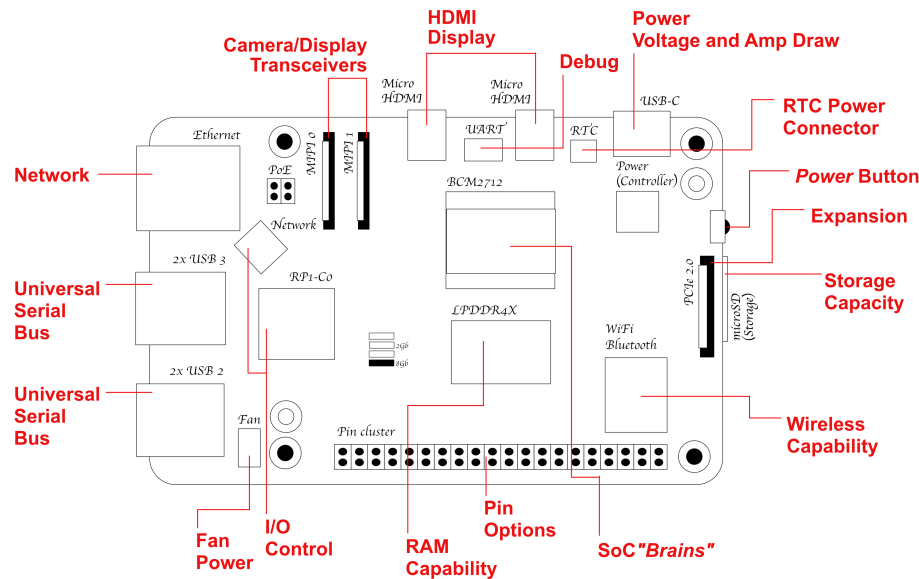


2024 Hardware Procurement for EEP522A (version 1)

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Raspberry Pi 5 (2023)

1 Start

IMPORTANT EEP522-A Last year, we saw major global supply chain disruptions, with many products experiencing long lead times. Hopefully, this year, it will be different. This year, we see the arrival (addition) of the *Raspberry Pi 5*. The course requires you to obtain one of the following models: *Raspberry Pi 3B* or *3B+*, *Raspberry Pi 4*, or the new *Raspberry Pi 5*. Note: I expect Raspberry Pi 5 availability will still be difficult until Q2'24, so I recommend ordering or getting hold of a Raspberry Pi 3 or 4. We will refer to them respectively as *RP3*, *RP4* and *RP5*. Each model requires slightly different setup components, so choose the right combination.

There are Kits available that provide all the components. Recommend spending time analyzing the options and choosing the right solution. You can buy a kit or purchase the parts individually; some kits provide many options and components.

1.1 Interesting places to look:

- Sparkfun (<https://www.sparkfun.com>)
- Seed Studio (<https://www.seeedstudio.com>)
- Raspberry Pi Foundation (<https://www.raspberrypi.com>)
- Amazon

1.2 Target board: Raspberry Pi

Choose a Raspberry Pi option:

- RP3 Raspberry Pi 3 B (2016), or B+ (2017)
- RP4 Raspberry Pi 4 (2019)
- RP5 Raspberry Pi 5 (2023)

Note: The memory configuration is optional. Recommend mapping the best memory-size with your budget and interests. The larger the memory configuration, the more options, but obviously this comes at a higher price. Choose wisely. Embedded Systems is all about compromise.

1.3 Additional components

You will need the following, make sure you pick the right component for your setup and interest:

- Cable to connect to a monitor
- SD Card to contain the Operating System
- Power Supply
- Heat sink or Cooling fan
- Case for the Raspberry Pi (optional)
- Ethernet cable (optional)

1.4 Access-to

You will need access to the following:

- Display: Monitor with HDMI interface (or an LCD screen with a DSI interface), at least initially.
- Communication: Wireless router or Ethernet Hub or *Ethernet Switch*
- USB Keyboard, or *Wireless BT Keyboard* (may work)
- USB Mouse, or *Wireless mouse* (may work)

Note: For the first part of the course, we will attempt to create a headless target and remote login or VNC, so the display is only temporary. Later on, you may wish to use the Raspberry Pi with a display for the final project.

2 Precise setup

This section outlines the details for setups.

2.1 RP3 Option

- Raspberry Pi 3 B or 3B+
- HDMI to HDMI cable
- micro USB power supply (5V/2.5A)
- SDCard recommend 16Gb or above
- RP3 Heat sinks
- RP3 Case (optional)

IMPORTANT to get the correct HDMI cable and power supply —differ significantly from RP4 and RP5.

2.2 RP4 Option

- Raspberry Pi 4
- micro HDMI to HDMI cable
- USB-C power supply (5V/3A)
- SDCard recommend 16Gb or above
- RP4 Heat sinks or Cooling Fan
- RP4 Case (optional)

IMPORTANT requires a micro HDMI cable and a USB-C power supply providing at least 3A. Take care with the cooling since the RP4 probably needs an active fan over passive cooling. May be get away with passive.

2.3 RP5 Option

This is a very new release, so I know very little about the details. Please let me know if there are any changes required.

- Raspberry Pi 5
- micro HDMI to HDMI cable
- USB-C power supply (5V/5A)
- SDCard recommend 16Gb or above
- RP5 Cooling Fan
- RP5 Case (optional)

IMPORTANT requires a micro HDMI cable and a USB-C power supply providing at 5A. RP5 appears to require an active cooling fan.

3 Miscellaneous

3.1 Case or Enclosure

Make sure to pick an enclosure or case for your needs. If you plan to use the pins, ensure the case accommodates easy pin access. Many great cases are available, including practical, industrial, and novelty designs. Also, some enclosures can not accommodate a fan and only provide passive cooling. Note no case will work fine.

3.2 USB-A Keyboard

Most USB-A Keyboards should be compatible with the Raspberry Pi. I have run across some keyboards which caused problems. That either required re-initializing (disconnecting the keyboard and re-connecting), and even rarer still, I have had a keyboard that refused to connect to the Raspberry Pi and produced corrupted characters. Recommend checking for compatibility. There are many online resources. We only need the keyboard for initializing purposes, and you may require it for your final project (depending on your choice).

3.3 USB-A Mouse

Again, similar to the USB-A Keyboard, most mice should be compatible with the Raspberry Pi. I had encountered rare instances when the mouse was non-functional (i.e., broken); most should work. Recommend checking for compatibility. Again, there are many online resources. We only need the mouse for initializing purposes, and you may require it for your final project (depending on your choice).

3.4 Ethernet cable

A nice to have and can speed up downloads and data transfers. The Raspberry Pi comes with a standard Ethernet connector RJ45.

4 Final: Any questions?

Obtaining all the components should be straightforward and fun. I recommend treating this as part of the course. Let's call it *procurement*. If you have any questions or concerns, please let me know by sending an email:

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