

M5StickT



Description

M5StickT is an exquisite and compact infrared thermal imaging camera. It adopts the latest FLIR Lepton 3.0 long-wave infrared (LWIR) camera core with an effective resolution of 160 * 120 for a clear and stable image. As it is a large area non-contact infrared sensor, it is a good solution for temperature measurement. Its main control chip is Espressif's ESP32, which has built-in support for Wi-Fi and Bluetooth connections, and computing speeds of up to 240MHz. This provides a favorable guarantee for image output with a FPS reaching 7 and above. The screen is 1.14 inches and has a resolution of 135 * 240. The device comes with a rich variety of hardware resources: An on-board 6-axis Inertial Measurement Unit, a digital microphone and a power management chip and a built-in 300mAh battery, all embedded into the device. In terms of interactive operation, two programmable buttons and a rotary encoder are provided. In order to facilitate users to connect more peripherals, a 4 Pin PH2.0 interface with I2C support is provided at the bottom. The body is 3D printed from high quality Black Nylon filament. In addition, an M3 screw hole and a 1/4" screw hole are provided underside for easy mounting.

Product Features

- ESP32-based
- Case Material: Nylon 3D print
- FLIR-lepton 3.0
- Built-in 6-Axis IMU, microphone
- Buttons and dial encoder
- IPS LCD (1.14 inch)
- built-in Lipo Battery
- GROVE-4P/PH2.0 Interface

Include

- 1x M5StickT
- 1x USB Type-C(20cm)

Applications

- Car engine failure check
- Building dehumidification insulation sealing test
- Industrial furnace inner wall refractory crack
- Outdoor observation of animals at night

Lepton 3.0 Parameter

Effective Pixels	160*120
Field of view	56°
Fast imaging time	< 500ms
Effective Frame Rate	8.7Hz
Input Clock	25MHz
Pixel Size	12um
Low operating power	150 mW (operating), 650 mW (during shutter event), 5 mW (standby)
Scene Dynamic Range	Low Gain Mode: -10 to 400°C; High Gain Mode: -10 to 140°C
Spectral Range	8 to 14um
Thermal Sensitivity	<50 mK(0.050°C)
Optimum Temperature Range	-10°C to +80°C

Notice:

M5StickT only supports WIN10 & Linux & MAC(>10.15) free drive, the rest of the operating system requires users to install the driver.

Installation steps: 1. Click the link below to download the driver installation package. 2. Connect the device and open the Computer Device Manager port option. 3. Right click on the unrecognized device and perform a manual update.

[Driver download Link](#)

Usage

Press the reset button to power on. The default display screen is RGB display mode. The left side is the temperature image, the upper right is the power display, and the lower right is the histogram and temperature range. The temperature range is automatically adjusted with the target temperature. The default bulls-eye automatically tracks the maximum temperature. Press the right button-A to switch the tracking mode (minimum / center / maximum value), press the button-B to switch the image display mode (GRAY / GOLDEN / RAINBOW / IRONBLACK / RGB). Dial encoder controls the display sensitivity (adjust the display temperature and color gamut), and long press the reset button for 6 seconds to turn off.

Specification

Resources	Parameter
ESP32	240MHz dual core, 600 DMIPS, 520KB SRAM, Wi-Fi, dual mode Bluetooth
Flash Memory	4MB
Power input	5V @ 500mA
Port	Type-C x 1, GROVE(I2C+I0+UART) x 1
LCD screen	1.14 inch, 135*240 Colorful TFT LCD, ST7789
Button	Custom button x 2
MEMS	MPU6886
MIC	SPM1423
Power Manager	AXP192
Battery	300 mAh @ 3.7V
Antenna	2.4G 3D Antenna
Thermal	Lepton 3.0
Encoder	Dial encoder
Operating Temperature	32°F to 104°F (0°C to 40°C)
Size	48 * 30 * 29mm
Weight	25g
Case Material	Plastic (PC)

EasyLoader

EasyLoader is a concise and fast program writer, which has a built-in case program related to the product. It can be burned to the main control by simple steps to perform a series of function verification. Please install the corresponding driver according to the device type. M5Core host [Please click here to view the CP210X driver installation tutorial](#), M5StickC/V1/ATOM series can be used without driver)

PinMap

BUTTON A & BUTTON B

ESP32	GPIO37	GPIO39
BUTTON A	Button Pin	
BUTTON B	Button Pin	

IPS LCD

Driver IC: ST7789

Resolution: 135 * 240

ESP32	GPIO5	GPIO13	GPIO23	GPIO18	GPIO5
IPS LCD	MOSI	CLK	DC	RST	CS

PH2.0 PORT

ESP32	GPIO33	GPIO32	5V	GND
-------	--------	--------	----	-----

PH2.0 port SCL SDA 5V GND

MIC (SPM1423)

ESP32 GPIO0 GPIO34

MICPHONE SCL SDA

6-Axis posture sensor (SH200Q/MPU6886) & power management IC (AXP192)

ESP32 GPIO22 GPIO21

6-Axis posture sensor SCL SDA

power management IC SCL SDA

AXP192

Microphone RTC TFT backlight TFT IC ESP32/3.3V MPU6886/SH200Q 5V GROVE

LD0K0 LD01 LD02 LD03 DC-DC1 IPSOUT

Dial Encoder

STM32 PA2 PA3 PA4

Encoder SW EN_B EN_A

Related Link

datasheet

[ESP32-PICO](#)

[MPU6886](#)

[AXP192](#)

[SPM1423](#)

[Lepion datasheet](#)

[Lepion engineering datasheet](#)

[Lepion software interface description](#)

3D Printer STL File

[STL](#)

Example

Arduino IDE

If you want the complete code, please [click here](#)