

# Applications for Unmanned Aerial Vehicles and Ground Vehicles



## WEOM<sup>®</sup> THERMAL CAMERA CORE

Unmanned aerial vehicles (UAVs) and ground vehicles (UGVs) are at the forefront of technological innovation, offering extensive applications that range from exploration and environmental monitoring to precision agriculture and emergency rescue operations. The efficacy of these systems hinges on their ability to detect, identify, and navigate diverse environments with precision and reliability. The WEOM<sup>®</sup> thermal camera core is a groundbreaking tool designed to meet these rigorous demands, providing unmatched performance and superior image quality.

### Superior Image Quality and Sensitivity

The WEOM<sup>®</sup> thermal core features an uncooled long-wave infrared sensor with a resolution of 640 x 480 pixels and an impressive sensitivity of 30mK. This high-resolution sensor ensures that even the minutest thermal differences are captured with clarity. In applications where visibility is compromised, such as nighttime surveillance or environments with significant thermal variability, the WEOM<sup>®</sup> core stands out by delivering consistent and reliable thermal imagery. This high sensitivity is crucial for applications such as wildlife monitoring, where detecting slight temperature variations can indicate the presence of animals.

## BENEFITS OF THE WEOM<sup>®</sup> THERMAL CORE IN UAVS/UGVS

### Enhanced Safety and Efficiency

The ability to detect thermal anomalies and obstacles in real-time significantly enhances the safety of UAV and UGV operations. This capability is vital in applications like firefighting, where detecting hot spots can prevent the spread of fires, and in urban search and rescue missions, where navigating through debris and locating survivors quickly is paramount.

### Reliability in Challenging Conditions

The WEOM<sup>®</sup> thermal camera core's resistance to extreme temperatures and humidity ensures consistent performance in a variety of environmental conditions. This reliability is essential for applications like wildlife conservation in remote regions or military surveillance in hostile environments, where equipment failure is not an option.



### Advanced Processing and Quick Response

The WEOM<sup>®</sup> thermal core leverages advanced FPGA (Field Programmable Gate Array) processing to deliver rapid response times and robust reliability. Real-time data processing is essential for the effective operation of UAVs and UGVs, particularly in dynamic environments where immediate navigation and obstacle detection are required. The FPGA processing capability of the WEOM<sup>®</sup> core ensures that thermal data is processed and transmitted swiftly, enabling the UAV or UGV to make instantaneous decisions. This feature is particularly beneficial in search and rescue missions, where time-sensitive operations can mean the difference between life and death.

### Flexible Integration

The compact and lightweight design of the WEOM<sup>®</sup> thermal core, combined with its range of output formats and control interfaces, allows for seamless integration into various unmanned systems. This flexibility enables the creation of specialized solutions tailored to specific operational needs, such as drones equipped for agricultural monitoring that can identify plant health based on thermal signatures.

### Wide Spectrum of Applications

From terrain exploration and environmental mapping to industrial inspection and security surveillance, the WEOM<sup>®</sup> thermal core proves its versatility across multiple domains. Its ability to provide detailed thermal imagery enhances decision-making and operational effectiveness in numerous fields.

## Durability and Reliability

Designed to operate in extreme conditions, the WEOM® thermal core, ensuring resistance to dust and water ingress. It operates effectively in temperature ranges from -40 °C to +80 °C, making it suitable for use in diverse environments, from arctic expeditions to desert operations. The core's robust construction ensures reliable performance even in harsh and fluctuating conditions, such as those encountered in maritime surveillance or volcanic monitoring. This durability is crucial for maintaining continuous operation and minimizing downtime in critical applications.

## Modular and Flexible Solution

The WEOM® thermal core offers a range of output formats and control interfaces, including HDMI, CVBS, USB3, CMOS, and GigE. This modularity provides integrators with the flexibility to tailor the system to specific application requirements. The ability to choose from various lenses with focal lengths ranging from 7.5 mm to 35 mm and different fields of view further enhances the core's adaptability. This feature is particularly beneficial in applications requiring customized imaging solutions, such as surveillance drones that need a wide field of view for area monitoring or industrial inspection robots that require a narrow focus for detailed examination.



### Superior Image Quality and Sensitivity:

The WEOM® thermal core provides detailed and clear thermal images with its high-resolution 640 x 480 pixels sensor and 30mK sensitivity, ensuring reliable performance even in challenging conditions.

### Advanced Processing and Quick Response:

Leveraging advanced FPGA processing, the WEOM® core ensures rapid data processing and transmission, crucial for real-time operations in UAVs and UGVs.

### Compact and Lightweight Design:

Measuring just 40.1 x 37.8 x 42.6 mm and weighing less than 65 grams, the WEOM® core is easy to integrate into various unmanned systems, facilitating extended operational time and improved maneuverability.

### Wide Range of Applications:

The WEOM® thermal core's versatility makes it ideal for applications such as terrain exploration, industrial heat leak detection, critical infrastructure monitoring, and rescue operations.

### Modular and Flexible Solution:

With multiple output formats and control interfaces, including HDMI, USB3, and GigE, the WEOM® core can be customized to meet specific application needs, enhancing its adaptability.

### Durability and Reliability:

Designed to operating temperatures ranging from -40 °C to +80 °C, the WEOM® core ensures consistent performance in harsh environments.

The WEOM® thermal core represents a state-of-the-art solution for unmanned systems requiring superior image quality, rapid response, and dependable performance in challenging conditions. Its modularity, durability, and exceptional performance make it an indispensable tool for modern UAV and UGV applications, ensuring mission success and operational excellence in a wide range of scenarios.