

# Chain ToF 使用教程

## 1.准备工作

- 环境配置：参考 [Arduino IDE 上手教程](#) 完成 IDE 安装，并根据实际使用的开发板安装对应的板管理与需要的驱动库。
- 使用到的驱动库：
  - [M5Chain](#)



- 使用到的硬件产品：
  - [Chain DualKey](#)
  - Chain 系列连接器，如 [Chain Bridge](#) 或 [Chain Return](#)
  - [Chain ToF](#)



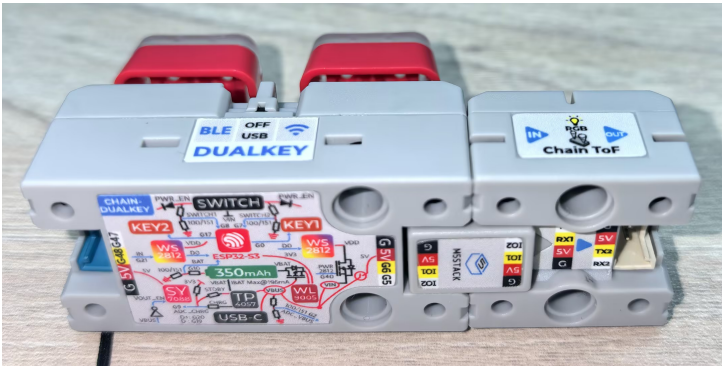
## 2.示例程序

### 编译要求

M5Stack 板管理版本  $\geq 3.2.4$   
M5Chain 库版本  $\geq 1.0.0$

```
1  #include "M5Chain.h"
2
3  #define RXD_PIN GPIO_NUM_5  // 47 for the other side of Chain DualKey
4  #define TXD_PIN GPIO_NUM_6  // 48 for the other side of Chain DualKey
5
6  Chain M5Chain;
7
8  device_list_t *device_list = NULL;
9  uint16_t device_count = 0;
10 uint8_t opr_status = 0;
11
12 uint16_t tof_distance;
13
14 void setup() {
15     Serial.begin(115200);
16     delay(1000);
17     Serial.println("=====");
18     Serial.println("M5Stack Chain ToF Test");
19
20     M5Chain.begin(&Serial2, 115200, RXD_PIN, TXD_PIN);
21     while (!M5Chain.isDeviceConnected()) {
22         Serial.println("No device connected");
23         delay(1000);
24     }
25
26     M5Chain.getDeviceNum(&device_count);
27     device_list = (device_list_t *)malloc(sizeof(device_list_t));
28     device_list->count = device_count;
29     device_list->devices = (device_info_t *)malloc(sizeof(device_info_t) * device_count);
30     M5Chain.getDeviceList(device_list);
31
32     if (device_list->devices[0].device_type == CHAIN_TOF_TYPE_CODE) {
33         Serial.println("ID[1] is Chain ToF\n");
34         delay(1000);
35     } else {
36         Serial.println("ID[1] is NOT Chain ToF\n");
37         return;
38     }
39
40     // Device ID, ToF measure mode (CONTINUOUS/SINGLE/STOP), operation status pointer
41     M5Chain.setToFMeasureMode(1, CHAIN_TOF_MODE_SINGLE, &opr_status);
42     // Device ID, ToF measure time (20-200 ms), operation status pointer
43     M5Chain.setToFMeasureTime(1, 50, &opr_status);
44 }
45
46 void loop() {
47     M5Chain.getToFDistance(1, &tof_distance); // Device ID
48     Serial.printf("tof_distance: %4d mm\n", tof_distance); // 30 - 2000
49     delay(200);
50 }
```

用 Chain Bridge 连接器连接主控 Chain DualKey 和 Chain ToF。连接时需要注意方向，三角箭头从主控 Chain DualKey 指向外侧，如图：



将以上程序编译并上传至设备，点击 Arduino IDE 右上角的按钮打开串口监视器（Serial Monitor）。可以看到 Chain ToF 到遮挡物的距离（有效范围为 30 - 2000 mm）：

tof | Arduino IDE 2.3.6

M5ChainDualKey

tof.ino

```
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3 #define RXD_PIN GPIO_NUM_5 // 47 for the other side of Chain DualKey
4 #define TXD_PIN GPIO_NUM_6 // 48 for the other side of Chain DualKey
5
6 Chain M5Chain;
7
8 device_list_t *device_list = NULL;
9 uint16_t device_count = 0;
10 uint8_t opr_status = 0;
11
12 uint16_t tof_distance;
13
14 void setup() {
15     Serial.begin(115200);
16     delay(1000);
17     Serial.println("=====");
18     Serial.println("M5Stack Chain ToF Test");
19
20     M5Chain.begin(6Serial2, 115200, RXD_PIN, TXD_PIN);
21 }
```

Output Serial Monitor x

Message (Enter to send message to 'M5ChainDualKey' on '/dev/cu.usbmodem101')

Both NL & CR 115200 baud

11:32:01.520 -> tof\_distance: 623 mm
11:32:01.751 -> tof\_distance: 637 mm
11:32:01.949 -> tof\_distance: 605 mm
11:32:02.148 -> tof\_distance: 553 mm
11:32:02.346 -> tof\_distance: 458 mm
11:32:02.542 -> tof\_distance: 326 mm
11:32:02.739 -> tof\_distance: 224 mm
11:32:02.937 -> tof\_distance: 145 mm
11:32:03.134 -> tof\_distance: 90 mm
11:32:03.364 -> tof\_distance: 56 mm
11:32:03.562 -> tof\_distance: 42 mm
11:32:03.760 -> tof\_distance: 29 mm
11:32:03.958 -> tof\_distance: 30 mm
11:32:04.154 -> tof\_distance: 39 mm
11:32:04.353 -> tof\_distance: 2000 mm
11:32:04.551 -> tof\_distance: 2000 mm
11:32:04.750 -> tof\_distance: 2000 mm

Ln 1, Col 1 M5ChainDualKey on /dev/cu.usbmodem101

### 3.参考链接

- [M5Chain Lib - GitHub](#)
- [Chain 系列设备 Bus 通信](#)