Deployment Procedure

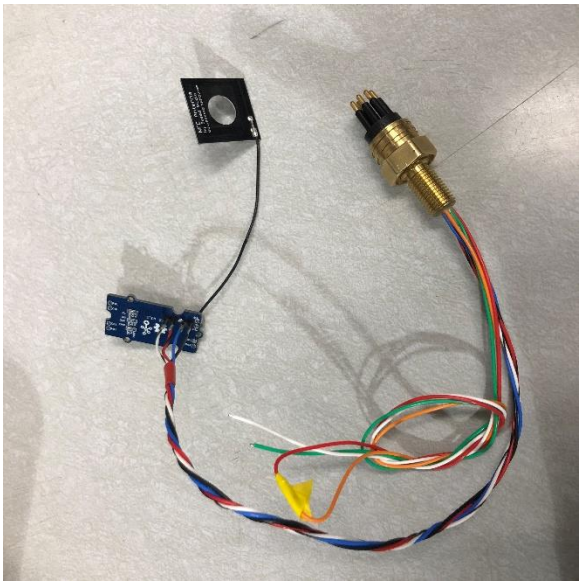
Phase 1: setting up the deployment

1. Make sure that the RPI is powered on
2. Plug in the RFID Reader dongle
3. The data from the previous deployment will have been uploaded
4. When the blue light blinks, tap the RFID on the filter onto the antenna
5. By now, the log from the previous deployment will have been uploaded
6. Wait until that green light blinks
7. Refresh the website, then the new deployment with corresponding RFID UID will appear
8. Click on “edit” next to the UID
9. Follow the instruction and specify the deployment details
10. Click “Submit” button at the bottom
11. Wait until the green light stops blinking. At this point, the sampler is properly programmed!
12. Pull out the RFID Reader dongle and wait until deployment

Phase 2: deployment

1. Make sure that the RPI is powered on
2. Plug in the pump unit and wait until the green light is on
3. Deploy!

The pump unit

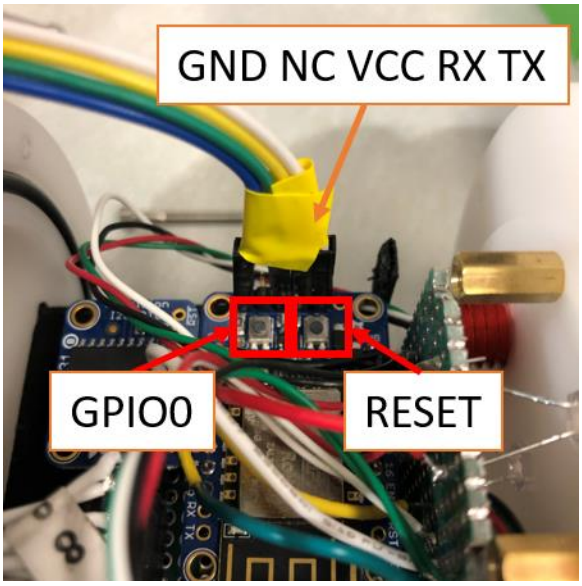


RFID reader dongle

Notes

- When the RFID reader cannot be properly initialized, which happens quite frequently, it restarts the entire system. It is fine, but you will notice the repeated sequence of the following light actions: blue sparks (turned on), red blinks (set-up), then turn off (failed reader initialization). It will power-cycle until blue light blinks (reader initialized), so please be patient! Unfortunately, we are stuck with this reader for now.
- To re-charge the battery, please plug in the recharging dongle.
- When all three LEDs blink together, something has gone awry in the code as it was setting things up (e.g. I2C devices or WiFi). In this case, please power-cycle by re-plugging in the dongle. The failure will be logged in /log.txt, which will be uploaded the next time it connects to the WiFi.
- Please be aware that there will be some water that flows as the device is primed in water. Hence, using distilled water first is recommended…!

Appendix 1: Programming the ESP8266 HUZZAH



Clone the github repository:
https://github.com/futureoceanlab/eDNA_Sampler.git

Please install Arduino IDE and required libraries mentioned in the github.

Upon plugging in the serial cables as shown above, you'll need to put the board into bootload mode. You'll have to do this before each upload. Each button is labeled in the image above.

1. Hold down the **GPIO0** button, the red LED will be lit
2. While holding down **GPIO0**, click the **RESET** button
3. Release **RESET**, then release **GPIO0**
4. When you release the RESET button, the red LED will be lit dimly, this means it's ready to bootload

Now you can upload the code using Arduino IDE

Appendix 2: Programming the webserver (RPI)

Clone the github repository: https://github.com/futureoceanlab/eDNA_Sampler.git

Modify the first line of run_webserver.sh to match the location of the cloned git repository.

Add a line at th end of the following file /etc/rc.local
“sudo bash /home/pi/eDNA_Sampler/run_webserver.sh &”
This should automatically run webserver when the RPI turns on

To set up the RPI to host its own WiFi, follow the instruction until before “add routing and masquerade” section in this link: https://www.raspberrypi.org/documentation/configuration/wireless/access-point.md

ESP8266’s are programmed to look for 192.168.4.1:5000, which is the ip-address and ports of the RPI webserver to access the web application. If that is different, ESP8266 will have to be re-programmed.

eDNA Sampler Checklist

Phase 1: Setting up the deployment

	1	Make sure that the RPI is powered on
	2	Plug in the RFID reader dongle
	3	When the blue light blinks, tap the RFID tag on the filter onto the reader antenna
	4	Wait until the green light blinks
	5	Refresh the website
	6	Click on “edit” next to the new UID added
	7	Follow the instruction and specify the deployment details
	8	Click on “submit” button
	9	Wait until the green light stops blinking
	10	Pull out the RFID reader dongle

Phase 2: Deployment

	1	Make sure that the RPI is on
	2	Plug in the pump unit
	3	Wait until the green light is on
	4	Deploy!