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Hardware Setup guide for the Raspberry Pi 4

Hardware Model	Raspberry Pi 4
Document Version	1.00,Feb 2022
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Video Tutorial

This tutorial is also available in video form.

Installation Guide

This hardware setup guide is the companion to the Raspberry PI 4 installation guides.

Hardware

This hardware list is what has been recommended by the Slackware community as a good starting point for setting up a Raspberry Pi. There are a plethora of peripherals available for the Raspberry Pi which you can use with Slackware.

SD cards: Some SD cards are known to have issues on the Raspberry Pi4. Please use one of the brands provided in the hardware table below.

Please purchase the hardware from any vendor: Slackware ARM has no affiliation with The PiHut, but it is a useful one-stop-shop for RPis and accessories, and this author can attest to good service within the UK.

Item	Specification/Type	Required?	Notes
Raspberry Pi 4 Model B	4GB and 8GB RAM models have been tested	Yes	This is the bare board

Item	Specification/Type	Required?	Notes
'Ice Tower' CPU heat sink & cooling fan		A heat sink or CPU is required	This has been recommended as a suitable fan for high-CPU workloads.
Power supply	Official Raspberry Pi PSU	Yes	It's best to use the official PSU as others can cause instability over time.
Inline power switch	-	Optional but recommended	The Raspberry Pi 4 does not have reset nor power buttons on the board. Reports from the Slackware community suggest that the power socket on the Rpi will become damaged over time from wear. This inline power switch prevents damage to the RPi.
Micro to full-size HDMI adapter	-	Optional	Depends on your local setup and whether you wish to connect an HDMI monitor to the RPi.
Real Time Clock (RTC)	Adafruit PiRTC - Precise DS3231	Optional	This RTC been recommended by the Slackware community.
Battery for RTC	Lithium 3volt CR1220	Optional	Depends on whether you use the RTC module. This enables the RTC to maintain the time whilst the RPi is powered down.
Dupont wires	Female to male	Optional	This is to wire in the RTC module, as the large sized CPU heat sink prevents the RTC module from connecting directly to the GPIO. These wires are also useful for connecting other peripherals to the RPi's GPIO.
SATA storage / SSD	Minimum useful size: 30GB	Required	Will contain the Operating System. You can install to other storage, but this documentation covers this particular configuration only. The Kingston-SA400S37-240G has thoroughly proved itself in the Slackware ARM build infrastructure - most build machines use these, but any SSD or spinning hard disk should work
USB to SATA adapter	-	Required	Many models will work, but this one has been tested on many of this author's ARM hardware.
USB to Serial adapter	PL2303 chip. Other models may work, but this one has been tested. If your model has the option to set voltages, ensure **3volts** is set!	Optional	A USB to Serial/UART adapter is recommended if you want to access the console remotely, but is unnecessary if you only plan on using an HDMI monitor. This document covers installing using an HDMI monitor - you can find information about connecting the Serial/UART adapter at the foot of this document
Micro SD Card	16GB **minimum capacity**, Class 10 (fast speed)	Required	Initially used to boot the Slackware Installer, and subsequently transformed into Slackware's /boot partition.

Item	Specification/Type	Required?	Notes
USB keyboard and mouse	Standard peripherals	Required	A USB keyboard and mouse are required for this Slackware installation guide but are not required for the running of the OS. Slackware can also be installed headless (without a keyboard or monitor) over the Serial/UART or SSH (but this isn't documented).

Recommended/ tested SD cards and other storage peripherals

In addition to the examples of tested hardware, here follows other storage devices and peripherals that have been tested by the Slackware community.

Type	Details
Micro SD card	Gigastone 32GB
Micro SD card	Kingston 64GB microSDHC Canvas Select Plus
Micro SD card	Kingston SDCG3
Micro SD card	SanDisk 16GB
USB to SATA adapter (alternative to the one in the table above)	SKL Tech

Alternatives to SSD

If you prefer to use NVME storage, these have been tested:

NVME Storage Module	Kingston A2000 SSD 250G & 500GB models
USB to NVME M.2 adapter & enclosure	LEMORELE M.2 NVMe SSD Enclosure USB C External PCIe B+M/M-Key SSD Caddy 10Gbp UASP USB 3.1 Gen 2 M2

Notes on storage setup

The setup documented here (2.5“ SSD connected to a USB-to-Serial adapter for power and data) has proven stable for this author.

Hardware Setup

In this section we'll prepare the physical aspects of the Raspberry Pi4 to receive Slackware Linux.

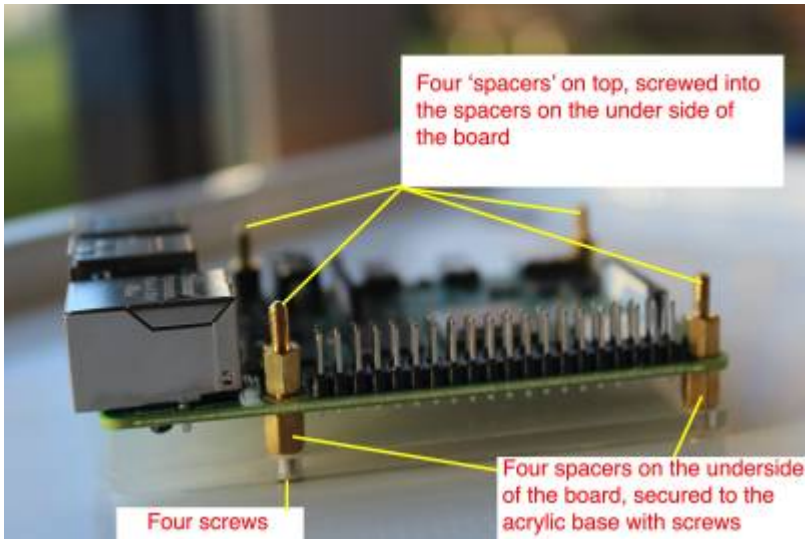
Note that this is just one of a vast array of hardware configurations for the Raspberry Pi4. If you have a different configuration that's already working, you can skip to the 'Software and Network Environment Setup ' section

Attach the base board

Attach the base board to the RPi4 using the brass spacers. Ensure that each brass spacer is screwed into the base board, as shown.

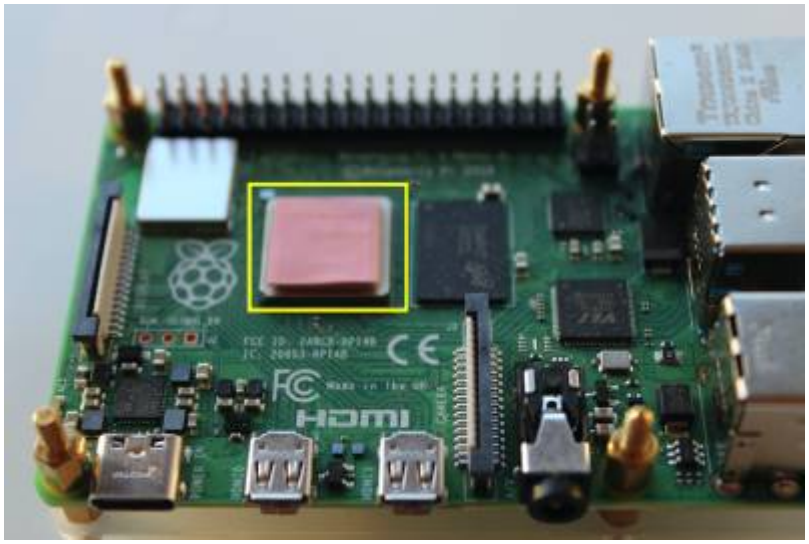
The base board comes with the 'Ice Tower' CPU cooling pack (as mentioned within the Hardware Requirements table). Other RPi “open” case designs would connect the RPi in a similar manner (e.g., the bottom element of Micro Connectors' Acrylic Stackable Raspberry Pi case)

Screw four spacers to the top to secure the board to the platform

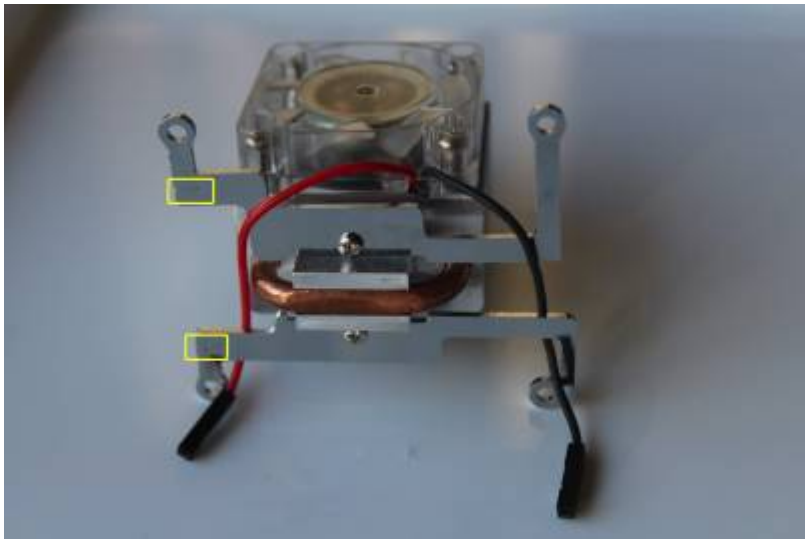


Attach the thermal tape to the CPU

Lay one of the pieces of thermal tape atop the CPU as shown:



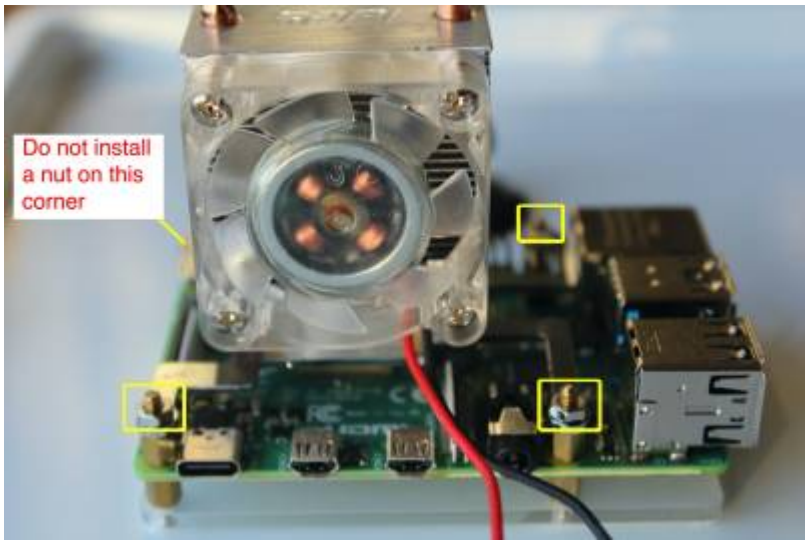
Attach the heat sink brackets



Pay close attention to the positioning of the brackets, otherwise it won't sit on the board properly.

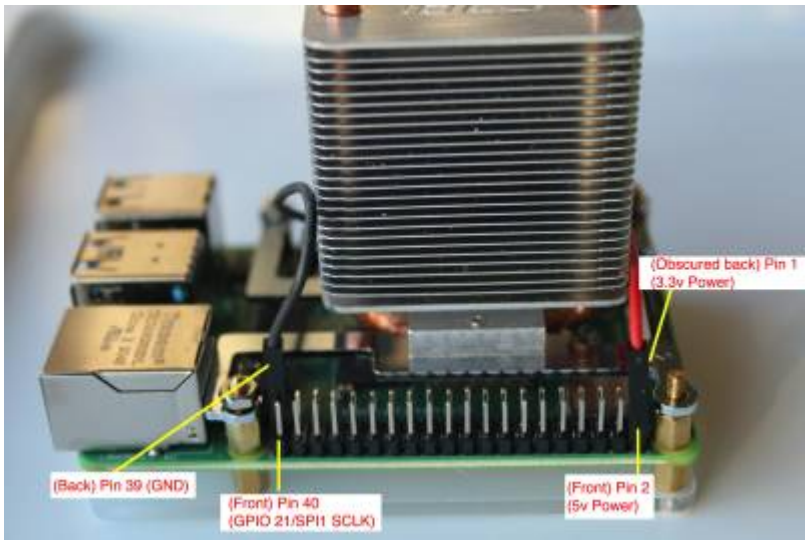
Use the symbols on the brackets for orientation

Secure the board to the platform

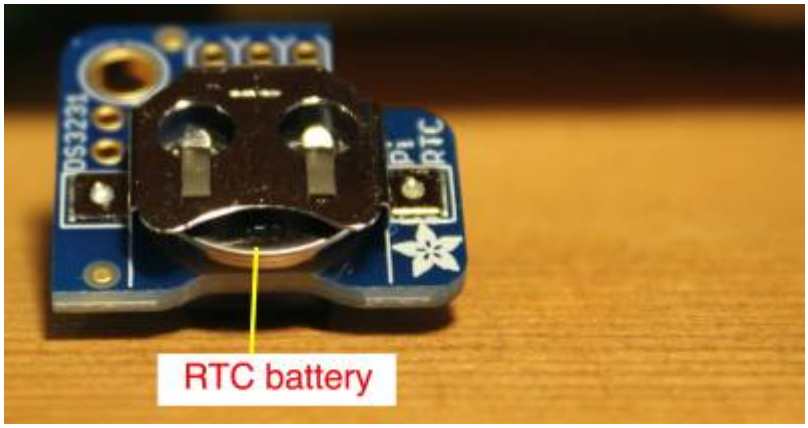


Only apply 3 nuts as shown. The fourth brass-coloured 'spacer' will be used to seat the RTC (Real Time Clock). If you do not have an RTC, secure this with a fourth nut.

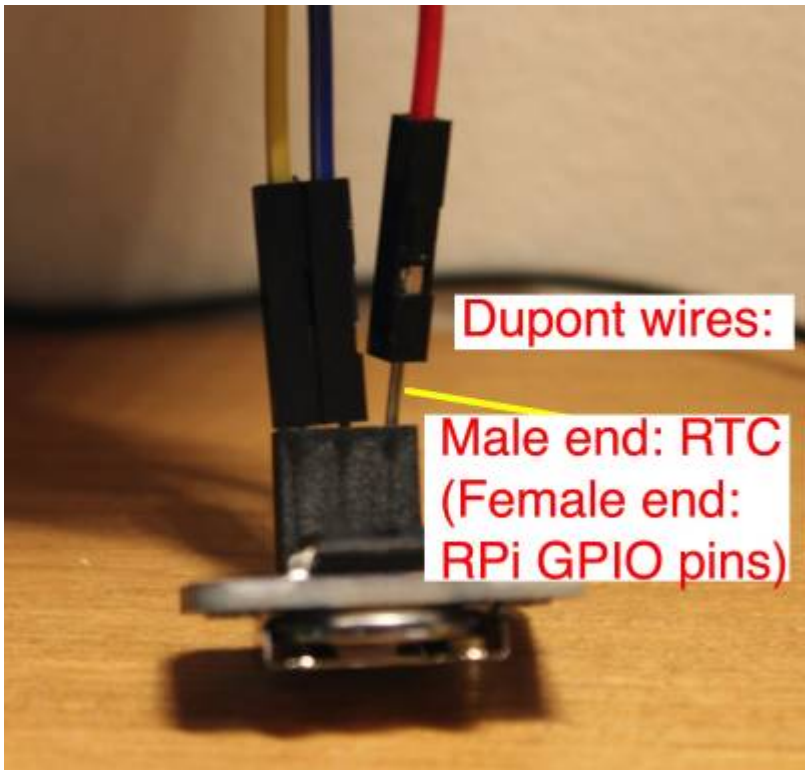
Attach CPU fan power wires

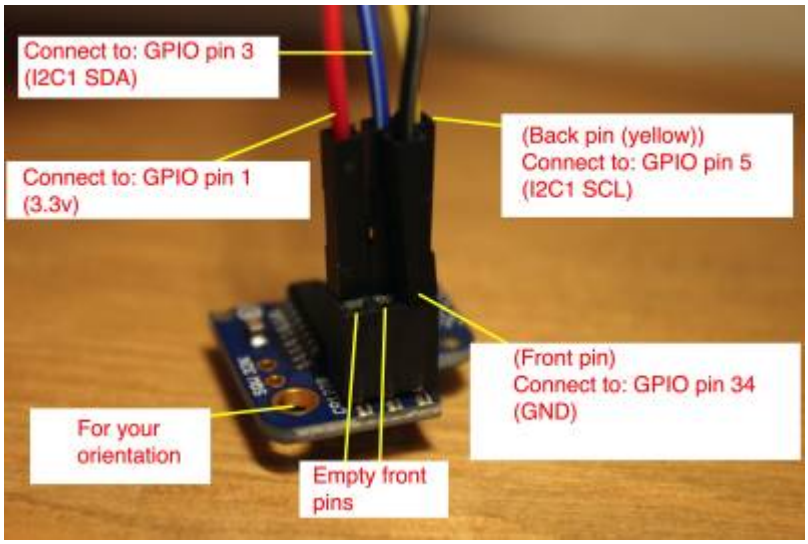


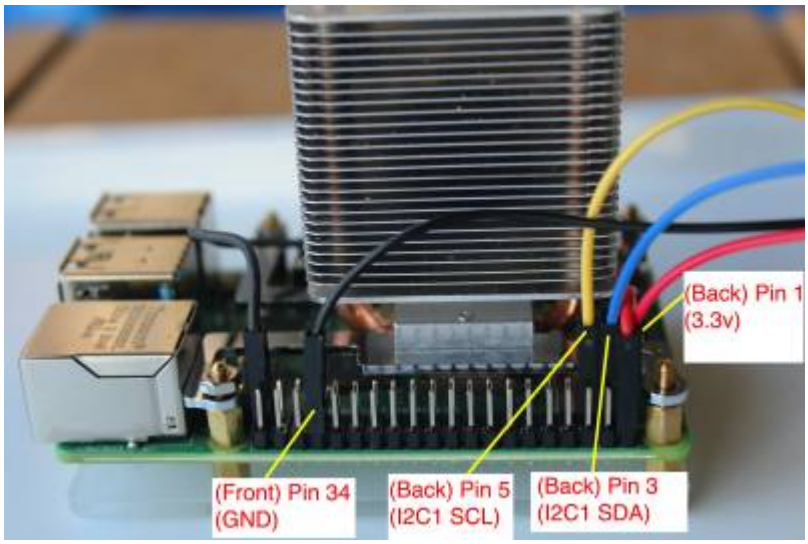
RTC (Real Time Clock): Insert battery



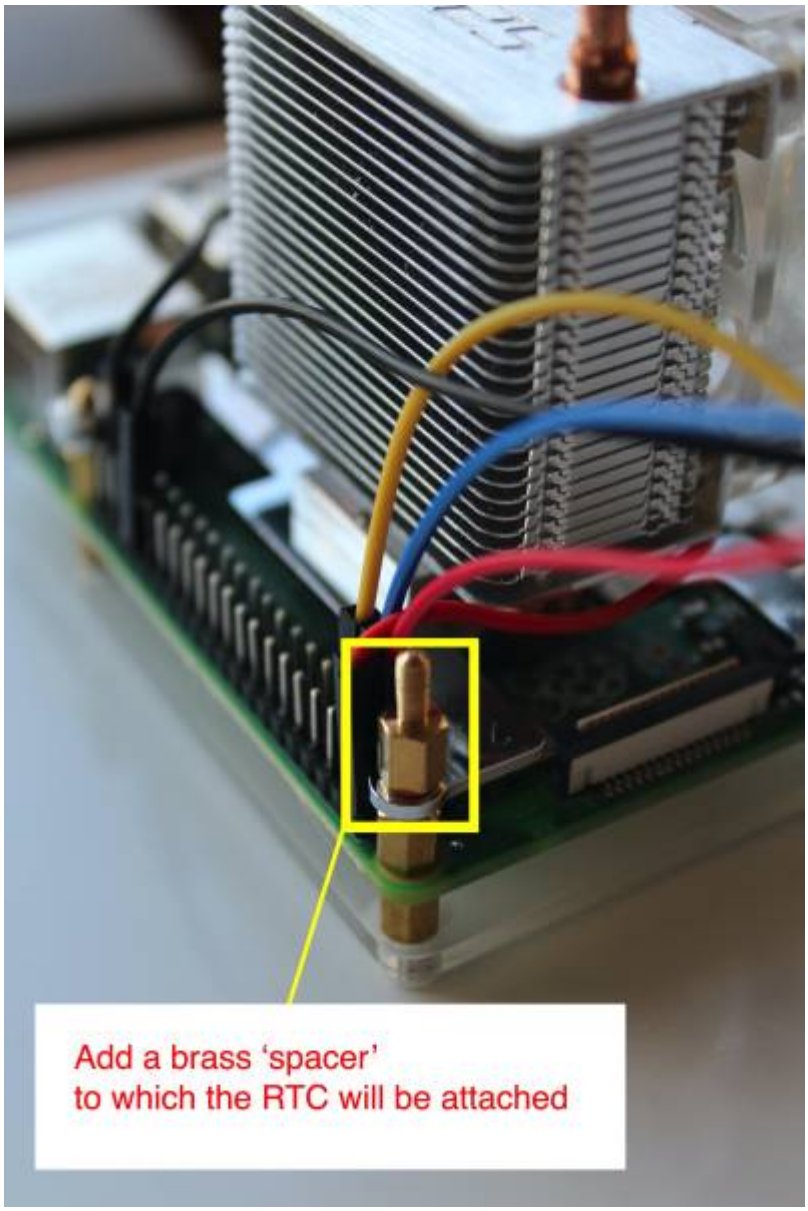
RTC (Real Time Clock): Wiring

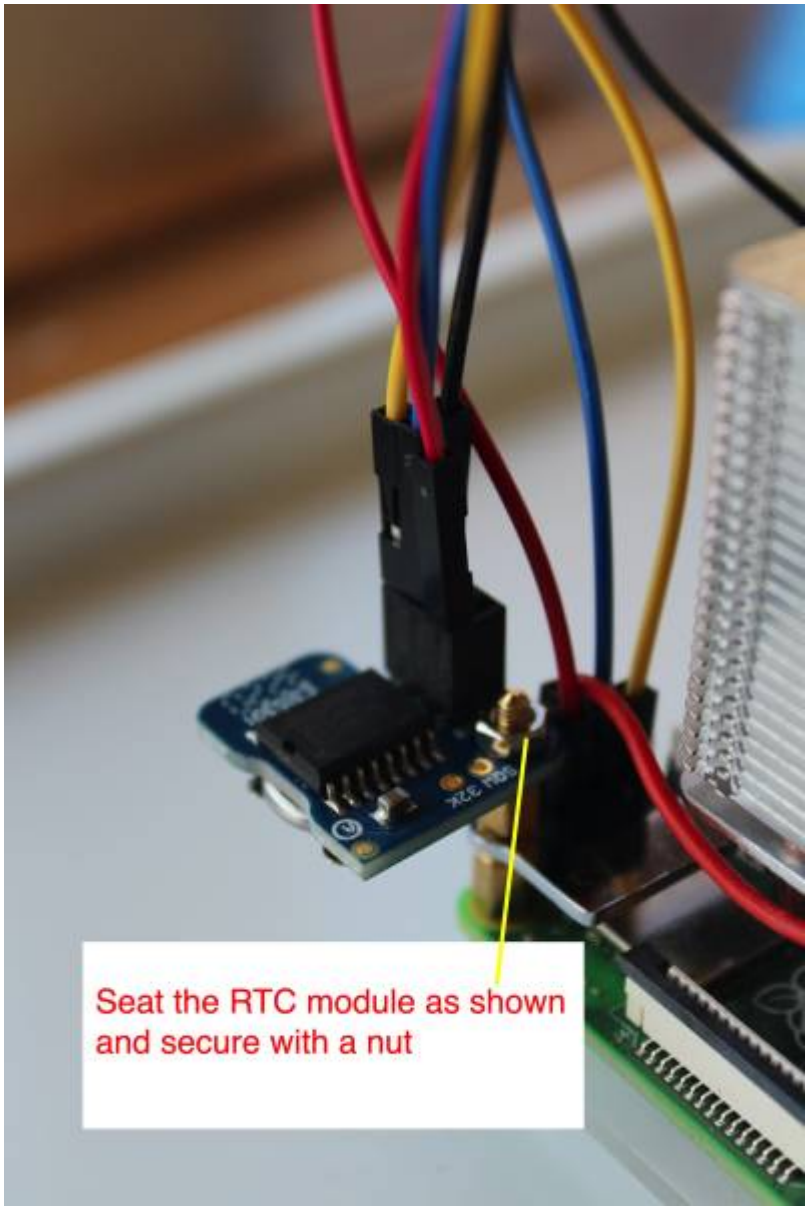






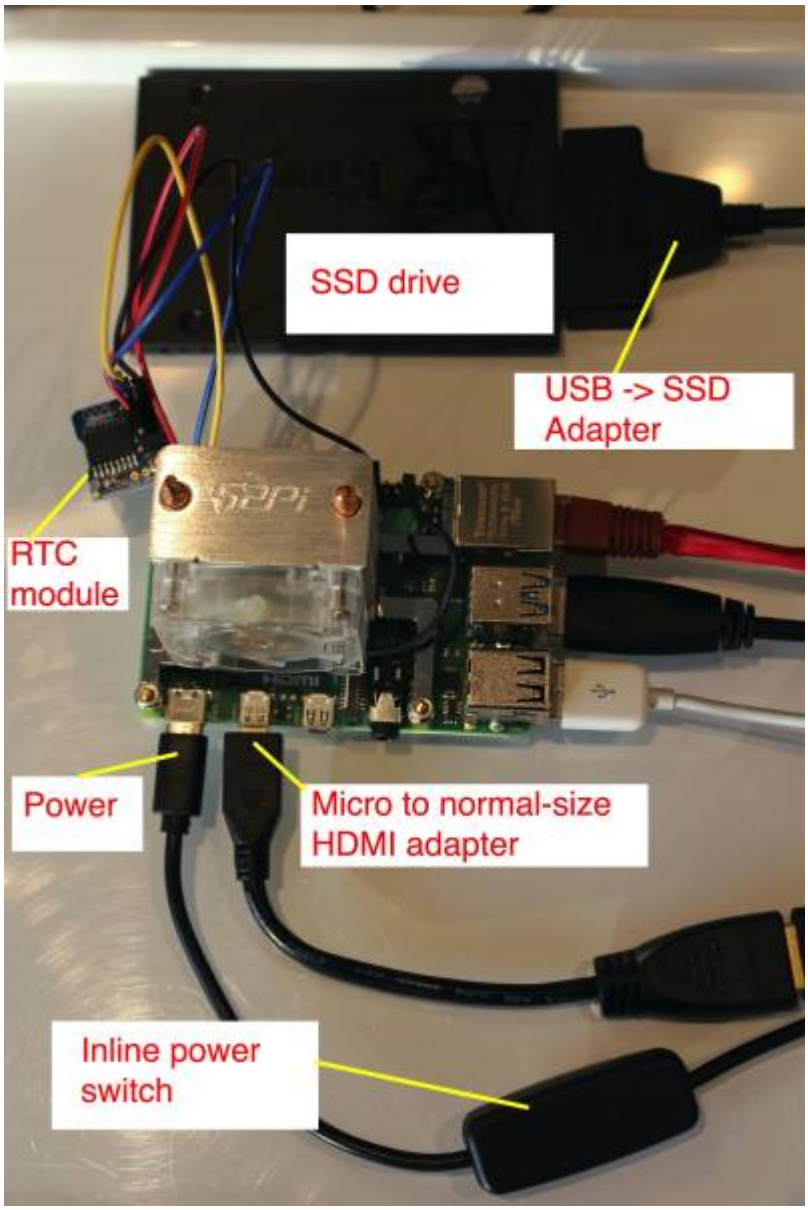
RTC (Real Time Clock): Attach to Raspberry Pi

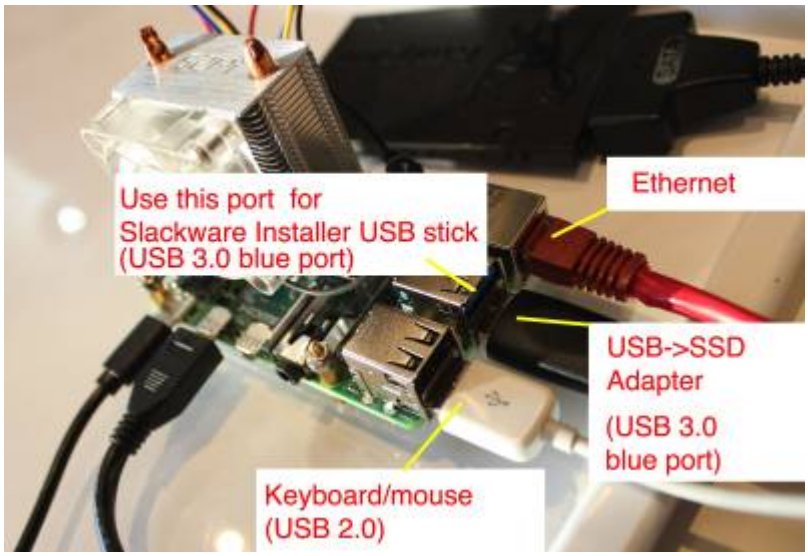




Add all other peripherals required to install Slackware

- Connect the storage - ensure that it's connected to a **blue USB 3.0** port
- Connect the Ethernet cable (optional - required if you want to set the date via NTP before commencing installation)
- Connect the HDMI cable
- Connect the USB keyboard and mouse





The basic hardware setup is complete.