

GO-POD NON-ROV DEVICE

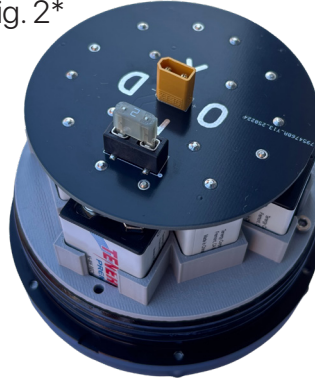
GO-POD (Peristaltic Ocean Device) is a *GO-BGC*-inspired float engineered to gather vital ocean data and vertically profile to targeted depths.

GO-POD is separated into two sections. In the lower section, eight 9V 250mAH NI-MH batteries (Figure 1) are routed in parallel via the Power Board (Figure 2). This battery pack can discharge 2A or less ($8 \times 250\text{mAh} = 2\text{Ah}$) of current safely. To prevent damage to the electronics, these batteries are routed through a 2A fuse on their common ground, less than 5 cm from all the battery terminals. Additionally, a 2.54 cm pressure relief cork is used to ensure that in the unlikely event of a battery failure, pressure will not accumulate.

Fig. 1*



Fig. 2*



FLA Table of Measurements

Condition	Amperage (A)
Waiting	0.2
Buoyance change	1.6

Fuse value selected from measurements: 2A

The upper compartment houses the buoyancy engine, electronics, and bag reservoir. At the center of the electronics system is an ESP32. This microcontroller is connected to a daughter board (Figure 4) that enables it to drive the peristaltic pump, which pulls in water into the bag to sink and pushes out seawater to float. This daughter board also enables the ESP32 to interface with the depth sensor.

To begin profiling, the control station sends a command through WiFi to a web server on the ESP32. When the ESP32 receives the command, it begins profiling to the targeted depth of 2.5 m. To maintain a depth of 2.5 m, a PID program is used to determine the pump's direction. When *GO-POD* resurfaces, the control station reconnects with the ESP32's web server, retrieves the collected depth data, and generates a graph for analysis.

Antenna

Depth Sensor

ESP32 &
Daughter Board

Inlet Tube

Peristaltic
Pump

Water Bag

Power Board

Ballast

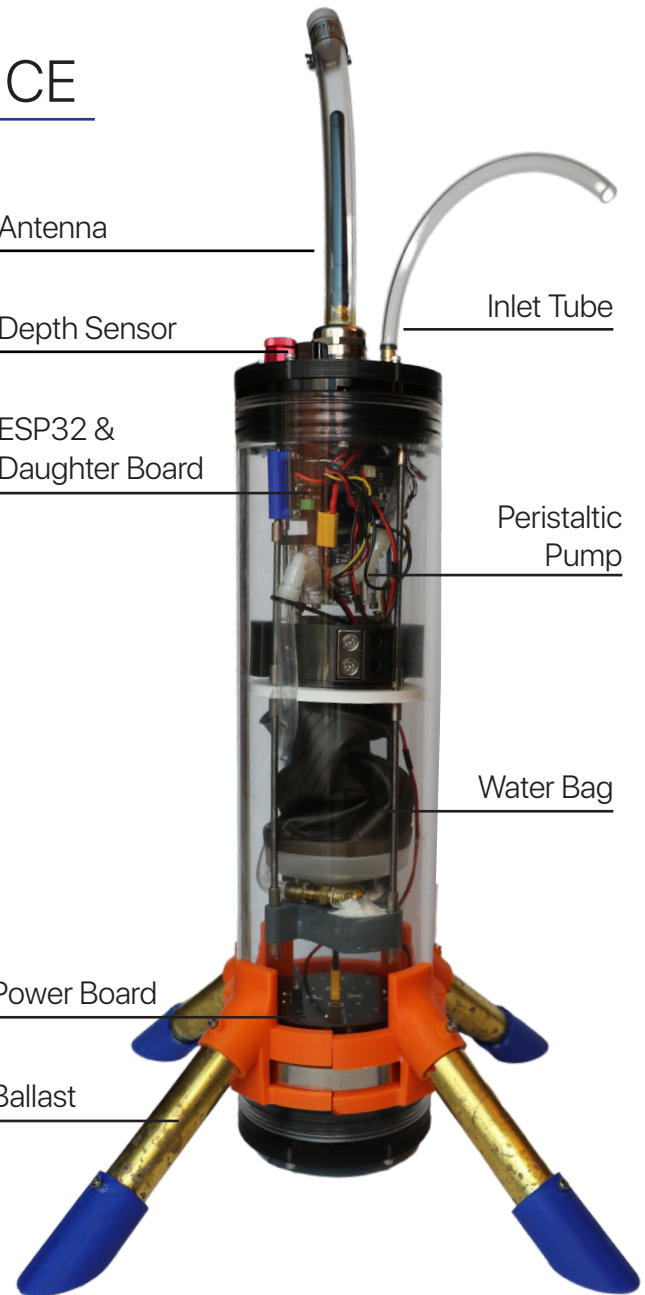


Figure 3*: *GO-POD*.

* Photos with asterisk are taken by ROVOTICS.

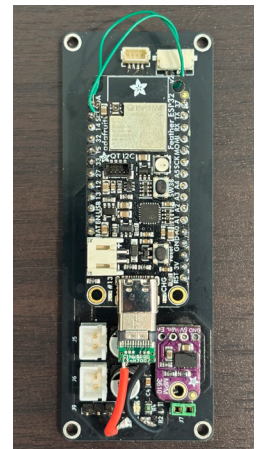


Figure 4*: ESP32
on Daughter Board.

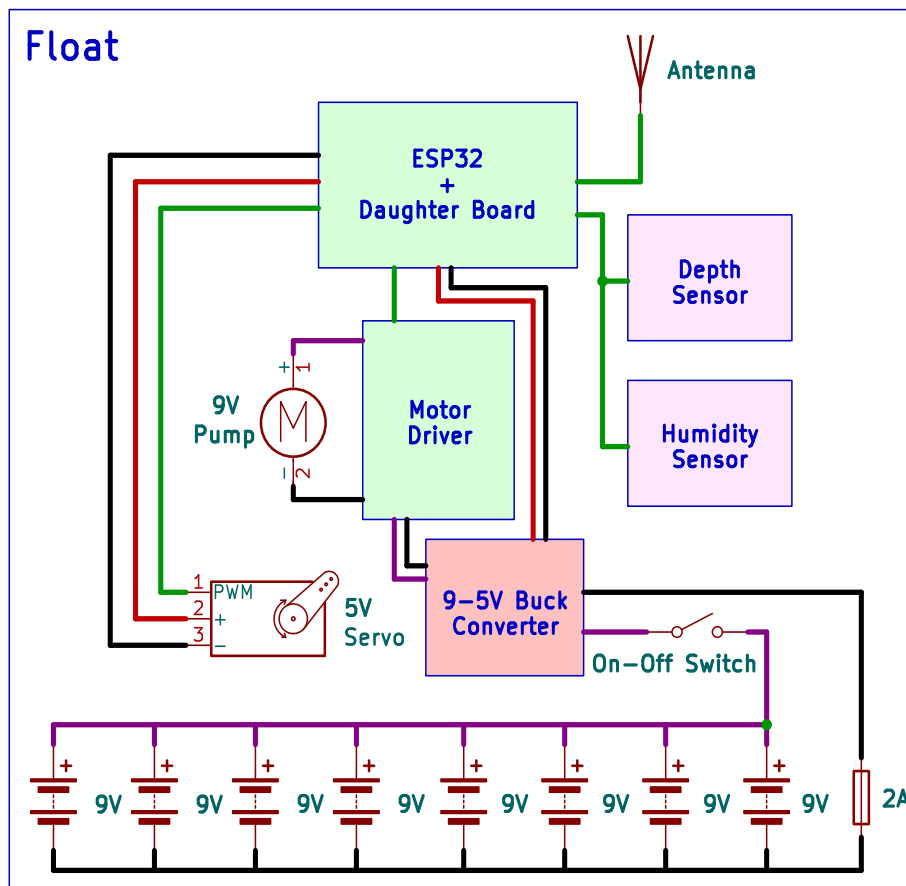
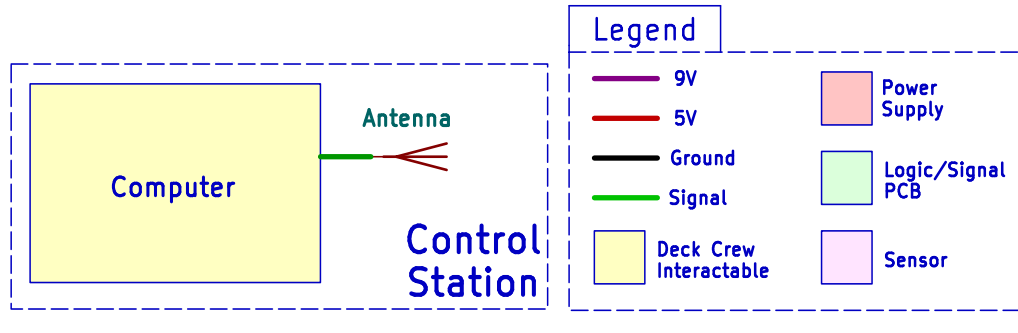
SID NON-ROV DEVICE

FLA Measurements

Waiting mode: 0.2A

Buoyancy change mode: 1.6A

Fuse value selected: 2A



ROVOTICS

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