Introduction

ROCK Pi 23W PoE HAT is a HAT accessory designed for Raspberry Pi, ROCK Pi 4, and Jetson Nano. The 23W PoE HAT allows you to power your Raspberry Pi, ROCK Pi 4 or Jetson Nano using Power over Ethernet–enabled networks; for this product to be used, the network it is connected to needs to have power-sourcing equipment installed.

It comes with the following features:

- 802.3at up to 23W(5V/4.6A)
- PWM control FAN up to 12000RPM
- Temperature sensor DS18B20
- Optional 40PIN GPIO pass-through exported
- Compatible with ROCK Pi 4, Raspberry Pi 3B+ and Raspberry Pi 4
- Clean design by hiding the fan and the big transformer inside
- EEPROM for HAT identity and driver probe

Supplied with this product

- ROCK Pi 23W PoE HAT
- Mechanical spacers

Other hardware needed

- A Raspberry Pi 4 Model B or Raspberry Pi 3 Model B+ or ROCK Pi 4 or Jetson Nano
- An Ethernet cable
- Power-sourcing equipment for an 802.3af or 802.3at Power over Ethernet network

Software support

We provide an install script to help you get the PoE fan control tool that works both in **Raspberry Pi 3B+/4B** and **ROCK Pi 4**.

```
                              pi@raspberrypi: ~

 File  Edit  View  Search  Terminal  Help
 toor@setq-me:~ $ ssh raspi0
Linux raspberrypi 5.4.51-v7+ #1327 SMP Thu Jul 23 10:58:46 BST 2020 armv7l

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Fri Jul 31 17:29:41 2020 from 192.168.0.101
pi@raspberrypi:~ $ curl -sL https://rock.sh/get-rockpi-poe | sudo -E bash -

*** 23W PoE Hat Install for Raspberry Pi & ROCK Pi

*** Tested boards and distributions:
***    Raspberry Pi 3B+/4B+ with Raspbian
***    ROCK Pi 4B with Debian 9 & Ubuntu 18.04

*** Please report problems to setq@radxa.com and we will try to fix.
```

```
curl -sL https://rock.sh/get-rockpi-poe | sudo -E bash -
```

Just copy the command above and paste it into the terminal and press enter. If you want more control, check out section **Fan Control** at the bottom of the page.

Model

Model	Description
F3	For Raspberry Pi 3B+, Raspberry Pi 4, **ROCK Pi X**, **ROCK 3A**, ROCK 3C, ROCK Pi 4C+, Jetson Nano

F3L	F3 with 40PIN GPIO pass-through exported		
F4	Use with ROCK Pi 4B / 4B+ / 4SE		
F4L	F4 with 40PIN GPIO pass-through exported		

The difference between F3 and F4 is, F3 and F4 use different GPIO for fan control. F4 uses ADC for temperature detection, while F3 uses DS18B20.

PINOUT

PoE HAT for ROCK Pi 4(Model F4/F4L)

Description	Function	Pin#	Pin#	Function	Description
		1	2		
		3	4		
		5	6		
	GPIO2_B3	7	8		
		9	10		
		11	12		
control fan speed	PWM1	13	14		
	GPIO4_C5	15	16	GPIO4_D2	enable/disable fan motor driver
		17	18		

Description	Function	Pin#	Pin#	Function	Description
		19	20		
		21	22		
		23	24		
		25	26	ADC_IN0	Get ADC value to get the temperature value
connect to EEPROM SDA pin	I2C2_SDA	27	28	I2C2_SCL	connect to EEPROM SCL pin
		29	30		
		31	32		
		33	34		
		35	36		
		37	38		
		39	40		

PoE HAT for Raspberry Pi 3B+/4/Jetson Nano (Model F3/F3L)

Description	Function	Pin#	Pin#	Function	Description
		1	2		
		3	4		

		5	6		
get data from DS18B20	BCM4	7	8		
		9	10		
		11	12		
		13	14		
enable/disable fan motor driver chip	BCM22	15	16		
		17	18		
		19	20		
		21	22		
		23	24		
		25	26		
connect to EEPROM SDA pin	I2C0_SDA	27	28	I2C0_SCL	connect to EEPROM SDA pin
		29	30		
		31	32		
control fan speed	PWM1	33	34		

		35	36		
		37	38		
		39	40		

Fan Control

Turn the fan on or off by systemctl

```
sudo systemctl start rockpi-poe.service

sudo systemctl stop rockpi-poe.service
```

Edit /etc/rockpi-poe.conf to set up the temperature of the fan speed level, take it to effect by below command

```
sudo systemctl restart rockpi-poe.service
```

Manual installation

If you have trouble installing software using our script, try the manual installation.

1. Enable hardware resources

For speed control and temperature detection, we need to ensure that some hardware resources are available, such as PWM and ADC. Since ROCK Pi and Raspberry Pi use different resources, they will be explained below.

1.1 ROCK Pi

If you are using the official system, please edit /boot/hw_intfc.conf to change intfc:pwm0=off and intfc:pwm1=off into intfc:pwm0=on and intfc:pwm1=on. If you are using another system, please refer to the distribution documentation to open PWM0 and PWM1.

1.2 Raspberry Pi

If you are using Raspbian, you can open **1-Wire** with raspi-config and the path is **Interfacing Options** -> **1-Wire**. Raspbian turns on PWM1 by default. If you are using another system, please refer to the distribution documentation to open 1-Wire and PWM1.

2. Install GPIO control library

2.1 ROCKP Pi

If you are using the official system, please install **libmraa-rockpi4** from testing repo of Radxa APT. If you are using another system, please download mraa and build.

2.2 ROCKP Pi

If you are using Raspbian, you can install python3-rpi.gpio via apt. If you are using another system, please download raspberry-gpio-python and build.

3. Download package and install

3.1 ROCK Pi

```
wget https://cos.setq.me/rockpi/deb/rockpi-poe-0.13.deb
```

If you are using a debian based system, you can install it through dpkg. If you are using another system, extract the file to the root directory.

3.2 Raspberry Pi

```
wget https://cos.setq.me/rockpi/deb/raspi-poe-0.13.deb
```

If you are using a debian based system, you can install it through dpkg. If you are using another system, extract the file to the root directory.

4. Enable service

```
sudo systemctl enable rockpi-poe.service
```

That's all the installation script (https://rock.sh/get-rockpi-poe) do.

Dimensions

- Download 2D file(.dwg) for ROCK Pi PoE HAT