

Turing M640Pro

Uncooled Infrared Module

- Pixel Pitch: 8 μm
- Resolution: 640 $\times$ 512



Introduction

The Turing M640Pro ultra-miniature uncooled infrared core module is a groundbreaking product. With its ultra-compact design measuring just 13 mm $\times$ 13 mm and weighing < 3.5 g, it redefines the industry standards for SWaP (Size, Weight, and Power). Powered by our proprietary pixel pitch of 8 μm , 640 $\times$ 512 uncooled LWIR detector, it delivers higher resolution to capture more intricate details. Operating at an ultra-low power of 0.5 W and offering versatile SDK solutions, it perfectly meets the stringent demands of payload constraints, system integration, and iterative development for compact systems like commercial drones and micro-gimbals. It also offers multiple lightweight infrared lens options. Its compact body delivers an extraordinary thermal imaging experience, pushing the boundaries of applications.

Highlights



Powerful Performance

Featuring a next-generation 640 $\times$ 512 infrared detector, the Turing M640Pro delivers a consistently high-performance core in an ultra-compact 13 mm $\times$ 13 mm form factor. This lightweight design makes it one of the optimal choices for smart, portable, and light-load devices.



Upgraded Image Algorithms

Upgraded with our next-generation image processing algorithms, the core provides superior image details, enhanced contrast, and seamless image fluidity.



Extensive Lens Options

Offers multiple lens solutions ranging from 10° to 100° to suit various application scenarios.

Product Parameters

Product Model		Turing M640Pro	
Specifications			
Detector Type		VOx uncooled infrared focal plane detector	
Spectral Range		8~14μm	
Pixel Pitch		8μm	
NETD		≤40mK@25°C, F#1.0	
Detector Frame Rate		50 Hz (Imaging) / 30 Hz (Thermography)	
Image Adjustment			
Brightness/Contrast Adjustment		Manual/Automatic	
Polarity		Black hot/white hot	
Pseudocolor		Supported	
Crosshair		Display/hide/move	
Image Processing		Grayscale stretching, local contrast enhancement, temporal noise reduction,spatial noise reduction, detail enhancement, edge enhancement	
Image Mirroring		Left/right, up/down, diagonal	
Temperature Measurement			
Range		-20°C ~ +150°C, 100°C ~ +650°C	
Temperature Measurement Accuracy (Typical value)		±2 °C or ±2% of reading @ ambient temperature -20 °C ~ 60 °C	
Temperature Measurement Tools		Analysis tools: spot, line, area	
Electrical Parameters			
Power Supply Voltage (Typical)		Core Assembly MAIN_POWER: 3.8V ~ 5.2V (Typical: 5 V); 4P USB User Expansion Board supports USB 2.0, USB_VBUS: 5.0V	
Typical Power Consumption @25°C		≤0.5W	
Digital Video		8bite LVCMOS/BT.601/2lane MIPI/USB2.0	
Serial Communication Interface		UART (1.8V)	
Physical Characteristics (Excluding lens and flange)			
Dimensions (W×L×H) mm		13mm×13mm×13.4mm	
Weight (g)		<3.5g	
Optional Lenses			
Lens (mm)		4.5mm/8.7mm	
Environmental Adaptability			
Operating Case Temperature		-40°C ~ +70°C (-20°C~+60°C Temperature measurement)	
Storage Case Temperature		-45°C~+85°C	
Humidity		5% ~95%, non-condensing	
Vibration		2g, random vibration, 3 axes/ 6 directions	
Shock		6g, 2ms, sawtooth waveform, 3 axes/ 6 directions	

Applications



Commercial Drones



Optoelectronic Pod



Outdoor Handheld



Head-Mounted Devices (HMDs)

Company Profile

Raytron Microelectronics Co., Ltd. is a wholly-owned subsidiary of Raytron Technology Co., Ltd., providing global customers with infrared detectors, core modules, and industry solutions.

Our products are widely used in various fields, including infrared temperature measurement, night vision observation, machine vision, intelligent driving, Commercial Drone, smart industry, security monitoring, Internet of Things, medical epidemic prevention and gas detection.

With the mission of "to create incremental value for customers with technological advancements", we are committed to leaving a name in the history of constantly expanding human perception capabilities.



Official Website



LinkedIn Official Account

Raytron Microelectronics Co., Ltd.

Tel (Global): +86 400-998-9038

WhatsApp Business: +86 198 0619 1838

Email: marketing@raytrontek.com

Website: www.raytron-microelectronics.com

Version: PL202610V1