

CAM-2D1T

Radiometric Thermal & Dual-Optical Analytics Platform

User Manual

rev: 260831
Made in Taiwan

Introduction

The CAM-2D1T is a compact Dual-EO and Thermal Imaging payload, featuring high-resolution Sony IMX415 sensors paired with an advanced long-wave infrared (LWIR) module. This configuration combines high-definition visual situational awareness with thermal detection capabilities, allowing for effective operation in total darkness, smoke, or fog. Engineered for rapid UAV and robotic integration, it provides dual-spectrum imaging via a simplified interface of UVC, and UART—eliminating the need for complex, custom camera stacks.

At its core, the CAM-2D1T features a high-performance embedded compute engine (quad-core 64-bit Arm with GPU/video acceleration) that manages real-time video processing, thermal palettes, and OSD overlays. For edge AI requirements, an integrated M.2 expansion slot supports optional acceleration modules, scaling performance to 13 or 26 TOPS. This extensibility transforms the CAM-2D1T from a standalone camera into a powerful, AI-ready compute platform.

FEATURES

- Dual EO imaging using two Sony IMX415 sensors
Wide-angle view for awareness and tele view for identification—both built on the IMX415 (Type 1/2.8, 8.46MP / 4K-class).
- Dual-view output switching with operator-friendly zoom
Default wide view, switch to tele view, with 1x / 2x / 4x digital zoom modes.
- With 640x480 resolution and 40mK sensitivity, the thermal sensor provides fluid, 30 FPS thermal vision and radiometric data.
- Supports RTSP streaming for dual-EO cameras and the thermal imaging camera.
- On-screen ranging overlay (OSD)
Center-point ranging with on-screen distance display toggleable.
- Fast integration interfaces
UVC out, and UART control for simple UAV/robot hookup.
- High-performance embedded compute
Built on a quad-core Arm Cortex-A76 @ 2.4GHz with a VideoCore VII-class GPU/video pipeline, enabling real-time video handling, overlays, and system control.
- Security & video-processing ready
Supports AES encrypted data transmission and H.264 video compression at the controller layer.
- M.2 expansion for optional AI acceleration
M.2 interface supports optional AI modules, enabling 13 TOPS or 26 TOPS configurations per customer request.
- Rich system I/O + flight-control integration
Supports UVC outputs, multiple control paths (USB / UART), and Pixhawk integration, enabling broader platforms beyond FPV.

SPECIFICATIONS

Model Name	CAM-2D1T
Technical	
UVC Video support	up to 3840x2160@60
Thermal Camera Res.	640x480@30
Output TMDS signal	1.2 Volts [peak-to-peak]
Output DDC signal	5 Volts [peak-to-peak, TTL]
ESD protection	Human body model — $\pm 15\text{kV}$ [air-gap discharge] & $\pm 8\text{kV}$ [contact discharge]
PCB stack-up	6-layer board [impedance control — differential 90Ω 、 100Ω ; single 50Ω]
Output	1xUSB(UVC), 1x RJ45
I/O	1xWafer(UART), 1xUSB
USB connector	Type C, Type A
Mechanical	
Housing	Metal enclosure
Fixedness	Wall-mounting case with screws
Power supply	5V DC
Power consumption	Watt [max]
Operation temperature	0~40°C [32~104°F]
Storage temperature	-20~60°C [-4~140°F]
Relative humidity	20~90% RH [no condensation]