

# ard\_k210-Color recognition

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### 1.K210 and Arduino communication

#### 1.1 Experimental premises

#### 1.2 Experimental wiring

#### 1.3 Main code explanation

#### 1.4 experimental phenomena

## 1.K210 and Arduino communication

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### 1.1 Experimental premises

This tutorial uses arduino, and K210 requires running the program in **K210-AI (stm32\_pico\_arduino)** to start the experiment

arduino \*1

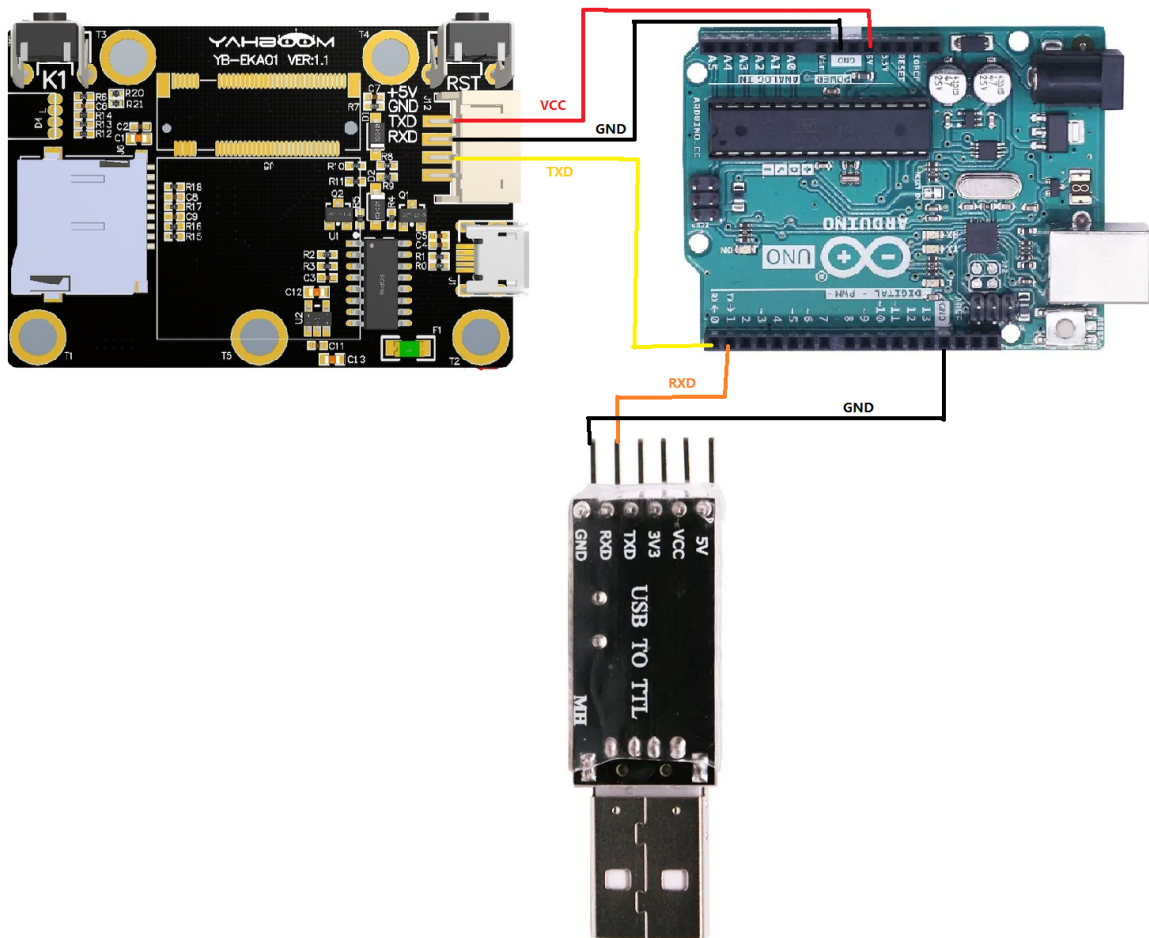
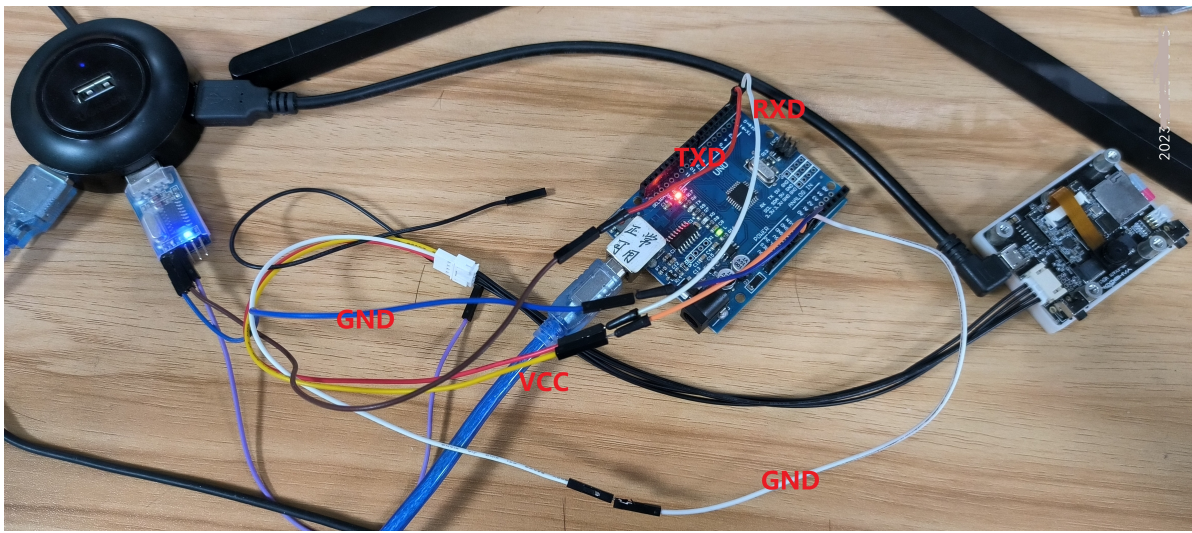
K210 perspective module \* 1 (requires SD card (with AI model inside) and camera)

USB to TTL module \* 1

### 1.2 Experimental wiring

arduino	usb to ttl
TXD	RXD
GND	GND

arduino	K210 perspective module
RXD	TXD
GND	GND
VCC	5V
Wiring as shown in the diagram:	



### 1.3 Main code explanation

```
void loop()
{
  while (K210Serial1.available())
  {
    recv_k210msg(K210Serial1.read());

    if (k210_msg.class_n != 0)
    {
      if(k210_msg.class_n == 1)
      {
```

```

    sprintf(buff_com, "x=%d,y=%d,w=%d,h=%d\r\n", k210_msg.x, k210_msg.y, k210_msg.w, k210_msg.h);
    k210Serial.print(buff_com);

    k210_msg.class_n = 0;
}

}

}
}

```

After the above program, if you are running this routine, k210\_ The members of the msg structure have corresponding values and are processed through serial port printing

K210\_ Msg: is a structure that receives information, and its main members are

- X: is the horizontal coordinate of the top left corner of the recognized box (range: 0-240)
- Y: is the vertical coordinate of the upper left corner of the identified box (range: 0-320)
- W: is the width of the recognized box (range: 0-240)
- H: The length of the recognized box (range: 0-320)
- ID: is the recognized label
- Class\_n: Routine number
- Msg\_ Msg [20]: Valid data

After receiving and processing data, k210\_ Each member of the msg will store valid information. If you want to develop it again, call K210 directly\_ Members of msg are sufficient

## 1.4 experimental phenomena

1. After connecting the cable, the K210 perspective module runs offline. Please check 【6.2 K210 as coprocessor】 -- 【ReadMe】

2. Set the serial port assistant to the interface shown in the figure

The image shows a 'COM Configs' dialog box with the following settings:

- Channel: COM1 串口1
- Baudrate: 115200
- Paritybits: NONE
- Databits: 8
- Stopbits: 1
- Flowctrl: NONE

Below the settings is a 'Close' button with a red circular icon. Underneath the dialog box is the 'Recv Options' section:

- ☒ ASCII ☐ HEX
- ☒ Log display mode
- ☒ Auto linefeed
- ☐ Hide received data
- ☐ Recv save to file...

At the bottom of the 'Recv Options' section are links for 'AutoScroll' and 'Clear'. Below that is the 'Send Options' section:

- ☒ ASCII ☐ HEX
- ☒ Enable escape chars
- ☒ AT CMD auto CRLF
- ☐ Auto append bytes
- ☐ Send from file ...
- ☐ Period: 1000 ms

At the bottom of the 'Send Options' section are links for 'Shortcut' and 'History'.

3. Then run the color recognition routine, and the serial assistant will print out the important information transmitted from k210 to stm32, as shown in the following figure

The image shows a serial terminal window with a black background and green text. The text displays a series of coordinates (x, y, w, h) for color recognition. The data is as follows:

```
x=0, y=0, w=319, h=106
x=0, y=0, w=319, h=95
x=0, y=0, w=319, h=85
x=0, y=0, w=319, h=73
x=177, y=0, w=142, h=62
x=192, y=0, w=127, h=55
x=197, y=0, w=122, h=52
x=202, y=0, w=117, h=50
x=204, y=0, w=115, h=48
x=201, y=0, w=118, h=49
x=202, y=0, w=117, h=49
x=206, y=0, w=113, h=47
x=209, y=0, w=110, h=47
x=209, y=0, w=110, h=47
x=209, y=0, w=110, h=47
x=211, y=0, w=108, h=46
x=215, y=0, w=104, h=44
x=216, y=0, w=103, h=44
x=216, y=0, w=103, h=43
x=218, y=0, w=101, h=43
x=219, y=0, w=100, h=42
x=219, y=0, w=100, h=42
x=218, y=0, w=101, h=41
x=219, y=0, w=100, h=40
x=224, y=0, w=95, h=36
```

Color recognition only transmits the four Member variable of k210\_msg: x, y, w, h.

