

1-1 Temperature control switch version

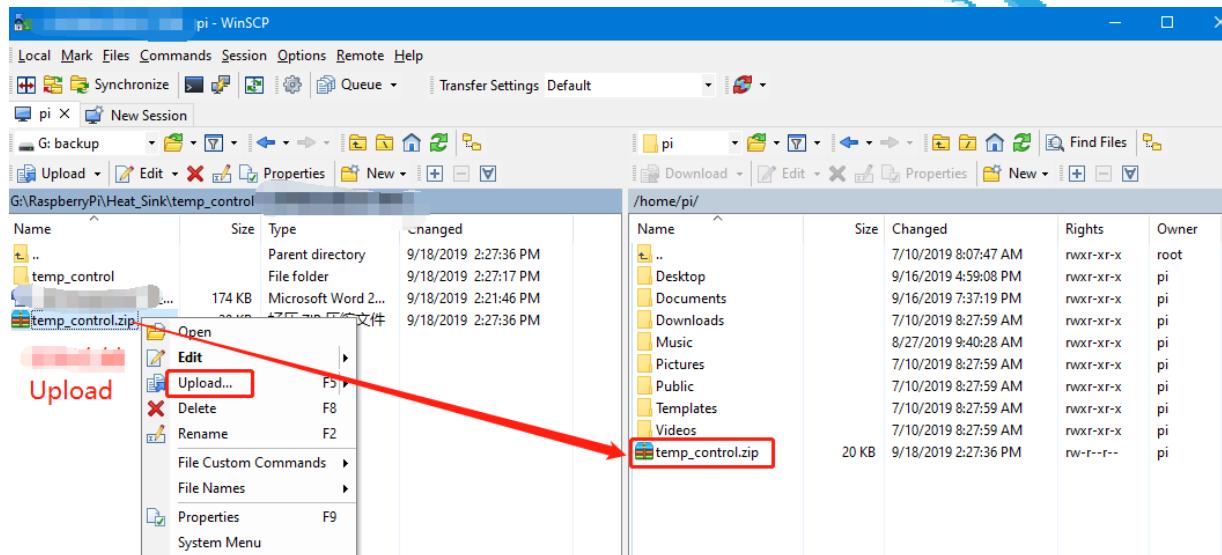
The Raspberry Pi RGB_Cooling_HAT needs to be properly plugged into the GPIO port of the Raspberry Pi and open the Raspberry Pi system **I2C** function.

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/ssdl1306_i2c.c
  inflating: temp_control/ssdl1306_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:~ $ cd temp_control/
pi@raspberrypi:~/temp_control $ ls
fan          oled          rgb.c          ssdl1306_i2c.h  temp_control.c
fan.c        oled.c        rgb_effect    start.desktop
fan_temp     oled_fonts.h  rgb_effect.c  start.sh
fan_temp.c   rgb          ssdl1306_i2c.c  temp_control
pi@raspberrypi:~/temp_control $
```

2.2 Input command to compile:

```
gcc -o temp_control temp_control.c ssd1306_i2c.c -lwiringPi
```

```
pi@raspberrypi:~/temp_control $ gcc -o temp_control temp_control.c ssd1306_i2c.c
-lwiringPi
ssd1306_i2c.c: In function 'ssd1306_fillRect':
ssd1306_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          oled          rgb.c          ssdl1306_i2c.h  temp_control.c
fan.c        oled.c        rgb_effect    start.desktop
fan_temp     oled_fonts.h  rgb_effect.c  start.sh
fan_temp.c   rgb          ssdl1306_i2c.c  temp_control
pi@raspberrypi:~/temp_control $
```

Among them, the gcc compiler is called, -o means to generate the file, **temp_control** is the generated file name, **temp_control.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

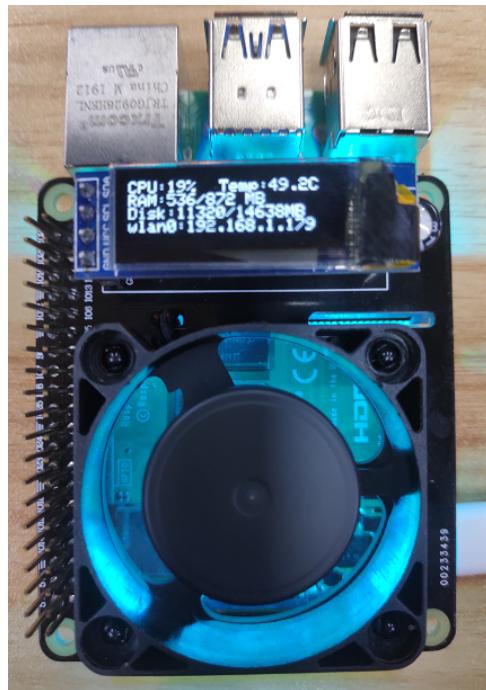
```
pi@raspberrypi:~/temp_control $ ./temp_control
init ok!
```

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.

- ① If you use the Raspberry Pi 4B board, when the CPU temperature reaches 55 °C, the fan will automatically turn on, to send heat to the Raspberry. When the temperature drops to 48 °C, the fan is automatically turn off.
- ② If you use the Raspberry Pi 3B+ board, when the CPU temperature reaches 46 °C, the fan will automatically turn on, and when the CPU temperature drops to 40 °C, it will automatically turn 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      fan temp.c  oled.c      rgb.c      ssdl306_i2c.c  start.sh
fan.c    install.sh  oled_fonts.h  rgb_effect  ssdl306_i2c.h  temp_control
fan_temp  oled       rgb          rgb_effect.c start.desktop temp_control.c
pi@raspberrypi:~/temp_control $
```

3.3 Run script command to install

```
sudo sh install.sh
```

Finally, system will prompt “install ok!”

As shown below.

```
pi@raspberrypi:~/temp_control $ sudo sh install.sh
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);
  ^
  ~~~
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

