

# **Building Automation System Market by Offering ( Facility Management Systems, Security & Access Controls, Fire Protection Systems), Communication Technology (Wireless Technologies, Wired Technologies), Application & Region-Global Forecast to 2028**

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## **Abstracts**

The building automation system market is expected to reach USD 155.9 billion by 2028 from 88.4 billion in 2023, at a CAGR of 12.0% during the 2023- 2028 period.

The IoT's evolution enables seamless communication between electronic devices without human intervention, revolutionizing building automation systems. Traditionally, HVAC, security, and lighting systems operated independently, but IoT integration empowers providers to introduce smart devices for efficient building management.

Cloud technology allows building automation providers to offer autonomous, data-rich monitoring services. This cloud-based system offers a user-friendly interface and data analytics, providing insights into weather forecasts, lighting control, access permissions, utility usage, and heating/cooling patterns. IoT facilitates automatic temperature adjustments based on sensor data, reducing energy consumption and costs.

This integration also makes building automation systems more cost-effective for buildings of all sizes.

Data analytics, driven by the vast data streams from various sources like sensors and thermostats, has the potential to transform the building automation market. It enhances facility management, reduces costs, and improves performance. The challenge lies in

delivering intelligent solutions to predict equipment failures and understand user behavior through historical data analysis. Leading companies like IBM and Schneider are pioneering advanced data analytics platforms, but there is immense potential for expanding these capabilities, ultimately tailoring solutions to each building's unique data profile.

“Security & Access Control is expected to have the highest market share in the forecast period.”

The safety and security systems of buildings and their occupants now include security and access control systems as standard components. They have done away with human intervention and transformed building security. These devices are put in place in buildings to track who enters and leaves, monitor people's movements and activities, and raise security levels. These systems are used by many organizations to monitor activity within buildings, regulate entry to premises, and safeguard their property, personnel, and data. To protect their citizens from terrorist assaults, governments throughout the world are investing more and more in creating dependable and strong security systems. The need for home security solutions is increasing quickly due to a number of factors, including the need to monitor children and provide medical care for elderly people at home, an increase in crime, and technological developments in home security solutions. Biometric and video surveillance systems are two categories under which security and access control systems fall. In the building automation system industry, Honeywell Security Group (US), Siemens AG (Germany), Carrier (US), and Trane Technologies (Ireland) are prominent players that offer security and access control systems.

“North America recorded the highest market share in the building automation system market for 2022.”

North America stands as one of the world's most developed regions and a prominent hub for the building automation systems market. In the year 2022, North America held a highest market share within the building automation system industry. The escalating demand for energy management and the increasing desire for eco-friendly residences have fueled the expansion of the North American building automation system market. This market has been scrutinized with a focus on the US, Canada, and Mexico.

Government agencies across the region collaborate to foster efficient and clean energy production and utilization. A noteworthy example is the North American Energy Working Group (NAEWG), established in 2001 through the joint efforts of the US, Canada, and

Mexico. NAEWG's primary objective is to bolster energy cooperation within the region. This includes enhancing communication and collaboration among these nations' governments and energy sectors regarding shared energy-related concerns. Additionally, the group concentrates on advancing energy trade and ensuring consistent interconnections in North America to promote sustainable development.

“Building automation system by commercial application is projected to have the highest market share in the forecast period”

Commercial applications of building automation systems encompass office complexes, hotels, healthcare institutions, retail and public gathering spaces, airports and train stations, warehouses, and more. Office buildings stand out as significant users of commercial building automation systems due to the prevalent utilization of energy-intensive equipment like HVAC and lighting control systems. These systems in office buildings primarily encompass HVAC control, lighting control, and security and access control. Many businesses prioritize creating a comfortable work environment with well-managed HVAC and efficient lighting systems to enhance employee productivity. For instance, May 2023 marked the completion of a 16-story office tower- the 555 Greenwich development- in New York City, touted as one of the most sustainable office buildings in the city, developed by the Hudson Square Properties and Hines. The office building features an innovative HVAC system with geothermal wells, a dedicated outdoor air system (DOAS), radiant heating and cooling, and a sophisticated control system for optimal performance. Connected to an adjoining office building, it is expected to use less than half the energy of its neighbor and be 40% more energy-efficient than the average large office building in New York. The tower is fully electrified, uses advanced HVAC technologies, and employs AI for energy-efficient operations, setting a precedent for sustainability in the city. Consulting engineers and sustainable design firms collaborated on this advanced HVAC system.

Retail buildings encompass various retail outlets, grocery stores, and expansive shopping malls. Public buildings include government-owned public administration facilities, municipal offices, utilities for water and electricity distribution, sports complexes, and auditoriums. Retail operations present a complex landscape with challenges such as security concerns, including theft and inventory losses that impact profits. Therefore, security and access control systems are of paramount importance in the retail sector. Furthermore, the adoption of HVAC control and security systems has become a standard practice in shopping malls and grocery stores, ensuring the safety and comfort of shoppers while also contributing to energy cost reductions. Some companies deliver building automation system solutions for retail and public assembly

buildings. For instance, 75F, an Indian company based in Bengaluru, offers building automation systems for retail applications that include energy management solutions to increase energy efficiency, creating effective scheduling for building lighting etc. The company- 75F received an investment from Next47, the global venture capital firm backed by Siemens, led the investment on behalf of Siemens Smart Infrastructure, because of its innovative solutions.

The majority of retailers contend with the issue of exceptionally narrow profit margins, rendering them acutely conscious of their operational expenditures. From individual stores to global retail chains, concerns revolve around building leases, escalating merchandise costs, and various fixed expenses. As a result, there has been a growing inclination towards implementing building automation systems, primarily to mitigate energy expenses. Leveraging wireless communication and cloud technology has made building controls more cost-effective. The adoption of building automation systems incorporating wireless communication and cloud capabilities has empowered numerous retail enterprises to achieve substantial energy cost reductions, often reaching up to 30%.

“Facility management type lighting control to grow at the highest CAGR for building automation system in the forecast period”

Lighting controls are important in building automation. Despite using less energy than HVAC systems, lighting systems are deployed in huge numbers in buildings, necessitating their automation. Lighting controls fulfill the current demands for environmental sustainability and responsibility while assisting in the promotion of energy efficiency and cost savings in a simple and accessible way. Lighting controls allow lighting systems to adapt to the real-world conditions in a room, such as the quantity of natural light present and the number of people using the space. As a result, lighting controls give residents the appropriate quantity of artificial light based on their needs. These systems are widely used in commercial, residential, and industrial buildings for both interior and outdoor illumination. The demand for lighting controls is rising worldwide since they are crucial for energy conservation.

Lighting sensors can be used to detect occupancy, daylight, and motion. This data can then be used to automate the operation of lighting systems, such as turning lights on and off automatically, adjusting the brightness of lights, and dimming lights when there is sufficient natural light. These sensors can help to improve energy efficiency by reducing the amount of time that lights are on unnecessarily. For example, occupancy sensors can turn off lights in empty rooms, and daylight harvesting systems can reduce

the need for artificial light during the day. They can help to reduce operating costs by lowering energy bills. Additionally, they can reduce the need for maintenance and replacement of lighting fixtures. They can help to improve comfort and productivity by creating a more dynamic and responsive lighting environment. They can also be used to enhance security by detecting movement in areas where people should not be.

The break-up of the profile of primary participants in the building automation system market-

By Company Type: Tier 1 – 30%, Tier 2 – 50%, Tier 3 – 20%

By Designation Type: C Level – 25%, Director Level – 35%, Others – 40%

By Region Type: North America – 35%, Europe –30 %, Asia Pacific – 25%, RoW – 10%,

The major players in the building automation system market are Honeywell International Inc. (US), Siemens (Germany), Johnson Controls (US), Schneider Electric (France), Carrier (US), Robert Bosch GmbH (Germany), Legrand (France), Hubbell (US), ABB (Switzerland), Trane Technologies plc (Ireland), Lutron Electronics Co., Inc (US), Crestron Electronics, Inc. (US), Hitachi, Ltd. (Japan), Delta Controls (Canada), Beckhoff Automation (Germany), Lennox International Inc. (US), Current Lighting Solutions, LLC. (US), AQUIITY BRANDS, INC, (Canada), Dialight (UK), Cisco Systems, Inc. (US), Rockwell Automation (US), Snap One, LLC (US), Signify Holding (Netherlands), Emerson Electric Co. (US), Leviton Manufacturing Co., Inc. (US), Mitsubishi Electric Corporation (Japan), Huawei Technologies Co., Ltd. (China), Bajaj Electricals Ltd (India), and Beijer Electronics, Inc. (Sweden).

## Research Coverage

The report segments the building automation system market and forecasts its size based and region. The report also provides a comprehensive review of drivers, restraints, opportunities, and challenges influencing market growth. The report also covers qualitative aspects in addition to the quantitative aspects of the market.

Reasons to buy the report:

The report will help the market leaders/new entrants in this market with information on

the closest approximate revenues for the overall building automation system market and related segments. This report will help stakeholders understand the competitive landscape and gain more insights to strengthen their position in the market and plan suitable go-to-market strategies. The report also helps stakeholders understand the pulse of the market and provides them with information on key market drivers, restraints, opportunities, and challenges.

The report provides insights on the following pointers:

Analysis of key drivers (empowering building automation through remote monitoring and control), restraints (complexity of customizing building automation solution), opportunities (increasing government and stakeholders' investments for the establishment of smart cities), and challenges (rapid technological evolution poses an obstacle to the building automation system growth)

Product Development/Innovation: Detailed insights on upcoming technologies, research & development activities, and new product launches in the building automation system market

Market Development: Comprehensive information about lucrative markets – the report analyses the building automation system market across varied regions.

Market Diversification: Exhaustive information about new products, untapped geographies, recent developments, and investments in the building automation system market

Competitive Assessment: In-depth assessment of market shares, growth strategies, and product offerings of leading players like Honeywell International Inc. (US), Siemens (Germany), Johnson Controls (US), Schneider Electric (France), Carrier (US), and many more.

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#### 7.2.2 ENOCEAN

7.2.2.1 Pioneers battery-free building automation technology with energy harvesting feature

#### 7.2.3 Z-WAVE

7.2.3.1 Engineered for automation of processes, enabling remote control of various devices and applications

#### 7.2.4 WI-FI

7.2.4.1 Empowers seamless connectivity and control in building automation systems, enhancing efficiency and convenience

#### 7.2.5 BLUETOOTH

7.2.5.1 Ideal for short-range communication in personal area networks (PANs)

#### 7.2.6 THREAD

7.2.6.1 Enhances real-time control and monitoring of various building functions, optimizing energy efficiency and occupant comfort

#### 7.2.7 INFRARED

7.2.7.1 Used for occupancy sensing and remote control, enhancing energy efficiency

and user comfort

## 7.3 WIRED TECHNOLOGIES

### 7.3.1 DIGITAL ADDRESSABLE LIGHTING INTERFACE (DALI)

7.3.1.1 Used for precise control and management of lighting systems, enabling individual luminaire control and energy efficiency

### 7.3.2 KONNEX (KNX)

7.3.2.1 Standardized platform for managing and automating lighting, HVAC, security, and energy systems, promoting seamless integration and control

### 7.3.3 LONWORKS

7.3.3.1 Enables seamless communication and integration of various systems, improving efficiency and control of building functions

### 7.3.4 BUILDING AUTOMATION AND CONTROL NETWORK (BACNET)

7.3.4.1 Streamlines communication and integration in building automation systems to enhance control and management of various building functions

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\*Details on Business Overview, Products/Solutions/Services offered, Recent Developments, MnM View might not be captured in case of unlisted companies.

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## About

Building automation and controls market is generally associated with lower development costs, lower operating costs, increased comforts, healthy indoor environment, enhanced durability, and less maintenance costs. All these parameters are hallmark to the green buildings concept and it has been observed that the market for green buildings is on a rise all over the world. Energy efficiency is the most important factor in almost all the building programs. Hence, factors such as the demand for energyefficient solutions, the rising concerns for enhanced security, the increasing venture capital funding, and greater convenience requirements have spurred the market of building automation and controls. Building automation and controls market initially started with wired technologies. However, it has entered the era of wireless technologies off late. The emergence of wireless technologies such as ZigBee, Z-wave, and EnOcean, among others has led to the increased deployment of automation & controls in the market, especially in the retrofit buildings, as wireless technologies help to prevent the reconstruction or renovations of the buildings. The building automation and controls products have not only increased the living standards and led to more convenient life but have also contributed significantly toward reducing energy consumption. The lighting controls regulate and save power through devices such as dimmers and sensors. Among all the products, the security & access controls have dominated the building automation and control market as a result of the increasing security.

Occupancy sensors are the most important component of lighting controls, which are used to reduce energy consumption and improve usability and control. They detect the presence of an individual in the room and turn lights on and off accordingly. They are majorly being used where the spaces are often unoccupied; such as offices, warehouses, restrooms, loading docks, corridors, stairwells, office lounges, conference rooms, and staircases. Occupancy sensors are particularly used to save energy, offer automatic control, and to comply with the building codes. Therefore, the shipment of occupancy sensors is more as compared to other lighting control components.

In this report, the building automation & controls market covers three major product segments, namely: lighting control, HVAC control, and security & access control. The market for these products has been analyzed across different application verticals (residential, commercial, and industrial) and geographical segments (North America, Europe, APAC, ROW).

Lighting control covers occupancy sensors, daylight sensors, relays, timers,

dimming actuators, switch actuators, blind/shutter actuators, transmitters, and receivers.

HVAC control includes smart thermostats, sensors, control valves, heating & cooling coils, dampers, actuators, pumps & fans, and smart vents.

Security & access control segment comprises video surveillance and biometric systems.

Other products covered in this report are smart meters, smart plugs, smart hubs, smart locks, and smoke detectors.

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