

stm_ K210 mechanical code identification

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1. Communication between k210 and stm32

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1. Communication between k210 and stm32

1.1 Experimental premises

This tutorial uses stm32C8T6, and k210 requires running the program in * * K210-AI (stm32_pico_arduino) * * to start the experiment

Stm32 * 1

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

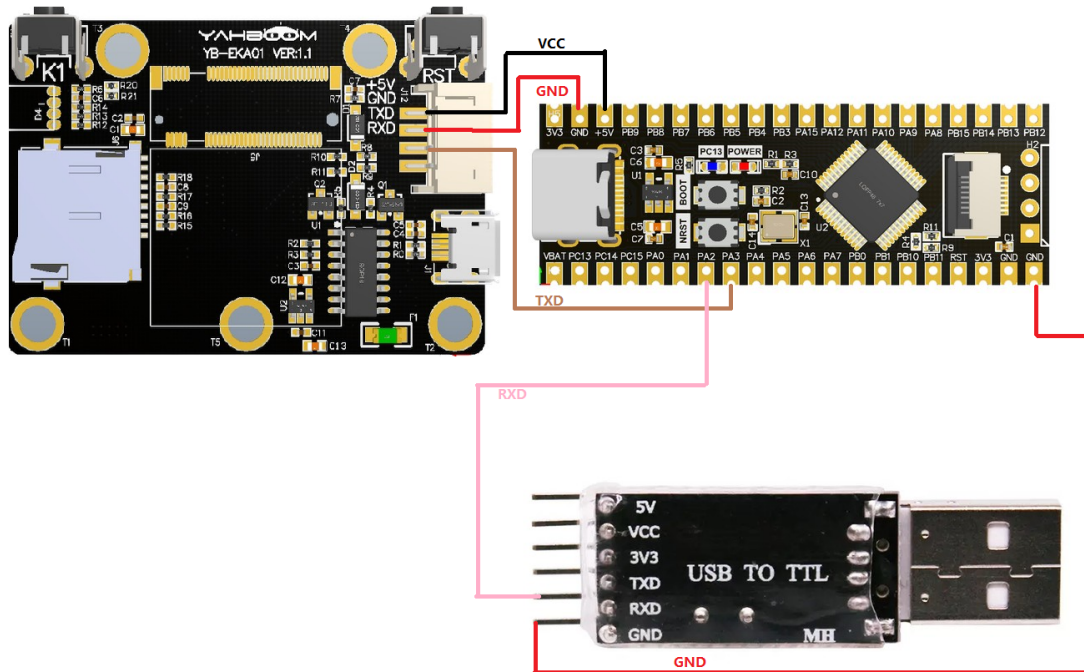
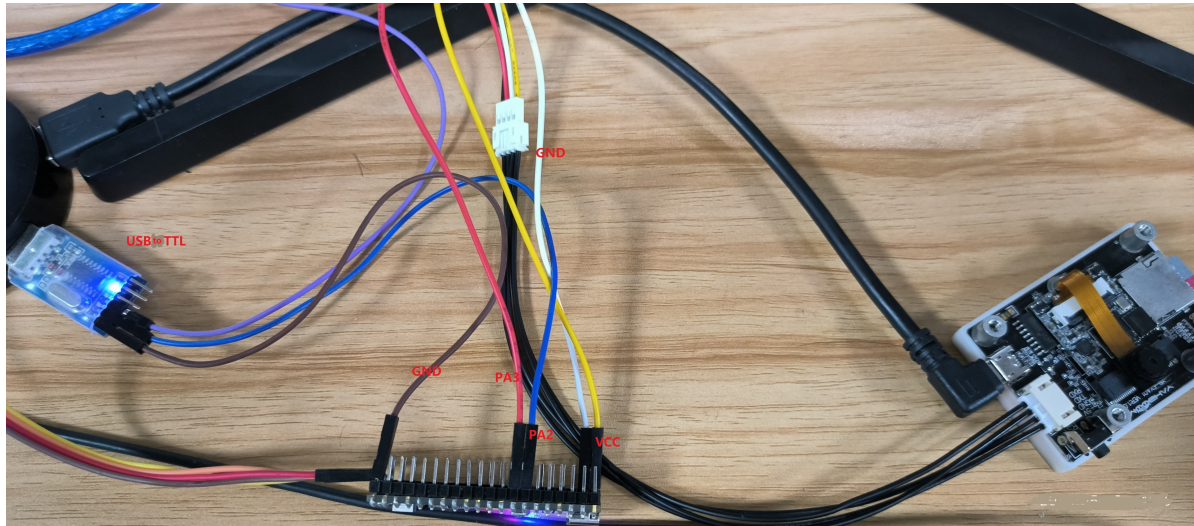
USB to TTL module * 1

1.2 Experimental wiring

stm32	usb to ttl
PA2	RXD
GND	GND

STM32	k210
PA3	TXD
GND	GND
VCC	5V

Wiring as shown in the diagram:



This type of wiring is not necessary for the RXD of k210 and the TXD of USB to TTL, as it was not used in the experiment.

1.3 Main code explanation

```
int main()
{
    //.....
    while(1)
    {
        if (k210_msg.class_n != 0)
        {
            if(k210_msg.class_n == 4)
            {
                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);
                USART2_Send_ArrayU8((uint8_t*)buff_com, strlen(buff_com));
            }
        }
    }
}
```

```

        sprintf(buff_com,"id = %c%c,str = %s\r\n",
(k210_msg.id>>8),k210_msg.id,k210_msg.msg_msg);
        USART2_Send_ArrayU8((uint8_t*)buff_com,strlen(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 two overlapping dialog boxes from a serial port assistant. The top dialog, titled 'COM Configs', has fields for Channel (COM1), Baudrate (115200), Paritybits (NONE), Databits (8), Stopbits (1), and Flowctrl (NONE). It includes a 'Close' button with a red stop icon. The bottom dialog, titled 'Recv Options', has radio buttons for ASCII (selected) and HEX, and checkboxes for Log display mode, Auto linefeed, Hide received data, and Recv save to file... It also has 'AutoScroll' and 'Clear' links. Below it, the 'Send Options' dialog has radio buttons for ASCII (selected) and HEX, and checkboxes for Enable escape chars, AT CMD auto CRLF, Auto append bytes, Send from file ..., and Period (1000 ms). It includes 'Shortcut' and 'History' links.

3. Then run the mechanical code 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. It displays a series of data points transmitted from k210 to stm32. Each line follows the format: id = 01, str = TAG16H5, followed by a line containing x, y, w, and h values. The data points are as follows:

```
id = 01, str = TAG16H5
x=112,y=17,w=23,h=23
id = 01, str = TAG16H5
x=112,y=18,w=23,h=22
id = 01, str = TAG16H5
x=111,y=19,w=23,h=22
id = 01, str = TAG16H5
x=109,y=19,w=24,h=22
id = 01, str = TAG16H5
x=109,y=18,w=23,h=23
id = 01, str = TAG16H5
x=106,y=19,w=23,h=23
id = 01, str = TAG16H5
x=107,y=20,w=23,h=22
id = 01, str = TAG16H5
x=106,y=19,w=23,h=22
id = 01, str = TAG16H5
x=104,y=13,w=23,h=22
id = 01, str = TAG16H5
x=101,y=4,w=24,h=23
id = 01, str = TAG16H5
x=102,y=7,w=24,h=23
id = 01, str = TAG16H5
x=103,y=9,w=23,h=23
id = 01, str = TAG16H5
```

Mechanical code recognition only transmits the six Member variable of k210msg, namely, x, y, w, h, msg and id.

