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Global Infrared Array Sensors for Smart Building Supply, Demand and Key Producers, 2026-2032

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Abstracts

The global Infrared Array Sensors for Smart Building market size is expected to reach $ 583 million by 2032, rising at a market growth of 11.0% CAGR during the forecast period (2026-2032).

Infrared array sensors for smart buildings are low-resolution thermal sensing devices composed of multiple infrared pixels arranged in a grid (such as 8?8, 16?16, or 32?32) that generate spatial heat maps rather than visual images, enabling privacy-preserving detection of occupancy, movement patterns, and abnormal temperature conditions for building automation. In the industry chain, the upstream includes semiconductor and materials suppliers providing MEMS or thermopile sensing elements, readout ICs, optics (lenses/windows), substrates, and packaging materials; algorithm IP (presence, counting, motion vectors) and firmware tools also sit upstream. The midstream consists of sensor manufacturers and module makers that integrate the array, optics, signal processing, and digital interfaces (I?C/SPI), often adding onboard algorithms to deliver plug-and-play modules for IoT deployment. The downstream spans system integrators, building automation OEMs, and solution providers who embed these sensors into HVAC controllers, smart lighting, ceiling sensors, and space-analytics platforms, ultimately serving end users such as commercial offices, schools, hospitals, retail spaces, and smart residential buildings. Value creation across the chain centers on balancing accuracy, power consumption, cost, and privacy compliance, with demand driven by energy-efficiency regulations, ESG goals, and the need for reliable occupancy data without cameras.

1) Strong Demand for Energy Efficiency and Regulatory Compliance

One of the most significant drivers for infrared array sensors in smart buildings is the

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increasing global emphasis on energy efficiency and regulatory compliance. Governments and regulatory bodies?particularly in Europe through frameworks such as the European Commission?s Energy Performance of Buildings Directive (EPBD)?are mandating stricter building energy performance standards. Infrared array sensors enable precise occupancy detection and thermal mapping, allowing HVAC and lighting systems to operate only when and where needed. Compared to traditional PIR sensors, infrared arrays provide more granular spatial data, improving energy savings in large commercial buildings, offices, and public infrastructure. As building owners seek to reduce operational costs and carbon footprints, adoption of advanced sensing technologies is accelerating.

2) Rapid Growth of Smart Building Automation and IoT Integration

The expansion of smart building ecosystems and IoT-based automation is a major driver for infrared array sensor adoption. Modern buildings increasingly integrate systems for HVAC control, lighting automation, security, and space utilization analytics, all of which rely on accurate sensing technologies. Infrared array sensors provide advantages such as multi-zone detection, people counting, and activity recognition without requiring cameras, addressing both performance and privacy concerns. Leading technology providers like Panasonic, Omron, and Teledyne FLIR are developing compact, high-resolution IR array modules tailored for smart building applications. The convergence of edge computing and sensor fusion (IR + mmWave + AI analytics) is further enhancing the value proposition, driving widespread deployment in commercial and institutional buildings.

3) Increasing Focus on Occupant Comfort, Safety, and Privacy-Preserving Sensing

Beyond energy savings, there is growing demand for technologies that enhance occupant comfort, safety, and privacy, which is significantly boosting the adoption of infrared array sensors. These sensors can detect temperature distribution, human presence, and movement patterns without capturing identifiable images, making them highly suitable for privacy-sensitive environments such as offices, hospitals, schools, and public facilities. Applications include adaptive HVAC control, smart lighting, fall detection, fire detection, and crowd monitoring. Compared with camera-based systems, infrared arrays offer a strong balance between functionality and compliance with data privacy regulations. This trend is particularly important in regions with strict data protection laws, where non-visual sensing technologies are increasingly preferred for smart building deployments.

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This report studies the global Infrared Array Sensors for Smart Building production, demand, key manufacturers, and key regions.

This report is a detailed and comprehensive analysis of the world market for Infrared Array Sensors for Smart Building 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 Infrared Array Sensors for Smart Building that contribute to its increasing demand across many markets.

Highlights and key features of the study
Global Infrared Array Sensors for Smart Building total production and demand, 2021-2032, (K Units)
Global Infrared Array Sensors for Smart Building total production value, 2021-2032, (USD Million)
Global Infrared Array Sensors for Smart Building production by region & country, production, value, CAGR, 2021-2032, (USD Million) & (K Units), (based on production site)
Global Infrared Array Sensors for Smart Building consumption by region & country, CAGR, 2021-2032 & (K Units)
U.S. VS China: Infrared Array Sensors for Smart Building domestic production, consumption, key domestic manufacturers and share
Global Infrared Array Sensors for Smart Building production by manufacturer, production, price, value and market share 2021-2026, (USD Million) & (K Units)
Global Infrared Array Sensors for Smart Building production by Type, production, value, CAGR, 2021-2032, (USD Million) & (K Units)
Global Infrared Array Sensors for Smart Building production by Application, production, value, CAGR, 2021-2032, (USD Million) & (K Units)

This report profiles key players in the global Infrared Array Sensors for Smart Building 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 Melexis, Teledyne FLIR, Panasonic, Omron Corporation, Excelitas Technologies, Heimann Sensor, Azbil Corporation, Amphemol, Seiko NPC, KODENSHI, 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

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used in analyzing the World Infrared Array Sensors for Smart Building 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 Infrared Array Sensors for Smart Building Market, By Region:

United States

China

Europe

Japan

South Korea

ASEAN

India

Rest of World

Global Infrared Array Sensors for Smart Building Market, Segmentation by Type:

Low-Resolution

Medium-Resolution

High-Resolution

Global Infrared Array Sensors for Smart Building Market, Segmentation by Product:

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Thermopile Array Sensor

Pyroelectric Array Sensor

Other

Global Infrared Array Sensors for Smart Building Market, Segmentation by Technology:

Cooled IR Sensor

Uncooled IR Sensor

Global Infrared Array Sensors for Smart Building Market, Segmentation by Application:

Smart Lighting

HVAC

Safety and Fire Detection

Occupancy Detection

Others

Companies Profiled:

Melexis

Teledyne FLIR

Panasonic

Omron Corporation

Excelitas Technologies

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Heimann Sensor

Azbil Corporation

Amphemol

Seiko NPC

KODENSHI

Orisystech

Key Questions Answered:

1. How big is the global Infrared Array Sensors for Smart Building market?
2. What is the demand of the global Infrared Array Sensors for Smart Building market?
3. What is the year over year growth of the global Infrared Array Sensors for Smart Building market?
4. What is the production and production value of the global Infrared Array Sensors for Smart Building market?
5. Who are the key producers in the global Infrared Array Sensors for Smart Building market?
6. What are the growth factors driving the market demand?

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