Adafruit PiUART - USB Console and Power Add-on for Raspberry Pi

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https://learn.adafruit.com/adafruit-piuart-usb-console-and-power-add-on-for-raspberry-pi

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Overview

PiUART

Here's another super handy add-on for your Raspberry Pi computer, perfect for 'headless' setups! The PiUART (http://adafru.it/3589) adds a USB Type-C to serial connection so you can use any serial port software to connect to the Pi's console. It plugs in and is fast and easy to add whenever you need to connect to your Pi. Two LEDs connect to RX and TX on the serial converter chip so you get blinking whenever data is sent or received.

We had some space left over, so the PiUART also comes with an on-off switch with a 4 Amp transistor. You can power your Pi through the USB-C port and then use the switch whenever you want to cut power, without having to unplug the cable. Low-power usage Pi's like the Pi Zero and A+ can thus be powered and controlled from a single cable connected to your computer.

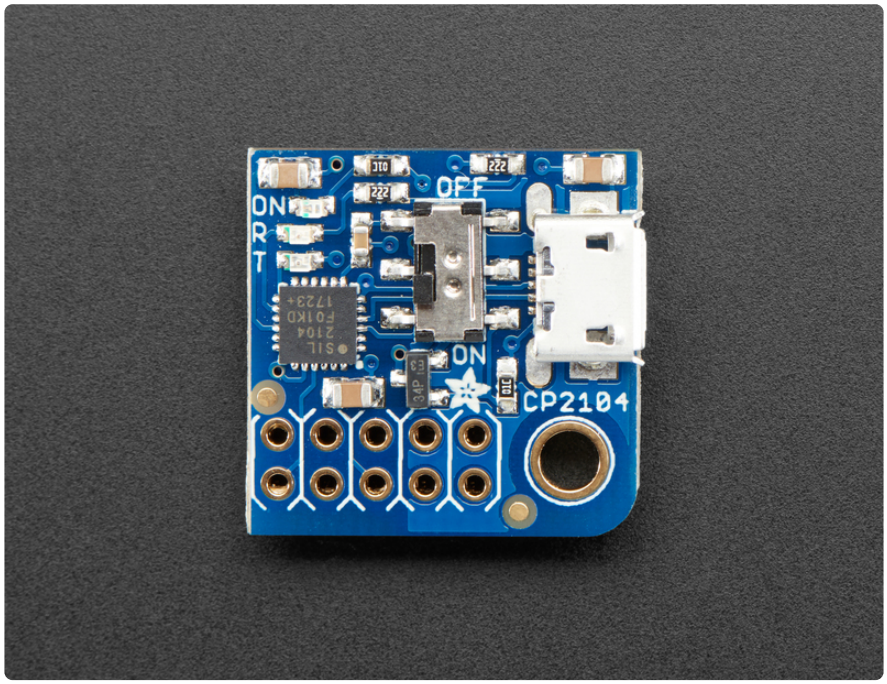
Heavy-hitter Pi's like the Pi 2 and Pi 3 may draw too much power from a computer USB port, so check if your motherboard has a high-current USB port before trying.

PiUART

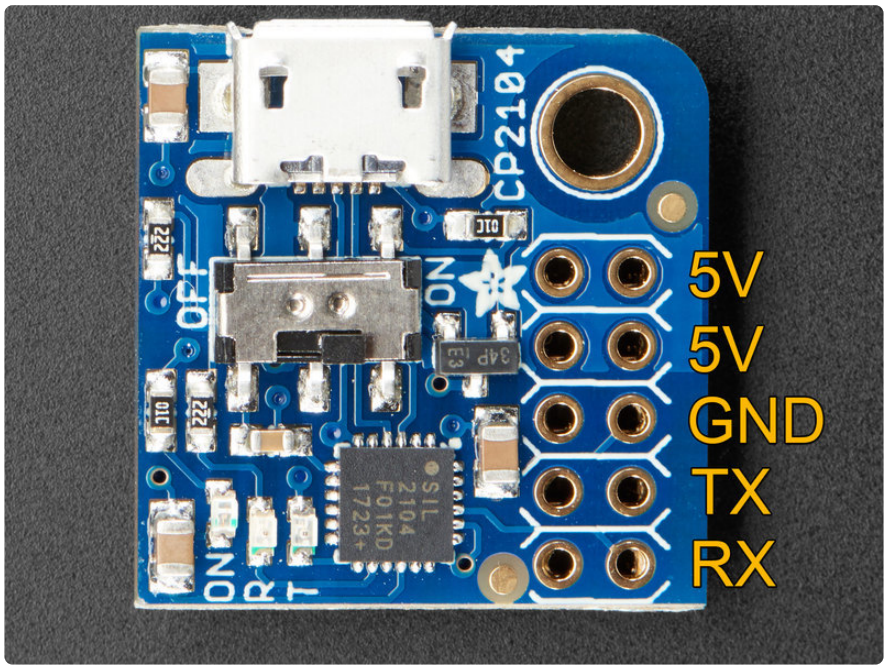
Comes fully assembled and ready to go, plug into your Pi, and on Mac OS X install the driver - within 2 minutes and you'll be ready to go.

Works with any Raspberry Pi computer (Pi 1, 2, 3, Zero, etc)

The original version of this board used USB Micro B, as seen below. This guide will work with both.



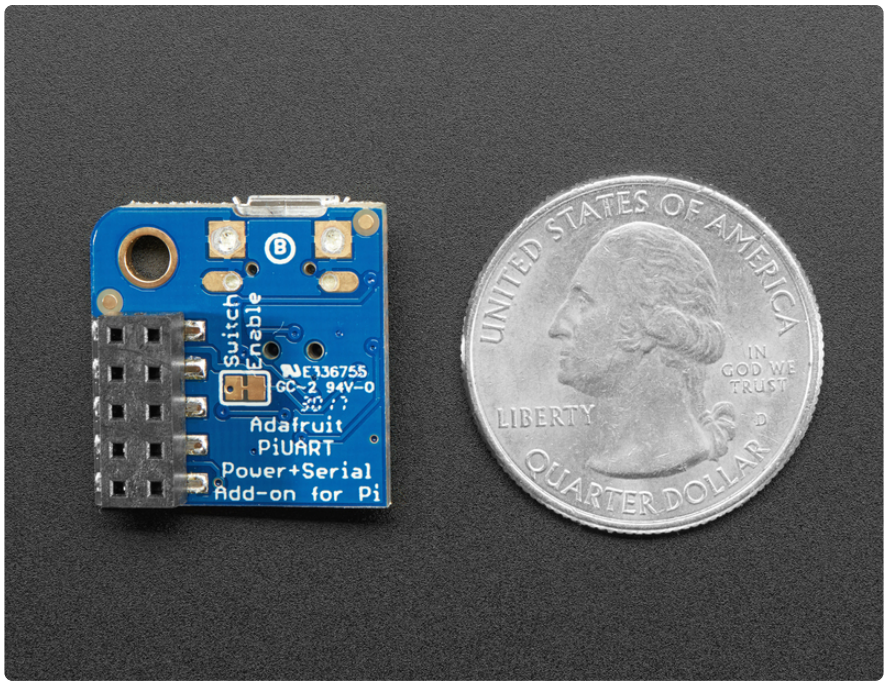
Pinouts



We only use the 'right' strip of the dual header but to make it more mechanically stable we have a dual header to plug into.

The 5V power pins can be fed from the MicroUSB connector when the switch is flipped to **ON**. Otherwise you can leave the switch **OFF** and power the Pi from the standard power port.

Note this will back-power the computer USB port. We've never had an issue with this as long as the Pi's power supply is 5V, **but** if you want to avoid it, cut the bottom **Switch Enable** trace. (Also good to do if you want to make sure the switch isn't activated by accident)



Enabling Serial Console

As of Jessie Raspbian, you may need to enable the serial console.

You can enable/disable the serial console with either editing **/boot/config.txt** or **raspi-config** (which will edit /boot/config.txt for you)

Option 1. Enabling in /boot/config.txt

You can pop your SD card into a computer and edit **config.txt** with a text editor like SimpleText, WordPad or whatnot. You can also edit on a pi with `sudo nano /boot/config.txt`

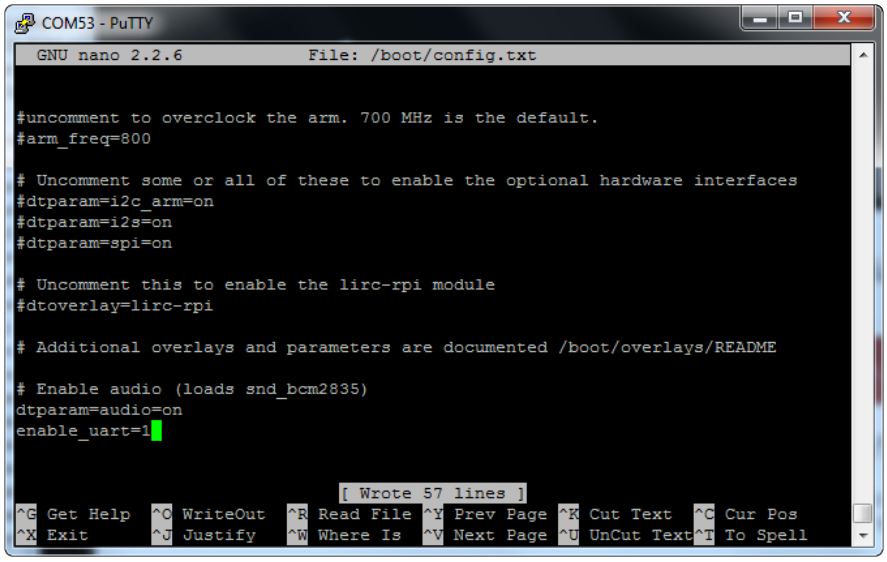
At the bottom, last line, add `enable_uart=1` on it's own line.

Pi OS Bookworm and the Pi 5 have minor changes from earlier Pi OS software and hardware. You will edit the file:

`sudo nano /boot/firmware/config.txt`

add these two lines to the end of the config.txt.

```
dtparam=uart0
dtparam=uart0_console
```

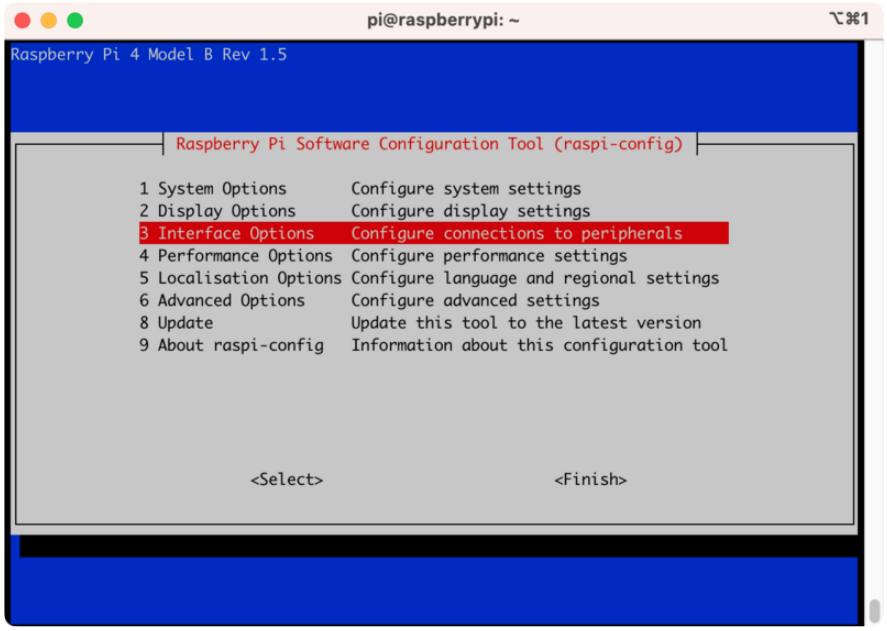


Option 2. Enabling via Raspi-Config

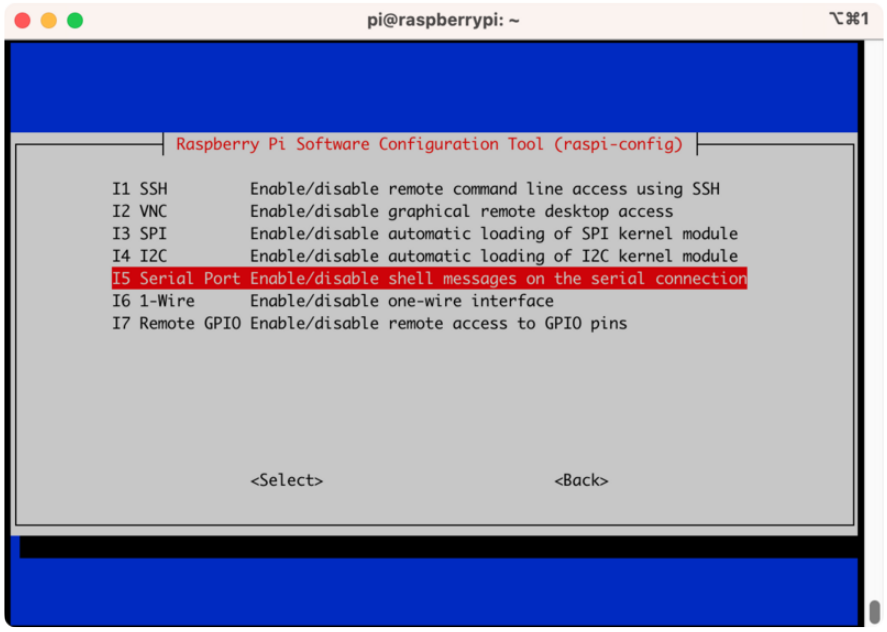
Using a monitor and keyboard, log into the shell and run

sudo raspi-config

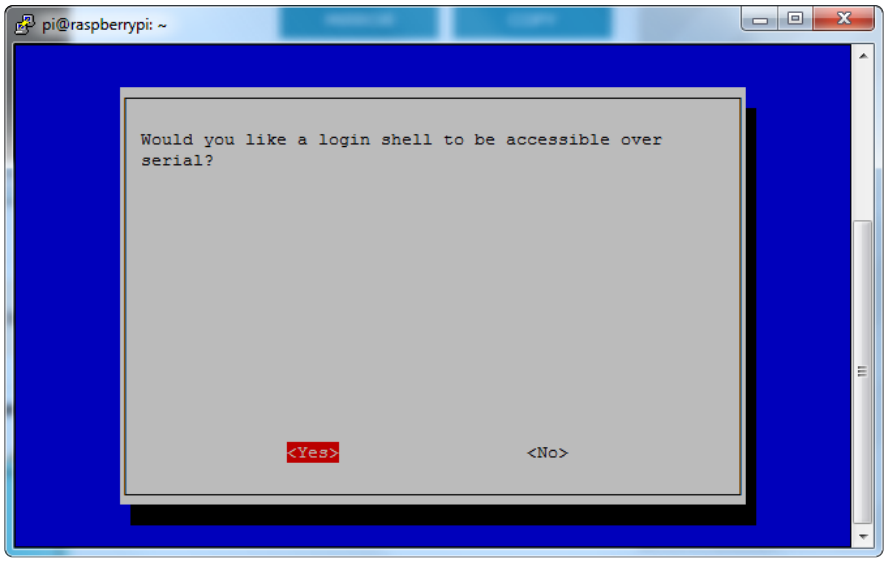
go down to **Interface Options**



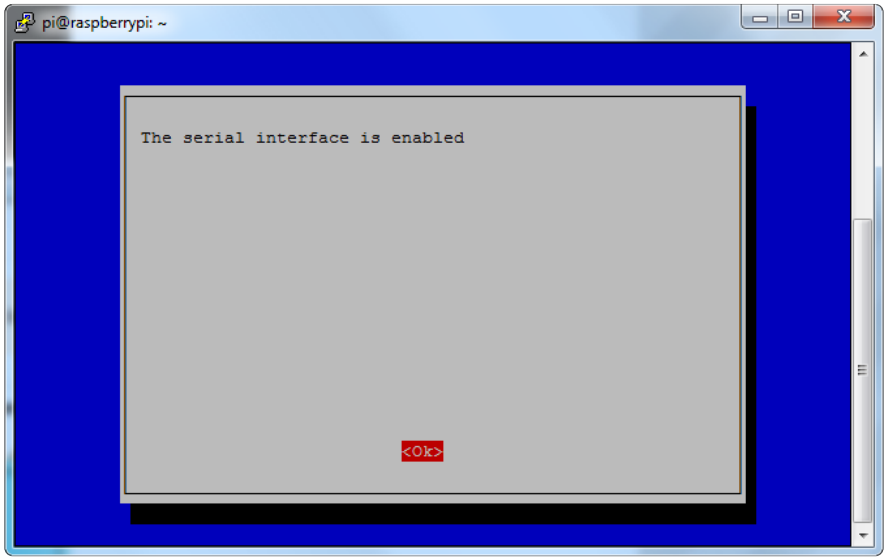
Hit enter and then go down to **Serial Port**



Select **Yes**



It should now be enabled



Hit return then select **Finish**

If it asks you to reboot, go to **Yes** and hit return

OK the serial console is now enabled!

Setup Software

Windows

Windows will automatically install the CP2104 driver for use so no driver is required. The Windows 10 driver can also be found here (https://adafru.it/yfA) if needed.

For terminal software, you can use Putty to start. Download and install Putty from here: http://www.putty.org/ (https://adafru.it/aUb)

From the list of downloads select the binary called just **putty.exe** from the section **For Windows on Intel x86**. This will prompt you to save the file. Save it onto the **Desktop** for now.

Note that this actually saves the Program itself not an installer. Simply double click putty.exe to run putty!

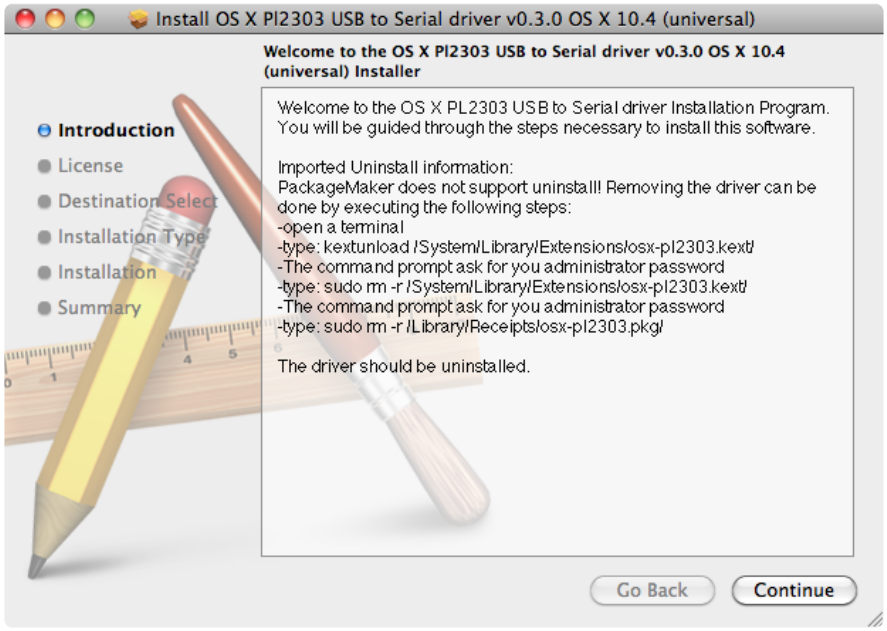
Mac OS X

If you are using Mac OS X you will need to install drivers. For the SiLabs chipset, you can grab the drivers from here:

Install Mac OS X driver

https://adafru.it/19cM

The download is a standard Mac installer. Accept all defaults when prompted.



Linux

Linux has the CP2104 driver built in!

Some distributions such as Ubuntu 12.10 do not include the "screen" command. Try running the command "screen" and if you get an error message, you can install it by typing the following command: **sudo apt-get install screen**

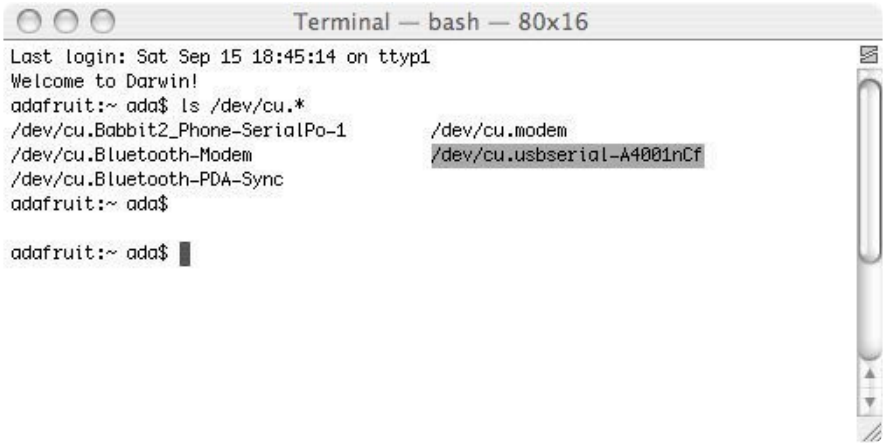
Test & Configure

Mac OS X

If you are using a Mac, then all you need to do is open a **Terminal** window and issue the command

```
ls /dev/cu.*
```

To list all of the available serial ports. You should see something like this:



You'll see a few items listed including a /dev/cu.Bluetooth device. You're looking for something like **/dev/cu.usbserial-NNNN** or **/dev/cu.SLAB_USBtoUART** or **/dev/cu.usbmodem**

Once you've identified the name, you can then run:

```
screen /dev/cu.PL2303-00001004 115200
screen /dev/cu.SLAB_USBtoUART 115200
screen /dev/cu.usbserial-A4001nCf 115200
```

The device will have a slightly different name than the above. One way to quickly figure out the name is start typing **screen /dev/cu.** and then press the TAB key to auto-complete to whatever your device is called, before adding 115200 (which is the baud rate) to the end.

You can also try `screen /dev/cu.SLAB* 115200` or `screen /dev/cu.PL2303* 115200` or `screen /dev/cu.usbserial* 115200` To have the shell complete the file name for you

You may need to disable system integrity protection (according to feedback from a tutorial-reader) (https://adafru.it/rlE)

Linux

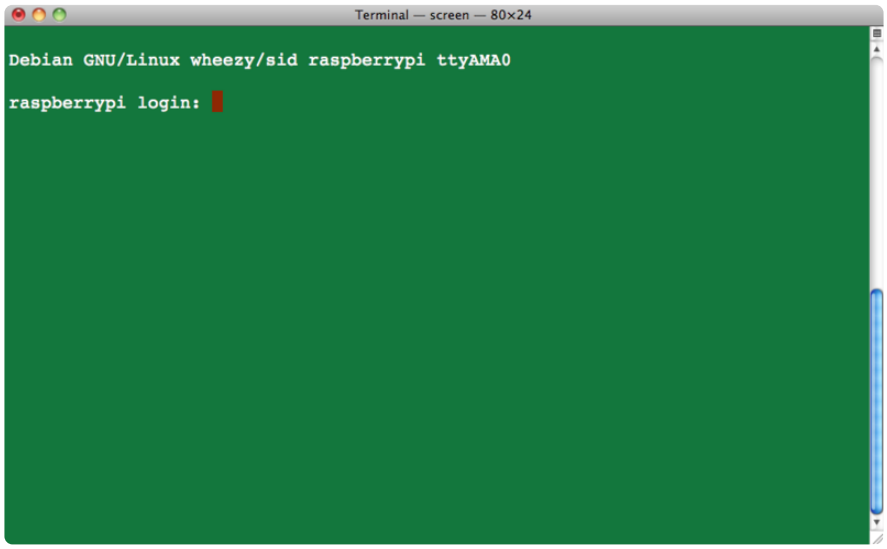
If you are using Linux, its much like the above but often times the device is called /**dev/ttyUSB0** - you may want to run **sudo dmesg** after plugging in and looking for hints on what the device is called.

Then use the command:

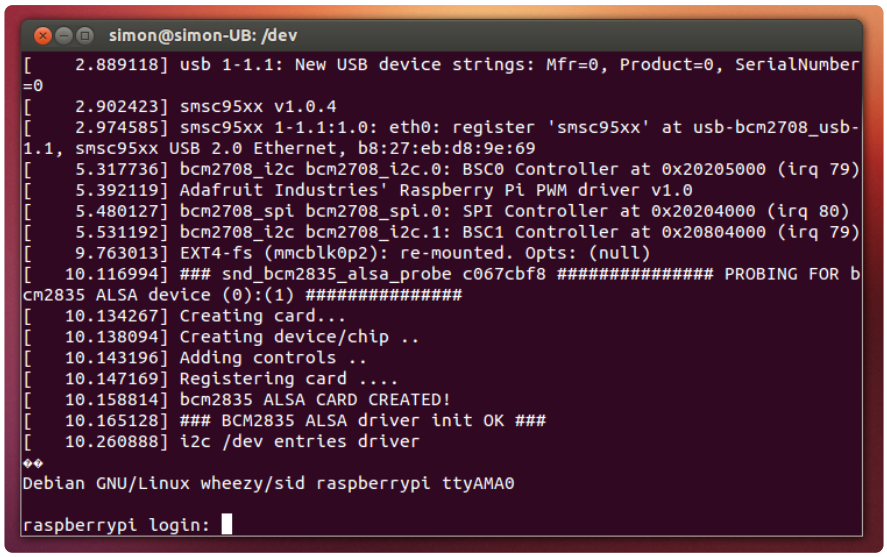
```
sudo screen /dev/ttyUSB0 115200
```

To start communication with the Pi, press ENTER and you should see the login prompt from the Pi.

Here it is running on a Mac.



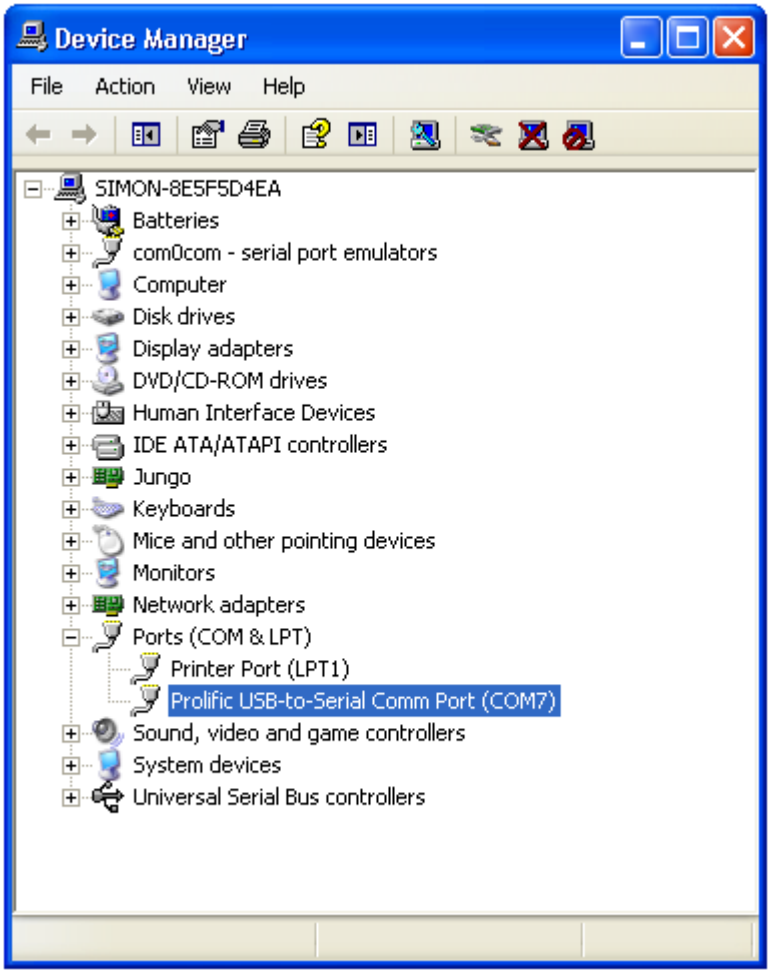
and here is what it looks like in Ubuntu.



Windows

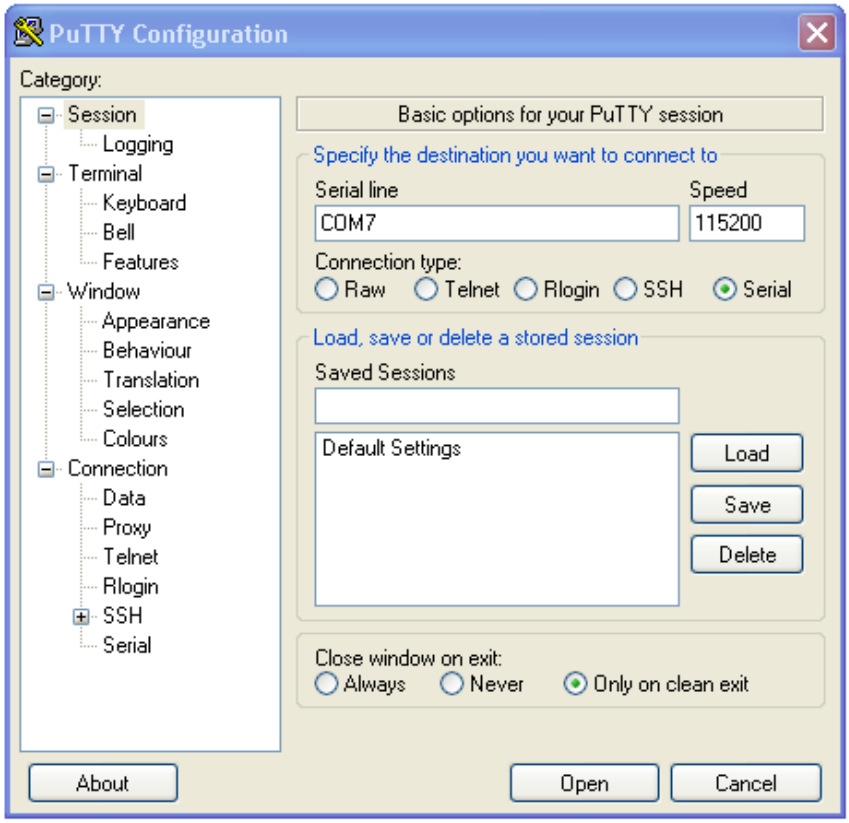
If you are using a PC, then before you start Putty, you need to know which com port is being used for the cable. You can find this by looking in the **Ports** section of the **Windows Device Manager.**

The **Device Manager** is accessible from the **Control Panel** under System.



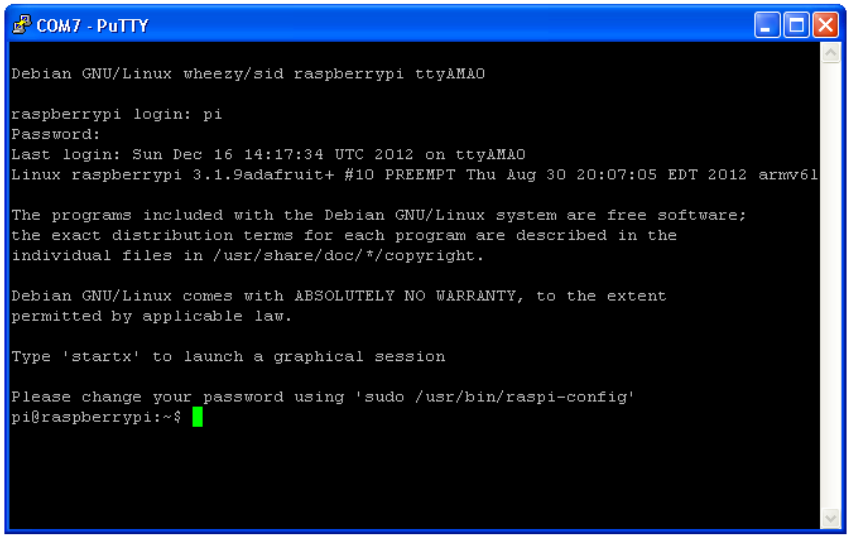
It **isn't** going to be COM1 so never pick that. Chances are its the one right below COM1. It will often say "SiLabs" or "Prolific" or similar next to it. In this case it is **COM7** that is in use.

Now start Putty and you will see a connection window.



Select a connection type of "Serial" from the radio buttons, then set the speed to **115200** and the serial line to **COM7**

Finally click 'Open' to connect. Remember to press ENTER to start communications.



For a new installation of Raspbian, the default username is **pi** and the default password is **raspberry**

Thats it! You are connected and can use the command line to navigate around your Pi.

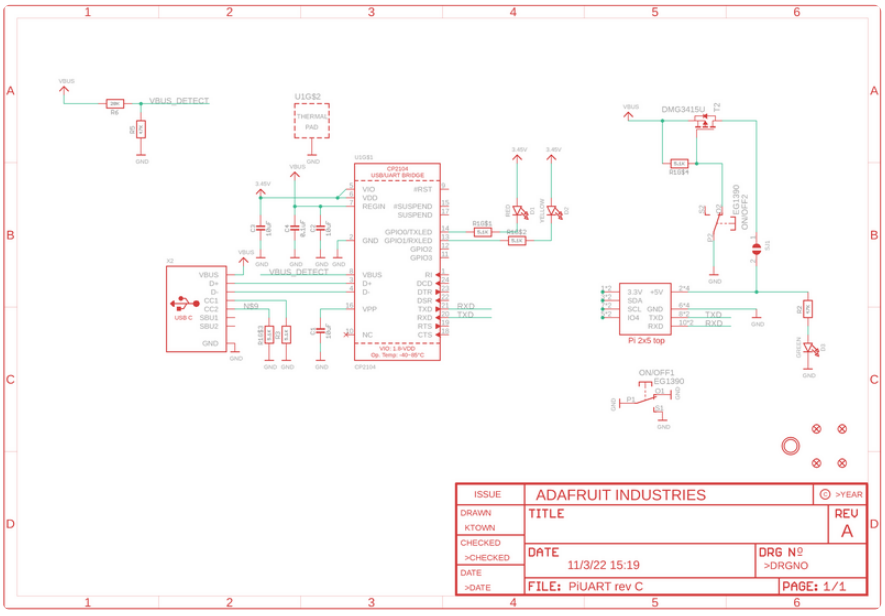
Once you've connected with the console you can set up your Pi to use SSH as another means of connecting to your Pi over your local network.

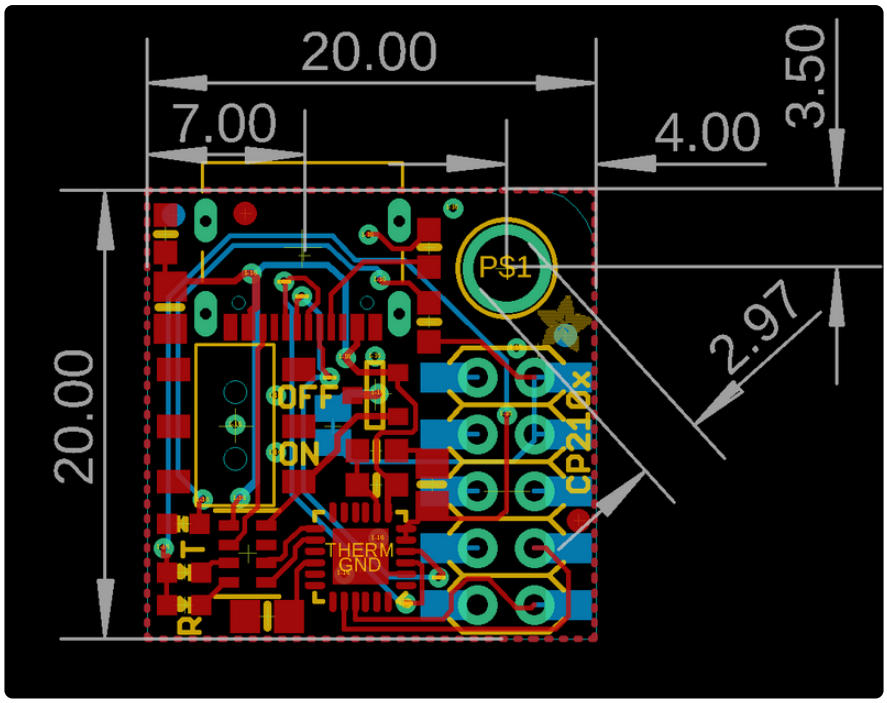
Downloads

Files

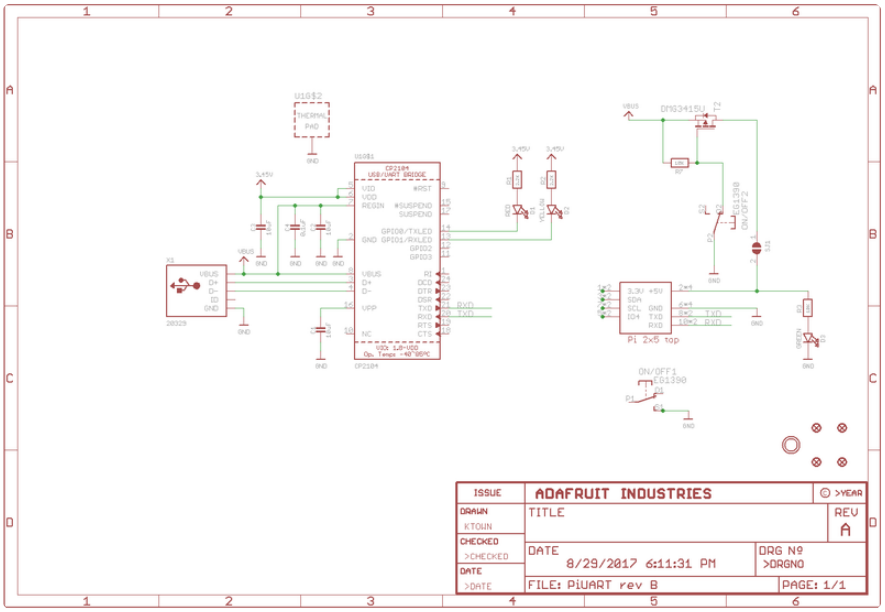
- EagleCAD PCB files on GitHub (https://adafru.it/yle)
- Fritzing object in Adafruit Fritzing library (https://adafru.it/aP3)

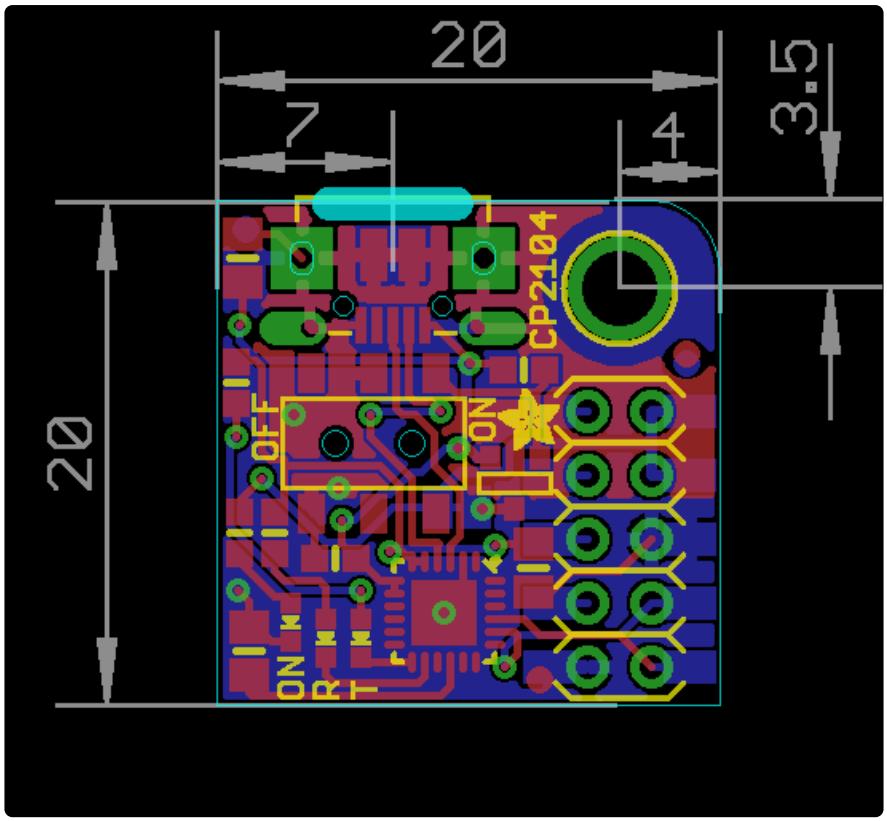
Schematic and Fab Print for USB C Version





Schematic and Fab Print for USB Micro B Version




20
7
4
3.5
20
CP2104
OFF
ON
ON
RST