

Global Absolute Encoders for Robots 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 Absolute Encoders for Robots market size was valued at US\$ 807 million in 2025 and is forecast to a readjusted size of US\$ 1767 million by 2032 with a CAGR of 11.9% during review period.

Absolute encoders for robots are precision position feedback devices that provide a unique digital position value for each shaft or joint position. They are used in robot joints, servo motors, actuators, grippers, mobile robot wheels, and precision motion modules to measure angular or linear position accurately. Unlike incremental encoders, absolute encoders can provide position information immediately after power-on without requiring a homing process. They can be single-turn or multi-turn, depending on whether they measure position within one revolution or across multiple rotations. In robotic systems, absolute encoders improve positioning accuracy, safety, repeatability, and motion control reliability.

Global production capacity is approximately 10 million units.

In 2025, global sales reached approximately 5.3 million units, with an average price of around US\$ 148 per unit, gross margin around 36%.

The absolute encoders for robots are becoming increasingly important as robotic systems move toward higher precision, higher safety, and more intelligent motion control. Compared with incremental encoders, they offer stronger advantages in position retention, startup efficiency, multi-axis coordination, and safety-critical applications. Although their cost is generally higher, their value is significant in industrial

robots, collaborative robots, humanoid robots, medical robots, and advanced servo systems. Future competition will focus on resolution, compactness, reliability, interface compatibility, anti-interference performance, functional safety, and integration with robotic joints. As robot adoption expands, absolute encoders are expected to maintain strong growth potential.

Market Trend

The absolute encoders for robots market is moving toward higher resolution, miniaturization, multi-turn capability, stronger environmental resistance, and deeper integration with robotic joints and servo systems. As industrial robots, collaborative robots, humanoid robots, medical robots, and mobile robots require more precise and safer motion control, demand for compact high-performance absolute encoders is increasing. Magnetic and optical technologies are both evolving, while modular and bearingless encoder designs are gaining attention for lightweight robotic joints. Suppliers are also improving communication interfaces, signal stability, functional safety features, and compatibility with EtherCAT, BiSS, SSI, CANopen, and other industrial control protocols.

Market Drive

The main driver of the absolute encoders for robots market is the rising demand for precise, safe, and reliable robotic motion control. Robots increasingly operate in complex environments where joint position must be known immediately after startup, emergency stop, power loss, or manual movement. Absolute encoders help reduce homing time, improve production efficiency, and enhance safety in multi-axis systems. Growth in industrial automation, collaborative robots, logistics robots, surgical robots, semiconductor equipment, humanoid robots, and high-end servo systems is supporting adoption. In addition, stricter requirements for repeatability, uptime, predictive maintenance, and intelligent motion control are pushing robot manufacturers toward absolute feedback solutions.

Upstream and Downstream

The upstream supply chain of absolute encoders for robots includes optical code discs, magnetic sensors, Hall sensors, magnetoresistive chips, ASICs, LEDs, photodiodes, bearings, shafts, housings, cables, connectors, communication interface chips, and precision machining components. Key upstream suppliers include semiconductor companies, sensor manufacturers, optical component suppliers, magnetic material

producers, bearing manufacturers, and electronic component providers. Midstream companies design and manufacture single-turn absolute encoders, multi-turn absolute encoders, motor feedback encoders, modular encoders, and integrated robotic joint feedback modules. Downstream customers include robot OEMs, servo motor manufacturers, collaborative robot companies, humanoid robot developers, medical robot makers, automation integrators, and industrial equipment manufacturers.

This report is a detailed and comprehensive analysis for global Absolute Encoders for Robots 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 Absolute Encoders for Robots market size and forecasts, in consumption value (\$ Million), sales quantity (K Units), and average selling prices (US\$/Unit), 2021-2032

Global Absolute Encoders for Robots market size and forecasts by region and country, in consumption value (\$ Million), sales quantity (K Units), and average selling prices (US\$/Unit), 2021-2032

Global Absolute Encoders for Robots market size and forecasts, by Type and by Application, in consumption value (\$ Million), sales quantity (K Units), and average selling prices (US\$/Unit), 2021-2032

Global Absolute Encoders for Robots market shares of main players, shipments in revenue (\$ Million), sales quantity (K Units), and ASP (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 Absolute Encoders for Robots

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 Absolute Encoders for Robots 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 this study include Heidenhain, Renishaw, Tamagawa Seiki, Omron, SICK, FAULHABER, Rockwell Automation, Inovance, Broadcom, Nikon, etc.

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

Market Segmentation

Absolute Encoders for Robots 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

Hollow Shaft

Solid Shaft

Market segment by Sensing Technology

Optical Encoders

Magnetic Encoders

Capacitive Encoders

Inductive Encoders

Market segment by Motion

Rotary Encoders

Linear Encoders

Market segment by Application

Industrial Robot

Collaborative Robot

Service Robot

Major players covered

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

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 Absolute Encoders for Robots product scope, market overview, market estimation caveats and base year.

Chapter 2, to profile the top manufacturers of Absolute Encoders for Robots, with price, sales quantity, revenue, and global market share of Absolute Encoders for Robots from 2021 to 2026.

Chapter 3, the Absolute Encoders for Robots competitive situation, sales quantity, revenue, and global market share of top manufacturers are analyzed emphatically by landscape contrast.

Chapter 4, the Absolute Encoders for Robots breakdown data are shown at the regional level, to show the sales quantity, consumption value, and growth by regions, from 2021 to 2032.

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 Absolute Encoders for Robots 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 Absolute Encoders for Robots.

Chapter 14 and 15, to describe Absolute Encoders for Robots sales channel, distributors, customers, research findings and conclusion.

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