

January 4, 2021

These are notes to set up a Raspberry pi for either DiSCO or Coral Marco camera. The Raspberry Pi acts as a USB hub between the deck cable/ROV and Snappy and the camera.

1. Set up Micro SD card with Raspberry Pi software
 - a. Download the Lite Pi software from <https://www.raspberrypi.org/software/operating-systems/>
 - b. Use balena Etcher to load onto the card. Download balenaEtcher at <https://www.balena.io/etcher/> (Raspberry Pi provides its own loader which probably works fine)
 - c. Insert MicroSD card into PC and format as Fat32
 - d. Extract zipped software then run balenaEtcher to flash files to microSD card
 - e. Once it is successfully installed then put the microSD card into the slot on the bottom of the Pi.
2. Plug the pi using the microUSB cable to power, plug in keyboard and monitor.
3. Once the system boots up the login and password are: User: pi, Pswd: raspberry
 - a. Login:pi
 - b. Word: raspberry
 - c. To change password use command `passwd` (changed to disco123)
- 4.

Notes from Paul

That is quickest. You can set up wifi once you're ssh'd on the wired. From my notes:

* To add wireless networks, edit

```
sudo nano /etc/wpa_supplicant/wpa_supplicant.conf
```

```
network={
ssid="MBARI WiFi"
psk="rovauvctd"
key_mgmt=WPA-PSK
}
```

and to restart wifi after changes

```
wpa_cli -i wlan0 reconfigure
```

You can always reach the pi via SSH by `raspberrypi.local` (that the MDNS address)

Raspberry Pi controlling IO from command lines

Permissions

In order to use the GPIO ports your user must be a member of the `gpio` group. The `pi` user is a member by default, other users need to be added manually.

```
sudo usermod -a -G gpio <username>
```

Elevate your permissions to root user to allow IO access

```
sudo -i
```

Setup to control pin as output

Substitute 23 in the following commands for your GPIO number (GPIO, not pin number)

```
echo "23" > /sys/class/gpio/export  
echo "out" > /sys/class/gpio/gpio23/direction
```

Control Output State

```
echo "1" > /sys/class/gpio/gpio23/value  
echo "0" > /sys/class/gpio/gpio23/value
```

Setup to read pin as an input

Substitute 23 in the following commands for your GPIO number (GPIO, not pin number)

```
echo "23" > /sys/class/gpio/export  
echo "in" > /sys/class/gpio/gpio23/direction
```

Read its state

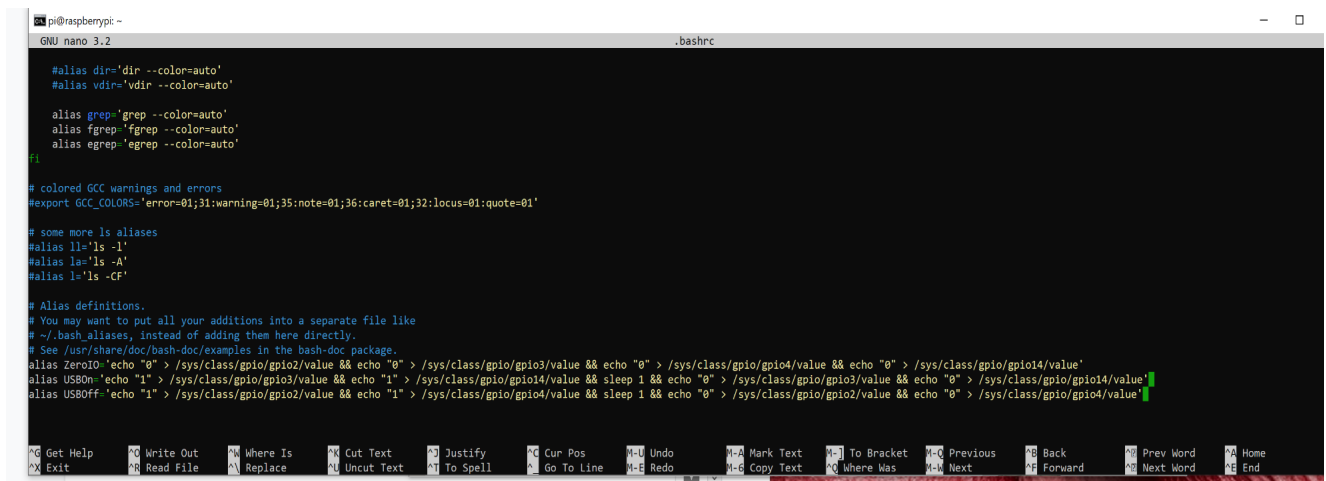
```
cat /sys/class/gpio/gpio23/value
```

To Release A Pin Afterwards

```
echo "23" > /sys/class/gpio/unexport
```

To set up GPIO at start up edit the rc.local file in /etc/:

1. cd /etc/
2. \$sudo nano rc.local
3. Add the following lines: (example for GPIO pin 2)
 - a. echo "2" > /sys/class/gpio/export
 - b. echo "out" > /sys/class/gpio/gpio2/direction
 - c. echo "0" > /sys/class/gpio/gpio2/value
 - d. Repeat for each IO pin used
4. Next step is to set aliases for the commands to Connect USB, and Disconnect USB
 - a. Go to home folder by typing in cd at prompt
 - b. Edit file .bashrc (will only appear when doing an "ls -la" - shows hidden files)
 - c. sudo nano .bashrc



```
pi@raspberrypi ~  
GNU nano 3.2 .bashrc  
  
#alias dir='dir --color=auto'  
#alias vdir='vdir --color=auto'  
  
alias grep='grep --color=auto'  
alias fgrep='fgrep --color=auto'  
alias egrep='egrep --color=auto'  
fi  
  
# colored GCC warnings and errors  
#export GCC_COLORS='error=01;31:warning=01;35:note=01;36:caret=01;32:locus=01:quote=01'  
  
# some more ls aliases  
#alias ll='ls -l'  
#alias la='ls -A'  
#alias l='ls -CF'  
  
# Alias definitions.  
# You may want to put all your additions into a separate file like  
# ~/.bash_aliases, instead of adding them here directly.  
# See /usr/share/doc/bash-doc/examples in the bash-doc package.  
  
alias ZeroIO="echo "0" > /sys/class/gpio/gpio2/value && echo "0" > /sys/class/gpio/gpio4/value && echo "0" > /sys/class/gpio/gpio14/value"  
alias USBOn="echo "1" > /sys/class/gpio/gpio3/value && echo "1" > /sys/class/gpio/gpio14/value && sleep 1 && echo "0" > /sys/class/gpio/gpio3/value && echo "0" > /sys/class/gpio/gpio14/value"  
alias USBOff="echo "1" > /sys/class/gpio/gpio2/value && echo "1" > /sys/class/gpio/gpio4/value && sleep 1 && echo "0" > /sys/class/gpio/gpio2/value && echo "0" > /sys/class/gpio/gpio4/value"  
  
^G Get Help  ^O Write Out  ^W Where Is  ^C Cut Text   ^J Justify    ^K Cur Pos   ^U Undo      ^M Mark Text  ^] To Bracket ^_ Previous  ^B Back      ^P Prev Word ^H Home  
^X Exit      ^R Read File  ^E Replace   ^T Uncut Text ^_ To Spell  ^G Go To Line ^R Redo      ^G Copy Text ^Q Where Was ^N Next      ^F Forward   ^N Next Word ^E End
```

- d. At the end of the files add:
- e. Three new functions ZeroIO, USBOn, USBOff
- f.