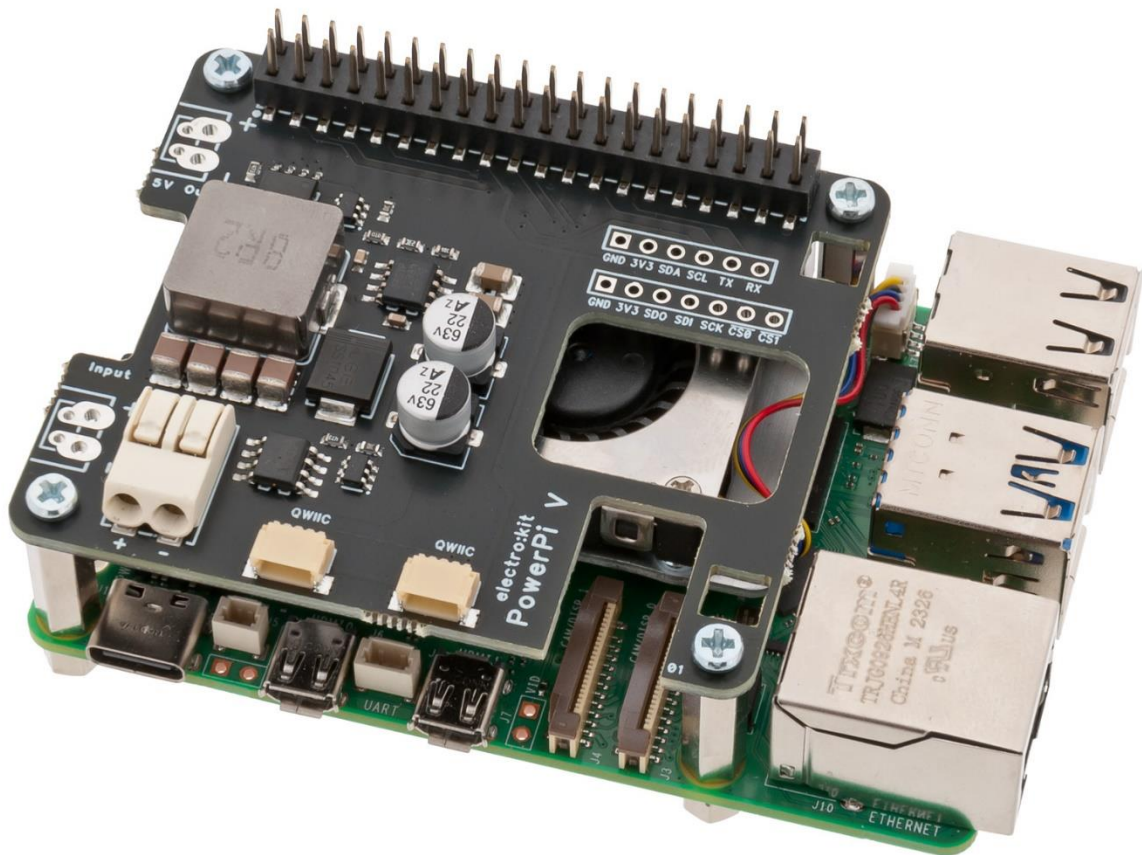


Power Supply HAT for Raspberry Pi 5

Part.no. 41022175



This expansion board will supply power to Raspberry Pi (3, 4, 5) using any regulated DC power supply between 6 and 36 V (12 – 24 V recommended).

No configuration is required for regular use. To enable maximum power output from the USB-ports, a simple change is required in config.txt. See chapter *Software Configuration* for details.

The board comes fully assembled with hardware included for mounting it to the Raspberry Pi board.

Included hardware:

- 4x 15mm M2.5 spacers
- 8x M2.5 screws
- 1x 40-pin riser header

First use requires the user to plug the riser header into the 40-pin connector on the Power Supply HAT and attach the spacers using the included screws.

Functions

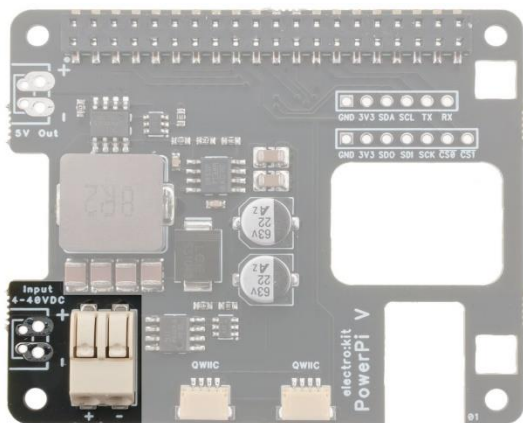
- Supplies power to most Raspberry Pi's with wide voltage range
- High efficiency switching design
- Ready to use. No soldering required!
- Expansion headers for serial interfaces
- Well ventilated design. Works with Raspberry Pi Active Cooler

Specifications

- Supply voltage: 6 - 36 VDC
- Output voltage: 5.1 V
- Efficiency: Up to 92%
- Maximum current output: 5 A
- Quiescent current: <50 μ A
- Onboard connectors: I2C, UART, 2x SPI, 5 V ut, GPIO, QWIIIC

Connections

Power input:



The incoming power should be a regulated DC voltage between 6 and 36 V and can be connected to either the pluggable terminal block OR the pads located to the left. The pads and the terminal block are connected directly and must not be fed from different sources simultaneously. It is possible though to use the additional pads as a way to splice the incoming power for powering other peripherals using the same power supply. The pads feature two different sets of holes with 2.54mm and 3.5mm pitch, that will accommodate most screw terminals, headers or by soldering wires directly to the board.

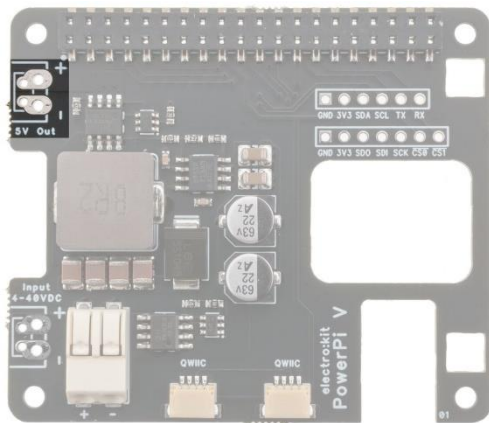
Please note that while the regulator will handle voltages up to 40 V, the maximum recommended voltage for continuous use is 32 – 36 V. Supplying the board with higher voltages than the absolute maximum will result in damage. The board is designed for use with 12, 15 or 24V power supplies. The onboard regulator is a step-down (buck) only and

will not convert a lower voltage to a higher. The lowest possible voltage for powering a Raspberry Pi therefore is 6 V.

The mounted pluggable connector (pn. WAGO 2060-452) is intended for permanent installations. The locking tabs are only rated for a limited number of uses! Single-core wires and other relatively stiff cables can be plugged in without tools. For more flexible and multi-stranded wires, the locking tab must be depressed when inserting the wires. The connector accepts wire gauges from 0.2 mm² to 0.75 mm² (AWG24 to AWG18). Recommended strip length 7 - 9mm.

The input is protected against reversed polarity and will withstand the rated voltage for any length of time without damage.

Power output:

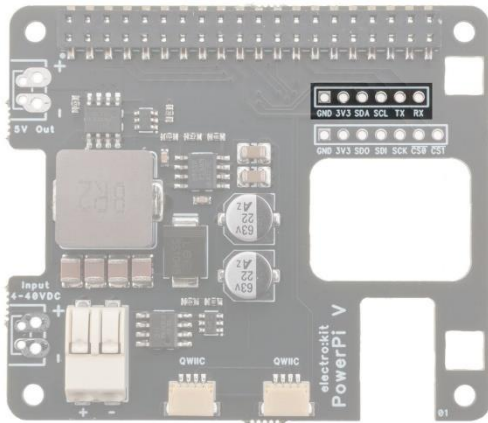


These pads have the same pitch and will work with the same connectors as the power input. These pads are not used in most cases, but provides a convenient way to connect external modules and other peripheral devices powered by 5V.

Maximum current draw is limited by the maximum current from the regulator (5A) minus whatever current the Pi draws (which varies depending on use).

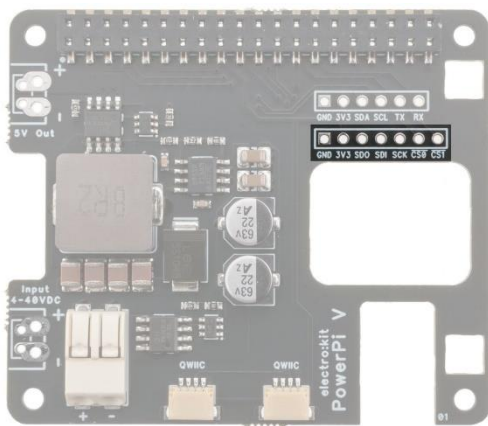
The regulated 5V output is protected against reversed polarity and back-feed, which allows the Raspberry Pi to be supplied via the USB-C connector and the Power Pi HAT simultaneously.

I2C / UART header pinout:



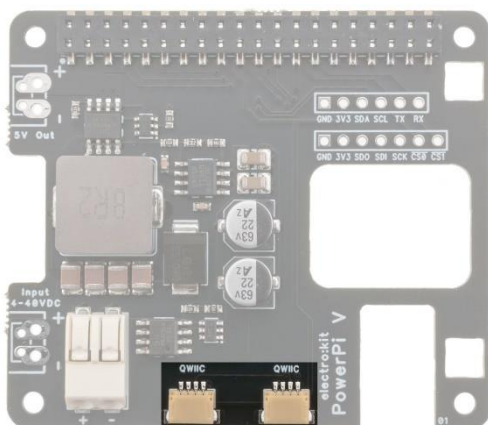
- GND -> GND
- 3V3 -> 3.3V regulated output from Pi (~50mA max)
- SDA -> I2C data (GPIO2, Pin 3)
- SCL -> I2C clock (GPIO3, Pin 4)
- TX -> UART Transmit (GPIO14, Pin 8)
- RX -> UART Receive (GPIO15, Pin 10)

SPI header pinout:



- GND -> GND
- 3V3 -> 3.3V regulated output from Pi (~50mA max)
- SDO -> MOSI / SDO (GPIO10, Pin 19)
- SDI -> MISO / SDI (GPIO9, Pin 21)
- SCK -> Clock (GPIO11, Pin 23)
- CS0 -> Chip Select 0, active low (GPIO 8, Pin 24)
- CS1 -> Chip Select 1, active low (GPIO 7, Pin 26)

QWIC pinout:



- GND -> GND
- 3V3 -> 3.3V regulated output from Pi (~50mA max)
- SDA -> I2C data (GPIO2, Pin 3)
- SCL -> I2C clock (GPIO3, Pin 4)

Mating connector 4-pin JST-SH 1.0mm

Software configuration

Enabling maximum current from USB ports:

1: Locate and open `"/boot/firmware/config.txt"` in a text editor

2: Add the following lines:

```
PSU_MAX_CURRENT=5000  
usb_max_current_enable=1
```

3: Save the file and reboot

The first line will tell the OS that the power supply is capable of supplying 5A current.

The second line will enable more current to be drawn from the USB ports.

Mechanical dimensions

