

Japan Current Transducer Market Assessment, By Technology [Open Loop, Closed Loop, Others], By Application [Motor Control, Inverters and Variable Frequency Drives, Battery Management, Uninterruptible Power Supply Systems, Others], By End-user [Industrial, Renewable Energy, Residential and Commercial, Automotive, Others], By Region, Opportunities and Forecast, FY2018-FY2032F

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Report description:

Japan current transducer market is projected to witness a CAGR of 3.92% during the forecast period FY2025- FY2032F, growing from USD 66.33 million in FY2024 to USD 90.22 million in FY2032.

Japan current transducer market has experienced significant growth in recent years due to the significant expansion of renewable energy sources and evolving needs for monitoring devices. The integration of renewable energy sources necessitates the deployment of precise monitoring and management of current flow measurement solutions, which drive the demand for current transducers in the market. Additionally, the demand for efficient battery management devices is increasing in Japan due to the rising adoption of electric vehicles (EVs). The devices can manage and control the electric flow in the battery, electric motor, and even in charging infrastructure, which drives its demand in the market. In addition, the ongoing development in smart grid technologies further enhances the demand for current transducers, as smart grid systems rely on accurate data to optimize energy distribution and integrate various energy sources seamlessly, which drives demand in the market. Moreover, Japan's strong focus on industrial automation and manufacturing excellence drives the need for reliable, current sensing solutions that could enhance operational efficiency and safety across various sectors.

For instance, the Ministry of Economy, Trade and Industry has inaugurated a "Public-Private Council on Smart Industrial Safety" program, which brings the public and private sectors, to encourage the adoption and promotion of smart industrial safety systems among Japanese industries, which drives the demand for efficient electric systems and equipment in the market. This development highlights that with the rising adoption of metering and safety devices will drive the demand for current transducers

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in the market.

Government policies promoting energy efficiency and sustainability also reinforce the demand for advanced monitoring solutions, such as current transducers in different sectors. As industries continue to evolve towards more efficient practices and as Japan aims to achieve ambitious green energy targets, the role of current transducers will become increasingly vital in ensuring reliable electrical systems across diverse applications, driving the demand for current transducers in the market.

Rise in Renewable Energy Development and Smart Grid Initiative Augmenting the Market Growth

The country is seeking an energy transition to complete its sustainability and decarbonization goals. Industrial and commercial sectors are increasingly adopting renewable energy solutions as part of sustainability strategies, which leads to the expansion of renewable energy infrastructure. As solar and wind energy adoption increases, the need for reliable, current measurement solutions grows correspondingly.

For instance, in December 2024, the Japanese government released a draft of a new energy plan that aims to generate 40-50% of its power from renewable energy and 20% from nuclear energy by 2040. To achieve the set target, renewable energy capacity will need to be increased, which will increase the demand for advanced current transducers in the coming years.

Current transducers are critical for monitoring and managing current flow in renewable energy systems and ensuring efficient energy conversion and integration into the national grid. Current transducers are becoming an essential component in energy transition as devices enable the efficient management of clean energy sources in the grid while ensuring compliance with environmental regulations.

In addition, the rise in the adoption of smart grid technologies further enhances the demand for current transducers. Smart grids with current transducers facilitate the management of distributed energy resources (DERs), which allow for real-time monitoring and control of energy flows from various renewable sources. These advanced systems rely on precise data from current transducers to optimize energy distribution, manage loads effectively, and integrate various energy sources seamlessly. The shift towards smart grids necessitates robust monitoring solutions to facilitate real-time data analysis and decision-making.

Upcoming Technological Advancement Creating Market Opportunity

Continuous innovations in sensor technology enhance current transducer functionality which makes products more compact, efficient, and capable of providing digital outputs. Integrating innovative sensors into the current transducer allows better control over electrical systems which helps to complete the manufacturing process effectively. Current transducers assist in communicating and enabling operators to access performance data remotely, and decisions could be made using a data-driven approach, which drives the demand for current transducers in the market.

The advanced current transducer includes IoT connectivity and data analytics capabilities which help to revolutionize the market and assist in adopting digital solutions. The digital systems enable real-time monitoring and control of electrical parameters, which is vital for applications in smart grids and automated industrial processes. The upcoming innovations in the current transducer products enhance the functionality of the power system in various industrial applications. As industries seek more efficient and reliable power solutions, the adoption of innovative current transducers equipped with advanced features becomes more attractive, which creates opportunities for current transducer market growth in the coming years.

Furthermore, the upcoming advancement in materials and manufacturing techniques have led to the development of smaller current transducers without compromising performance or accuracy which could be used in the EVs application, hence fostering growth in the current transducer market.

For instance, in February 2024, Asahi Kasei Microdevices Corporation decided to launch the CZ39 series of current sensors for EVs, which is highly compatible with SiC/GaN power devices and suitable for chargers and electronic fuses. This development highlights that manufacturers are developing innovative products to increase their revenue and market share.

Closed-Loop Current Transducer to Dominate the Market Share

Closed-loop current transducers are experiencing a high adoption rate in the forecast period which makes the segment dominate the market. Closed-loop current transducers align with the country's energy landscape, technological advancements, and industrial needs, which drive demand in the market. Closed-loop current transducers are able to monitor and manage current flow in renewable energy systems and ensure efficient energy generation and grid stability in the long term.

Furthermore, the country is looking to modernize power infrastructure through the implementation of smart grid technologies, which creates a substantial demand for current closed-loop transducers. The devices provide real-time data on current levels,

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which is crucial for optimizing energy distribution, managing loads effectively, and integrating various energy sources into the grid. The shift towards smart grids enhances the importance of accurate current monitoring devices, hence driving the market demand for closed-loop current transducer devices.

Central Region Dominate the Japanese market

The central region has dominated the current transducer market and is expected to continue during the forecast period. The region includes numerous manufacturing facilities, technology companies, and research institutions that require precise current measurements for automation and energy management, which drive the demand for current transducers in the region. The region shows a strong inclination towards the adoption of innovative technologies that can effectively cost-effectively automate the production process. In addition, technology firms are focusing on adopting advanced electronics, smart devices, and renewable energy solutions for various operations, which leads to a high demand for current transducers in the region. Furthermore, the region organizes several international exhibitions highlighting innovative technologies for grid stability, smart metering, and safety devices.

For instance, in February 2024, RX Japan Ltd. organized the largest international exhibition in Tokyo. The exhibition highlighted various innovative technologies and products related to smart grids and smart communities. These kinds of exhibitions increase consumers' awareness of devices, which drives the demand for current transducers in the market in the coming years.

In the central region, the demand for electric vehicles EVs is on the rise which leads to increased investments in EV technology and infrastructure, further boosting the need for current transducers in battery management systems and charging stations. Furthermore, the region aims to diversify the energy mix with a high emphasis on renewable power. The higher authority's emphasis on the integration of renewable energy sources in the electric grid creates opportunities for current transducer devices in the region.

Moreover, expanding large-scale utility projects will create a strong demand for power management technologies that optimize energy output and input. Current transducers are becoming well-suited technology for several projects, helping utility companies manage the power flow that drives demand in the region.

Future Market Scenario (FY2025 – FY2032F)

□□The development of smart grid technologies is a crucial aspect of Japan's energy strategy. This shift towards smart grids will necessitate greater investment in sophisticated current transducer devices.

□□Continuous research and development (R&D) in sensor technology will bring improvements in current transducer efficiency and durability which will drive the demand for devices in different sectors.

□□Japan aims to increase the share of renewable energy to 36-40% of its energy mix by 2030. This increase is driving demand for current transducers in the coming years.

□□The rise in industrial automation across various sectors, including manufacturing and automotive, is driving demand for current transducers in the forecast period.

Key Players Landscape and Outlook

Continuous innovation characterizes the landscape of current transducers, as the companies compete in terms of energy efficiency, product life, and unique features. The market outlook remains positive, owing to increased demand for the integration of renewable energy and automation in the industrial sector. Product launches, agreements, business expansions, collaborations, and developing technologies are projected to increase competition in the fast-paced market.

For instance, October 2023, TDK Corporation and LEM International SA decided to enter into an agreement for the development of next generation integrated current sensors. The collaboration further positions TDK's TMR technology to succeed in the automotive and industrial markets. This development helped the company to increase its revenue and customer base in the market.

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*Companies mentioned above DO NOT hold any order as per market share and can be changed as per information available during research work.

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