MSPM0_K210 color recognition

1. K210 communicates with MSPM0

1.1 Experimental prerequisites

This tutorial uses the MSPM0G3507 development board. K210 needs to run the program in **K210-AI(MSPM0G3507)** to start the experiment

MSPM0G *1

K210 visual module *1 (must have an SD card (with AI models), camera)

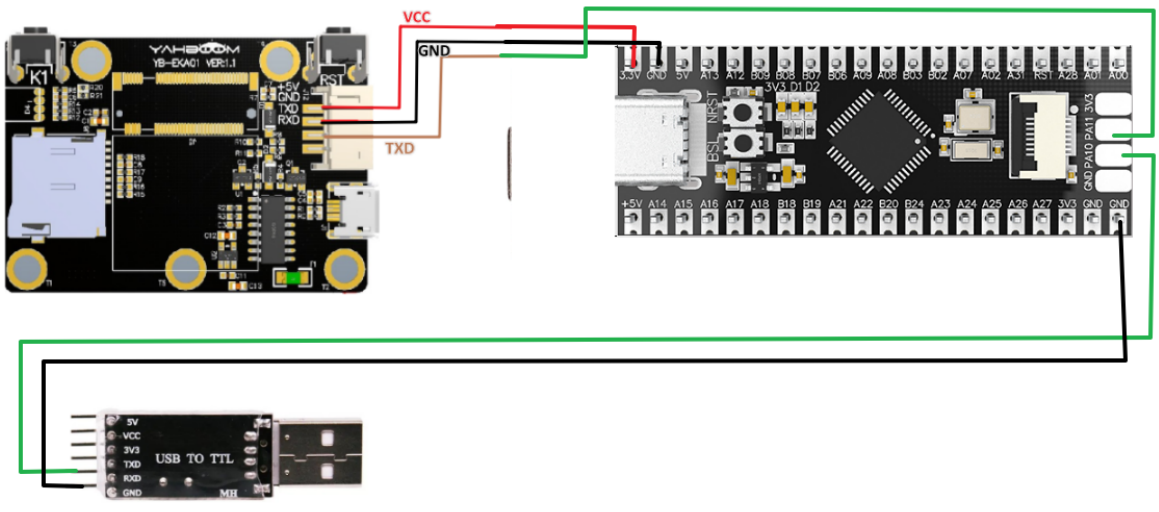
USB to TTL module *1

1.2 Experimental wiring

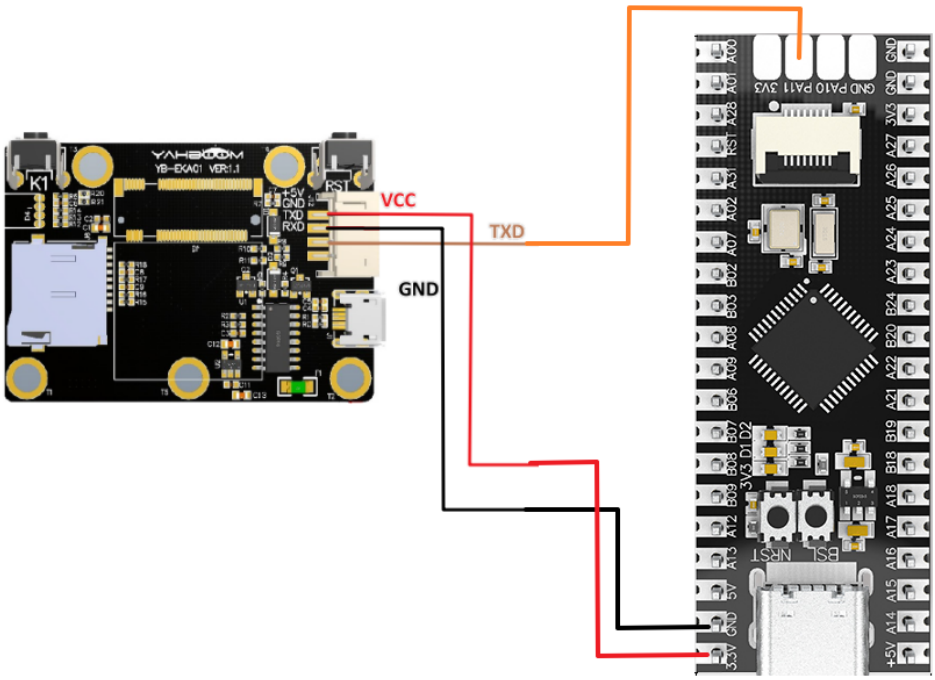
Method 1: Use USB to TTL module

MSPM0G	K210 visual module
RX	TXD
GND	GND
VCC	5V

MSPM0G	USB to TTL module
TX	RXD
GND	GND

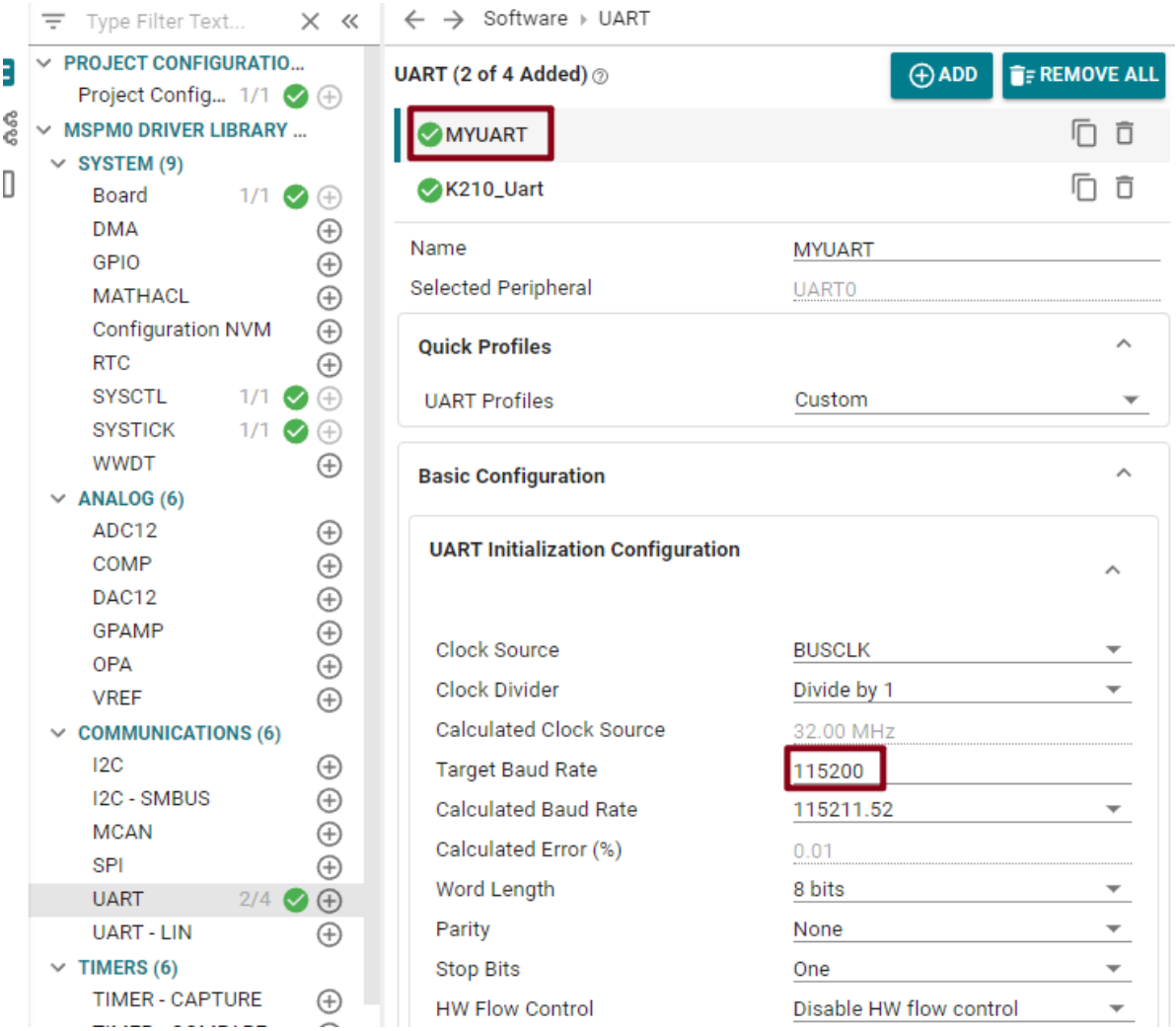


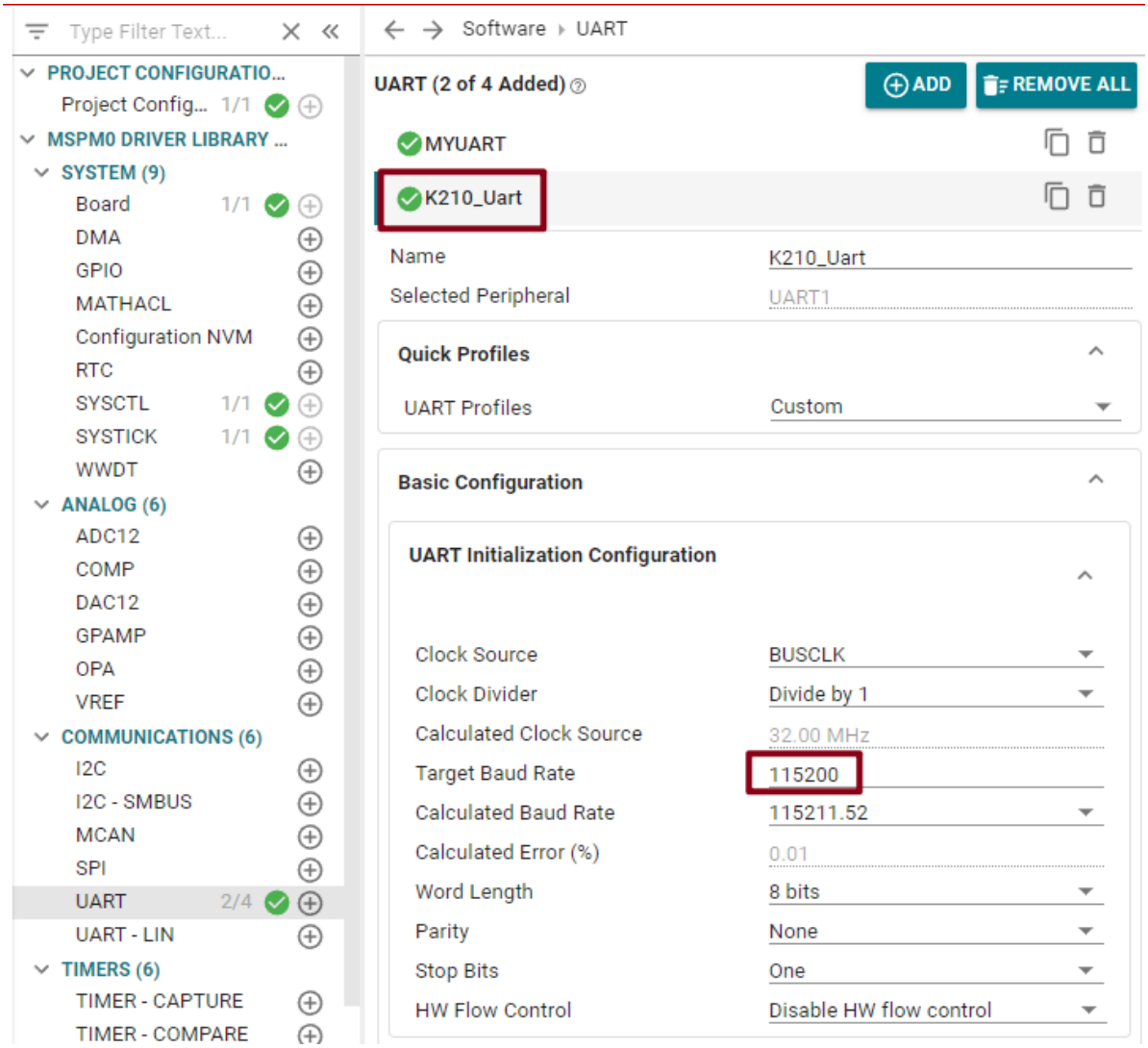
Method 2: Use the onboard Type-C port



1.3 Main code explanation

This example sets the baud rate of the serial port printing to 115200 bps, and the baud rate of the K210 module connection to 115200 bps.






```
int main(void)
{
    SYSCFG_DL_init();

    NVIC_ClearPendingIRQ(MYUART_INST_INT_IRQN);//清除串口中断标志 Clear the serial port interrupt flag
    NVIC_EnableIRQ(MYUART_INST_INT_IRQN);//使能串口中断 Enable serial port interrupt



    while (1)
    {
         if (k210_msg.class_n != 0)//例程号不为空 Routine number is not empty
        {
            if(k210_msg.class_n == 1)//是颜色识别  Color recognition
            {
                sprintf(buff_com,"class = %d,x=%d,y=%d,w=%d,h=%d\r\n",k210_msg.class_n,k210_msg.x,k210_msg.y,k210_msg.w,k210_msg.h);
                uart0_send_string(buff_com);
                k210_msg.class_n = 0;
            }

        }
        delay_ms(500);
```

```
    }
}
```

After the above program, if this routine is run, the members of the k210_msg structure will have corresponding values and will be processed through the serial port printing

k210_msg: is the structure for receiving information, and its main members are

- x: is the horizontal coordinate of the upper left corner of the identified 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 identified box (range: 0-240)
- h: is the length of the identified box (range: 0-320)
- id: is the identified label
- class_n: routine number
- msg_msg[20]: valid data

After the data is received and processed by the function, each member of k210_msg will store valid information. If you want to do secondary development, you can directly call the members of k210_msg

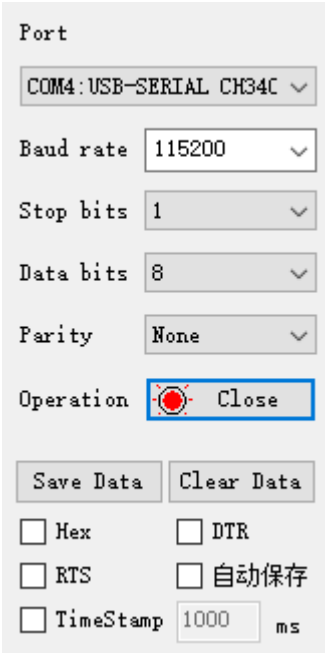
Note: The keil project source code must be compiled under the SDK path.

1.4 Experimental Phenomenon

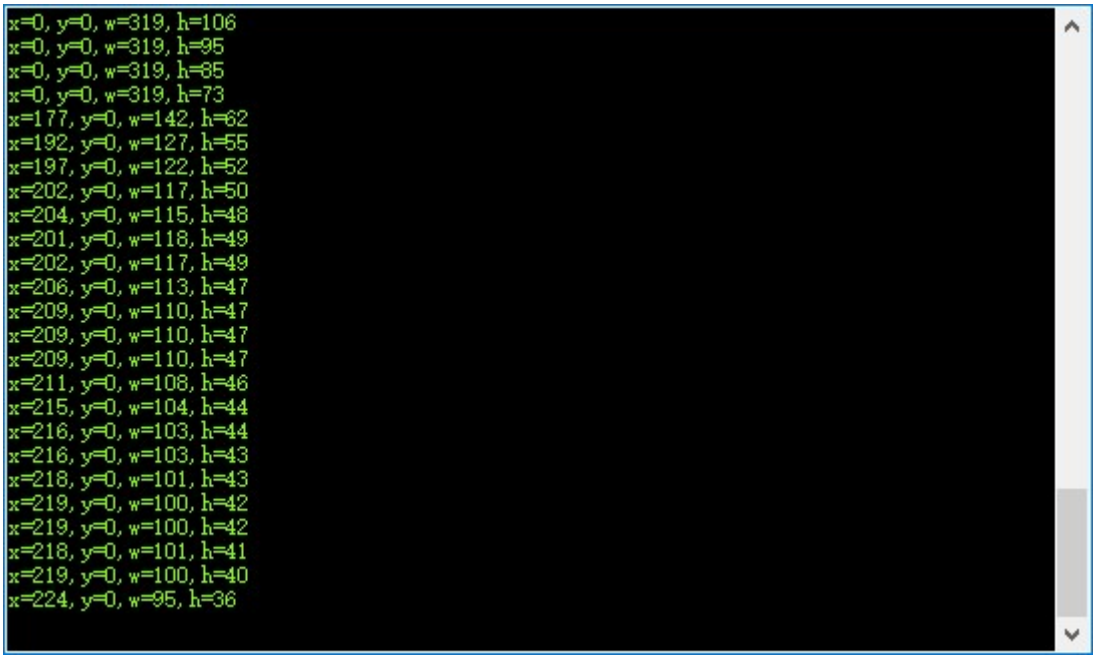
1. After connecting the cable, the K210 perspective module runs offline. Please check 【6.2 K210 as coprocessor】--【ReadMe】

   Link:http://www.yahboom.net/study/K210-AI-Camerahttps://www.yahboom.com/build.html?id=6655&cid=580)

2. The serial port assistant is set to the interface as shown in the figure



3. Then run the color recognition routine, and the serial port assistant will print out the important information transmitted by k210 to MSPM0G, as shown in the figure below


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