

1-1 Temperature control switch version

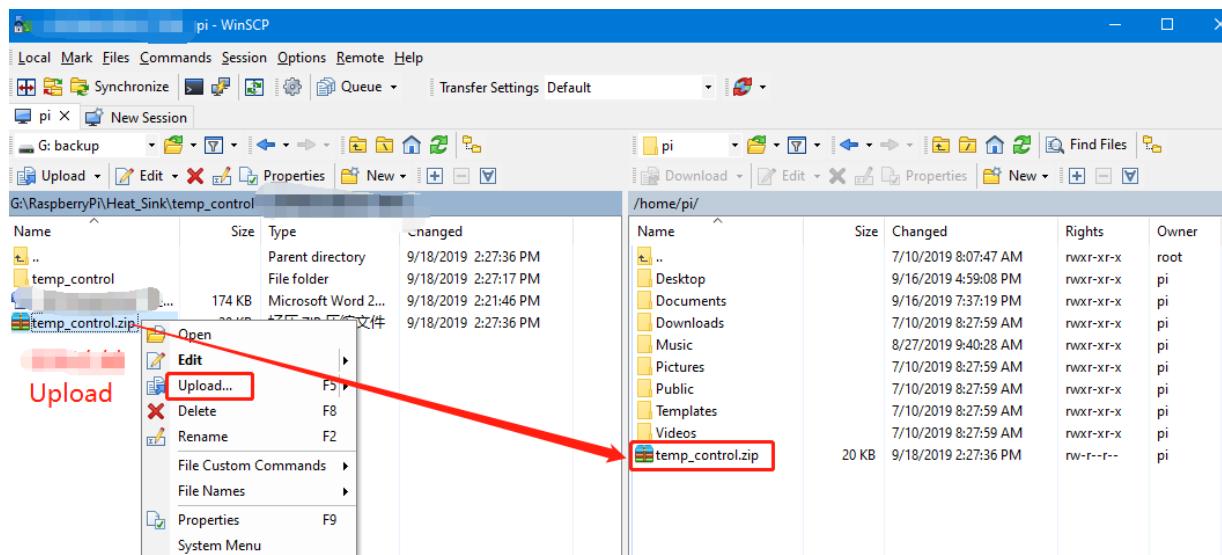
The Raspberry Pi RGB_Cooling_HAT needs to be properly plugged into the GPIO port of the Raspberry Pi and open the Raspberry Pi system **I2C** function.

This experimental phenomenon shows that the OLED displays the CPU usage, CPU temperature, running memory usage, disk usage and IP address of the Raspberry Pi. The RGB light turns on the special effect. When the CPU temperature of the Raspberry Pi reaches a certain level, the fan will automatically turn on, cooling the Raspberry Pi. When the temperature drops, the fan will automatically turn off.

1. File transfer

1.1 Install **WinSCP** tool on the computer side, connect the Raspberry Pi and transfer the **temp_control.zip** package to the pi directory of the Raspberry Pi.

Path of WinSCP:[Raspberry Pi]
RGB_Cooling_HAT]---[Tools]---[winscp556_setup.1416364912.exe]



1.2 Extract file

Open the Raspberry Pi terminal and input command **ls** to find the **temp_control.zip** file.
As shown below:

```
pi@raspberrypi:~ $ ls
Desktop  Downloads  Pictures  temp_control.zip  Videos
Documents  Music    Public    Templates
pi@raspberrypi:~ $
```

Input command to extract file:

unzip temp_control.zip

```
pi@raspberrypi:~ $ unzip temp_control.zip
Archive: temp_control.zip
  creating: temp_control/
  inflating: temp_control/fan
  inflating: temp_control/fan.c
  inflating: temp_control/fan_temp
  inflating: temp_control/fan_temp.c
  inflating: temp_control/oled
  inflating: temp_control/oled.c
  inflating: temp_control/oled_fonts.h
  inflating: temp_control/rgb
  inflating: temp_control/rgb.c
  inflating: temp_control/rgb_effect
  inflating: temp_control/rgb_effect.c
  inflating: temp_control/ssdl306_i2c.c
  inflating: temp_control/ssdl306_i2c.h
  inflating: temp_control/start.desktop
  inflating: temp_control/start.sh
  inflating: temp_control/temp_control
  inflating: temp_control/temp_control.c
pi@raspberrypi:~ $
```

2.Compiling and running program

2.1 Input command to enter temp_control find file:

```
cd temp_control/
ls
```

```
pi@raspberrypi:~/temp_control $ ls
fan           install.sh    rgb.c          ssdl306_i2c.c      start.sh
fan.c         oled          rgb_effect    ssdl306_i2c.h      temp_control
fan_temp     oled.c        rgb_effect.c  start_1.desktop  temp_control_1
fan_temp.c   oled_fonts.h  rgb_temp     start_1.sh       temp_control_1.c
install_1.sh  rgb          rgb_temp.c   start.desktop   temp_control.c
pi@raspberrypi:~/temp_control $
```

2.2 Input command to compile:

```
gcc -o temp_control_1 temp_control_1.c ssdl306_i2c.c -lwiringPi
```

```
pi@raspberrypi:~/temp_control $ gcc -o temp_control_1 temp_control_1.c ssdl306_i
2c.c -lwiringPi
ssdl306_i2c.c: In function 'ssdl306_fillRect':
ssdl306_i2c.c:724:3: warning: implicit declaration of function 'swap_values' [-W
implicit-function-declaration]
  swap_values(x, y);
  ^~~~~~~~
pi@raspberrypi:~/temp_control $ ls
fan           install.sh    rgb.c          ssdl306_i2c.c      start.sh
fan.c         oled          rgb_effect    ssdl306_i2c.h      temp_control
fan_temp     oled.c        rgb_effect.c  start_1.desktop  temp_control_1
fan_temp.c   oled_fonts.h  rgb_temp     start_1.sh       temp_control_1.c
install_1.sh  rgb          rgb_temp.c   start.desktop   temp_control.c
pi@raspberrypi:~/temp_control $
```

Among them, the gcc compiler is called, -o means to generate the file, **temp_control_1** is

the generated file name, **temp_control_1.c** is the source program, **ssd1306_i2c.c** is the library that drives oled, and **-lwiringPi** is the wiringPi library that references the Raspberry Pi.

2.3 Input command to run the program

./temp_control_1

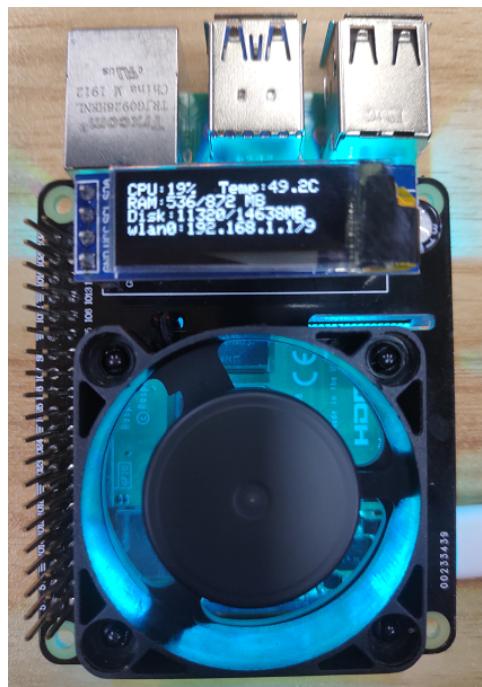
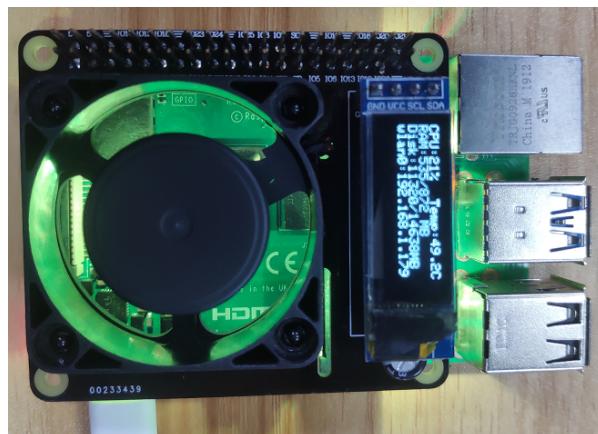
```
pi@raspberrypi:~/temp_control $ ./temp_control_1
init ok!
```

At this point, the system will prompt “init ok!”, RGB lights show special effects, and the OLED screen displays information such as CPU usage, CPU temperature, running memory usage, disk usage and IP address of the Raspberry Pi.

When the Raspberry Pi CPU temperature reaches 47°C, the fan will automatically turn on, cooling the Raspberry pi.

When the temperature drops to 45°C, the fan is automatically turned off.

Press **Ctrl+C** to exit this program.



3. Add boot self-starting

3.1 Input command to enter relate folder

```
cd /home/pi/temp_control
```

3.2 Input command t view script file

```
ls
```

```
pi@raspberrypi:~/temp_control $ ls
fan           install.sh    rgb.c        ssdl306_i2c.c   start.sh
fan.c         oled          rgb_effect  ssdl306_i2c.h   temp_control
fan_temp     oled.c        rgb_effect.c start_1.desktop temp_control_1
fan_temp.c   oled_fonts.h  rgb_temp    start_1.sh    temp_control_1.c
install_1.sh  rgb          rgb_temp.c  start.desktop  temp_control.c
pi@raspberrypi:~/temp_control $
```

3.3 Run script command to install

```
sudo sh install_1.sh
```

Finally, system will prompt “install ok!”

As shown below.

```
pi@raspberrypi:~/temp_control $ sudo sh install_1.sh
install ok!
pi@raspberrypi:~/temp_control $
```

! Note: If you already have the autostart folder, it will be prompt can not create the autostart folder, which will not affect our use.

```
pi@raspberrypi:~/temp_control $ sudo sh install_1.sh
mkdir: cannot create directory '/home/pi/.config/autostart': File exists
install ok!
pi@raspberrypi:~/temp_control $
```

4.Restart Raspberry pi

Input command to restart Raspberry Pi:

```
sudo reboot
```