

Global Absolute Optical Encoders Supply, Demand and Key Producers, 2026-2032

<https://marketpublishers.com/r/G430F8A8BBB3EN.html>

Date: January 2026

Pages: 147

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

ID: G430F8A8BBB3EN

Abstracts

The global Absolute Optical Encoders market size is expected to reach \$ 941 million by 2032, rising at a market growth of 5.4% CAGR during the forecast period (2026-2032). Optical encoders are position and motion feedback sensors that turn mechanical movement into electrical signals by using light. In a typical optical encoder, a light source (often an LED) shines through or reflects off a patterned scale (a code disk for rotary motion, or a scale strip for linear motion). A photodetector reads how the light changes as the pattern moves, and electronics convert this into signals that a controller can use to know position, speed, and direction. This is why optical encoders are a core part of many motion systems: without feedback, motors and axes cannot reliably hit the right location, keep stable speed, or correct errors in real time. Renishaw describes optical encoders as a scale + readhead system where a light source and photodetector move past scale lines to generate an electrical signal for a motion control system. A key way the market is segmented is incremental vs. absolute. Incremental encoders output pulses as motion occurs; the controller counts pulses to infer movement and direction. They are widely used for speed control, relative positioning, and cost-sensitive systems. Absolute encoders output a unique position value (or can report it on demand), so the system can know the position immediately even after power loss, which matters for safety, multi-axis coordination, and high-value equipment. Manufacturers commonly explain this split and also the further split of single-turn vs multi-turn absolute encoders: single-turn reports position within one revolution, while multi-turn also tracks the number of revolutions so it can report position across multiple turns.

In 2025, global Absolute Optical Encoders production reached approximately 6129 K Units, with an average global market price of around US\$ 102.2 per unit. The global single-line production capacity ranges from 100 to 200 K Units per year. The industry's gross profit margin is approximately 30%-40%.

One major trend in the optical encoder market is the continued push toward higher accuracy and better control of error sources in precision manufacturing. This is especially visible in CNC machining, precision grinding, and high-end motion stages. The reason is straightforward: as customers demand tighter tolerances and higher throughput, manufacturers try to reduce scrap, reduce rework, and shorten cycle time. Linear encoders support this by measuring actual axis position and helping controls compensate for mechanical and thermal effects. HEIDENHAIN's materials emphasize this "error elimination" value proposition for linear encoders in machine tools. The trend is not only "more encoders," but also a shift toward using encoders in more axes and using better encoder systems in higher-value machines.

A second major trend is the move from "simple signal output" to smart, networked encoders that support modern industrial communication and diagnostics. In older architectures, encoders often output basic quadrature pulses (A/B/Z) or a simple serial position signal. In newer architectures, encoders increasingly support real-time Ethernet and "Industry 4.0" style connectivity, so systems can do easier commissioning, parameter management, diagnostics, and predictive maintenance.

A third trend is demand growth in robotics and motion platforms beyond traditional factory robots. Warehouses and logistics are expanding the use of AGVs/AMRs and automated material handling; service robots (in cleaning and transport) are also growing. IFR press releases note rising sales of professional service robots and describe labor shortages and productivity needs as drivers in some segments. These systems often require reliable position feedback for wheels, lifts, steering modules, and actuator joints, and they run in mixed environments where robustness and stable feedback matter. In many cases, optical encoders compete with magnetic sensing, but optical systems remain attractive where high resolution and stable measurement are important for smooth control.

Another demand driver is the growth of electronics and semiconductor-related manufacturing equipment, which relies on precise motion (linear stages, wafer handling, inspection equipment). Even when this equipment uses specialized metrology, encoders still play a key role in positioning loops and motion repeatability. The market driver here is that electronics manufacturing continues to push for smaller feature sizes, higher throughput, and more automation, which increases the value of precision feedback components. In addition, medical devices, lab automation, and high-end printing/inspection equipment often require accurate, repeatable movement and benefit from optical encoder feedback.

This report studies the global Absolute Optical Encoders production, demand, key manufacturers, and key regions.

This report is a detailed and comprehensive analysis of the world market for Absolute Optical Encoders 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 Absolute Optical Encoders that contribute to its increasing demand across many markets.

Highlights and key features of the study

Global Absolute Optical Encoders total production and demand, 2021-2032, (K Units)

Global Absolute Optical Encoders total production value, 2021-2032, (USD Million)

Global Absolute Optical Encoders production by region & country, production, value, CAGR, 2021-2032, (USD Million) & (K Units), (based on production site)

Global Absolute Optical Encoders consumption by region & country, CAGR, 2021-2032 & (K Units)

U.S. VS China: Absolute Optical Encoders domestic production, consumption, key domestic manufacturers and share

Global Absolute Optical Encoders production by manufacturer, production, price, value and market share 2021-2026, (USD Million) & (K Units)

Global Absolute Optical Encoders production by Type, production, value, CAGR, 2021-2032, (USD Million) & (K Units)

Global Absolute Optical Encoders production by Application, production, value, CAGR, 2021-2032, (USD Million) & (K Units)

This report profiles key players in the global Absolute Optical Encoders 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 Broadcom, BEI Sensors, Renishaw, Dynapar, Baumer Group, Tamagawa, Allied Motion, EPC, CUI, Omron, 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 Absolute Optical Encoders 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 Absolute Optical Encoders Market, By Region:

United States

China

Europe

Japan

South Korea

ASEAN

India

Rest of World

Global Absolute Optical Encoders Market, Segmentation by Type:

Single-turn Encoder

Multi-turn Encoder

Global Absolute Optical Encoders Market, Segmentation by Measurement Type:

Rotary Optical Encoders

Linear Optical Encoders

Global Absolute Optical Encoders Market, Segmentation by Mechanical Construction:

Shaft Encoders

Hollow-Shaft Encoders

Ring Encoders

Others

Global Absolute Optical Encoders Market, Segmentation by Optical Principle:

Transmissive

Reflective

Interferential

Global Absolute Optical Encoders Market, Segmentation by Application:

Healthcare

Machine Tool

Consumer Electronics

Assembly Equipment

Others

Companies Profiled:

Broadcom

BEI Sensors

Renishaw

Dynapar

Baumer Group

Tamagawa

Allied Motion

EPC

CUI

Omron

Heidenhain

Bourns

Grayhill

Gurley

Honeywell

Honest Sensor Corporation

HONTKO

Yuheng Optics

Key Questions Answered:

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

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