

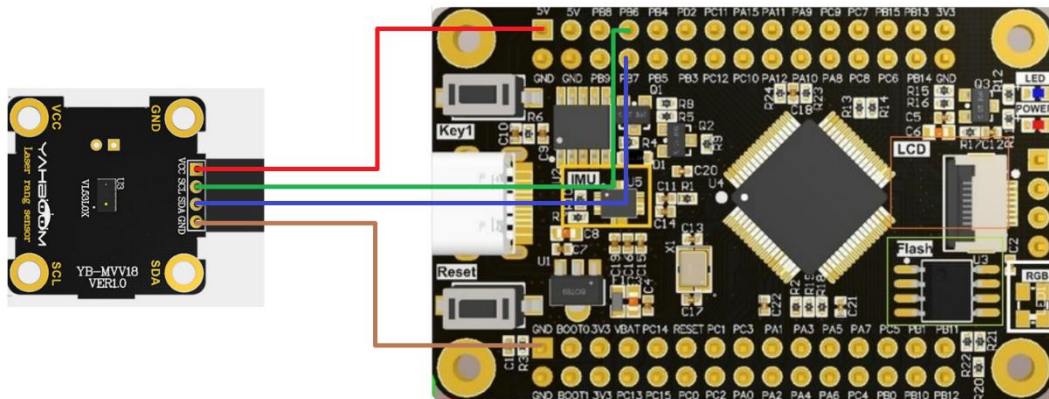
Laser ranging

1. Learning objectives

In this course, we mainly learn to use STM32F103RCT6 and laser ranging module for ranging.

2. Prepare before class

The gesture recognition module adopts I2C communication, and connects the SDA and SCL of the module to the PB7 and PB6 pins of the STM32F103RCT6 board.



3. Program

Initialize the module

```
VL53LOX_Dev_t *pMyDevice = &vl53l0x_dev;

pMyDevice->I2cDevAddr      = 0x52;
pMyDevice->comms_type      = 1;
pMyDevice->comms_speed_khz = 400;

VL53LOX_i2c_init();

Status = VL53LOX_DataInit(pMyDevice); // Data initialization
if(Status != VL53LOX_ERROR_NONE){
    print_pal_error(Status);
    return Status;
}

Status = VL53LOX_GetDeviceInfo(pMyDevice, &vl53l0x_dev_info);
if(Status != VL53LOX_ERROR_NONE){
    print_pal_error(Status);
    return Status;
}

printf("VL53LOX_GetDeviceInfo:\n");
printf("Device Name : %s\n", vl53l0x_dev_info.Name);
printf("Device Type : %s\n", vl53l0x_dev_info.Type);
printf("Device ID : %s\n", vl53l0x_dev_info.ProductId);
printf("ProductRevisionMajor : %d\n", vl53l0x_dev_info.ProductRevisionMajor);
printf("ProductRevisionMinor : %d\n", vl53l0x_dev_info.ProductRevisionMinor);

if ((vl53l0x_dev_info.ProductRevisionMajor != 1) && (vl53l0x_dev_info.ProductRevisionMinor != 1)){
    printf("Error expected cut 1.1 but found cut %d.%d\n",
        vl53l0x_dev_info.ProductRevisionMajor, vl53l0x_dev_info.ProductRevisionMinor);
    Status = VL53LOX_ERROR_NOT_SUPPORTED;
    print_pal_error(Status);
    return Status;
}

Status = vl53l0x_measure_init(pMyDevice);
vl53l0x_status = Status;
if(Status != VL53LOX_ERROR_NONE){
    print_pal_error(Status);
    return Status;
}
```

Microcontroller initialization

```
/* 端口初始化 */
GPIO_Config();
//LED1:红灯控制; LED2:绿灯控制; LED3:蓝灯控制

/* 配置SysTick 为1us中断一次 */
SysTick_Init();
/*初始化USART 配置模式为 115200 8-N-1, 中断接收*/
USART_Config();

vl53l0x_init();
```

启动测试。

```
while(1)
{
    if(vl53l0x_status == VL53L0X_ERROR_NONE)
    {
        vl53l0x_start_single_test(&vl53l0x_dev, &vl53l0x_data);
    }
}
```

4. Experimental phenomenon

After the program is downloaded, the module is successfully initialized and the module name, ID and other information are printed, please check your own wiring when it fails. The detected distance is then printed in millimeters. The measuring range is 300mm-2000mm.