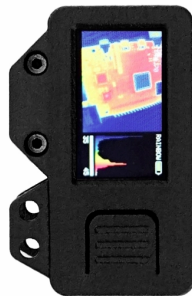


StickT2

SKU:K016-T2



Description

StickT2 is a compact and exquisite infrared thermal imager. It adopts the latest FLIR Lepton 3.0 long-wave infrared (LWIR) camera core, with an effective resolution of 160 x 120, providing clear and stable imaging. It is an excellent solution for large-area non-contact infrared temperature measurement. The main control chip is the ESP32, which supports Wi-Fi connectivity and has a computing power of up to 240MHz, ensuring smooth image output with a frame rate (FPS) of 7+.

The screen is 1.14 inches with a resolution of 135 x 240. Additionally, it is equipped with rich internal hardware resources, including two programmable buttons and a rotary encoder for interactive operations. It also features an onboard 6-axis IMU (MPU6886), a microphone (SPM1423), a power management chip (AXP192), and a built-in 300mAh battery.

For easy connection to peripherals, a 4P HY2.0 interface is provided on the side. The body is made of black nylon material through 3D printing, and it includes an M3 screw hole and a 1/4 screw hole at the bottom for mounting.

In terms of firmware, it offers up to 5 color display modes, allowing users to specify the measurement of maximum, minimum, or center values, and the display temperature range is adjustable.

Features

- Based on ESP32 development
- Housing: 3D-printed nylon material
- FLIR Lepton 3.0
- Built-in 3-axis gyroscope and 3-axis accelerometer
- Integrated microphone
- IPS LCD (1.14 inches)
- Rotary encoder and programmable buttons
- Built-in power management chip
- Built-in lithium battery
- Supports expandable GROVE/HY2.0 interface
- Development Platform
 - Arduino IDE
 - ESP-IDF
 - PlatformIO

Includes

- 1 x StickT2
- 1 x USB Type-C cable (20cm)

Applications

- Vehicle engine fault detection
- Building moisture insulation and sealing detection
- Industrial furnace wall refractory material crack detection
- Nighttime outdoor animal observation

Specifications

Specification	Parameter
SoC	ESP32-PICO-D4 @ Xtensa® 32-bit LX6 dual-core processor, clock frequency up to 240MHz
Flash	4MB
Wi-Fi	2.4 GHz Wi-Fi
DMIPS	600
SRAM	520KB
Input Voltage	5V@500mA
Host Interface	USB Type-C x 1, HY2.0-4P (I2C+I/O+UART) x 1
IPS Screen	1.14 inch, 135x240 Colorful TFT LCD, ST7789
Microphone	SPM1423
Buttons	Custom Buttons x 2
Power Management IC	AXP192
Antenna	2.4G 3D Antenna
MEMS	MPU6886
Battery Capacity	300mAh
Encoder	Rotary Encoder
Thermal Imaging IC	Lepton 3.0
Product Size	48.0 x 24.0 x 24.0mm
Product Weight	28.6g
Package Size	73.0 x 45.0 x 28.0mm
Gross Weight	50.0g

Lepton 3.0 Parameters

Parameter	/
Effective Pixels	160 x 120
Field of View	56°
Fast Imaging Time	500ms
Effective Frame Rate	8.7Hz
Input Clock	25MHz
Pixel Size	12μm
Power Consumption	150 mW (typical operation), 650 mW (shutter), 5 mW (standby)
Dynamic Range	Low gain: -10 to 400°C; High gain: -10 to 140°C
Wavelength Range	8 to 14μm
Thermal Sensitivity	50 mK (0.050°C)
Optimal Temperature Range	-10°C to +80°C

Power On/Off:

- Power On: Press the reset button for at least 2 seconds
- Power Off: Press the reset button for at least 6 seconds

Usage Introduction

Press the reset button to enter the startup screen. By default, it enters RGB display mode, with the temperature image on the left, battery level display on the top right, and a histogram and temperature range on the bottom right. The temperature range adjusts automatically based on the target temperature. The default target automatically tracks the maximum temperature. Press the button on the right side of the body (Button B) to switch tracking modes (minimum/center/maximum). Press the front button (Button A) to switch image display modes (GRAY / GOLDEN / RAINBOW / IRONBLACK / RGB). The rotary encoder controls the display sensitivity (adjusting the display temperature range). Long press the reset button for 6 seconds to power off.

IMU Triaxial Direction Schematic Diagram



IMU ORIENTATION OF AXES

PinMap

Button A & Button B

ESP32-PICO-D4	G37	G39
Button A	Button Pin	
Button B		Button Pin

Color IPS Screen

Driver Chip: ST7789

Resolution: 135 x 240

ESP32-PICO-D4	G15	G13	G23	G18	G5
IPS Screen	MOSI	CLK	DC	RST	CS

Microphone MIC (SPM1423)

ESP32-PICO-D4	G0	G34
Microphone MIC	SCL	SDA

Six-Axis IMU (MPU6886) & Power Management Chip (AXP192)

ESP32-PICO-D4	G22	G21
MPU6886(0x68)	SCL	SDA
AXP192(0x34)	SCL	SDA

Rotary Encoder

ESP32-PICO-D4	PA2	PA3	PA4
Rotary Encoder	SW	EN_B	EN_A

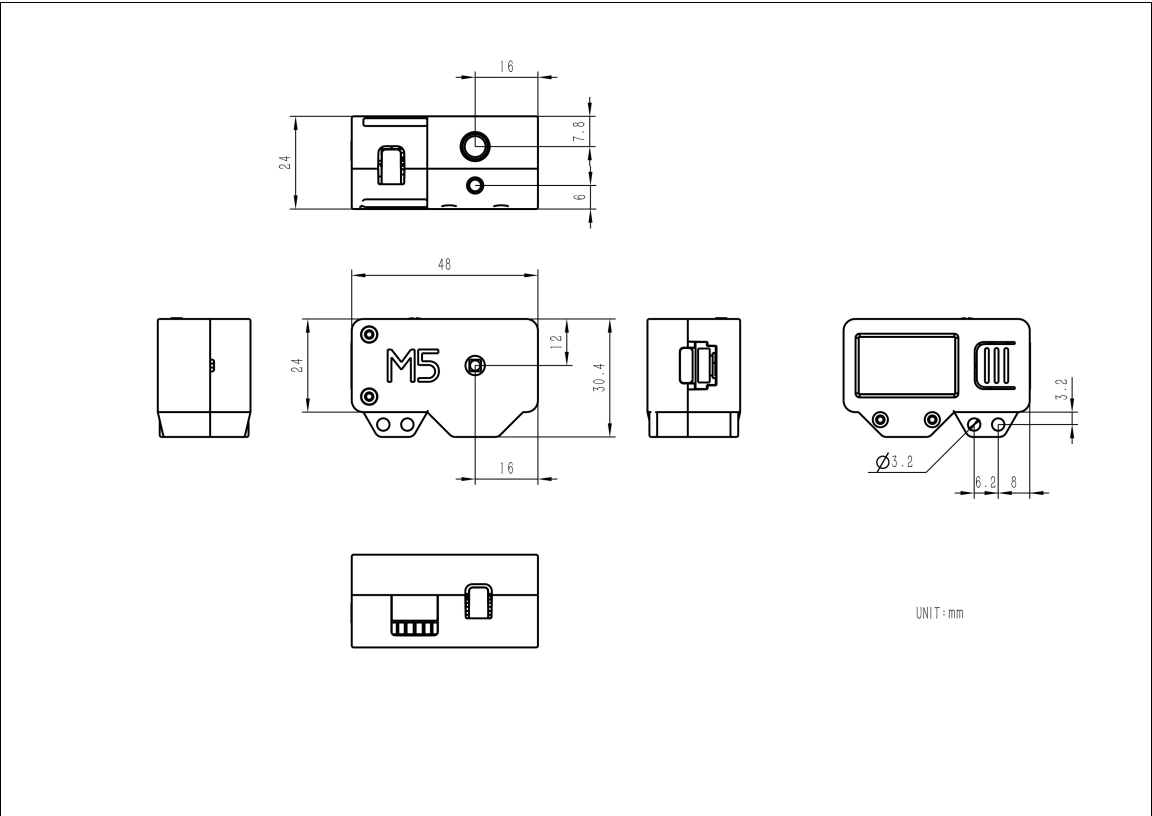
Power Management Chip (AXP192)

Microphone	RTC	TFT Backlight	TFT IC	ESP32/3.3V MPU6886	5V GROVE
LDOio0	LDO1	LDO2	LDO3	DC-DC1	IPSOUT

HY2.0-4P

HY2.0-4P	Black	Red	Yellow	White
PORT.CUSTOM	GND	5V	G32	G33

Model Size



Structure

- [StickT2 Structure Files](#)

Datasheets

- [ESP32-PICO](#)
- [MPU6886](#)
- [AXP192 Datasheet](#)
- [AXP192 Register](#)
- [SPM1423](#)
- [Lepton Datasheet](#)
- [Lepton Engineering Datasheet](#)
- [Lepton Software Interface Description](#)

Softwares

Arduino

- [StickT2 Arduino Library](#)

Board Manager Requirement

Compiling this example requires M5Stack Arduino Board Manager version v1.0.8

Board Management Requirement

Compiling this example requires using the **M5Stack Arduino Board Management version v1.0.8**, with the model set to **M5Stick-C**.

Easyloader

Easyloader	Download Link	Notes
StickT2 Firmware Easyloader	download	/

Video

Product Comparison

To compare information on the Stick series products, you can visit the [Product Selection Table](#), check the target products, and get the comparison results. The selection table covers key information such as core parameters and functional features, and supports comparison of multiple products simultaneously.

Version Change

Release Date	Product Changes
2021.5	Optimized internal structure, reduced encoder wheel size, and improved details
2020.1	First release