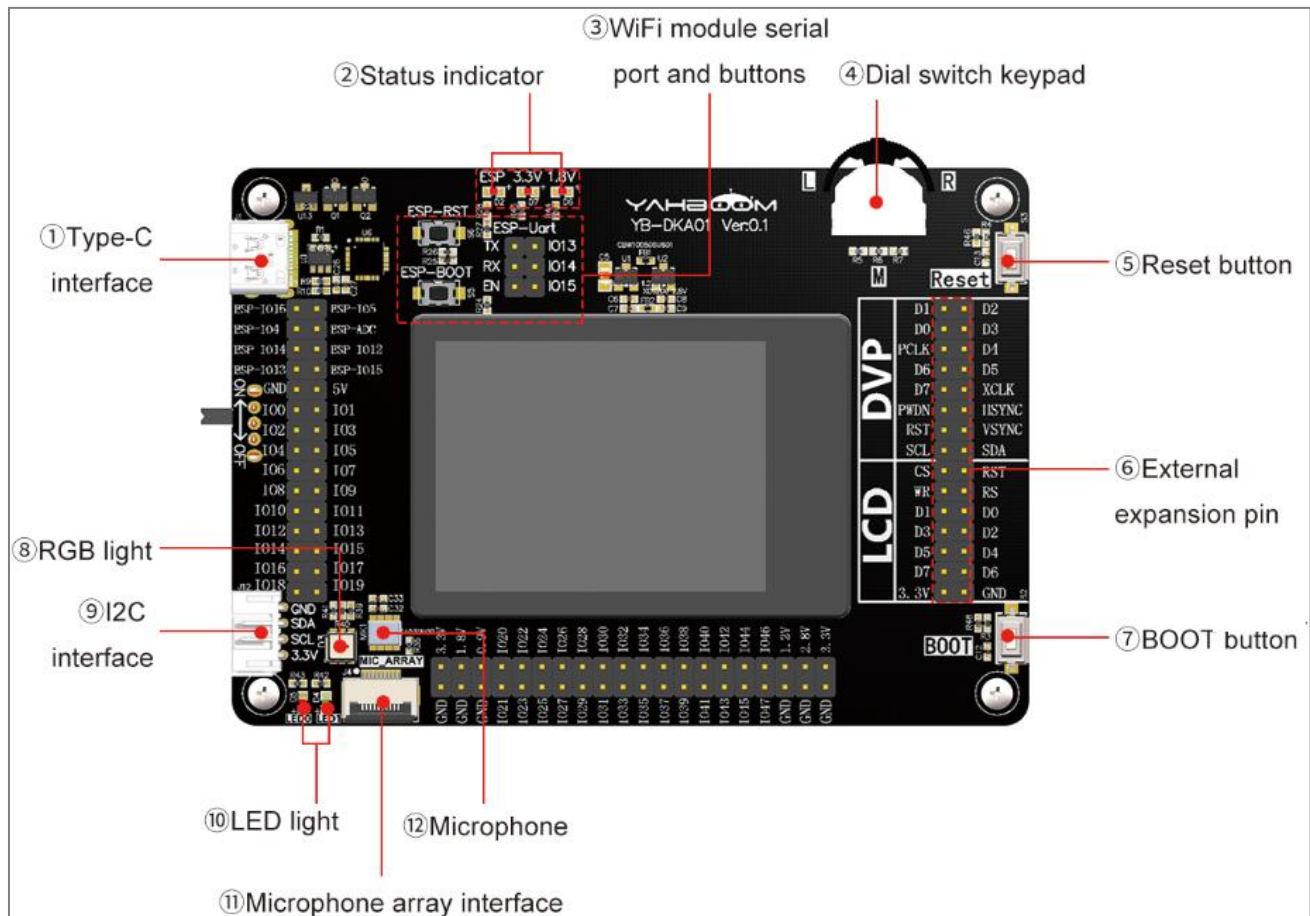


## First Trial

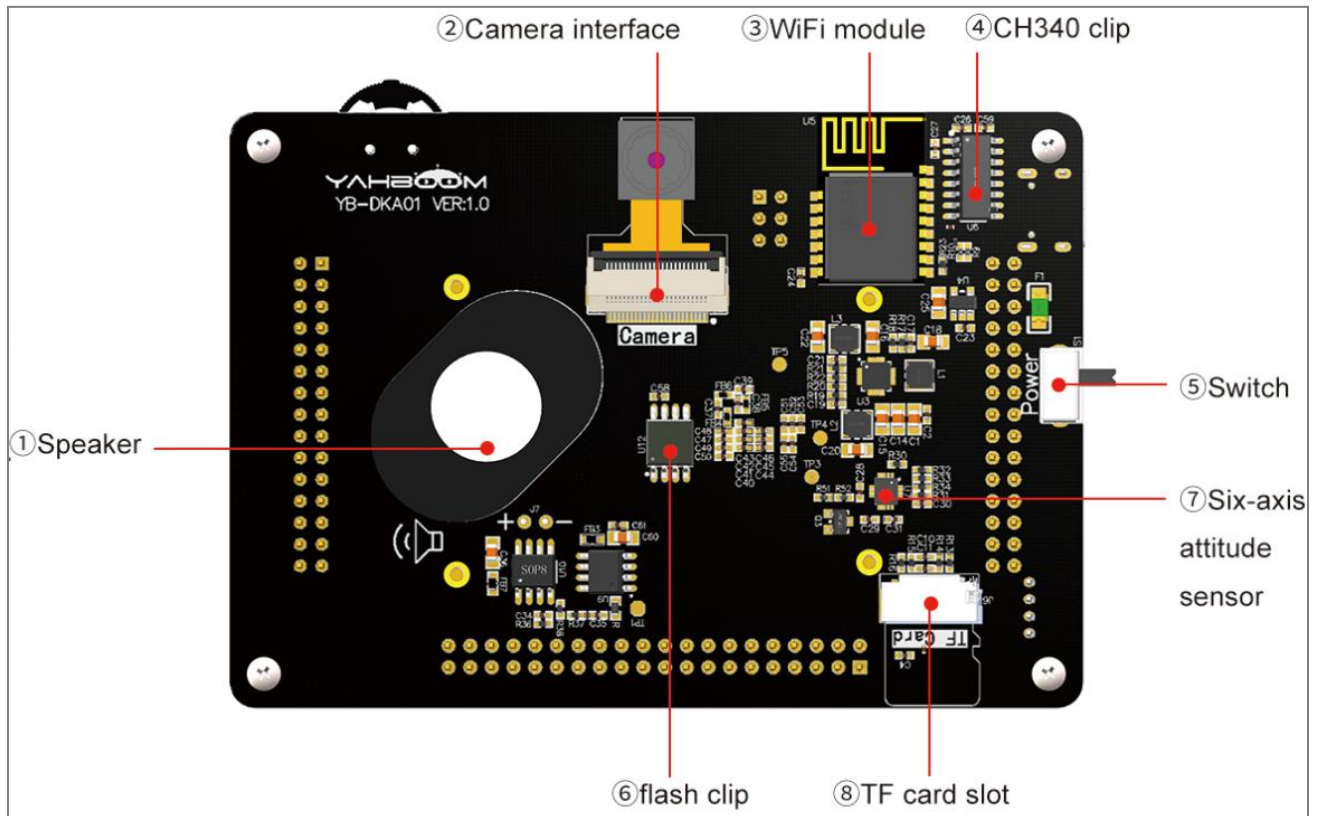
### 1. Introduction to the location of components

#### Front



- ① **Type-C interface:** power supply, download firmware and serial port debugging, etc.
- ② **Status indicator:** Indicate whether the 3.3V, 1.8V voltage of the development board is normal, and the light is on when it is normal. And the WiFi module BOOT level indicator.
- ③ **WiFi module serial port and buttons:** can be used to burn the firmware of the WiFi module or communicate with the K210 serial port.
- ④ **Dial switch keypad:** Three-channel dial switch.
- ⑤ **Reset button:** the reset button of K210 chip.
- ⑥ **External expansion pin header:** The development board has led out all the IO ports of K210 for connecting with external devices.
- ⑦ **BOOT button:** can be used as a custom function button.
- ⑧ **RGB light:** set three IO port levels to light up different colors.
- ⑨ **I2C interface:** external I2C slave device can be connected for communication
- ⑩ **LED light:** LED0 and LED1.
- ⑪ **Microphone array interface:** used to connect a microphone array.
- ⑫ **Microphone:** record sound.

Back



- ① Speaker: play sound.
- ② Camera interface: connect the camera.
- ③ WiFi module: ESP8285-WiFi module, which can realize IOT function on the Internet.
- ④ CH340 chip: download firmware and serial port debugging function.
- ⑤ Power switch: the main power switch of the development board, turn ON to open, turn OFF to turn off.
- ⑥ flash chip: used to save program firmware and data.
- ⑦ Six-axis attitude sensor: The inside is composed of a three-axis gyroscope and a three-axis accelerometer.
- ⑧ TF card slot: You need to insert the TF card yourself, with the golden finger facing the development board.

**(Please prepare TF card by yourself)**

## 2. How write program into K210 board

2.1 Double-click to open **K-Flash.exe**, and connect the computer to the K210 development board through the Type-C data cable.

**Device:** selects the serial port number of your K210 development board.

**Baud rate:** selects the baud rate(115200).

**Chip:** selects In-chip or In-SRAM.

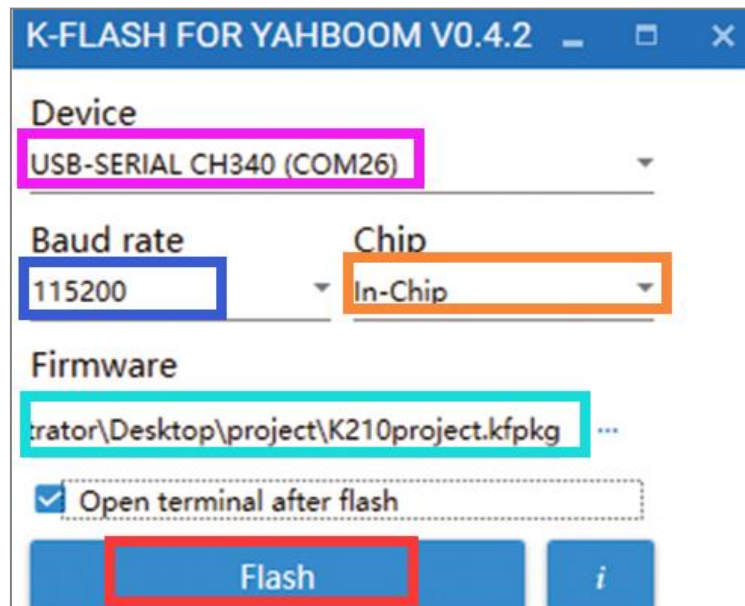
If you choose in-Chip, it will write to the chip, it will start automatically when power is on, and will be saved after power off.

If you choose in-Memory, it will be write to SRAM and will not be saved after power off.

**Firmware:** selects the program firmware (.bin file), we select **K210project.kfpkg**.

Checking Open terminal after flash means that the terminal will be opened automatically after the programming is completed.

Click Flash to start burning the firmware.



2.2 After the writing is completed, the terminal will be opened automatically and the following information will be printed.

```

C:\Users\Administrator\AppData\Local\Temp\tmp7553.tmp
read-0x02=12
/*****sdcard test*****/
sd init 0
card info status 0
CardCapacity:15931539456
CardBlockSize:512
/*****fs test*****/
mount sdcard:0
printf filename
dir:System Volume Information
file:REC.wav
hardware init ok!
ReadId C8 60 18 C8 60 18 C8 60
start lvgl init
app_init finish
start ok!
get_free_heap_size=4538368

```

### 3. First Trial

After burning the 【K210project.kfpkg】 firmware, there are four picture buttons on the main interface, including face detection, object detection, RGB control, recording and playing.



#### A. Face detection

Click "Face Detection" and the LCD screen will display the camera screen. When the camera detects a human face, a small frame will appear on the face.

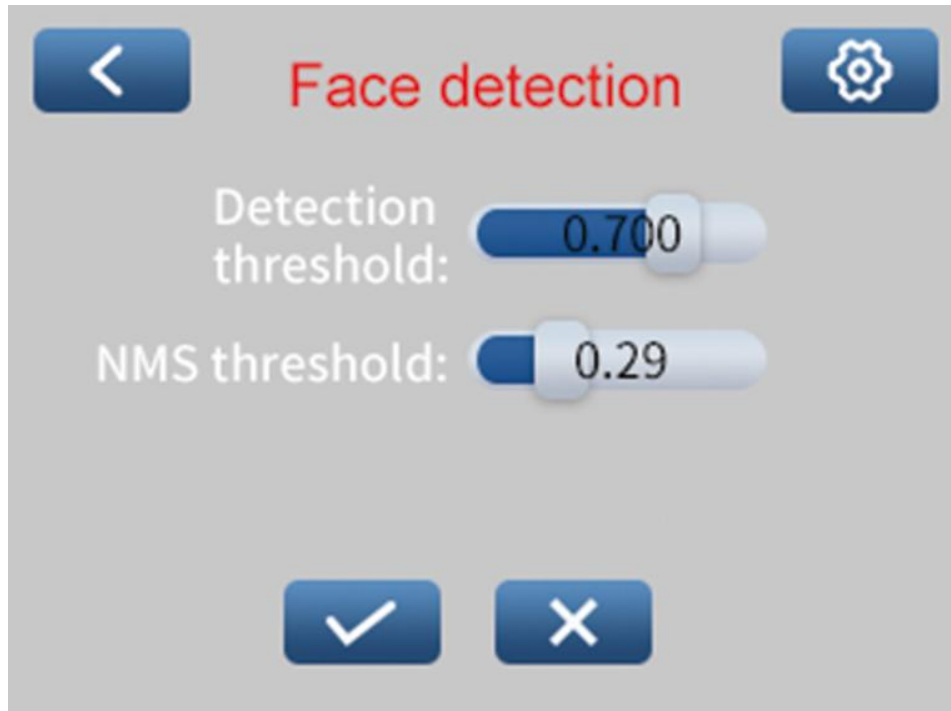
Click the screen again to pop up the following menu. At the same time, the camera stops collecting data.

After modifying the data by dragging the slide bar, click the "v" below to save the data, and click "X" to exit without saving.

**Detection threshold:** The threshold of face detection.

**NMS threshold:** Non-maximum threshold, mainly combining recognition frames for face detection.

**Return method:** Click the "<" button in the upper left corner, or scroll the keypad to the left to L to exit.



## B. Object detection

Object detection can detect the following objects:

Airplane, bicycle, bird, boat, bottle, bus, trolley, cat, chair, milk, table, dog, motorcycle, person, potted plant, sheep, sofa, train, TV.

Click "Object Detection" button to enter the object detection function interface.

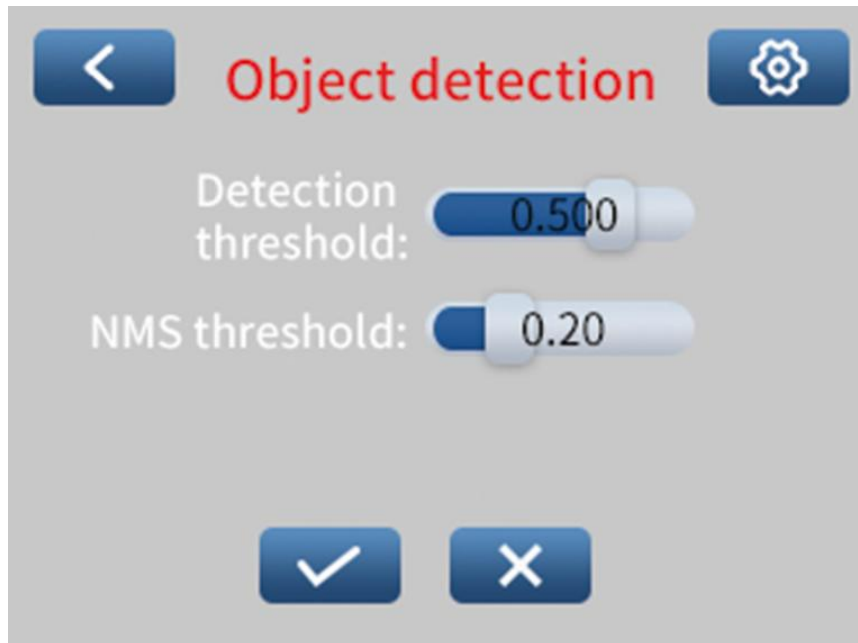
When check the object described above, the LCD will circle the detected object and mark the type of this object.

Click the screen again to pop up the following menu. At the same time, the camera stops collecting data.

After modifying the data by dragging the slide bar, touch the "v" below to save the data, and touch "X" to exit without saving.

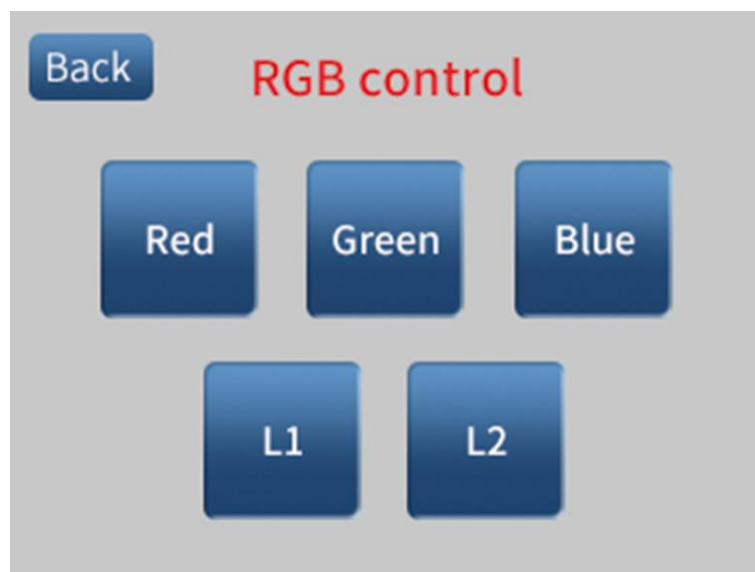
**Detection threshold:** The threshold of object detection.

**NMS threshold:** Non-maximum threshold, which is mainly combined with the recognition frame of object detection



**Return method:** Click the "<" button in the upper left corner, or scroll the keypad to the left to L to exit.

### C. RGB control

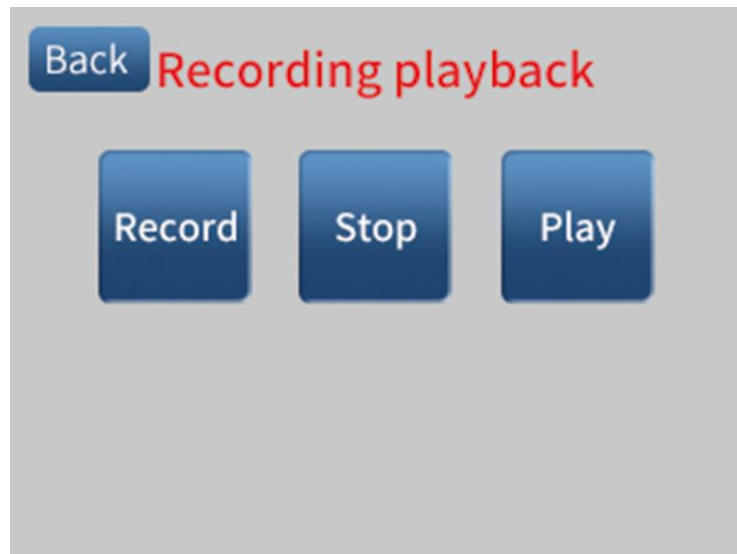


Click "RGB Control" to enter the RGB control interface, as shown above. Click the Red, Green, and Blue buttons, the RGB lights will correspond to three different colors.

Click "L1", LED0 will light up red, click "L2", LED1 will light up green .

Click "Back" to exit to the main interface.

### D. Recording and playing



**Tip: you need to close the K210 development board and then insert the TF card(fat32).**

Click "Recording/Playing" button to enter the recording playback interface.  
When we press "Record" to start recording (RGB red starts to flash);  
press "Stop" to stop recording and save it to the TF card (RGB red is off);  
press "Play" to play the sound just recorded ( RGB blue lights up).