

Mechanical:

Arlo's buoyancy engine consists of a set of four syringes which are actuated by a stepper motor. By expelling or intaking water it is able to control its buoyancy. It utilizes a Blue Robotics enclosure that will pop open if pressure were to build up inside the housing.

Additionally Arlo has four detachable legs secured onto the tube via a clamp ring that provide adjustable levels of ballast to control how it descends.

Electrical:

Arlo operates using a ESP32-C3 which allows it to run a stepper driver, receive pressure data, and communicate it's depth over the WiFi antenna. This data is communicated back to another ESP on the surface connected into a laptop to display the data.

The power source is 8 1.5V AA batteries wired in series in a store bought battery pack in order to provide the required 12V for the stepper motor and 1.1A for the overall circuit. Inline with the batteries positive terminal is a 2A fuse based on a 1.5 safety factor.

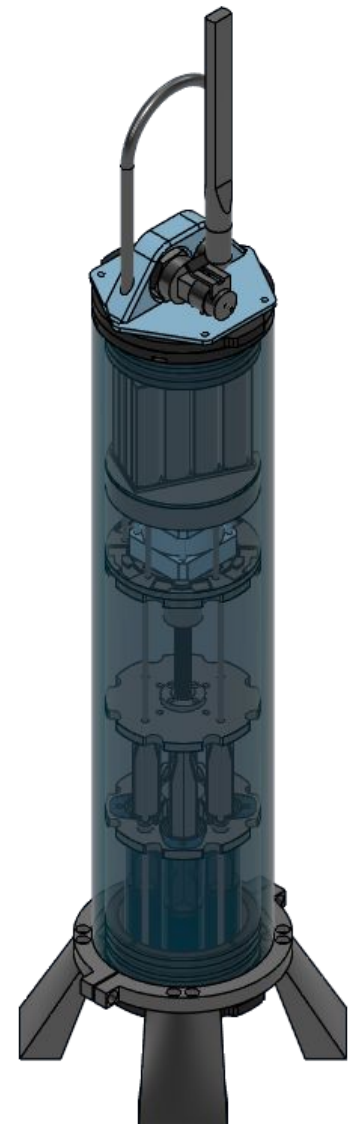


Fig 1. Arlo Model

Fuse Calculation	
Profiling	Waiting
1.1 A	0.31 A

Fig 2. Fuse Calculations



Fig 3. Battery Pack and 2A Fuse

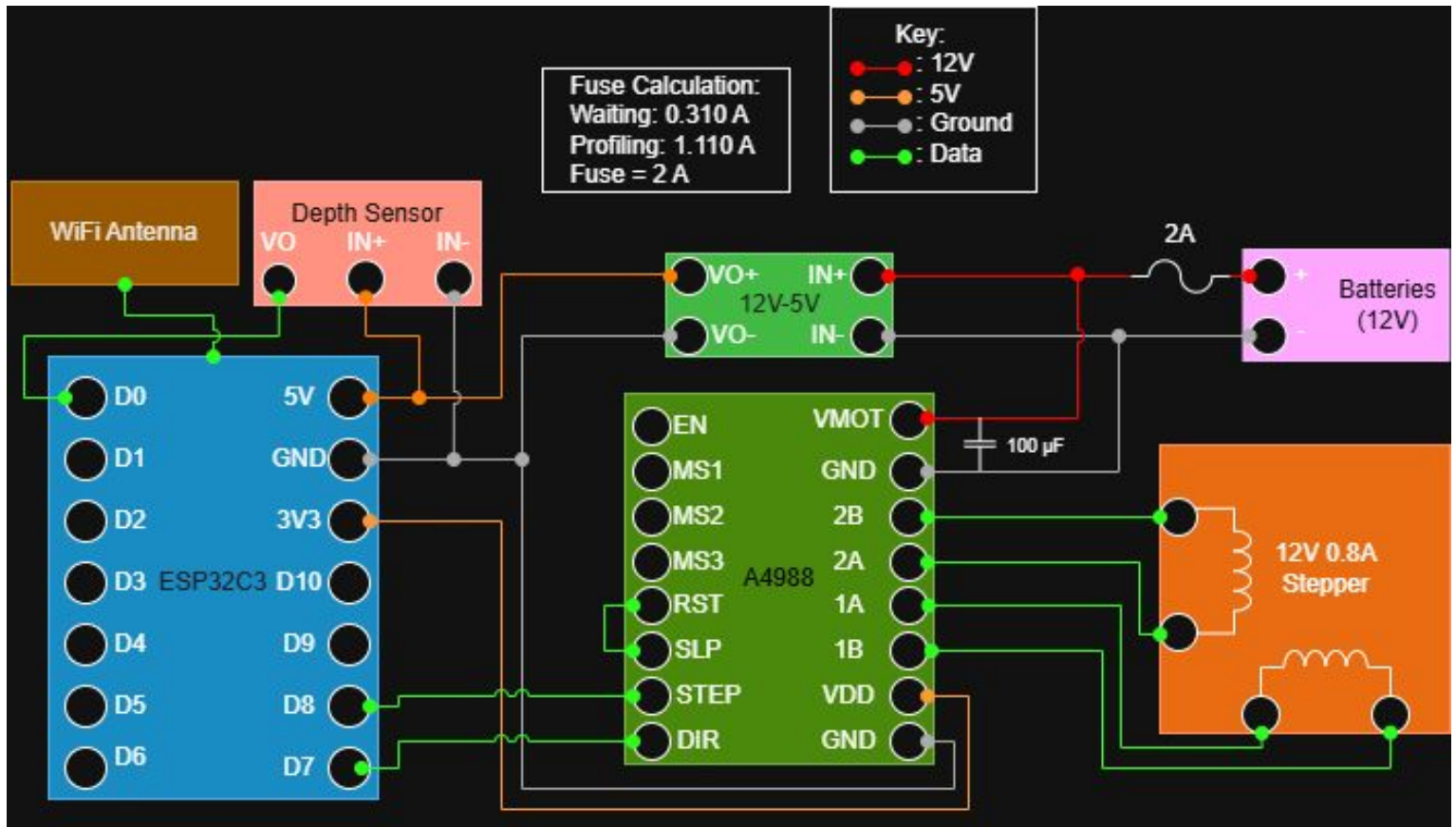


Fig 4. Non ROV Device SID