contains quantitative market data including market by value (US\$ Millions), volume (production, consumption) & (K Units) and average price (US\$/Unit) by manufacturer, by Type, and by Application. Data is given for the years 2021-2032 by year with 2025 as the base year, 2026 as the estimate year, and 2027-2032 as the forecast year.

Global Secondary Encoders for Industrial Robot Market, By Region:

United States

China

Europe

Japan

South Korea

ASEAN

India

Rest of World

Global Secondary Encoders for Industrial Robot Market, Segmentation by Type:

Incremental Encoder

Absolute Encoder

Global Secondary Encoders for Industrial Robot Market, Segmentation by Sensing Technology:

Optical Encoders

Magnetic Encoders

Capacitive Encoders

Inductive Encoders

Global Secondary Encoders for Industrial Robot Market, Segmentation by Motion Measurement:

Rotary Encoders

Linear Encoders

Global Secondary Encoders for Industrial Robot Market, Segmentation by Application:

Industrial Robot

Collaborative Robot

Service Robot

Companies Profiled:

Heidenhain

Renishaw

Tamagawa Seiki

Omron

SICK

FAULHABER

Rockwell Automation

Broadcom

Nikon

Maxon Motor

Baumer

RLS

HCFA

POSITAL

Encoder Products Company

K?bler

Dynapar Encoders

Key Questions Answered:

1. How big is the global Secondary Encoders for Industrial Robot market?
2. What is the demand of the global Secondary Encoders for Industrial Robot market?
3. What is the year over year growth of the global Secondary Encoders for Industrial Robot market?
4. What is the production and production value of the global Secondary Encoders for Industrial Robot market?
5. Who are the key producers in the global Secondary Encoders for Industrial Robot market?
6. What are the growth factors driving the market demand?

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