160 x 120 RESOLUTION NON-RADIOMETRIC
MICRO THERMAL CAMERA

# LEPTON® FS1

Available in a limited supply, the NDAA-compliant and ITAR-free Lepton FS is a non-radiometric 160 x 120 resolution micro thermal camera module with reduced thermal sensitivity, reduced scene dynamic range, and up to 3% inoperable pixels. These units balance performance and price, enabling monitoring applications where radiometry is not required and pixel-level image information is less important than broad thermal data.

With the lowest cost per pixel in the Lepton family, low power consumption, and simple integration, Lepton FS provides integrators an appropriate thermal capability for innovative thermal monitoring products in smart building automation, security, occupancy sensing, and more.

## COMMON INTERFACES AND FACTORY SUPPORT TO SHORTEN TIME TO MARKET

Standard Lepton mechanical interface, electrical interface, and US-based Technical Services team

- 160 x 120 thermal pixel resolution
- Low operating power – 140 mW typical and 650 mW during shutter event
- Small 11.8 x 12.7 x 7.2 mm package

## ACCEPTABLE PERFORMANCE AT DISCOUNTED PRICE

Affordable, non-radiometric thermal imagery and data

- -10 °C to 350 °C scene dynamic range
- Thermal sensitivity <75 mK
- ≤3% inoperable pixels


## BUILD INNOVATIVE THERMAL MONITORING SOLUTIONS

Appropriate for heat, security, and comfort monitoring applications

- Home and building automation
- Heat and occupancy sensing
- Security and location monitoring

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

## SPECIFICATIONS

| Overview | Lepton FS1 |
|---|---|
| Sensor Technology | Uncooled VOx microbolometer |
| Spectral Band | Longwave infrared, 8 µm to 14 µm |
| Resolution | 160 x 120, progressive scan |
| Pixel Pitch | 12 µm |
| Frame Rate | 8.7 Hz (commercial application exportable) |
| Sensitivity [NEdT] | <75mK NEdt |
| Operability | Number of non-defective pixels shall be >97% Adjacent clusters, rows, columns may contain defective pixels that are not factory corrected and unable to be corrected. 3% of operability failures allowed. |
| Temperature Compensation | Automatic. Output image independent of camera temperature. |
| Non-Radiometric Performance | While some of the Lepton FS units may output radiometric values per pixel, the Lepton FS units are not guaranteed against any radiometric accuracy and users whom wish to use Lepton FS products for radiometric applications do so at their own risk. Teledyne FLIR will not support questions pertaining to calibrating Lepton FS units. |
| Non-Uniformity Corrections | Integral Shutter |
| Scene Dynamic Range | High Gain Mode: -10 to 140 °C typical<br>Low Gain Mode: -10 to 350 °C typical |
| Image Optimization | Factory configured and fully automated |
| FOV - Horizontal | 57° |
| FOV - Diagonal | 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 Voltage (nominal) | 2.8 V, 1.2 V, 2.5 V to 3.1 V IO |
| Power Consumption<br>(Typical, room temp) | Nominally 150 mW (operating), 650 mW (during shutter event),<br>5 mW (standby) |
| Mechanical | |
| Package dimensions – without socket (w x l x h) | 11.50 x 12.70 x 6.835 mm |
| Weight | 0.91 grams |
| Environmental | |
| Operating Temperature Range | -10 °C to +65 °C |
| Non-Operating Temperature Range | -40 °C to +80 °C |
| Shock | 1500 G @ 0.4 ms |
| Ordering | |
| Part Numbers | 500-0771-FS1 |

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

**SANTA BARBARA**
Teledyne FLIR LLC, Inc.
6769 Hollister Ave.
Goleta, CA 93117
PH: +1 805.690.6602

**EUROPE**
Teledyne FLIR LLC, Inc.
Luxemburgstraat 2
2321 Meer
Belgium
PH: +32 (0) 3665 5106



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