

SPECTRA L04T

384×288 Uncooled LWIR Module · Shutterless

Overview

Spectra L04T is an infrared module built on our high-refresh-rate 12 μm WLP-packaged detector and the 2nd-generation in-house Asic-ISP image processor. With 384×288 resolution, NETD ≤ 40 mK and standard shutterless algorithms, the picture is smooth and stutter-free. At 21×21×10.3 mm, under 7 g excl. lens and typical USB output power under 0.42 W, it meets demanding SWaP requirements. It measures -20°C – 150°C (high image quality) and 100 – 650°C (extended range) with accuracy of $\pm 2^{\circ}\text{C}$ or $\pm 2\%$ (whichever is greater), supporting spot/line/area analysis and info-line temperature readout, with seven fixed-focus lens options (4 mm F1.1, 6.8 mm F1.2, 9.1 mm F1.1 and 15/19/25/35 mm F1.0) for handheld thermometry, industrial measurement, power inspection, security & firefighting inspection and smart integration.



384×288

RESOLUTION


12 μm

PIXEL PITCH


 ≤ 40 mK

NETD



21×21×10.3 mm

DIMENSIONS

Key Features

Powerful Thermometry

- Range of -20°C – 150°C (high image quality) and 100 – 650°C (extended range)
- Accuracy of $\pm 2^{\circ}\text{C}$ or $\pm 2\%$ (whichever is greater)
- Spot, line and area analysis with info-line temperature readout

Standard Shutterless

- Shutterless algorithm standard across the range for smooth, stutter-free imaging
- New-generation infrared-specific image algorithms

Small · Low Power · Great Value

- 21×21×10.3 mm ultra-small; under 7 g excl. lens (384 version)
- 2nd-gen in-house Asic-ISP processor with 30/60 Hz high refresh rate
- DVP / BT656 / USB 2.0 / MIPI plus PAL / NTSC interfaces for easy integration

Typical Applications



Handheld Thermometry
Tools



Industrial Thermometry &
Power Inspection



Security & Firefighting
Inspection



Smart Integration



Technical Specifications

Detector Performance

Sensitive Material	VOx uncooled infrared focal plane detector
Resolution	384×288
Pixel Pitch	12μm
Spectral Band	8μm ~14μm
Detector Frame Rate	30 Hz (30/60 Hz high-refresh option)
Typical NETD	≤40mK@25°C, F#1.0
Thermal Time Constant	<12ms

Image Adjustments

NUC	Shutter / Shutterless correction
Image Processor	2nd-gen in-house Asic-ISP image processor with new-generation IR algorithms
Brightness / Contrast	0–100 levels
Polarity / Palettes	White-hot / black-hot / multiple pseudo-color
Digital Zoom	1.0–8.0× continuous (step 0.1)
Image Mirror	Top-bottom / left-right / diagonal

Lens Options (Fixed, Choose One)

4 mm F1.1 fixed	FOV 64.1°×48.8° · IFOV 3.05 mrad Focus 0.29 m–∞ · DRI 300/100/50 m · Weight (lens + flange) 10 g±5%
6.8 mm F1.2 fixed	FOV 39.3°×29.4° · IFOV 1.76 mrad Focus 0.8 m–∞ · DRI 510/170/90 m · Weight (lens + flange) 9.3 g±5%
9.1 mm F1.1 fixed	FOV 29.2°×21.7° · IFOV 1.3 mrad Focus 1.2–5.5 m · DRI 680/230/110 m · Weight (lens + flange) 10.5 g±5%
15 mm F1.0 fixed (est.)	FOV 17.5°×13.1° · IFOV 0.80 mrad Focus ≈4.7 m–∞ · DRI 1130/380/180 m · Weight (lens + flange) ≈30 g
19 mm F1.0 fixed (est.)	FOV 13.8°×10.4° · IFOV 0.63 mrad Focus ≈7.5 m–∞ · DRI 1430/480/230 m · Weight (lens + flange) ≈40 g
25 mm F1.0 fixed (est.)	FOV 10.5°×7.9° · IFOV 0.48 mrad Focus ≈13 m–∞ · DRI 1880/630/300 m · Weight (lens + flange) ≈70 g
35 mm F1.0 fixed (est.)	FOV 7.5°×5.7° · IFOV 0.34 mrad Focus ≈25.5 m–∞ · DRI 2630/880/420 m · Weight (lens + flange) ≈125 g

D/R/I: detection / recognition / identification range (m) for a walking person (2 × 0.5 × 0.3 m) per Johnson criteria at 50% probability; focus depth = max sharp range at fixed focus; lens-optional configurations supported; 15/19/25/35 mm lens values are estimates.

Electrical

Analog Video	PAL / NTSC
Digital Video	DVP/BT656/ USB2.0/MIPI
Communication Interface	UART/I2C/USB2.0
Power Input	5V
Typical USB Power @25°C	<0.42W

Physical

Weight (excl. Lens)	<7g
Dimensions (excl. Lens)	21×21×10.3 mm
Interfaces	50-pin male connector DF40C-50DP-0.4V(51)

Thermometry

Measurement Range	–20°C–150°C (high image quality), 100–650°C (extended range)
Measurement Accuracy	±2°C or ±2% (typical)
Measurement Tools	Spot / line / area secondary analysis
Info Line	Info line reads temperature and other data

Environmental

Operating Temp.	–40°C–+80°C (imaging); –10°C–+70°C (thermometry)
Storage Temp.	–50°C ~ +85°C
Humidity	5%–95%, non-condensing
Vibration	6.06 g random vibration, all axes
Shock	80 g @ 4 ms sawtooth, 3 axes 6 directions

Specifications subject to change without notice.

Rev. 1.0 · September 2026