

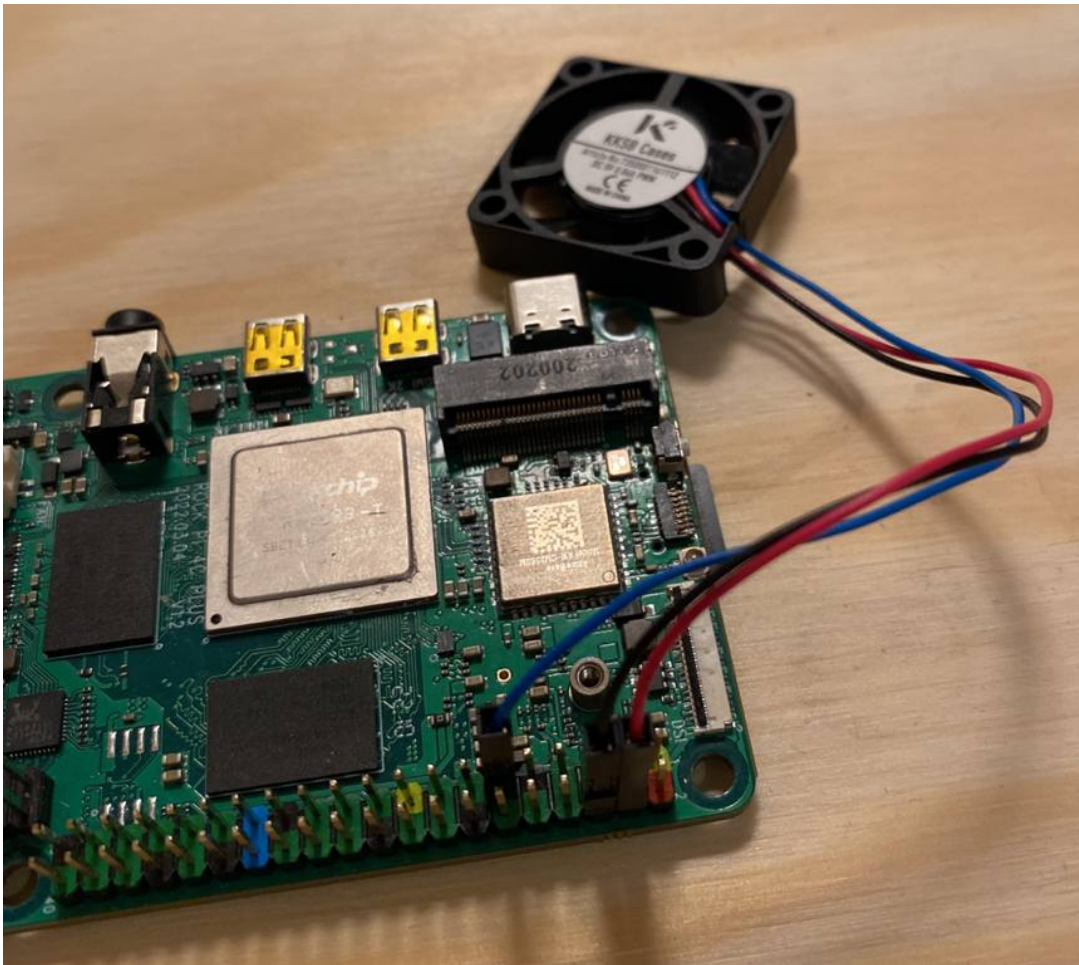
Temperature controlled KKSB PWM fan on Rock 4 C Plus Debian

In this KKSB Fan wiring guide, we are taking Rock 4 C Plus GPIO as an example running the Official Debian OS. But you can use this fan and instruction with other RockPis as well with smaller tweaks.

Connection diagram

The KKSB 30mm 5V PWM Fan has 3 wires. Red for 5V, Black for GND and Blue for the PWM signal.

Function	Pin#	Pin#	Function
+3.3V	1	2	+5.0V
I2C7_SDA	3	4	+5.0V
I2C7_SCL	5	6	GND
SPI2_CLK	7	8	UART2_TXD
GND	9	10	UART2_RXD
PWM0	11	12	I2S1_SCLK
PWM1	13	14	GND
SPDIF_TX	15	16	
+3.3V	17	18	
SPI1_TXD	19	20	GND
SPI1_RXD	21	22	
SPI1_CLK	23	24	SPI1_CS _n
GND	25	26	ADC_IN0
I2C2_SDA	27	28	I2C2_CLK
SPI2_TXD	29	30	GND
SPI2_RXD	31	32	SPDIF_TX
SPI2_CS _n	33	34	GND
I2S1_LRCK_TX	35	36	I2S1_LRCK_RX
	37	38	I2S1_SDI
GND	39	40	I2S1_SDO



Connect Red to pin 4
Connect Black to pin 6
Connect Blue to pin 11

Enable PWM

In Radxa Official Debian release for RockPi 4 C Plus libmraa is already installed, for other OSes follow the guide for that release on how to enable GPIO and install libmraa.

First open `/boot/hw_intfc.conf` to enable PWM.

Copy this text and paste into a terminal:

```
sudo nano /boot/hw_intfc.conf
```

Change `pwm0=off` to `on` and `pwm1=off` to `on`

```
# Hardware Interface Config
# For more details, check
https://wiki.radxa.com/Rockpi4/hardware/devtree\_overlays.
# Set "on" to enable the optional hardware interfaces while set "off"
to disable

intfc:pwm0=on
intfc:pwm1=on
intfc:uart2=off
intfc:uart4=off
intfc:spi1=off
intfc:spi2=off
intfc:i2c2=off
intfc:i2c6=off
intfc:i2c7=off
```

ctrl+x to save.

Reboot for it to take effect

Python script

To create the script, copy this text and paste into a terminal:

```
nano fan.py
```

Copy and paste this script into the nano editor, pay close attention to the indents. Python is sensitive to indentation so everything after *while True* needs to have the same amount of whitespaces before it.

```
import mraa
import time

LEVEL1 = 35 # Turn off temperature under
LEVEL2 = 50 # Full speed temperature above
LOOP_TIME = 10 # Seconds between temperature check

# Initialize PWM
fan = mraa.Pwm(11) # 11 for PWM0, 13 for PWM1
fan.period_us(700)
fan.enable(True)

# Main loop
while True:
    # Read Temperature
    file = open("/sys/class/thermal/thermal_zone0/temp")
    cpu = float(file.read()) / 1000

    # Control fan speed
    # Each "elif" can be copied for more granular control
    if cpu < LEVEL1:
        fan.write(1) # The pin is inverted so a 1 means off and a 0
means full speed
    elif cpu < LEVEL2:
        fan.write(0.5) # Half speed
    else:
        fan.write(0) # Full speed
    time.sleep(LOOP_TIME)
```

ctrl+x to save.

Test script:

Copy this text and paste into a terminal:

```
sudo python fan.py
```

sudo is required to access PWM

ctrl+c to stop script

Autostart script

Create a systemd script to autostart the script at startup
Copy this text and paste into a terminal:

```
sudo nano /etc/systemd/system/fan.service
```

Copy and paste this text into the nano editor:

```
[Unit]
Description=Fan control service
After=multi-user.target

[Service]
Type=simple
Restart=always
ExecStart=/usr/bin/python3 /home/<username>/fan.py

[Install]
WantedBy=multi-user.target
```

Replace <username> with your username (**rock** as standard)

ctrl+x to save.

Reload the systemd daemon

```
sudo systemctl daemon-reload
```

Enable fan.service so it doesn't stop after a restart

Copy this text and paste into a terminal:

```
sudo systemctl enable fan.service
```

Start the service

Copy this text and paste into a terminal:

```
sudo systemctl start fan.service
```

Now the fan.py is up and running every time the system boots.