PoE HAT (B)

From Waveshare Wiki
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Instroduction

This Power Over Ethernet HAT (Type B) is designed for Raspberry Pi 3B+/4B, it supports 802.3af Power-Sourcing equipment for PoE function.

PoE HAT (B)

(https://www.waveshare.com/poe-hat-b.htm)

Power Over Ethernet HAT (Type B) For Raspberry Pi 3B+/4B, 802.3af Power-Sourcing Equipment Required

Features

- Standard Raspberry Pi 40PIN GPIO header, supports Raspberry Pi 3B+/4B.
- PoE (Power Over Ethernet) capability，802.3af-compliant.
- Fully isolated switched-mode power supply (SMPS).
- 0.91" OLED, for monitoring processor temperature, IP address, and fan status in real-time.
- Onboard cooling fan, allows auto running on powerup OR programmable control, configured by the switch.
- Integrates PCF8574 IO expander for I2C bus, providing pin P0 for direct fan control, and more spare IO pins.

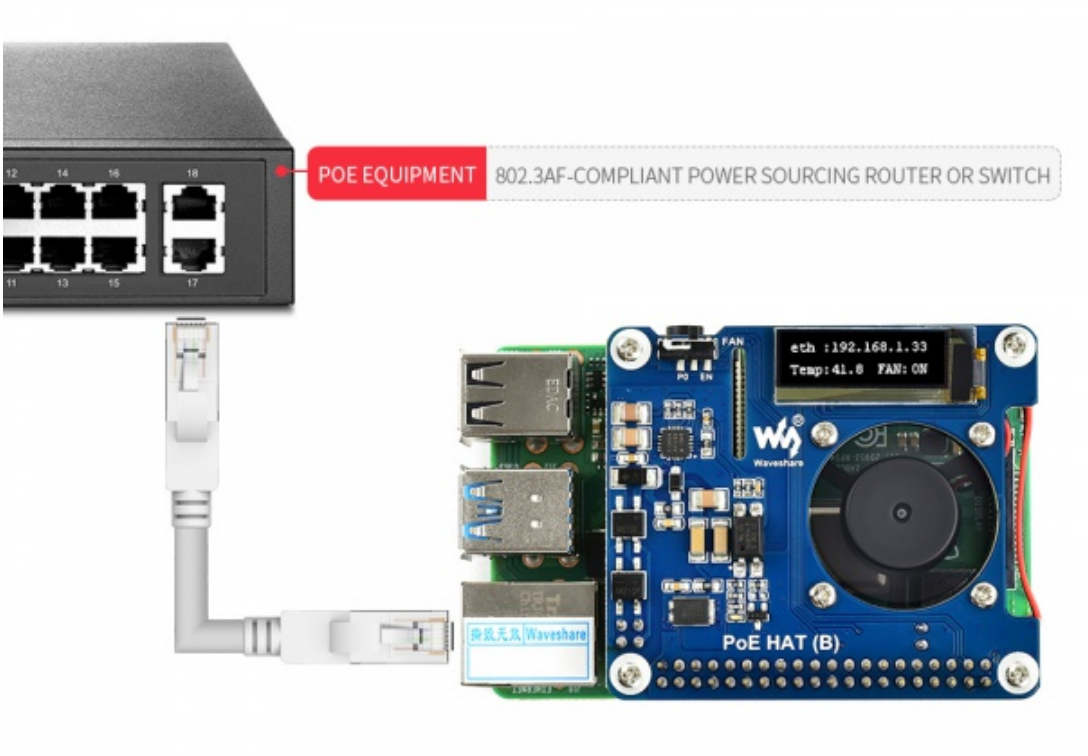
Specifications

- PoE Power input: 37V ~ 57V DC in
- PoE Power output: 5V 2.5A DC out
- Network standard: 802.3af PoE
- Dimensions: 56.5mm x 65mm
- OLED control interface: I2C
- OLED size: 0.91inch
- OLED pixels: 128 x 32
- OLED driver: SSD1306
- OLED display color: White
- OLED viewing angle: greater than 160°
- GPIO expansion interface: I2C
- GPIO expansion chip: PCF8574

Examples

Hardware connection

You need to connect the PoE HAT to Raspberry Pi as picture



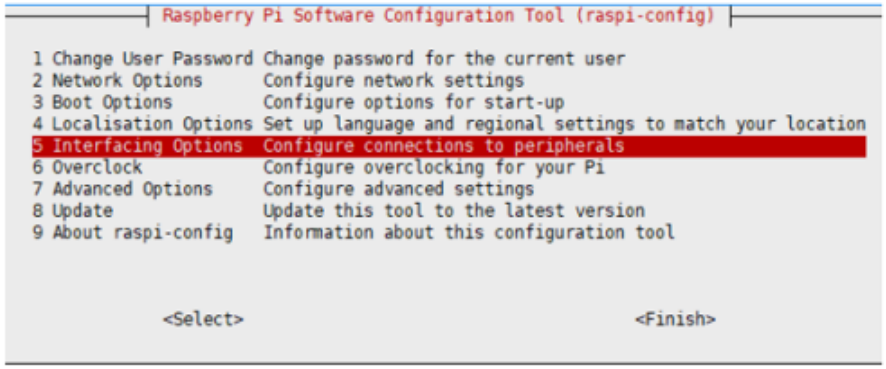
(/wiki/File:PoE-HAT-B-details-5.jpg)

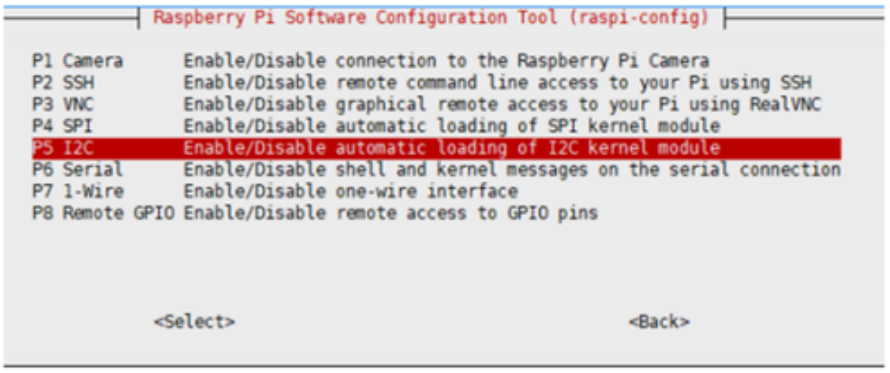
Enable I2C Interface

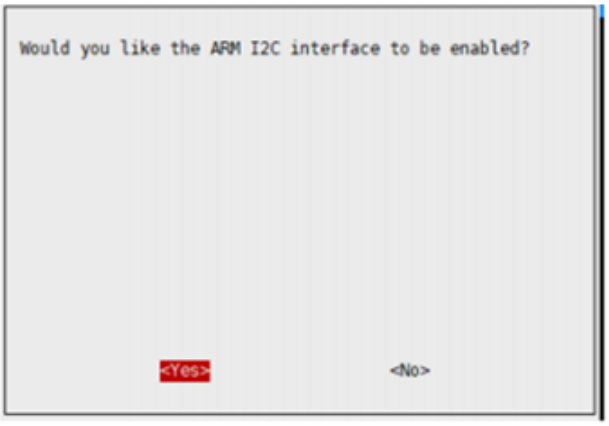
I2C interface is required for the OLED display, you need to first enable the i2c interface for properly work.

Open a terminal of Raspberry Pi and configure:

```
sudo raspi-config
Interfacing Options -> I2C -> Yes
```







(/wiki/File:TSL25911_Light_Sensor-5.png)

And then reboot the system.

```
sudo reboot
```

Libraries Installation for RPi

PS: If you are using the system of the Bullseye branch, you need to change "apt-get" to "apt". The system of the Bullseye branch only supports Python3.

First of all you make sure to use which language C or python Open the terminal of Raspberry Pi and install libraries as guides below

C

C language is installed as follows First of all you make sure to use which language C or python You only need to install one kind of library, install the corresponding library, and then in the Makefile file

```
# USELIB = USE_BCM2835_LIB
# USELIB = USE_WIRINGPI_LIB
USELIB = USE_DEV_LIB
```

Just select the corresponding library, the default is to read and write files without installing any libraries

Install WiringPi Library

If you use WiringPi, you need to update WiringPi to version 2.52. This library may not be updated. Other libraries are recommended

```
cd
sudo apt-get install wiringpi
wget https://project-downloads.drogon.net/wiringpi-latest.deb
sudo dpkg -i wiringpi-latest.deb
gpio -v

#The Bullseye branch system uses the following command:
git clone https://github.com/WiringPi/WiringPi
cd WiringPi
./build
```

Install bcm2835

```
cd
wget http://www.airspayce.com/mikem/bcm2835/bcm2835-1.60.tar.gz
tar zxvf bcm2835-1.60.tar.gz
cd bcm2835-1.60/
sudo ./configure
sudo make && sudo make check && sudo make install
```

For more information and the newest libraries please refer to website: http://www.airspayce.com/mikem/bcm2835/ (http://www.airspayce.com/mikem/bcm2835/)

Install Python Library

```
sudo pip3 install pillow
sudo pip3 install numpy
sudo apt-get install libopenjp2-7
sudo apt install libtiff
sudo apt install libtiff5
sudo apt-get install libatlas-base-dev
```

For python2

```
cd
sudo apt-get update
sudo apt-get install python-pip
sudo pip install RPi.GPIO
sudo pip install smbus
```

For python3

```
cd
sudo apt-get update
sudo apt-get install python3-pip
sudo pip3 install RPi.GPIO
sudo pip3 install smbus
```

Download example

Open a terminal and download with commands below.

```
cd
wget https://www.waveshare.com/w/upload/8/8b/PoE_HAT_B_code.zip
unzip -o  PoE_HAT_B_code.zip -d ./PoE_HAT_B_code
sudo chmod 777 -R PoE_HAT_B_code
```

Run the example

C

Note: C language does not use the library by default, and uses the method of reading and writing the device number. If you need to change it, please modify the Makefile file.

```
#·USELIB·=·USE_BCM2835_LIB
#·USELIB·=·USE_WIRINGPI_LIB
USELIB·=·USE_DEV_LIB
```

(/wiki/File:POE_Makefile.png)

```
cd PoE_HAT_B_code/PoE_HAT_B_code/c/
make clean
make
sudo ./main
```

python

```
cd PoE_HAT_B_code/PoE_HAT_B_code/python/examples/
sudo python main.py
```

Set the fan setup temperature

C

```
sudo nano examples/main.c
```

Set the last parameter of the POE_HAT_Display() function as the fan's turn-on temperature

python

```
sudo nano ~/PoE_HAT_B_code/python/examples/main.py
```

Set the fan on temperature in the POE.POE_HAT_Display() function parameter.

Auto-run

Modify rc.local file

```
sudo nano /etc/rc.local
```

- Set the boot to start automatically. Add sudo /home/pi/Fan_HAT/c/main & before exit 0. Note that you must add "&" to run in the background, otherwise the system may not be able to start.

```
fi
sudo /home/pi/PoE_HAT_B_code/PoE_HAT_B_code/c/main &
exit 0
```

Resources

Documents

- SSD1306 datasheet (https://www.waveshare.com/w/upload/a/af/SSD1306-Revision_1.1.pdf)
- SI3404 datasheet (https://www.waveshare.com/w/upload/8/8a/SI3404.pdf)

Example

- Codes (https://www.waveshare.com/w/upload/8/8b/PoE_HAT_B_code.zip)

Third Party Examples

- kernel driver which supports Raspberry OS and Ubuntu (https://github.com/yostinso/waveshare_poe_b_kernel_driver)

FAQ

Question:What is the height of the PoE HAT (B)?

Answer:

27.5mm, as shown below

(/wiki/File:PoE-HAT-B-height.jpg)

Support

If you require technical support, please go to the Support (https://support.waveshare.com/hc/en-us/requests/new) page and open a ticket.

Retrieved from "https://www.waveshare.com/w/index.php?title=PoE_HAT_(B)&oldid=44009 (https://www.waveshare.com/w/index.php?title=PoE_HAT_(B)&oldid=44009)"