



Sipeed MaixCube – All-in-One AI Development Platform Based on K210 (RISC-V)

SKU 102110425

Sipeed MaixCube is an all-in-one development platform based on the M1n module which is powered by the Kendryte K210 core. It is equipped with a camera, TF card slot, user buttons, TFT display, lithium battery, speaker, microphone and an expansion interface. This provides a great platform for everyone to start learning about AI development.

Features

- All-in-One Platform with Rich Peripherals
- K210 RISC-V 64-bit Dual-Core CPU for Powerful AI Applications
- Computing Power up to 1TOPS for Heavy Machine Vision Applications
- Built-in FPU, KPU, FFT Hardware Acceleration Units
- Built-in APU for High-Quality Audio Processing

Description

Object recognition using Artificial Intelligence has never been this convenient ever before.

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The KendryteK210 which acts as the main control chip for the MaixCube, is very powerful. The module has a built-in 64-bit dual-core processor chip and 8M of on-chip SRAM. It has outstanding performance in AI machine vision and Auditory applications. It has a variety of hardware acceleration units such as KPU, FPU, FFT, etc. and the total computing power can be up to 1TOPS, which can conveniently realize machine vision/hearing algorithms of various application scenarios, and can also perform pre-processing work of voice scanning and voice data output.

Users can use MaixCube to easily build a face recognition access control system.

A Wide Range of Sipeed Modules (SP-MOD) Supported

Through the SP-MOD interface on the MaixCube which is a standard 2.54mm 2x4 Pin female header, with Vcc, GND, and 6 signals, you can connect to various SP-MOD modules and extend your AI projects further.



1	Handle Module	8	SP-MOD One-to-Multi-Adapter Board
2	USB In-line Module	9	1.14 inch LCD module
3	Microphone Array Adapter Board	10	Single point ToFu Module
4	Weather Station Module	11	FPC Extension Module
5	PSRAM Module	12	Bluetooth Module
6	Credit Card Module	13	Ink Screen Module
7	Grove Adapter Board	14	LoRa Module

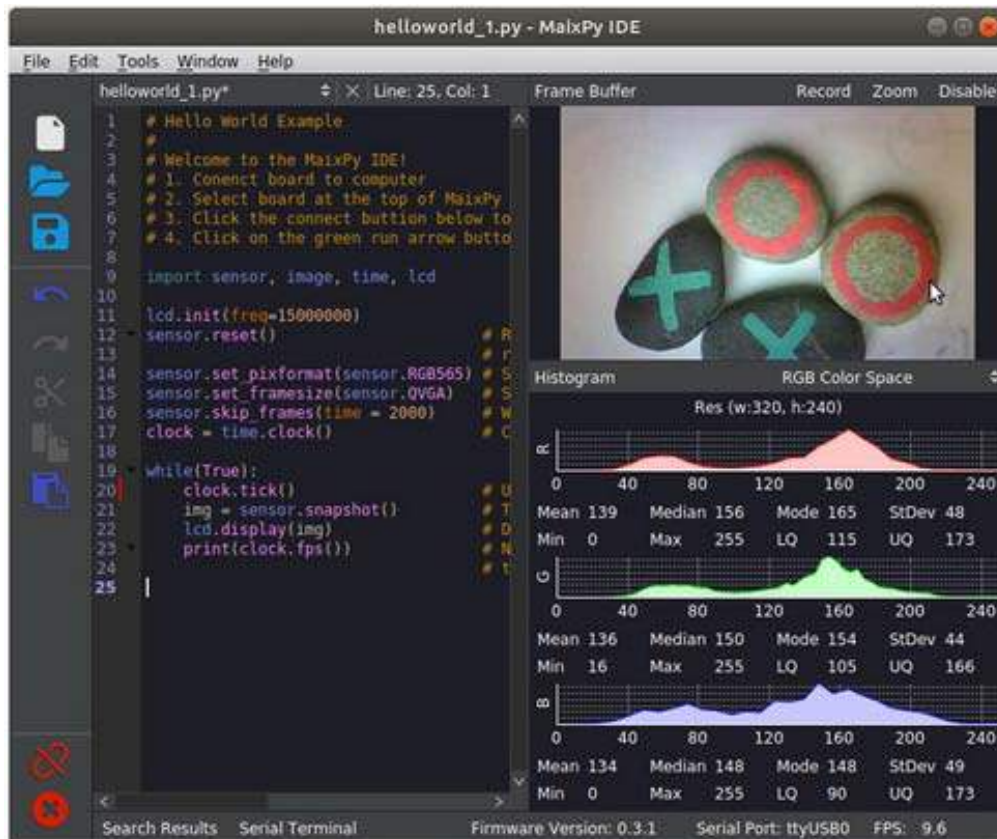
What is MaixPy?

Before getting to know about the MAIX product series, it is very necessary to understand the MaixPy project. It can help you quickly use the AI module.

MaixPy is a project of porting Micropython to K210 chip (running Micropython parser on K210), that is, users can finally control the function of K210 chip through Micropython programming. For example, you can directly call the facial recognition algorithm built into the firmware through Micropython programming, and finally generate a Micropython file, which can be downloaded to the Flash chip, and run on it. In addition, MaixPy supports the normal operation of MCU and integrates machine vision and microphone arrays to rapidly develop intelligent applications in the field of AIoT with extremely low cost and practicality.

What is the Development Environment on MaixCube?

By default, the development board has burned MaixPy firmware (the firmware source code is open source and can be downloaded from Github). MaixPy has developed a variety of functional libraries that developers can call directly. Maix series products use Maix IDE developed by the Sipeed team. The software is free of installation. After downloading, you can directly use MaixPy to use Micropython script syntax. Developers can edit the script on the computer and upload it to the development board to execute the script directly on the development board. The IDE can view camera images in real-time and save files to the development board, which is very convenient for development.



In addition to MaixPyIDE, developers can also use ArduinoIDE, PlatformIO IDE and other environments for development, please refer to our technical information for details.

Note

For more information about K210 RISC-V, please view the blogs:

- [1.RISC-V Based Development Boards Collection](#)
- [2. Get Started with K210: Hardware and Programming Environment](#)

Tip

Don't miss out the full selection of Sipeed products available at Seed! Please check all [Sipeed products](#) here.

Tip

We have released the [Sipeed AI forum area](#), where we will publish relevant resources from time to time. You are welcome to ask questions and communicate in the forum area.

Specifications

Kendryte K210	
Core	RISC-V Dual-Core 64-bit, with FPU
Frequency	400MHz (overclockable to 600MHz)
SRAM	Built-in 8M Byte
Image recognition	QVGA @ 60fps / VGA @ 30fps
Voice recognition	Microphone array (8mics)
Network Model	supports YOLOv3/TinyYOLOv2/face recognition, etc.
Deep learning framework	Support frameworks such as TensorFlow / Keras / Darknet / Caffe
Peripherals	FPIOA, UART, GPIO, SPI, PC, PS, TIMER
Hardware acceleration unit	KPU convolution operation accelerator
	FPU floating point accelerator
	APU Audio processor
	FFT Fourier transform accelerator
MaixCube Module	
Onboard Peripherals	Button x 3

	Camera x 1
	RGB LED x 2
	1.3 inch TFT screen
	Electret Microphone x 1
	128Mbit Flash x 1
	Accelerometer x 1
Onboard Interfaces	USB Type-C Interface
	Audio interface (supports external speakers)
	TF card slot
	Grove standard interface
	SP-MOD interface (supports SP-MOD interface module)
Power supply	USB-Type-C / Internal lithium battery (200mAh)
Software Development	
Operating system	FreeRTOS, Linux
Face recognition	Recognition accuracy up to 98%

Development environment	MaixPy IDE, PlatformIO IDE, Arduino IDE, etc.
Programming languages	C, C ++, MicroPython

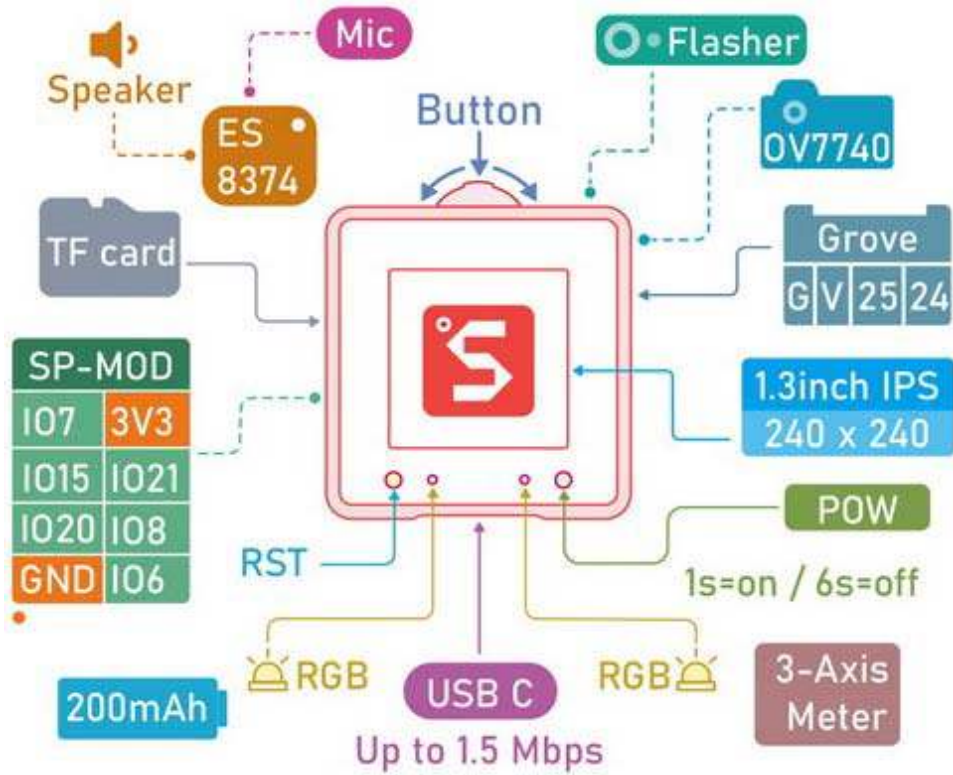
Applications

- Face Detection
- Object Recognition
- FFT Spectrum Analysis
- Game Simulation

Hardware Overview



- | | | |
|-----------------------|--------------------|----------------|
| ① 1.3 inch TFT Screen | ② Reset Button | ③ Power Button |
| ④ Grove Interface | ⑤ SP-MOD Interface | ⑥ TF Card Slot |
| ⑦ Camera | ⑧ Type-C Interface | ⑨ 3-Way Button |
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Dimensions



Parts List

1 x Sipeed MaixCube – All-in-One AI Development Platform Based on K210 (RISC-V)



ECCN/HTS

HSCODE	8543709990
UPC	