NCIR2 🛒

Description

Living through this pandemic has made contactless temperature sensing a must! The NCIR 2 Thermometer Unit utilizes the MLX90614 temperature sensor, and take ambient and object temperature readings with No Contact. Great for socially-distant reality.

The MLX90614 sensor is factory calibrated in wide temperature range, -40 to 125 ˚C for the ambient temperature and -70 to 380 ˚C for the object temperature. The embedded MCU - STM32 can process the data to achieve high/low temperature alert function. There are also buzzer, RGB LED, function button and reset button on board.

This Unit can either work with M5Core through I2C protocol, or work alone. Suitable for medical, environmental monitoring and home automation applications.

Features

- STM32F030F4P6
- MLX90614 IR Sensor
- HY2.0-4P Connector (I2C)
- Program platform: Arduino, UIFlow
- Two brick-compatible holes

Includes

- 1x NCIR 2 Unit
- 1x HY2.0-4P Cable (20cm)

Applications

- High-precision non-contact temperature measurement
- Motion detection
- Home Automation

Specification

| Resources	Parameters
MCU	STM32F030F4P6
Sensor	MLX90614ESF-BAA
Object Measurement Temperature Range	-70°C ~ 380°C
Calibrated Sensor Temperature	-40°C ~ 125°C
Unit Operation Temperature	0°C ~ 40°C
Accuracy	±0.5°C
Program Platform	Arduino, UIFlow
I2C Address	0x5A
Product Size	48mm × 24mm ×8mm
Package Size	136mm × 92mm × 13mm
Product Weight	7.3g
Package Weight	12.8g

Related Link

- STM32F030F4P6 Datasheet
- MLX90614 Datasheet

Schematic
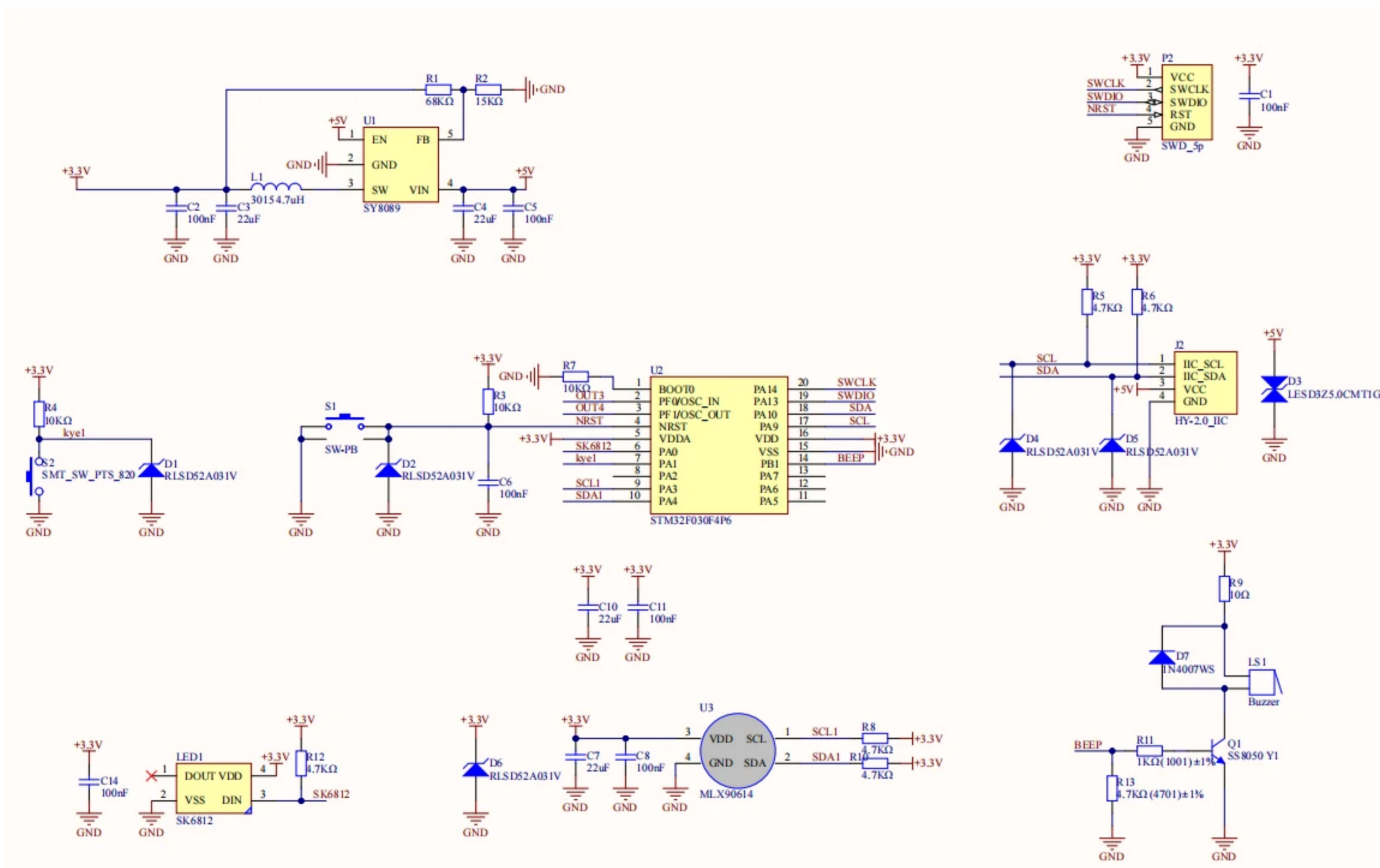
Module Size
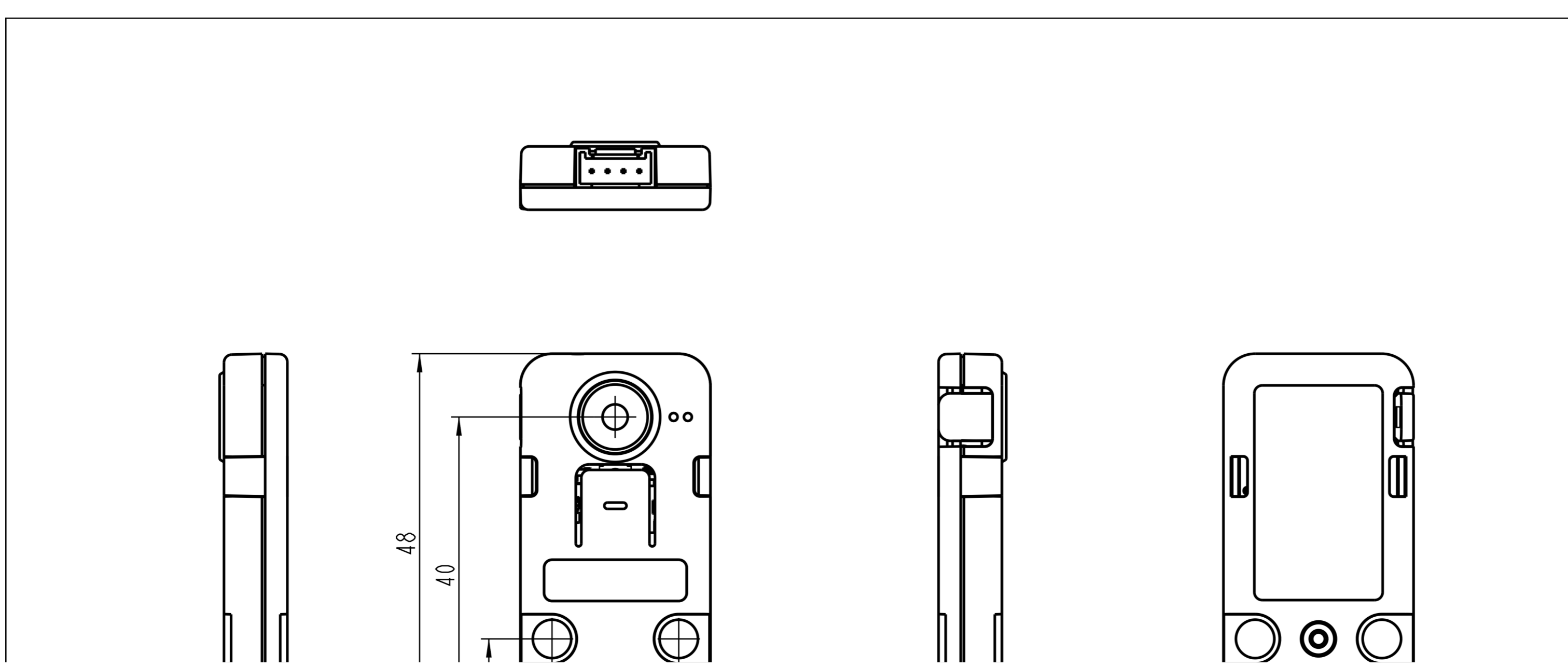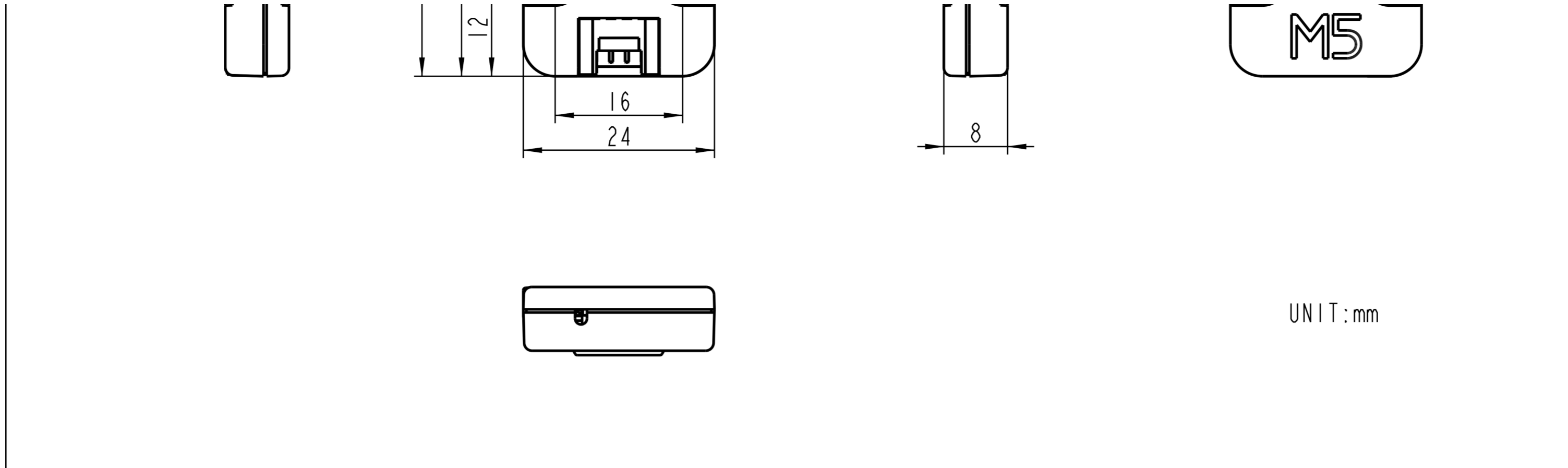
Examples

Arduino

- [Arduino Example （Core）](#)



- [UNIT NCIR2 firmware](#)

REG MAP (Addr:0x5A)		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	note
Temperature	0x00 R	Temperature-L	Temperature-H															Temperature: unit Celsius (actual temp value) * 100[1]
Emissivity	0x10 R/W	Emissivity-L	Emissivity-H															Emissivity: 65535 * rate (0.1 < rate < 1)[2]
Alarm Temperature	0x20 R/W	Alarm Low Temp-L	Alarm Low Temp-H	Alarm High Temp-L	Alarm High Temp-H													Alarm Temp: unit Celsius (actual temp value) * 100[3]
Alarm LED	0x30 R/W	Alarm Low Temp-R	Alarm Low Temp-G	Alarm Low Temp-B	Alarm High Temp-R	Alarm High Temp-G	Alarm High Temp-B											Alarm LED R/G/B: 0~255
Alarm Buzz	0x40 R/W	Alarm Low Temp Buzz Freq-L	Alarm Low Temp Buzz Freq-H	Alarm Low Temp Buzz Interval-L	Alarm Low Temp Buzz Duty	Alarm Low Temp Buzz Interval-H	Alarm High Temp Buzz Freq-L	Alarm High Temp Buzz Freq-H	Alarm High Temp Buzz Interval-L	Alarm High Temp Buzz Interval-H	Alarm High Temp Buzz Duty							Alarm Temp Buzz Freq[4], Alarm Temp Buzz Interval[5], Alarm Temp Buzz Duty[6]
Buzz	0x50 R/W	Buzz-Freq-L	Buzz-Freq-H	Buzz Duty	Buzz Control													Buzz Freq[7], Buzz Duty[8] Buzz Control: 0, disable; 1, enable
RGB LED	0x60 R/W	LED-R	LED-G	LED-B														LED R/G/B: 0~255
Button	0x70 R	Button Status																Button Status: 0 or 1
Save Config	0x80 W	Save Config																Save Config: write 1 to save config
Chip Temperature	0x90 R	Chip Temperature-L	Chip Temperature-H															Chip Temperature: unit Celsius (actual temp value) * 100[9]
Firmware Version	0xF0 R															Version		Version: firmware version number
I2C Address	0xF0 R/W																Address	Address: 1~127

[1] For example, the actual temperature is 27.55 degrees Celsius, and the obtained data is 27.55*100=2755, Temperature-L = 0xC3, Temperature-H = 0x0A
[2] For example, the emissivity needs to be set to 0.95, and the value to be set is 65535*0.95=62258, Emissivity-L = 0x32, Emissivity-H = 0xF3.(Note: Everytime you set the emissivity, must restart the mlx90614)
[3] For example, to set the high temperature alarm temperature to 37.00 degrees Celsius, the value to be set is 37.00*100=3700, Alarm Low Temp-L = 0x74, Alarm Low Temp-H= 0x0E
[4] Alarm Temp Buzz Freq: The unit is Hz. For example, when setting the high temperature alarm, the Buzz frequency is 4000Hz, Alarm Low Temp Buzz Freq-L = 0xA0, Alarm Low Temp Buzz Freq-H = 0x0F
[5] Alarm Temp Buzz Interval: The unit is ms. For example, set the Buzz interval to 100ms, Alarm Low Temp Buzz Freq-L = 0x64, Alarm Low Temp Buzz Freq-H = 0.(Note: The value is from 1ms to 5000ms)
[6] Alarm Temp Buzz duty. For example, set the Buzz duty to 50%, Alarm Low Temp Buzz Duty = 255 * 0.5 = 127
[7] Buzz Freq: The unit is Hz. For example, set the buzz frequency to 4000Hz, Buzz-Freq-L = 0xA0, Buzz-Freq-H = 0x0F
[8] Alarm Temp Buzz duty. For example, set Buzz duty to 50%, Buzz Duty = 255 * 0.5 = 127
[9] For example, the actual temperature is 27.55 degrees Celsius, and the obtained data is 27.55*100=2755, Chip Temperature-L = 0xC3, Chip Temperature-H = 0x0A
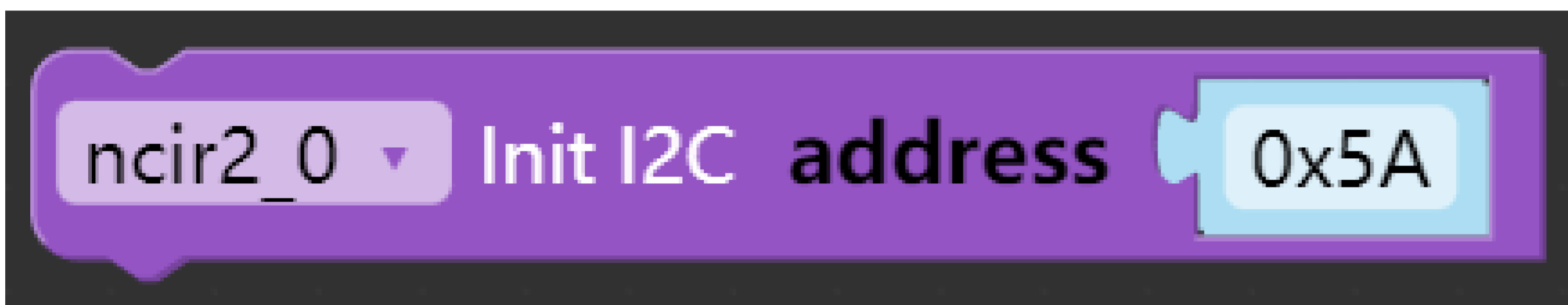
UIFlow

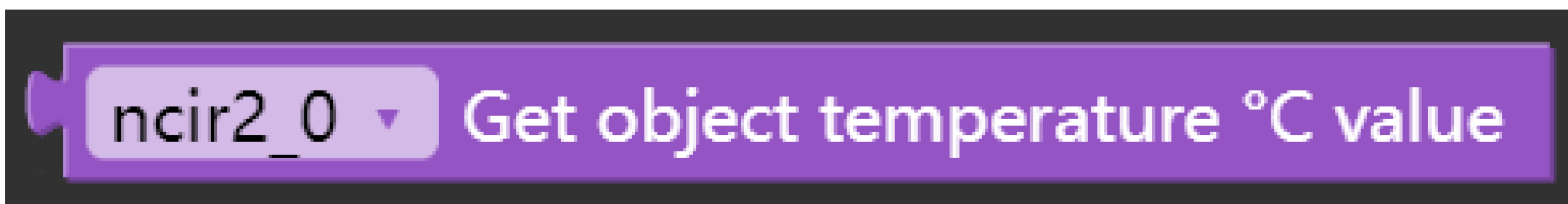- [Non-Contact Body Temperature Measurement Alert System](#)
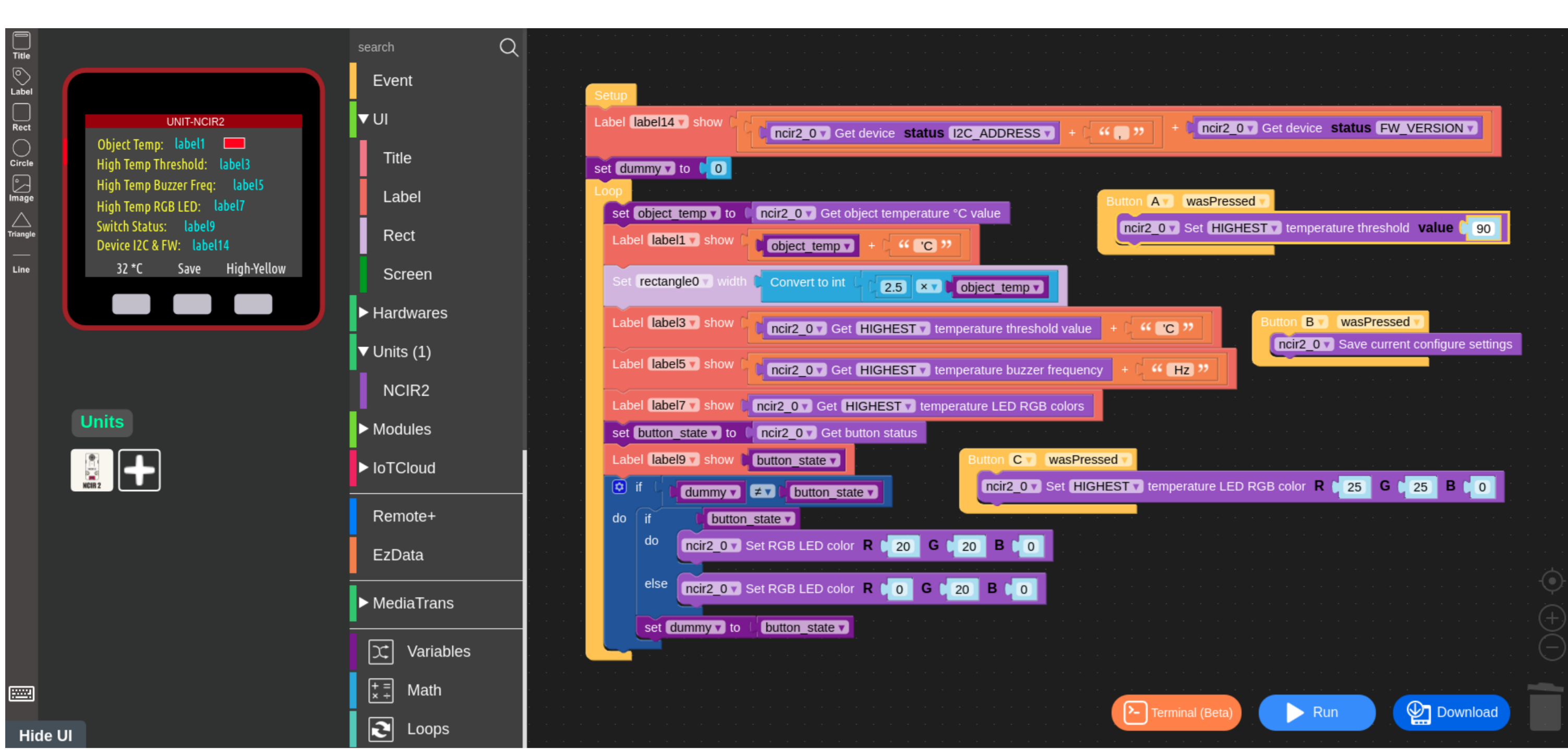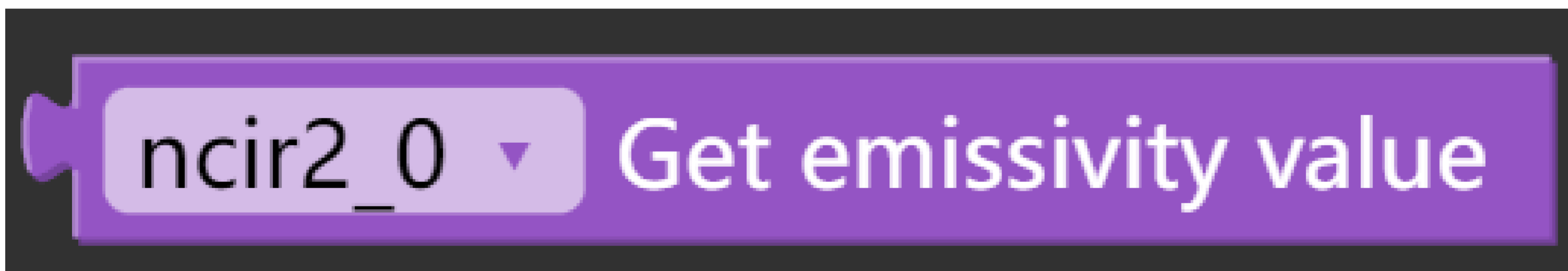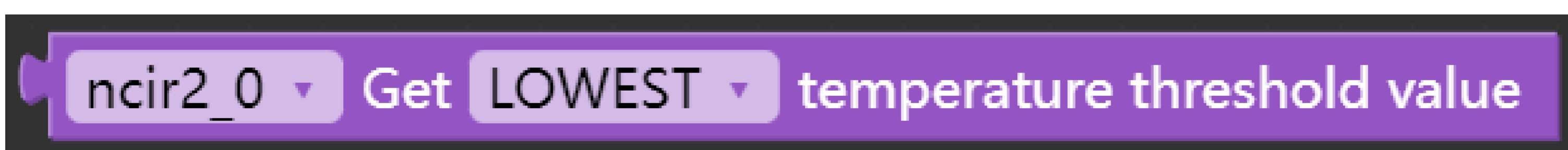
UIFlow Blocks

- Init I2C address (0X5A)

- Get object temperature value (℃)(Sensor measurement range: -70℃ ~ 380℃)

- Get emissirty value(For example, the reflectivity of the skin is 0.95)

- Get lowest or highest temperature threshold value(The default setting is 10℃ minimum, 37℃ maximum)

- Get lowest or highest temperature led rgb colors(RGB value is 0-255)

- Get lowest or highest temperature buzzer frequency(The default is 4000, the higher the value, the sharper the loudness)

- Get lowest or highest temperature buzzer interval(The default minimum is 100 and the maximum is 204)

`ncir2_0 ▾ Get LOWEST ▾ temperature buzzer interval`

- Get lowest or highest temperature buzzer duty cycle(Duty cycle value 0-255, the greater the value, the louder the loudness)

`ncir2_0 ▾ Get LOWEST ▾ temperature buzzer duty cycle`

- Get buzzer frequency(default 4000)

`ncir2_0 ▾ Get buzzer frequency`

- Get buzzer duty cycle(Duty cycle value 0-255, the higher the value, the louder the loudness)

`ncir2_0 ▾ Get buzzer duty cycle`

- Get buzzer control status(On or off)

`ncir2_0 ▾ Get buzzer control status`

- Get rgb led color(RGB value is 0-255)
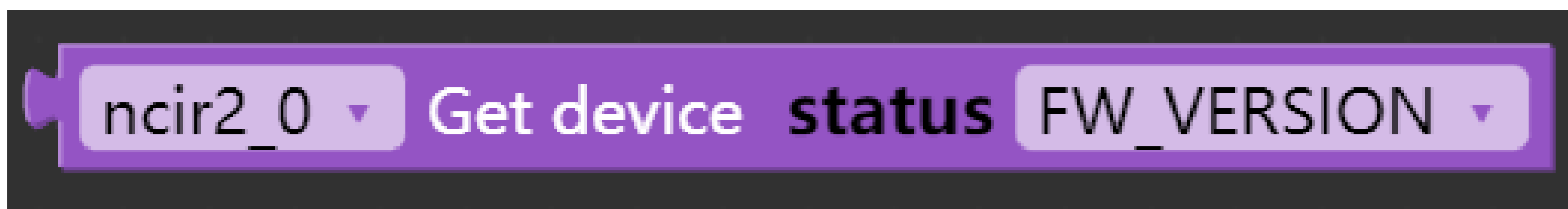
`ncir2_0 ▾ Get RGB LED color`

- Get button status(press or release)

`ncir2_0 ▾ Get button status`

- Get device temperature value (℃)

`ncir2_0 ▾ Get device temperature ℃ value`

- Get device status (fw version / i2c address)(The default I2C address is 0x5A)

`ncir2_0 ▾ Get device status FW_VERSION ▾`

- Set emissivity value,　(if use this blockly,the power must be reconnected to NCIR2)　(skin reflectivity of 0.95)

`ncir2_0 ▾ Set emissivity value 0.95`
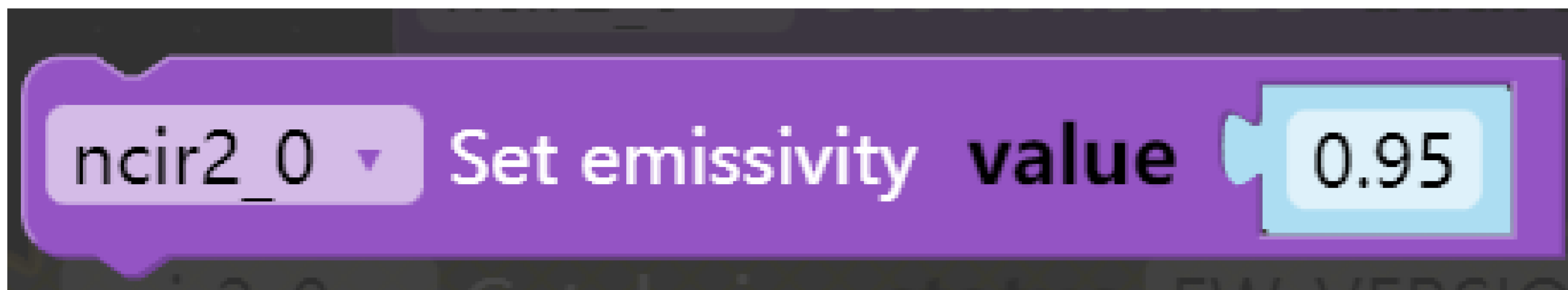
- Set lowest or highest temperature threshold value(When the detected value is higher or lower than the set temperature, the buzzer sounds)

`ncir2_0 ▾ Set LOWEST ▾ temperature threshold value 25`

- Set lowest or highest temperature led rgb color(RGB value between 0-255)

`ncir2_0 ▾ Set LOWEST ▾ temperature LED RGB color R 50 G 50 B 50`
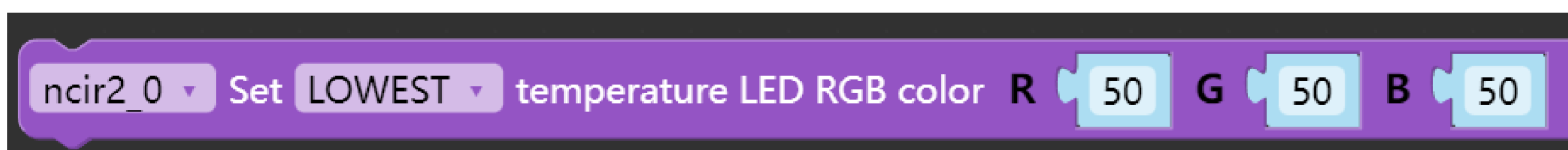
- Set lowest or highest temperature buzzer frequency(The default setting here is 4000, the higher the frequency, the sharper the sound)

`ncir2_0 ▾ Set LOWEST ▾ temperature buzzer frequency 4000`
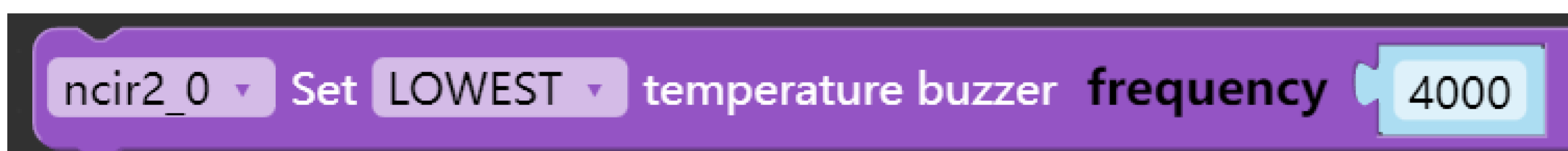
- Set lowest or highest temperature buzzer interval(The higher the value setting, the faster the sound)

`ncir2_0 ▾ Set LOWEST ▾ temperature buzzer interval 100`
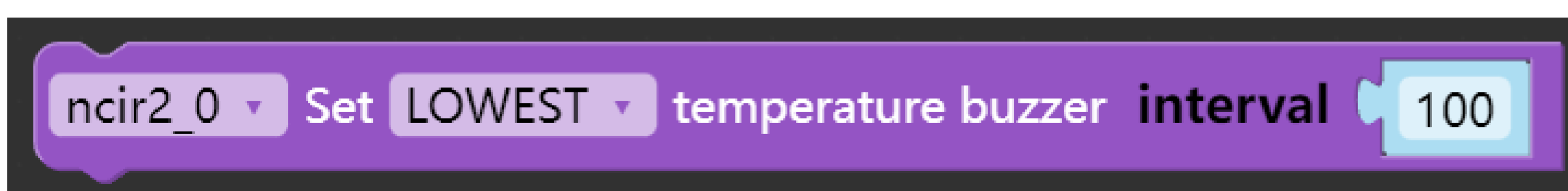
- Set lowest or highest temperature buzzer duty cycle(The duty cycle value is 0-255, the larger the duty cycle, the louder the loudness)

`ncir2_0 ▾ Set LOWEST ▾ temperature buzzer duty cycle 80`
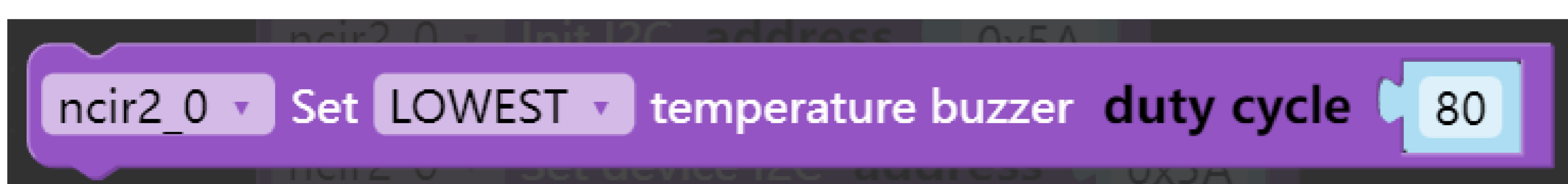
- Set buzzer frequency(The default buzzer frequency is 4000, the higher the value, the louder the loudness)

`ncir2_0 ▾ Set buzzer frequency 4000`
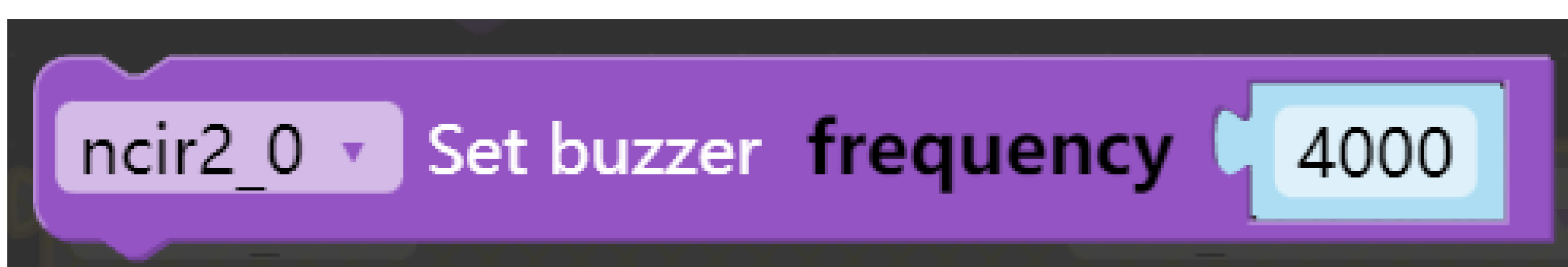
- Set buzzer control state(On or off)

ncir2_0 ▾ Set buzzer control **state** ENABLE ▾
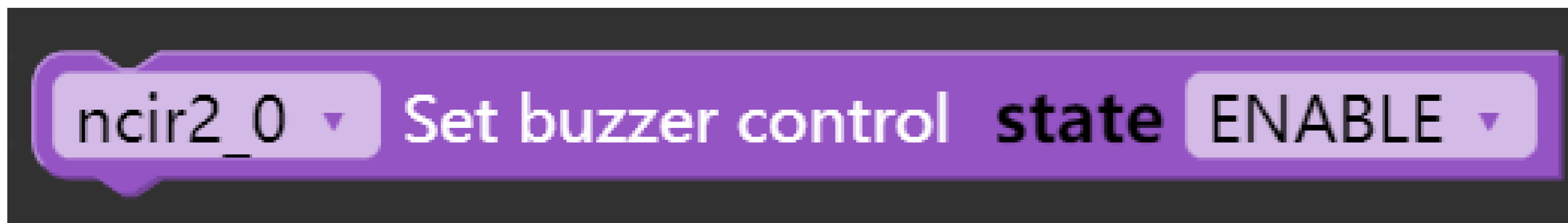
- Set rgb led color(RGB value range 0-255)

ncir2_0 ▾ Set RGB LED color **R** 50 **G** 50 **B** 50

- Save current configure settings

ncir2_0 ▾ Save current configure settings

- Set device I2C address(Defaults to 0x5A)

ncir2_0 ▾ Set device I2C **address** 0x5A