# MANTIS™
Multispectral Thermal Imaging Camera

KEY FEATURES

Lightpath Technologies Mantis™ features an uncooled microbolometer detector with a 640 x 480 pixel array, offering a low size, weight, and power design. It provides customized cores and lens assemblies, utilizing exclusive chalcogenide materials for optical design, ensuring focus across all wavelengths. The camera covers the broadband ranges of both MWIR and LWIR (2um - 12um) and captures multiple modalities in one device. Target applications include thermal imaging, laser beacon recognition, and threat detection, particularly for use with drones, scientific, defense, and industrial applications. The Mantis™ is optionally configurable in both Digital and AI-Ready versions, offering networking and AI-powered analytics, detection, recognition, tracking, and deep learning capabilities. It supports customer AI Processes with up to 26 TOPS (Tera Operations Per Second) and delivers end-to-end ultra-low latency for streaming over wired and wireless networks. Additionally, it supports Unicast, Multicast, and Broadcast in UDP, RTP, and RTSP, and provides video and audio capture, encoding, decoding, transcoding, and display, as well as video raw-data pre-processing and ONVIF support including PTZ control over RS485.
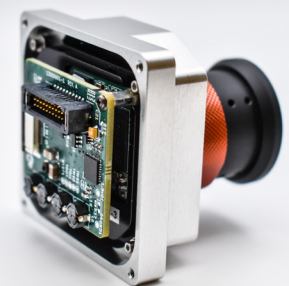
Nominal Design Summary

Parameter	Notes	Design Value	Unit
Waveband	Multispectural (MWIR-LWIR)	2-12	μm
EFL	Magnification-based	19	mm
F/#	Aperture-based	1.1	
Detector Resolution	Horizontal x Vertical / Pitch	640x480 / 17μm	Pixels
Field of View	Vertical	24.3	Deg
	Horizontal	32	Deg
	Diagonal (corner)	39.3	Deg
Lens MTF -Avg Sag/Tan at Nyquist (29.4 lp/mm) (2-12μm waveband)	Diffraction Limited MTF (Ref. Only)	68	%
	MTF at On-Axis Field	65	%
	MTF at VFOV	49	%
	MTF at HFOV	42	%
	MTF at DFOV	50	%
Lens Distortion	Max over Full Field (corner)	2	%
Relative Illumination	At HFOV	83	%
	At Corner Field	77	%
Size	Camera (l x w x h)	~49 x 64 x 52	mm

The Mantis can be optionally configured in both Digital and AI-Ready versions, unlocking advanced edge processing features such as networking and AI-powered analytics. These capabilities include detection, recognition, tracking, and deep learning, along with other customer-specific AI processes. Its end-to-end ultra-low-latency supports streaming over wired and wireless networks, with compatibility for Unicast, Multicast, and Broadcast in UDP, RTP, and RTSP formats. Additionally, the Mantis offers comprehensive video and audio functionalities, including capture, encoding, decoding, transcoding, display, and video raw-data pre-processing, with ONVIF support and PTZ control over RS485.

Specifications

Imaging Core

Detector	Broadband Uncooled Microbolometer (2-12μm)
Format	640x480 / 17μm
NEDT	<35mk

Lenses

EFL	19mm, 75mm, **Custom

System

	MANTIS	MANTIS-Digi	MANTIS-Ai
Frame Rate	9 fps*, 30 fps, 60 fps		
SOC	N/A	NXP i.MX 8M Plus	
Memory	N/A	6GB LPDD4 RAM 32GB EMMC Flash	
Ai Accelerator	N/A	N/A	Hallo-8
Webserver	N/A	Yes	Yes
Digital Video Interace	CameraLink	GigE (**Optional CameraLink, MIPI, USB3, HDMI)	
Network Interface	N/A	GigE	
Compression	N/A	H.264 H.265	
Serial Interface	N/A	*RS232 *RS485	
Analog Video Interface	NTSC/PAL	**Optional NTSC/PAL	
Audio Input	N/A	**Optional 3.5mm	
Onboard Storage	N/A	**Optional Micro-SD up to 1TB	
Controls	USB Communication, GUI Software		
Power	1.1 Watt, 5-18 V DC	< 7 Watt, 5-18 V DC	

*ghz versions for available for export

**Contact factory