

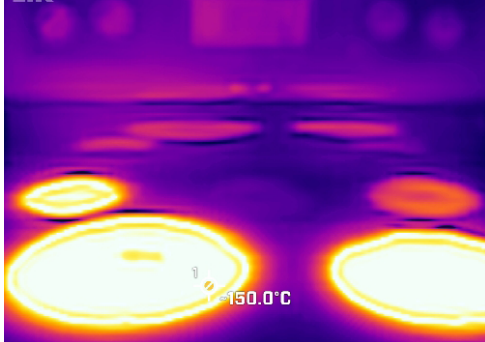
## High Resolution LWIR Micro Thermal Camera Module

# LEPTON® SERIES

Made in the USA, and ITAR-free, the Lepton is the highest production volume longwave infrared camera module in the world. Compact and cost-effective, Lepton has enabled thermal innovation adopted by millions of customers. Lepton offers multiple resolutions, four field-of-view (FOV) options, and absolute temperature output on specific models.

Teledyne FLIR continuously enhances the online Lepton integration toolbox to reduce development costs and shorten market time. Application notes, integration videos, quick start guides, and complementary source code for testing on Windows, Linux, Raspberry Pi, and BeagleBone ensure efficient integration. For advanced, large-volume programs, the Technical Services team can support 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, equipment condition monitoring, and more.



### ENHANCED THERMAL PERFORMANCE

Greater resolution and sensitivity than common thermopile arrays.

- Radiometric 80x60 and 160x120 or non-radiometric 120x120 usable resolutions
- Thermal sensitivity <50 mK
- Scene dynamic range up to 450 °C depending on model
- Integrated digital thermal image signal processing



### AFFORDABLE MICRO THERMAL CAMERA WITH UNBEATABLE SWaP

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

- 50°, 57°, 95°, and 160° horizontal FOV lens options
- 10.5 x 12.7 x 7.2 mm excluding 160° lens
- 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.

- World's largest production capacity and made in the U.S.A.
- Proven consumer electronic quality assurance metrics
- Technical and marketing knowhow support development and go-to-market strategy
- MyFLIR software and image enhancing MSX and Vivid-IR available for license

For more information visit:  
[www.flir.com/lepton](http://www.flir.com/lepton)

[www.teledyneflir.com](http://www.teledyneflir.com)

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 04/25/2024 REV1



Overview	Lepton 2.5	Lepton 3.1R	Lepton 3.5	Lepton UWFOV
Principal Uses	Imaging Applications			Sensor Applications
Sensor Technology	Uncooled microbolometer			
Spectral Range	Longwave infrared, 8 $\mu$ m to 14 $\mu$ m			
Array Format	80 x 60 progressive scan	160 x 120 progressive scan	160 x 120 progressive scan	160x120 output with a usable 120-pixel diameter area
Pixel Size	17 $\mu$ m	12 $\mu$ m	12 $\mu$ m	12 $\mu$ m
Effective Frame Rate	8.7 Hz (commercial application exportable)			
Thermal Sensitivity	<50 mK (0.050 $^{\circ}$ C)			
Temperature Compensation	Automatic. Output image independent of camera temperature.			
Radiometric Accuracy	High Gain: Greater of $\pm 5$ $^{\circ}$ C (41 $^{\circ}$ F) or 5% (typical) Low Gain: Greater of $\pm 10$ $^{\circ}$ C (50 $^{\circ}$ F) or 10% (typical)			Non-radiometric
Non-uniformity Corrections	Integrated Shutter			Shutterless - external FFC recommended
Scene Dynamic Range	High Gain Mode: -10 $^{\circ}$ C to 140 $^{\circ}$ C (14 $^{\circ}$ F to 284 $^{\circ}$ F) Low Gain Mode: -10 $^{\circ}$ C to +450 $^{\circ}$ C (14 $^{\circ}$ F to 842 $^{\circ}$ F)	High Gain Mode: -10 $^{\circ}$ C to 140 $^{\circ}$ C (14 $^{\circ}$ F to 284 $^{\circ}$ F) Low Gain Mode: -10 $^{\circ}$ C to +400 $^{\circ}$ C (14 $^{\circ}$ F to 752 $^{\circ}$ F)		
Image Optimization	Factory configured and fully automated			
FOV - Horizontal	50 $^{\circ}$	95 $^{\circ}$	57 $^{\circ}$	160 $^{\circ}$
FOV - Diagonal	63.5 $^{\circ}$	119 $^{\circ}$	71 $^{\circ}$	160 $^{\circ}$
f-number	f/1.1			
Output Format	User-selectable 14-bit, 8-bit (AGC applied), or 24-bit RGB (AGC and colorization applied)			
Solar Protection	Integrated			
<b>Electrical</b>				
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, and 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)			Nominally 150 mW (operating), 5 mW (standby)
<b>Mechanical</b>				
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)			8.47 x 12.7 x 11.14 mm (without socket) 11.52 x 12.70 x 11.44 mm (with socket)
Weight (without socket)	1.0 grams	1.0 grams	0.9 grams	0.7 grams
<b>Environmental</b>				
Optimum Operating Temperature Range	-10 $^{\circ}$ C to +80 $^{\circ}$ C (14 $^{\circ}$ F to 176 $^{\circ}$ F)			
Non-Operating Temperature Range	-40 $^{\circ}$ C to +80 $^{\circ}$ C (-40 $^{\circ}$ F to 176 $^{\circ}$ F)			
Shock	1500 G @ 0.4 ms			
<b>Ordering</b>				
Part Number	500-0763-01	500-0758-03	500-0771-01	500-1387-00

Specifications are subject to change without notice.  
For the most up-to-date specs, go to [www.flir.com/lepton](http://www.flir.com/lepton)

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23-0918-OEM-COR-Lepton-Series-Data-Sheet-LTR

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