

MosaicCORE™

**HIGH PERFORMANCE, EASY TO USE
AND RELIABLE THERMAL IMAGING
CORES CONFIGURABLE FOR
VARIOUS APPLICATIONS.**

KEY CAMERA SPECS

- 200 x 150 & 320 x 240 Sensor Resolution
- 15° to 105° Field of View Options
- 40C to 330C (-40F to 626F) Detection
- Size (LxWxH) 10x20x21mm to 23x20x21mm
- Dual-Gain Smart Pixels
- Up to 32Hz and < 9Hz Frame Rate

seek
thermal
thermal.com



Implementing high-end thermal technology has never been this simple. Mosaic Core is configurable for a variety of applications, such as Surveillance & Security, Test & Measurement, Firefighting, Drones, PVS (Personal Vision Systems), Automotive, and much more. Mosaic Cores are designed for performance and versatility while enabling manufactures to build winning product lines with competitive pricing.

Designed and Manufactured in Santa Barbara, California with Global Components.

KEY FEATURES

High-Resolution Thermal Sensors

Choose a core with 30,000 or 76,800 temperature pixels with excellent image clarity and sensitivity

Dual-Gain Smart Pixels

Each pixel automatically adjusts gain states to maximize resolution contrast when viewing hot and cold objects in the same scene

12 Micron Pixels

More resolution and temperature data packed into a physically tiny array enables small form factor applications and lower cost

Options For <9Hz or Fast Frame

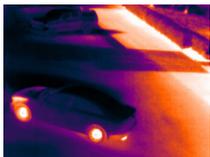
Perfect for regions where <9Hz is required and available up to 32Hz Fast Frame where higher frame rates are preferred and permitted

Configurable To Meet Your Design Goals

Select the ideal thermal core for your project with options for resolution, field of view, frame rate and more

Easy To Use Development Tools

Purchase a development Starter Kit and start imaging in seconds with Simple Viewer.



Security & Surveillance



Automotive



Test & Measurement



Personal Vision Systems



Firefighting



Drones

DEVELOPER PORTAL ACCESS

Get access to SDKs, APIs, support documentation and other important tools to ensure your project is a success. SDKs available for Linux, Android and Windows.

Please contact your sales representative for access to the Seek Developer Portal.

TECHNICAL SUMMARY
200 x 150 RESOLUTION

Specifications		Description			
Microbolometer	Uncooled Vanadium Oxide				
Pixel Pitch	12 Microns				
Spectral Response	7.8 - 14 Microns				
Sensor Resolution (Array Format)	200 (h) x 150 (v); 30,000 pixels				
Frame Rate	<9Hz or up to 32Hz				
Imaging Range ¹	-40°C to 330°C Contact your sales rep for higher temperature applications				
Sensor Sensitivity	65 mK (typical), <100 mK (max) @ 25°C				
Non-Uniformity Correction (NUC)	Automatic NUC (with shutter)				
Video Output Interfaces	USB				
Supply Voltage	3.3V to 5.0V				
Power: Core Only	<50mW				
Power: Core + Interface Board	300mW				
Output Formats (user selectable)	Linux / Windows SDK		Android SDK		
	16-bit filtered pre AGC. 32-bit ARGB post colorization. 32-bit floating point or 16-bit fixed point thermography data.		16-bit filtered pre AGC. 32-bit ARGB post colorization in the bitmap image. 16-bit fixed point thermography data.		
Optics & Mechanical					
Focal Length	2.2mm	4.0mm	6.6mm	9.1mm	
F-number (focal length/aperture)	f/1.05	f/1.00	f/1.26	f/1.00	
Spatial Resolution (IFOV, center)	5.23	3.00	1.82	1.32	
HFOV	61°	35°	21°	15°	
VFOV	45°	26°	15°	12°	
Detection Range ²	186m	333m	543m	758m	
Recognition Range ²	46m	83m	136m	190m	
Identification Range ²	27m	48m	78m	108m	
Distance to Spot Ratio	31:1	56:1	91:1	126:1	
Ingress Protection	N/A	IP67	IP67	IP67	
Core Dimensions Without Cushion (L x W x H)	10 x 20 x 21mm	20 x 20 x 21mm	23 x 20 x 21mm	20 x 20 x 21mm	
Core Weight	8 g	12 g	12 g	12 g	
Focus	Fixed				
Lens Material	Chalcogenide				
Thermography					
Temperature Calibration	Calibrated Output in °C, °F, K				
Temperature Accuracy ^{1,3}	The greater of ±5°C or 5% between 5°C to 140°C scene temperatures Typical performance of ±10% between 140°C to 330°C scene temperatures Contact your sales rep for higher temperature accuracy up to 330°C and beyond				
Environmental					
Operating Temperature Range	-10°C to 60°C Contact your sales rep for higher operating temperature ranges				
Storage Temperature Range	-40°C to 80°C				
Solar Protection	Yes				
Humidity	10%~95%RH, non-condensing				
Regulatory	ROHS, WEEE, REACH				
Documentation and Tools					
Starter Kit	Available				
Data Sheet	Available				
Accessories	Interface Board and Flexes				

1. Specified at nominal 25°C ambient operating temperature and nominal measurement distance of 12 inches. Temperature reported is Center Spot temperature, which is an average of the center 36 pixels. Contact Seek Thermal for performance at other nominal operating temperatures and measurement distances.
2. Based on Johnson Criteria.
3. Factory default emissivity is set to 0.97. Emissivity is adjustable using the SDK. See data sheet for more information.

TECHNICAL SUMMARY
320 x 240 RESOLUTION

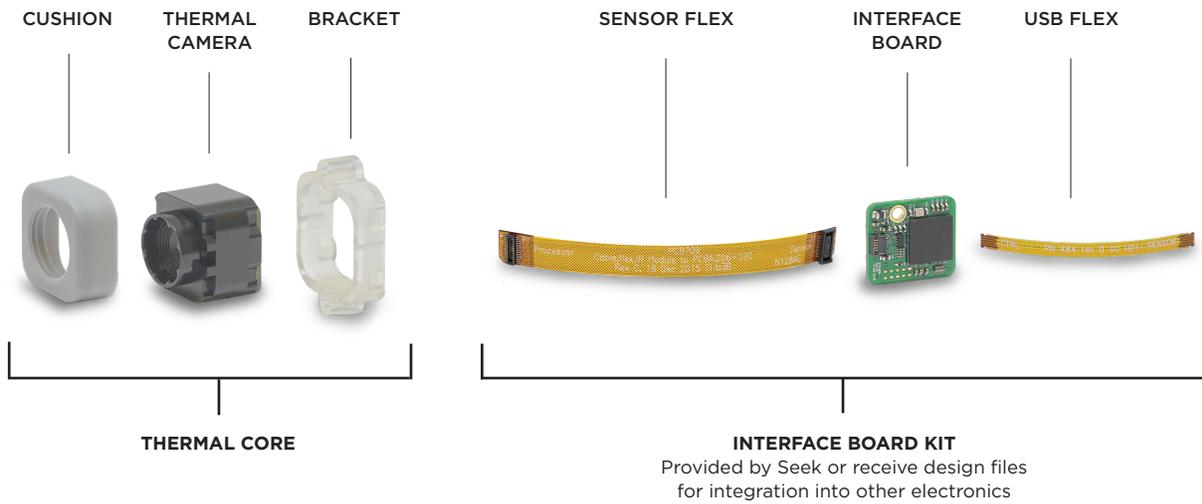
Specifications		Description			
Microbolometer	Uncooled Vanadium Oxide				
Pixel Pitch	12 Microns				
Spectral Response	7.8 - 14 Microns				
Sensor Resolution (Array Format)	320 (h) x 240 (v); 76,800 pixels				
Frame Rate	<9Hz or up to 27Hz				
Imaging Range ¹	-40°C to 330°C Contact your sales rep for higher temperature applications				
Sensor Sensitivity	65 mK (typical), <100 mK (max) @ 25°C				
Non-Uniformity Correction (NUC)	Automatic NUC (with shutter)				
Video Output Interfaces	USB				
Supply Voltage	3.3V to 5.0V				
Power: Core Only	<50mW				
Power: Core + Interface Board	300mW				
Output Formats (user selectable)	Linux / Windows SDK		Android SDK		
	16-bit filtered pre AGC. 32-bit ARGB post colorization. 32-bit floating point or 16-bit fixed point thermography data.		16-bit filtered pre AGC. 32-bit ARGB post colorization in the bitmap image. 16-bit fixed point thermography data.		
Optics & Mechanical					
Focal Length	2.2mm	4.0mm	6.6mm	9.1mm	
F-number (focal length/aperture)	f/1.05	f/1.00	f/1.26	f/1.00	
Spatial Resolution (IFOV, center)	5.23	3.00	1.82	1.32	
HFOV ⁴	105° 67° without vignetting	56°	34°	24°	
VFOV ⁴	75° 48° without vignetting	42°	25°	18°	
Detection Range ²	186m	333m	543m	758m	
Recognition Range ²	46m	83m	136m	190m	
Identification Range ²	27m	48m	78m	108m	
Distance to Spot Ratio	31:1	56:1	91:1	126:1	
Ingress Protection	N/A	IP67	IP67	IP67	
Core Dimensions Without Cushion (L x W x H)	10 x 20 x 21mm	20 x 20 x 21mm	23 x 20 x 21mm	20 x 20 x 21mm	
Core Weight	8 g	12 g	12 g	12 g	
Focus	Fixed				
Lens Material	Chalcogenide				
Thermography					
Temperature Calibration	Calibrated Output in °C, °F, K				
Temperature Accuracy ^{1,3,4}	The greater of ±5°C or 5% between 5°C to 140°C scene temperatures Typical performance of ±10% between 140°C to 330°C scene temperatures Contact your sales rep for higher temperature accuracy up to 330°C and beyond				
Environmental					
Operating Temperature Range	-10°C to 60°C Contact your sales rep for higher operating temperature ranges				
Storage Temperature Range	-40°C to 80°C				
Solar Protection	Yes				
Humidity	10%~95%RH, non-condensing				
Regulatory	ROHS, WEEE, REACH				
Documentation and Tools					
Starter Kit	Available				
Data Sheet	Available				
Accessories	Interface Board and Flexes				

- Specified at nominal 25°C ambient operating temperature and nominal measurement distance of 12 inches. Temperature reported is Center Spot temperature, which is an average of the center 36 pixels. Contact Seek Thermal for performance at other nominal operating temperatures and measurement distances.
- Based on Johnson Criteria.
- Factory default emissivity is set to 0.97. Emissivity is adjustable using the SDK. See data sheet for more information.
- Actual usable FOV and temperature accuracy on 2.2mm lens may be less due to vignetting at the edges and corners.

Specifications and undocumented specifications are subject to change without notice.

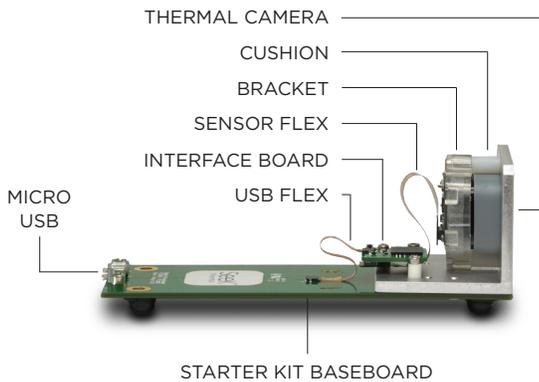
For the most up-to-date specifications, visit thermal.com/oem

REQUIRED ELEMENTS



MOSAIC CORE PART NUMBERS

Resolution	Lens	HFOV	Interface Board Kit	Frame Rate	Part Number
200 x 150	2.2mm f/1.05	61°	Provided by Seek	< 9Hz	C202SP
				Fast Frame	C212SPX
	4.0mm f/1.00	35°	Provided by Seek	< 9Hz	C204SP
				Fast Frame	C214SPX
	6.6mm f/1.26	21°	Provided by Seek	< 9Hz	C206SP
				Fast Frame	C216SPX
	9.1mm f/1.00	15°	Provided by Seek	< 9Hz	C209SP
				Fast Frame	C219SPX
320 x 240	2.2mm f/1.05	105°	Provided by Seek	< 9Hz	C302NP
				Fast Frame	C312NPX
	4.0mm f/1.00	56°	Provided by Seek	< 9Hz	C304SP
				Fast Frame	C314SPX
	6.6mm f/1.26	34°	Provided by Seek	< 9Hz	C306SP
				Fast Frame	C316SPX
	9.1mm f/1.00	24°	Provided by Seek	< 9Hz	C309SP
				Fast Frame	C319SPX



It all starts with Starter Kits

Everything you need to start developing with Seek Thermal comes with a Starter Kit. In addition to receiving a development thermal camera, customers receive access to the Developer Portal with SDKs, APIs, and other important documentation to ensure your project is a success. Starter Kits enable your project team to begin development quickly and easily.

MOSAIC CORE STARTER KIT PART NUMBERS

Resolution	Lens	HFOV	Interface Board Kit	Frame Rate	Part Number
200 x 150	2.2mm f/1.05	61°	Provided by Seek	< 9Hz	S202SP
				Fast Frame	S212SPX
	4.0mm f/1.00	35°	Provided by Seek	< 9Hz	S204SP
				Fast Frame	S214SPX
	6.6mm f/1.26	21°	Provided by Seek	< 9Hz	S206SP
				Fast Frame	S216SPX
	9.1mm f/1.00	15°	Provided by Seek	< 9Hz	S209SP
				Fast Frame	S219SPX
320 x 240	2.2mm f/1.05	105°	Provided by Seek	< 9Hz	S302NP
				Fast Frame	S312NPX
	4.0mm f/1.00	56°	Provided by Seek	< 9Hz	S304SP
				Fast Frame	S314SPX
	6.6mm f/1.26	34°	Provided by Seek	< 9Hz	S306SP
				Fast Frame	S316SPX
	9.1mm f/1.00	24°	Provided by Seek	< 9Hz	S309SP
				Fast Frame	S319SPX

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Seek Thermal engineers and manufactures affordable, high-resolution thermal imaging cameras and OEM thermal cores. Founded by industry pioneers who spent 40 years advancing the state of military and professional-grade thermal technologies, Seek Thermal has developed a breakthrough line of products at competitive price points making this technology more accessible to manufacturers and end users. The company's products serve the firefighting, law enforcement and commercial markets, among others, under its own brand and OEM offerings.