

Encoder - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts 2019 - 2029

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Report description:

The Encoder Market size is estimated at USD 3.08 billion in 2024, and is expected to reach USD 4.5 billion by 2029, growing at a CAGR of 7.91% during the forecast period (2024-2029).

The market is witnessing rapid growth due to the increasing demand for encoders in multiple applications, from data centers to telecommunication.

Key Highlights

- The need for high-end automation and Industry 4.0 are the major factors driving the growth of the market. Industry 4.0 describes the fourth industrial revolution, a new world where factory automation moves beyond manufacturing plants controlled by conventional information technology systems to a cloud-based infrastructure that permits big data analytics and the virtualization of production processes.
- Many countries worldwide have positively responded to Industry 4.0 by developing strategic initiatives to strengthen its implementation. For instance, SAMARTH Udyog Bharat 4.0 is an Industry 4.0 initiative of the Ministry of Heavy Industry & Public Enterprises, Government of India, under its scheme on Enhancement of Competitiveness in the Indian Capital Goods Sector. According to the UNCTAD, China and the United States are leaders in investment and capacity in Industry 4.0 technologies. They are home to the largest digital platforms, accounting for 90 percent of the market capitalization.
- Furthermore, encoders are central to motion control applications. They can offer feedback on position, speed, and direction to a controller or drive to increase the accuracy and reliability of a drive system. As technology advances, so do encoders, incorporating the latest developments in communications and networking and offering engineers tools to solve challenges they face across a diverse array of motion control applications.
- One of the most significant limitations of encoders is that they can be reasonably complex and comprise some delicate parts.

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This makes them less tolerant of mechanical abuse and restricts their allowable temperature. One would be hard-pressed to find an optical encoder that will survive beyond 120°C. In addition to this, rising concern about functional safety issues, which is of significant importance in any motion control design, is also a notable limitation for the market's growth as the acquisition of functional safety certification can be arduous, and there can be some errors associated with the functionality of the motion control encoders. Such limitations pose a challenge to the market's growth.

- Since the outbreak of COVID-19, industries were looking for automation to reduce human interaction and enhance efficiency. For instance, leading retail and grocery outlets explored ways to ensure faster, automated self-checkouts that minimized human contact and kept shoppers and employees safe. Increased investment in automation and automated printing equipment has also been observed in the printing industry, which has been instigated by the pandemic. For instance, in February 2021, Thieme announced that it installed a new printing line at LUMON Oy in Kouvola, Finland, which allowed an automatic adaptation of different glass sizes to be printed without screen change or manual cleaning. These changes are expected to aid the growth of the market studied.

Encoder Market Trends

Industrial Sector is Expected to Hold Major Market Share

- Encoders are utilized in multiple industrial applications, such as linear measurement, registration mark timing, web tensioning, backstop gauging, conveying, filling, and more. The most standard application is providing feedback on the motion control of electric motors. In the industrial sector, a significant amount of electricity goes to electric power motors. Most of these motors have encoders incorporated into them.
- Robots are experiencing a growing number of application areas, especially for operations like welding, material handling, assembly, and grinding. Since there is typically limited human oversight or monitoring, these robots must have reliable encoders to help guide their movement.
- As per the IFR, China's massive investment in industrial robotics in recent years has moved its position up among various other countries for robot density, surpassing the United States for the first time. The number of operational industrial robots relative to the number of workers reached 322 units per 10,000 employees in the manufacturing industry in China. South Korea, Singapore, Japan, Germany, and China are the world's top five most automated manufacturing countries. Such an increase in the adoption of automation in the industries is expected to further fuel the demand for encoders in the market.
- Companies, such as Strausak AG, are exploring industrial robotics, specifically in terms of the ways it can accelerate operator-free grinding and re-sharpening tools. In this application, a gripper arm is used to pick small tools from tightly loaded pallets into the fixture and back. Every axis of the arm includes HEIDENHAIN's inductive EQI 1100 rotary encoder. This encoder allows the accuracy of 50 µm at the tip of its gripper for the safe, quick, and precise placement of tools with diameters as small as 10 mm.

Asia-Pacific to Register Fastest Growth

The growing industrialization and demand for better solutions for manufacturing processes are driving the growth of the market at a rapid pace. As Asia is home to large industrial hubs, such as Japan, China, and India, the increasing production facilities and service agreements with businesses are also propelling industry growth. Increasing market rivalry has resulted in the introduction of new items to the market, which has boosted the market's growth.

- According to a report by the IFR (International Federation of Robotics), Asia is the world's largest market for industrial robots; 74

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percent of all newly deployed robots in 2021 were installed in Asia, compared to 70 percent in the previous year. Installations for the region's largest adopter, China, increased by 51 percent, with 268,195 units shipped.

- As per the report, Japan followed China as the largest market for industrial robots; installations increased by 22 percent in 2021, with 47,182 units. Moreover, the country is the world's predominant robot manufacturing country, with exports of Japanese industrial robots achieving a new peak level of 186,102 units. Both standard and custom rotary and linear encoders are effectively utilized in electro-medical and laboratory equipment, such as operating and examination tables, Gamma Knife and X-ray, Scanners, and many more.

- According to the Indian Brand Equity Foundation 2021, to promote the medical industry, the Government of India (GOI) launched several programs to strengthen the medical device sector, focusing on research and development (R&D) and 100 percent FDI for medical devices. Between April 2000 and June 2021, FDI in the medical and surgical appliances industry totaled USD 2.23 billion. Such huge investments by the government in the medical sector will drive the market for encoders.

- The automotive industry in the region also accounts for a significant share of the total demand for encoders. For instance, according to the China Association of Automobile Manufacturers, around 210,000 commercial vehicles and 996,000 passenger cars were produced in China in April 2022.

- Moreover, South Korea has maintained its position as one of the world's top automotive manufacturing countries and one of the largest automotive exporters, owing to the presence of many major car makers in the country. Additionally, the trends toward electrification in the region are unlocking new opportunities for the market.

Encoder Industry Overview

The encoder market comprises various players, such as Omron Corporation, Honeywell, Heidenhain GmbH, Baumer Group, and Posital Fraba Inc., among others. The companies have the advantage of a large client base, enabling them to produce large volumes of encoders, a key factor in ensuring better profits and economies of scale in the sensor market. As strong brands are synonymous with good performance, long-standing players are expected to have the upper hand. Owing to their market penetration and the ability to offer advanced products, the competitive rivalry is expected to continue to be high.

In March 2023, Celera Motion announced the introduction of the Field Calibration IncOder, which is a groundbreaking new absolute inductive encoder solution that enables next-level accuracy angle measurement in motion control applications and position feedback in robotics in the most demanding environments. The product is designed for applications that need precise angle measurements but in conditions not suited for optical encoders: dusty, dirty, and wet environments or in conditions where high shocks and vibrations are common.

In March 2023, POSITAL announced the launch of a major upgrade to its IXARC family of incremental rotary encoders that features new magnetic sensor technology and more energy-efficient embedded microcontrollers. The new encoders are likely to benefit customers by reducing power consumption while remaining mechanically and electrically compatible with earlier models.

Additional Benefits:

- The market estimate (ME) sheet in Excel format
- 3 months of analyst support

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