



**640px**  
THERMAL  
RESOLUTION

**30mK**  
SENSITIVITY

**60Hz**  
FRAME RATE

**INTEL  
FPGA**

**USB**



# WORKSWELL WEOM USB

## ITAR-FREE THERMAL IMAGING CAMERA CORE

## Datasheet

**Release date:** 3<sup>rd</sup> of March 2025

**Version:** 250303

# WEOM USB thermal imaging core specification

## WEOM USB thermal imaging camera core key features description

**ITAR-free thermal imaging camera module designed and produced in Europe** with unmatched quality suitable for all types of demanding applications such as unmanned vehicle (UAV/UGV), thermal monocular/binocular, thermal fixed industrial and security cameras, maritime thermal cameras, machine vision thermal cameras, monitoring and intelligent systems, driving systems, defence, security and many more.

Advanced FPGA processing provides outstanding image quality and scene visualization with high performance **sensitivity of 30mK and resolution of the detector 640 x 480 px**. WEOM USB offers small dimensions, weight, variety of lenses for any desired application.

## Technical specification

<b>Detector type</b>	Uncooled LWIR detector, microbolometer
<b>Spectral band</b>	8 – 14 $\mu\text{m}$
<b>Detector resolution</b>	640 x 480 px
<b>Detector pixel size</b>	17 $\mu\text{m}$ (up to 30% higher sensitivity than 12 $\mu\text{m}$ detector)
<b>Detector sensitivity</b>	<30 mK or <50 mK
<b>Image frame rate</b>	9 Hz, 30 Hz or 60 Hz full frame rate
<b>Scene temperature range</b>	High Gain mode -50 °C to +160 °C, Low Gain mode -50 °C to 600 °C High Gain mode -58 °F to +320 °F, Low Gain mode -58 °F to 1 112 °F)
<b>Non-uniformity correction (NUC)</b>	Integrated, factory calibrated
<b>Fixed focus lenses (M25)</b>	FOV 42° (H) x 32° (V), focal length 14 mm, f/1.2 FOV 24° (H) x 18° (V), focal length 25 mm, f/1.2 FOV 17° (H) x 13° (V), focal length 35 mm, f/1.1
<b>Fixed focus lenses (M34)</b>	FOV 91° (H) x 74° (V), focal length 7.5 mm, f/1.2 FOV 44° (H) x 33° (V), focal length 14.25 mm, f/1.2 FOV 24° (H) x 18° (V), focal length 25 mm, f/1.2 FOV 17° (H) x 13° (V), focal length 35 mm, f/1.2 FOV 12° (H) x 9° (V), focal length 50 mm, f/1.2 FOV 8° (H) x 6° (V), focal length 73.1 mm, f/1.05
<b>Version without the lens</b>	Delivery of WEOM is available without lens (M25 or M34 lens holder)
<b>Image orientation</b>	Invert (Flip the image vertically), Mirror (Flip the image horizontally)
<b>Control software</b>	Control software WEOM GUI
<b>Spatial image filter</b>	Median full frame 60Hz spatial filter for improved image quality
<b>Temporal image filters</b>	Time-domain 2x, 4x moving average filter for improved image quality
<b>AGC</b>	Automatic Image Gain Control (Plateau Histogram equalization)
<b>MGC</b>	Manual Gain Control function (Brightness, Contrast)

<b>Temperature drift compensation</b>	Factory calibrated for temperature drift compensation
<b>WEOM USB video outputs and control</b>	
<b>USB plugin</b>	1x USB-C connector for video UVC output & power supply 1x JST connector for AUX signals Video format Pre-IGC MONO 14bit, Post-coloring YCbCr
<b>CMOS</b>	14-bit parallel video (50-pin Hirose)
<b>Serial communication</b>	UART serial communication channel for WEOM control
<b>Image palettes</b>	14 image palettes available in total (2 definable by the user)
<b>Dead Pixel Correction</b>	User Dead Pixel correction wizard
<b>Time to start</b>	< 5 sec
<b>Physical attributes</b>	
<b>Mounting holes</b>	6 x M2 mounting holes
<b>Dimensions (CMOS version)</b>	40.1 (h) x 37.8 (w) x 42.6 (l) mm (1.57 x 1.48 x 1.67 in) without the lens
<b>Weight</b>	< 81.1 g (2.86 oz) including the USB plugin (without the lens)
<b>Power supply</b>	
<b>Input voltage</b>	5 VDC
<b>Primary electronic interface</b>	CMOS (50-pin Hirose)
<b>Power dissipation</b>	CMOS: Typically 1.9 W, 2.1 W peak USB: Typically 2.0 W, 2.2 W peak
<b>Environmental data</b>	
<b>IP rating (Encapsulation)</b>	IP67 (at front of lens)
<b>Operating temperature</b>	-30°C to +70°C (-22 °F to 158 °F)
<b>Storage temperature</b>	-50°C to +90°C (-58 °F to 194 °F)
<b>Humidity</b>	5% to 95% non-condensing
<b>Housing material</b>	Durable aluminum body
<b>ROHS, REACH, WEEE, CE</b>	Compliant

### DRI information for WEOM lenses

The calculations are based on the “Johnson Criteria” that is used for DRI (Detection, Recognition, and Identification). According to the Johnson Criteria, the minimum resolution, pixels on target, required to achieve a 50% probability for an observer to discriminate an object are:

- (D) Detection:**  
If a target is found in the field of view, the image of the target must account for more than 1.5 pixels in the critical dimension direction.
- (R) Recognition:**  
The target is classified to identify whether the target is a car, truck or person, which means that the image of the target must occupy more than 6 pixels in the critical dimension direction.
- (I) Identification:**  
The definition of identification is that the model and other characteristics of the target can be distinguished. The image of the target must occupy more than 12 pixels in the critical dimension direction.

Lens	Human (1.8 m x 0.5 m) (5.90 ft x 1.64 ft)			Vehicle (2.3 m x 2.3 m) (7.54 ft x 7.54 ft)			Drone (0.5 m x 0.5 m) (1.64 ft x 1.64 ft)		
	D	R	I	D	R	I	D	R	I
7.5 mm	280 m	70 m	35 m	675 m	170 m	85 m	150 m	35 m	25 m
14.25 mm	520 m	130 m	70 m	1 260 m	320 m	160 m	270 m	70 m	30 m
25 mm	930 m	230 m	120 m	2 250 m	560 m	280 m	490 m	120 m	60 m
35 mm	1 300 m	330 m	160 m	3 160 m	790 m	390 m	690 m	170 m	90 m
50 mm	1 860 m	470 m	230 m	4 510 m	1 130 m	560 m	980 m	250 m	120 m
73.1 mm	2 720 m	680 m	340 m	6 580 m	1 650 m	820 m	1 430 m	360 m	180 m

\* Real values may vary based on environmental conditions and integration.

# Contact information

WORKSWELL IN THE WORLD

