

Thermal Imaging Market Assessment, By Type [Cameras, Modules, Scopes], By Focus System [Manual Focus, Fixed Focus, Auto Focus, Multi-sharp Focus, Laser-assisted Focus], By Wavelength [Short Wavelength, Mid Wavelength, Long Wavelength], By Temperature Range [1000 °C], By Industry [Manufacturing, Healthcare, Defense & Government, Industrial, Research & Development, Marine, Others], By Region, Opportunities and Forecast, 2016-2030F

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Abstracts

Global thermal imaging market has experienced significant growth in recent years and is expected to maintain a strong pace of expansion in the coming years. With projected revenue of approximately USD 4.2 billion in 2022, the market is forecasted to reach a value of USD 6.5 billion by 2030, displaying a robust CAGR of 5.7% from 2023 to 2030.

Thermal imaging may uncover hidden defects in electrical systems, detect energy inefficiencies in buildings, locate missing people in search and rescue operations, and highlight irregularities in industrial machinery. Due to its non-contact nature and ability to see in the dark, it is a helpful instrument for various purposes.

The thermal imaging market has grown significantly, owing to increased demand for security and surveillance applications, which has promoted adoption. Also, industrial automation and predictive maintenance have increased the need for thermal imaging in the manufacturing industry. Furthermore, technological developments have resulted in more cheap and adaptable thermal imaging technologies, fueling the market expansion.

The increased need for surveillance and security solutions has pushed thermal imaging technology into widespread adoption. Its capacity to identify heat signatures in low-light or difficult-to-notice situations improves monitoring and threat detection, making it important in protecting key infrastructure, borders, and public places. Because of its dependability and efficacy, thermal imaging has become essential in modern surveillance and security applications.

For instance, in January 2021, The Australian Defence Force granted L3Harris Technologies contracts totaling \$233 million. A \$115 million deal will offer cryptographic upgrading assistance, including tactical radios, while a \$118 million contract will improve military situational awareness by outfitting soldiers with sophisticated night vision goggles. Both the contracts include Australian support and repair capability .

Non-Destructive Testing to Fuel the Growth

The need for non-destructive testing (NDT) to adopt thermal imaging has considerably expanded the thermal imaging market. This technique detects faults in materials and structures without inflicting any harm, safeguarding the integrity and safety of essential assets in manufacturing, construction, and aerospace sectors. Its capacity to detect hidden issues, such as structural flaws or material defects, enables proactive maintenance with economical quality management. It lowers downtime, eliminates accidents, and extends asset lifespan, making thermal imaging a critical tool in guaranteeing safety and efficiency, improving its acceptance and market development.

For example, in December 2021, HUVR and Opgal partnered to integrate thermal cameras with HUVR's inspection software, improving leak detection and reporting. It aims to boost environmental impact mitigation and streamline inspection processes.

Importance of Thermal Imaging in Healthcare

The increasing use of thermal imaging in healthcare applications has been a major driving force in the market. Its application in fever screening, illness identification, and patient monitoring has been proven critical, particularly during public health emergencies like the COVID-19 pandemic. Thermal imaging enables quick and non-invasive temperature monitoring, allowing for early infection detection and disease control. The enhanced usefulness has resulted in increased implementation in healthcare settings, increasing demand for sophisticated thermal imaging equipment. Thermal imaging's importance in healthcare is expanding as healthcare stresses patient safety and efficient screening.

For example, in August 2023, Innovative technological advances in firefighter communication systems, like incorporating Bluetooth microphones into SCBA masks, improved on-scene team communication. Using Wi-Fi to transmit thermal imaging camera data, further improves situational awareness during firefighting operations.

Dominance of Cameras in Thermal Imaging Market

Thermal imaging cameras dominate the market due to their broad application and usability. They excel at non-contact measurement of temperatures, anomaly identification, and improving safety across sectors. Technological developments have enhanced their resolution & sensitivity while cutting prices. This accessibility has increased their healthcare, defense, and consumer electronics use. Thermal imaging cameras dominate the market due to their numerous applications and expanding capabilities, driving widespread adoption.

For instance, in September 2023, Teledyne FLIR introduced the Neutrino Ground ISR 300 and Ground ISR 420, which are mid-wave infrared imaging solutions for ground-based ISR systems that use CZ lenses and imaging electronics from InVeo Designs LLC.

North America Dominates Thermal Imaging Market

North America dominates the thermal imaging market for multiple factors. The region has a strong defense sector that spends extensively on military thermal imaging applications such as night vision and surveillance. Thermal imaging is used for various reasons in many other industries, including aerospace, automotive, and healthcare. North America is home to large thermal imaging technology companies, which allows it to keep ahead of the competition. Furthermore, the region's rigorous safety regulations promote the usage of thermal imaging for inspections and testing. All these variables combine to make North America the global thermal imaging market leader.

For instance, in July 2021, L3Harris Technologies deployed its first Unmanned Surface Vehicle (USV), which was meant to safeguard the environment and improve safety during oil spill response operations.

Government Initiatives are Acting as a Catalyst

Government initiatives are propelling the thermal imaging market forward by

strengthening its usage in various industries. These projects frequently try to improve security, healthcare, and industrial operations. Governments, for example, invest in thermal imaging equipment to improve border security and monitor key infrastructure. Furthermore, during the COVID-19 pandemic, thermal imaging was used to scan fever in public locations, increasing market growth due to its potential for public health and safety.

For example, in September 2023, The National Institute of Standards and Technology (NIST) in the United States is working on a large project dubbed 'Thermal Magnetic Imaging and Control' (Thermal MagIC). The concept employs nanometer-sized magnetic spheres to sense temperature changes with great accuracy and spatial resolution, promising medical and manufacturing benefits.

Impact of COVID-19

Before the pandemic, the thermal imaging market was continuously developing, especially due to surveillance, industrial, and healthcare applications. Thermal cameras were used in industries for predictive maintenance, assuring operational efficiency. Thermal imaging was used in healthcare for diagnosis and fever detection. The pandemic had a huge influence on the thermal imaging market. With a greater emphasis on public health and safety, the demand for thermal cameras increased. These gadgets were critical for fever screening at airports, offices, and public places. Industries spent more on thermal imaging for contactless temperature checks, while governments encouraged its use for pandemic control.

Impact of Russia-Ukraine War

The Russia-Ukraine conflict has a substantial influence on the thermal imaging market. It has interrupted the supply chain since numerous important thermal imaging component manufacturers are headquartered in the affected region. It resulted in market volatility due to shortages and price variations. However, the war drove demand for thermal imaging technologies, particularly in the defense and surveillance industries. As border tensions grew, several countries sought sophisticated thermal imaging technology to improve their security and situational awareness. As a result, the thermal imaging market enjoyed an upsurge in demand, however, it encountered barriers due to disrupted supply chains and geopolitical uncertainty.

Key Players Landscape and Outlook

The dominance of key players like Fluke Corporation, L3Harris Technologies, Inc., BAE Systems, plc, Chauvin Arnoux, Inc., and Teledyne FLIR LLC characterizes the Thermal Imaging market. These industry leaders have established a strong foothold due to their technological prowess and extensive product portfolios. The market outlook remains optimistic as thermal imaging technology finds applications across various sectors, including defense, surveillance, and industrial automation. With increasing awareness about the benefits of thermal imaging and growing demand for non-contact temperature measurement solutions, the market is expected to witness steady growth, driven by innovation and expanding use cases in both developed and emerging economies.

In May 2022, L3Harris commenced low-rate initial production of the F-PANO (Fused Panoramic Night Vision Goggle) for USSOCOM. The F-PANO offers a 97-degree field-of-view, combining image intensification and thermal imagery for enhanced situational awareness and rapid decision-making.

In June 2022, Teledyne FLIR enhanced its Si124 industrial acoustic imaging camera series with a broader detection range of up to 65 kHz and an integrated battery for efficient condition monitoring and inspection.

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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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