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Data Acquisition (DAQ) System Market Report by Component Type (Hardware, Software), Speed (High Speed (>100 KS/s), Low Speed (128 Channels), End User (Aerospace and Defense, Energy and Power, Automotive and Transportation, Wireless Communication and Infrastructure, Water and Wastewater Treatment, Healthcare, Food and Beverages, and Others), and Region 2024-2032

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Abstracts

The global data acquisition (DAQ) system market size reached US$ 1.9 Billion in 2023. Looking forward, IMARC Group expects the market to reach US$ 2.9 Billion by 2032, exhibiting a growth rate (CAGR) of 4.5% during 2024-2032. The increasing demand for data monitoring to increase operational efficiency, extensive research and development (R&D) activities, and the surging product adoption in the healthcare industry, are some of the major factors propelling the market.

A data acquisition (DAQ) system is crucial in gathering, storing, measuring, and distributing information from diverse sources. It consists of both software and hardware components, incorporating sensors, actuators, and network support to enable seamless data communication among its different parts. It relies on an analog-to-digital converter (ADC), responsible for transforming data from the environment into discrete levels that can be easily understood by the processor. It operates through several steps, beginning with signal conditioning to prepare the incoming signals, then data conversion and storage. It offers enhanced control over organizational processes and operations, enabling swift responses to failures. It offers improved efficiency and reliability in steel mills, utilities, and research laboratories machinery. At present, the demand for DAQ

systems is on the rise due to their ability to supervise company operations and processes without requiring human intervention.

The increasing demand for automation in business processes and the rising preference among companies to streamline their operations and optimize efficiency will stimulate the growth of the market during the forecast period. Additionally, the integration of DAQ systems in the agriculture sector to monitor and regulate irrigation systems using sensor data helps maximize crop yield and conserve water resources, thereby propelling market growth. Moreover, the surging adoption of data-centric approaches in many companies across various industries in their production and operations to maintain a competitive edge is positively influencing market growth. Apart from this, the increasing demand for industrial Ethernet that handles the unique challenges of factory environments, including noise, specific process requirements, and harsh conditions, is catalyzing the market growth. Furthermore, the rising implementation of Internet of Things (IoT)-based systems in diverse industries that allow companies to monitor inventory in real-time and receive immediate alerts in case of any deviations, allowing for proactive and efficient management, is contributing to the market growth.

Data acquisition (DAQ) System Market Trends/Drivers:
Increase in Demand for Automation

The increasing demand for automation is fueled by several factors, driving the growth of the market. Companies across diverse industries are seeking ways to streamline processes, reduce manual intervention, and eliminate time-consuming tasks. By adopting DAQ systems, businesses can automate data acquisition processes, enabling the collection and analysis of real-time data without human intervention. This automation saves time and reduces the risk of errors associated with manual data collection and entry. Moreover, automation through DAQ systems enhances productivity by enabling continuous monitoring and control of operations. Real-time data acquisition allows companies to promptly identify bottlenecks, inefficiencies, or deviations from desired performance metrics, which in turn is supporting the market growth.

Advancements in Sensor Technology

Advancements in sensor technology have revolutionized the field of data acquisition (DAQ) systems, fueling their growth and adoption across various industries. These technological developments have led to the development of sensors with enhanced accuracy, reliability, and functionality, significantly expanding the capabilities of DAQ systems. Modern sensors can precisely capture data, allowing for more accurate and

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reliable measurements. This increased accuracy is particularly valuable in industries where precise measurements are critical, such as manufacturing, scientific research, and quality control processes. Acquiring higher-precision data enables companies to make more informed decisions, optimize processes, and improve overall product quality. Modern sensors are designed to withstand harsh environments, extreme temperatures, and vibrations, ensuring consistent performance even in challenging conditions, thereby accelerating the product adoption rate.

Rise in Focus on Data-Driven Decision Making

The growing focus on data-driven decision-making has emerged as a key factor driving the adoption of data acquisition (DAQ) systems in various industries. Businesses today recognize the significant value in harnessing real-time data to gain insights into their operations, understand customer behavior, and identify market trends. This awareness has led to a shift towards utilizing DAQ systems, which provide a robust infrastructure for collecting, processing, and interpreting large volumes of data. Traditional manual data collection methods usually need more time and accuracy, limiting the speed and accuracy of decision-making processes. With DAQ systems, companies can gather data in real time, enabling them to respond swiftly to changing circumstances and make more informed decisions, which is augmenting the market growth.

Data Acquisition (DAQ) System Industry Segmentation:
IMARC Group provides an analysis of the key trends in each segment of the global data acquisition (DAQ) system market report, along with forecasts at the global, regional and country levels from 2024-2032. Our report has categorized the market based on component type, speed, channel and end user.

Breakup by Component Type:
Hardware
External Chassis and Modules
Plug-In Analog I/O Boards
Software
Bundled
3rd Party

Hardware represents the most popular component type

The report has provided a detailed breakup and analysis of the market based on the component type. This includes hardware (external chassis and modules and plug-in

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analog I/O boards) and software (bundled and 3rd party). According to the report, hardware represented the largest segment.

Hardware refers to the physical components and devices essential for capturing, converting, and transmitting real-world data into digital formats. These hardware components include sensors, actuators, analog-to-digital converters (ADCs), signal conditioning modules, and communication devices. Hardware dominates the DAQ market primarily because it forms the foundation of data acquisition systems. With reliable and accurate hardware, collecting and converting real-world data is possible.

Furthermore, the escalating demand for real-time data acquisition across industries is propelling segment growth. Hardware components are crucial in capturing data in real-time, providing up-to-date information for timely decision-making. The rising need for real-time data, essential for monitoring processes, optimizing operations, detecting anomalies, and responding quickly to changing conditions, has catalyzed market growth. Apart from this, the surging demand for hardware solutions to cater to specific industry requirements, providing specialized sensors, transducers, and interfaces, is another major growth-inducing factor.

Breakup by Speed:

High Speed (>100 KS/s)
Low Speed (100 KS/s) holds the largest share in the market

A detailed breakup and analysis of the market based on the speed has also been provided in the report. This includes high speed (>100 KS/s) and low speed (100 KS/s) accounted for the largest market share.

The increasing demand for real-time data acquisition as industries such as manufacturing, automotive, telecommunications, and aerospace require high-speed data acquisition to monitor and control rapidly changing processes is driving the segment growth. Furthermore, the escalating need for instantaneous data capture and analysis is critical for optimizing operations, detecting anomalies, and making timely decisions has catalyzed the expansion of the high-speed segment.

Additionally, numerous technological advancements, including the development of high-speed analog-to-digital converters (ADCs), faster communication interfaces, and more efficient data processing algorithms that enhance the sampling rates and bandwidths of DAQ systems, have accelerated product adoption rates.

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Apart from this, the surging demand for high-speed data acquisition in research and development (R&D) applications is contributing to segment growth. Besides this, the emergence of high-speed communication protocols such as Ethernet, USB 3.0, and PCI Express provides fast and reliable data transfer between DAQ systems and computers is another major growth-inducing factor.

Breakup by Channel:

32-128 Channels
> 128 Channels

A detailed breakup and analysis of the market based on the channel has also been provided in the report. This includes 128 channels.

32-128 Channels represents data acquisition systems that provide a moderate number of input channels, typically ranging from 32 to 128 channels. These systems cater to applications that require a more extensive data acquisition capability. They are commonly utilized in industrial monitoring, control systems, and larger-scale data acquisition projects.

>128 Channels encompasses data acquisition systems that offer a high number of input channels, exceeding 128 channels. These systems are designed to handle complex and large-scale data acquisition requirements. They are commonly used in applications such as aerospace testing, automotive testing, power grid monitoring, or scientific research involving multiple sensors and data sources.

Breakup by End User:

Aerospace and Defense
Energy and Power
Automotive and Transportation
Wireless Communication and Infrastructure
Water and Wastewater Treatment
Healthcare
Food and Beverages
Others

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The aerospace and defense sector represents the largest end user segment

A detailed breakup and analysis of the data acquisition (DAQ) system market based on the end user has also been provided in the report. This includes aerospace and defense, energy and power, automotive and transportation, wireless communication and infrastructure, water and wastewater treatment, healthcare, food and beverages, and others. According to the report, aerospace and defense accounted for the largest market share.

The rising complexity and criticality of systems in the aerospace and defense sector fuels the demand for advanced data acquisition solutions. This industry deals with highly complex systems, such as aircraft, missiles, and defense equipment, where precise and real-time data acquisition is crucial. Moreover, the emerging need for accurate data collection from various sensors and instruments to ensure these systems' safety, reliability, and effectiveness is positively influencing the segment growth. Apart from this, the aerospace and defense industry operates within stringent regulatory frameworks and safety standards. In addition, the rising use of advanced data acquisition systems to comply with these regulations as it ensures accurate and reliable data collection has catalyzed segment growth. Furthermore, the aerospace and defense sector places a strong emphasis on performance optimization, and companies in this industry are constantly striving to enhance the performance, efficiency, and reliability of their systems. This has augmented the demand for data acquisition in monitoring and analyzing the performance of aircraft, engines, and other critical components.

Breakup by Region:
North America
United States
Canada
Asia Pacific
China
Japan
India
South Korea
Australia
Indonesia
Others
Europe
Germany
France

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United Kingdom
Italy
Spain
Russia
Others
Latin America
Brazil
Mexico
Others
Middle East and Africa

North America exhibits a clear dominance in the market

The report has also provided a comprehensive analysis of all the major regional markets, which include North America (the United States and Canada); Asia Pacific (China, Japan, India, South Korea, Australia, Indonesia, and others); Europe (the United Kingdom, Germany, France, Italy, Spain, Russia, and others); Latin America (Brazil, Mexico, and others); and the Middle East and Africa. According to the report, North America was the largest market for data acquisition (DAQ) system.

North America held the largest market share since the region boasts a strong technological infrastructure and a highly developed industrial sector. North America has several advanced industries, including manufacturing, aerospace, automotive, telecommunications, and healthcare. These industries have a high demand for data acquisition solutions to monitor, analyze, and optimize their operations. The region's robust technological ecosystem, coupled with a strong emphasis on innovation, drives the adoption of advanced DAQ systems and establishes North America as a dominant player in the market.

Another major growth-inducing factor is the presence of a mature and well-established market for industrial automation and process control systems in the region. The integration of DAQ systems with automation and control systems enables companies to achieve higher efficiency, productivity, and accuracy in their operations. The region's focus on industrial automation and a strong manufacturing base drive the demand for DAQ systems.

Competitive Landscape:
The market is experiencing a lower-than-anticipated demand compared to pre-pandemic levels however, this is likely to witness a paradigm shift over the next decade

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with the rising employment of the internet of things (IoT) based systems in various industries for monitoring inventory and issuing an alert in case of deviations. The market is witnessing a steady increase in research and development initiatives as well as investments resulting in improved technology, easy availability of high-speed internet connectivity and the advent of industry 4.0. We expect the market to witness new entrants, consolidation of portfolio and increased collaborations to drive healthy competition within the domain.

The report has provided a comprehensive analysis of the competitive landscape in the global data acquisition (DAQ) system market. Detailed profiles of all major companies have also been provided. Some of the key players in the market include:

ABB Group
AMETEK Inc.
Emerson Electric Co.
Fortive Corporation
General Electric (GE) Company
Honeywell International Inc.
Keysight Technologies
National Instruments Corporation
Rockwell Automation Inc.
Schneider Electric SE
Siemens AG
Spectris PLC
Yokogawa Electric Company

Recent Developments:
In June 2023, ABB offered Technology solutions that helped in supporting the clean energy transition and EV adoption. ABB recognized the urgent need to address climate change and reduce greenhouse gas emissions, leading to their commitment to developing and providing sustainable solutions.
In March 2023, Emerson has tracked and benchmarked energy usage at more than 200 global sites that are designated ‘major energy-consuming facilities,’ as well as over 500 other offices and service centers. This proactive approach helped Emerson gain insights into their energy usage patterns and also enabled them to implement targeted strategies and initiatives to enhance energy efficiency and sustainability across their operations worldwide.
In June 2023, Keysight Technologies leads agreement between 6G-SANDBOX and European space agency for non-terrestrial networks research. Recognizing the

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significance of non-terrestrial networks in the development of future wireless communication systems, Keysight took the initiative to facilitate collaboration between these two influential entities.

Key Questions Answered in This Report

1. What was the size of the global Data Acquisition (DAQ) system market in 2023?
2. What is the expected growth rate of the global Data Acquisition (DAQ) system market during 2024-2032?
3. What are the key factors driving the global Data Acquisition (DAQ) system market?
4. What has been the impact of COVID-19 on the global Data Acquisition (DAQ) system market?
5. What is the breakup of the global Data Acquisition (DAQ) system market based on the component type?
6. What is the breakup of the global Data Acquisition (DAQ) system market based on the speed?
7. What is the breakup of the global Data Acquisition (DAQ) system market based on the end user?
8. What are the key regions in the global Data Acquisition (DAQ) system market?
9. Who are the key players/companies in the global Data Acquisition (DAQ) system market?

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