

# ard\_K210-object detection

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## ard\_K210-object detection

### 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

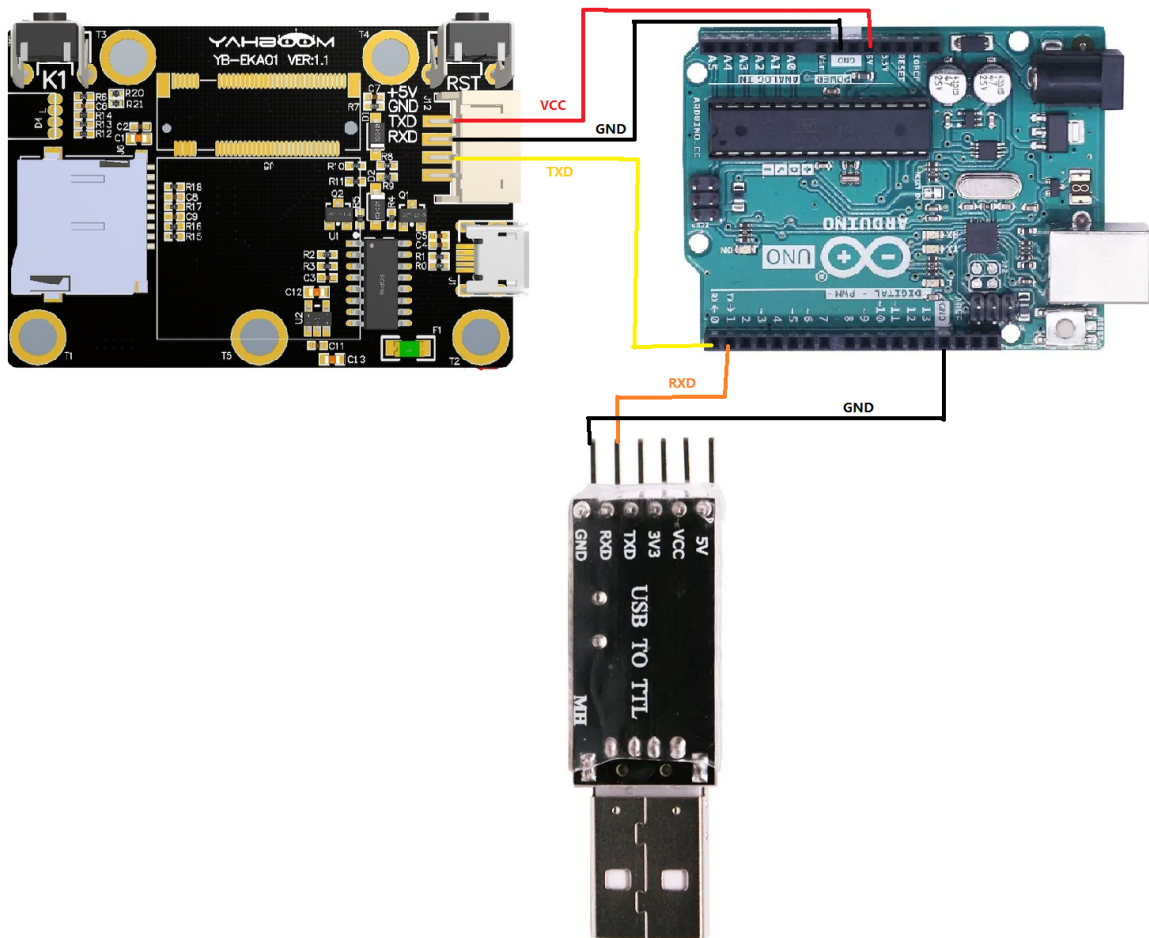
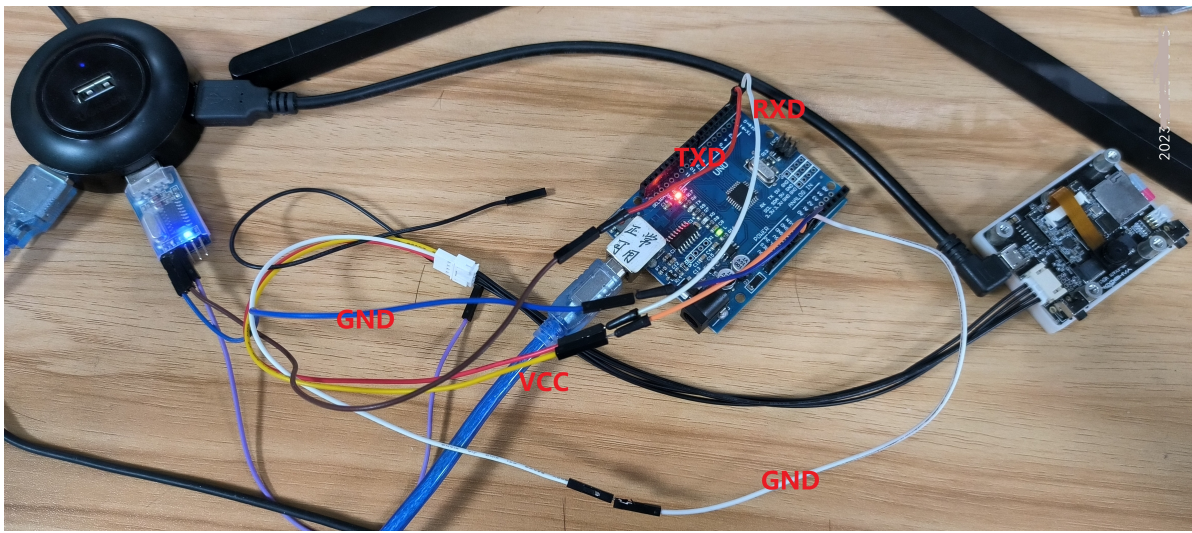
K210 perspective module \* 1 (requires SD card (with AI model inside) and camera)

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 == 9)
      {
```

```

    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);

    sprintf(buff_com, "id = %s\r\n", k210_msg.msg_msg);
    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

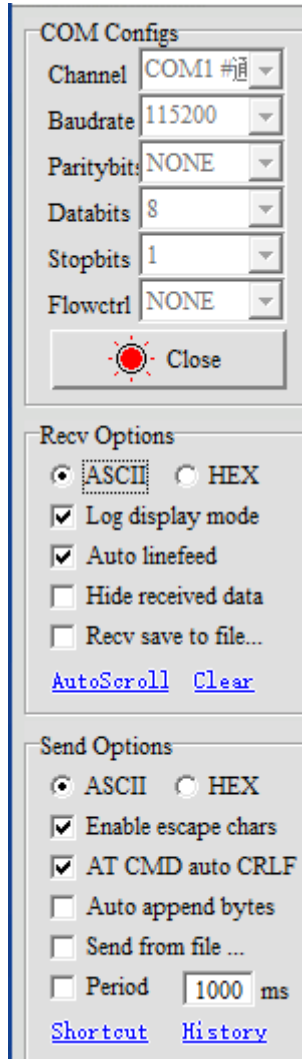
- X: is the horizontal coordinate of the top left corner of the recognized box (range: 0-240)
- Y: is the vertical coordinate of the upper left corner of the identified box (range: 0-320)
- W: is the width of the recognized box (range: 0-240)
- H: The length of the recognized box (range: 0-320)
- ID: 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 screenshot of a 'Serial Port Assistant' configuration window. It is divided into three main sections: 'COM Configs', 'Recv Options', and 'Send Options'. In the 'COM Configs' section, the 'Channel' is set to 'COM1', 'Baudrate' is '115200', 'Paritybits' is 'NONE', 'Databits' is '8', 'Stopbits' is '1', and 'Flowctrl' is 'NONE'. There is a 'Close' button with a red sun icon. The 'Recv Options' section has radio buttons for 'ASCII' (selected) and 'HEX', and checkboxes for 'Log display mode' (checked), 'Auto linefeed' (checked), 'Hide received data' (unchecked), and 'Recv save to file...' (unchecked). It also has 'AutoScroll' and 'Clear' links. The 'Send Options' section has radio buttons for 'ASCII' (selected) and 'HEX', and checkboxes for 'Enable escape chars' (checked), 'AT CMD auto CRLF' (checked), 'Auto append bytes' (unchecked), 'Send from file ...' (unchecked), and 'Period' (unchecked) with a value of '1000 ms'. It also has 'Shortcut' and 'History' links.

COM Configs

Channel: COM1 #01

Baudrate: 115200

Paritybits: NONE

Databits: 8

Stopbits: 1

Flowctrl: NONE

Close

Recv Options

☒ ASCII ☐ HEX

☒ Log display mode

☒ Auto linefeed

☐ Hide received data

☐ Recv save to file...

[AutoScroll](#) [Clear](#)

Send Options

☒ ASCII ☐ HEX

☒ Enable escape chars

☒ AT CMD auto CRLF

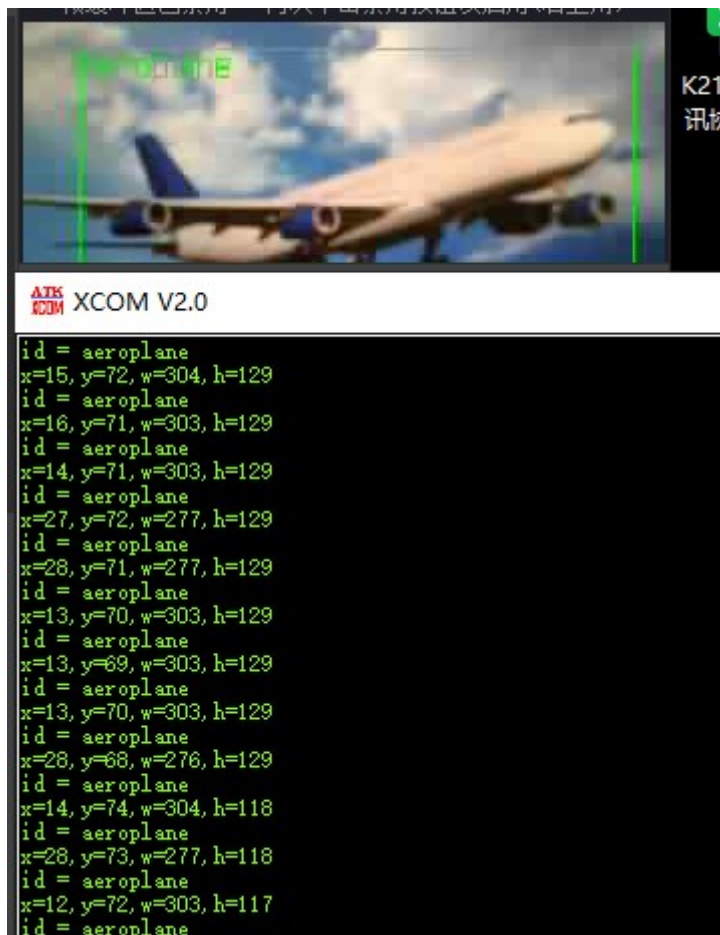
☐ Auto append bytes

☐ Send from file ...

☐ Period: 1000 ms

[Shortcut](#) [History](#)

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



Object detection only transmits the six Member variable of k210msg, namely, x, y, w, h, id and msg.

ID: The information includes (0. plane, 1. bicycle, 2. bird, 3. boat, 4. bottle, 5. bus, 6. car, 7. cat, 8. chair, 9. cow, 10. dining table, 11. dog, 12. horse, 13. motorcycle, 14. person, 15. potted plant, 16. sheep, 17. sofa, 18. train, 19. monitor)