

High Resolution LWIR Micro Thermal Camera Module

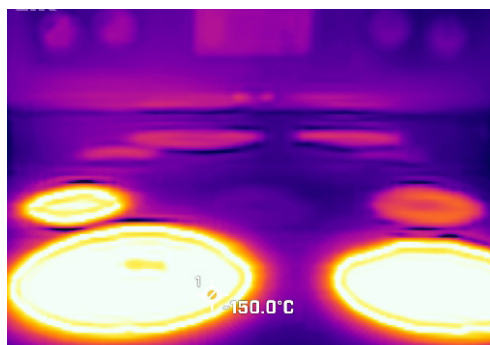
LEPTON® SERIES



Lepton is the highest production volume longwave infrared camera module in the world. Smaller than a dime and cost-effective, Lepton has enabled thermal innovation and has been adopted by millions of customers. Lepton offers either 80x60 (17 μm) or 160x120 (12 μm) pixel resolution, absolute temperature output, multiple field-of-view (FOV) options, and an expanded scene dynamic range for high-temperature scenes.

To reduce development costs and shorten time to market, Teledyne FLIR continuously enhances the online Lepton integration toolbox. Application notes such as a dewarping calibration guide for the Lepton 3.1R with a 95° FOV complement source code for testing on Windows, Linux, Raspberry Pi, and BeagleBone. Furthermore, the Technical Services team can work with customers licensing MyFLIR® application software and image enhancing MSX® and Vivid-IR™.

Lepton's low power consumption, unmatched image quality, and integration support enable innovative product development in mobile, small electronics, and unattended sensors for smart buildings, fire detection, occupancy tracking, utility and process equipment condition monitoring, smart home, and more.



ENHANCED RADIOMETRIC THERMAL PERFORMANCE

Radiometric sensor with greater resolution and sensitivity than common thermopile arrays.

- 80 x 60 or 160 x 120 radiometric pixels
- Thermal sensitivity <50 mK
- Expanded scene dynamic range to 400 °C
- Integrated digital thermal image processing



AFFORDABLE MICRO THERMAL CAMERA WITH UNBEATABLE SWaP

Size, power, and lens options enable mobile devices, unattended sensors, and small electronics.

- 50°, 57°, and 95° horizontal FOV lens options
- Small 10.5 x 12.7 x 7.2 mm package includes integrated shutter
- 150 mW typical, 5 mW standby mode, and 650 mW shutter activation (0.5 sec)
- Smart phone-compatible power supplies



PROFESSIONAL GRADE AND BUILT FOR INTEGRATORS

Develop with the industry's leading thermal camera manufacturer to reduce risk, cost, and time to market.

- Shared SPI video, two-wire serial control, and 32-pin socket connector interface
- Technical Services team available to support integration
- Online resources for Windows, Linux, Raspberry Pi, BeagleBone, and more
- Licensing options enhance application and performance

For more information visit:
www.flir.com/lepton

www.teledyneflir.com

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SPECIFICATIONS

Overview	Lepton 2.5		Lepton 3.1R	Lepton 3.5
Sensor Technology	Uncooled VOx microbolometer			
Spectral Range	Longwave infrared, 8 μm to 14 μm			
Array Format	80 x 60 progressive scan	160 x 120 progressive scan		160 x 120 progressive scan
Pixel Size	17 μm	12 μm		12 μm
Effective Frame Rate	8.7 Hz (commercial application exportable)			
Thermal Sensitivity	<50 mK (0.050 °C)			
Temperature Compensation	Automatic. Output image independent of camera temperature.			
Radiometric Accuracy	High Gain: Greater of ±5 °C (41 °F) or 5% (typical) Low Gain: Greater of ±10 °C (50 °F) or 10% (typical)			
Non-uniformity Corrections	Integral Shutter			
Scene Dynamic Range	High Gain Mode: -10 °C to 140 °C (14 °F to 284 °F) Low Gain Mode: -10 °C to +400 °C (14 °F to 752 °F) at room temperature; -10 °C to +450 °C (14 °F to 842 °F) typical			
Image Optimization	Factory configured and fully automated			
FOV - Horizontal	50°	95°		57°
FOV - Diagonal	63. 5°	119°		71°
Lens Type	f/1.1			
Output Format	User-selectable 14-bit, 8-bit (AGC applied), or 24-bit RGB (AGC and colorization applied)			
Solar Protection	Integral			
Electrical				
Input clock	25-MHz nominal, CMOS IO Voltage Levels			
Video Data Interface	Video over SPI			
Control Port	CCI (I2C-like), CMOS IO Voltage Levels			
Input Supply Voltage (nominal)	2.8 V, 1.2 V, 2.5 V to 3.1 V IO			
Power Dissipation (Typical, room temp)	Nominally 150 mW (operating), 650 mW (during shutter event), 5 mW (standby)			
Mechanical				
Package Dimensions (w x l x h)	11.5 x 12.7 x 6.9 mm (without socket) 11.8 x 12.7 x 7.2 mm (with socket)			
Weight	1.02 grams (without socket)	1.0 grams (without socket)		0.9 grams (without socket)
Environmental				
Optimum Operating Temperature Range	-10 °C to +80 °C (14 °F to 176 °F)			
Non-Operating Temperature Range	-40 °C to +80 °C (-40 °F to 176 °F)			
Shock	1500 G @ 0.4 ms			
Ordering				
Part Numbers	500-0763-01	500-0758-03		500-0771-01

Specifications are subject to change without notice.
For the most up-to-date specs, go to www.flir.com/lepton

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