



PROFILING FLOAT

Our profiling float used in task 3 *MATE Floats!* Uses a buoyancy engine to complete two vertical profiles while transmitting the Universal Coordinated Time to one of the laptops on the surface side of the pool. Four AAA batteries are used inside the enclosure and are secured by a container for four AAA batteries as shown in Fig. 1 and are further secured by wrapping with electrical tape. A 7.5A fuse is attached within 5 cm of the battery pack as shown in Fig. 2. After this point, power goes to switches and is then distributed to the Arduino Nano and MKR WAN 1310 which control the buoyancy engine and radio communication respectively. The enclosure used is a Blue Robotics 3" enclosure with standard end caps which act as pressure relief plugs. These are >2.5cm in diameter as shown in Fig. 3 and will pop off of the enclosure if the pressure inside the enclosure exceeds exterior pressure.



Fig. 1: Four AAA batteries secured - Makenna Reilly



Fig. 2: Fuse within 5 cm of power - Makenna Reilly

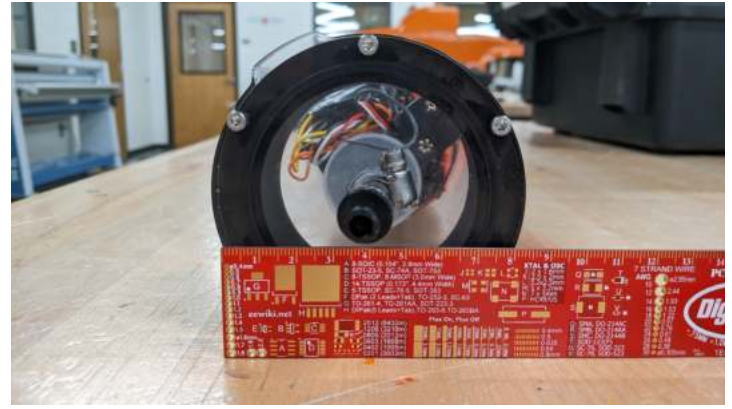


Fig. 3: End cap/pressure relief - Makenna Reilly



Fig. 4: Profiling float - Makenna Reilly



FRY CONTAINER

The fry container is used in task 2.5 *Release the fry* to transport and release the three simulated fish. It utilizes an electromagnet to control the opening and closing of the device, ensuring that the fish can only escape when it is actuated. It utilizes a 12V power source, and can be connected to the topside control box or the separately provided power supply. The SID for this device assumes that the device is connected to the separately provided power supply. Power passes through a 3A fuse before reaching the electromagnet for safety purposes. Strain on the wires is relieved both by the string that is shorter than both the wires going to the surface and the hot glue before it enters the fully epoxied electromagnet.

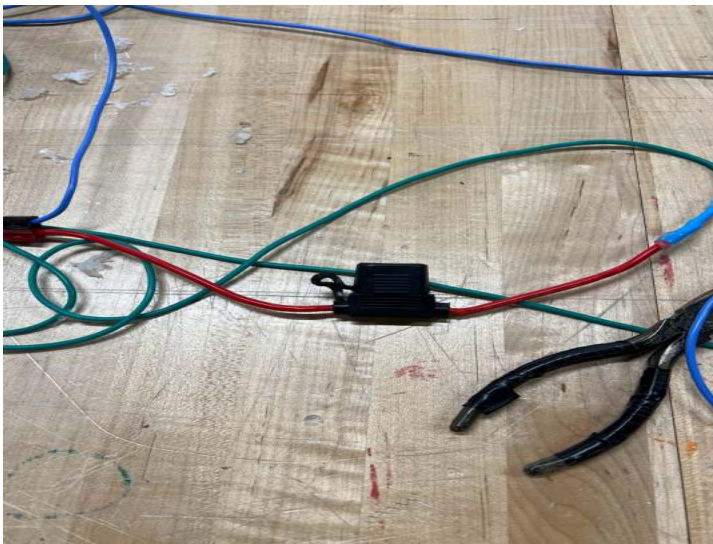


Fig. 5: Fuse after power attachment - Violet Brockmann

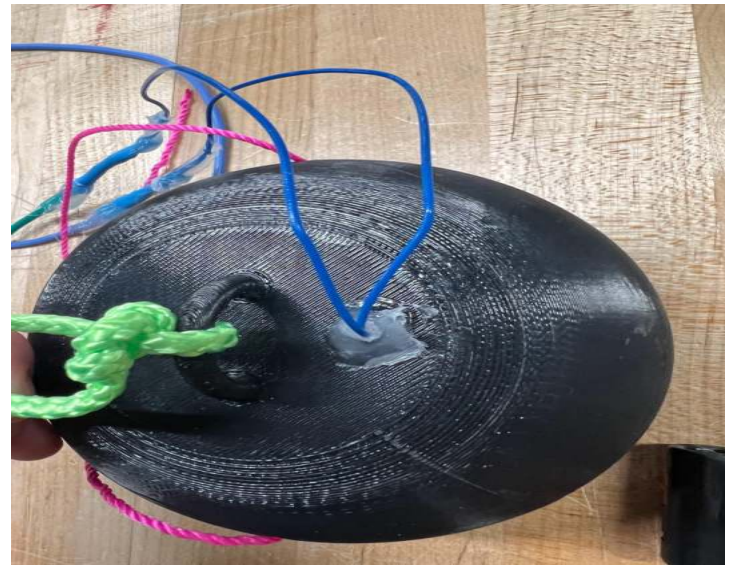


Fig. 6: Hot glue strain relief - Violet Brockmann

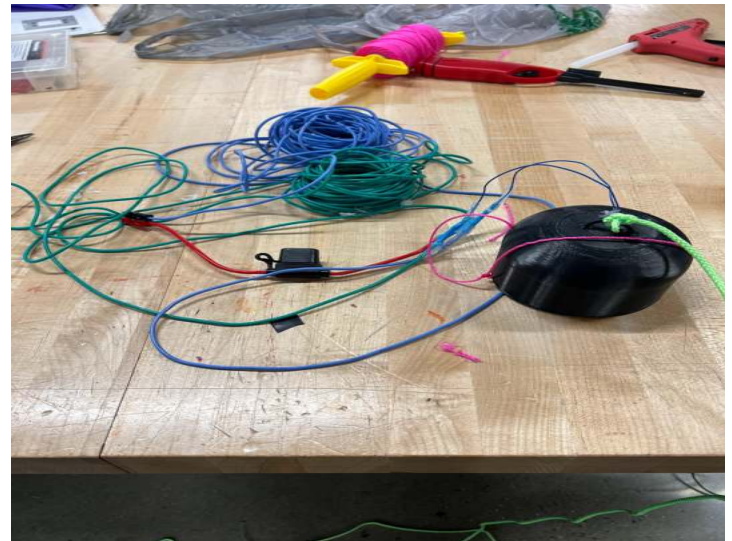


Fig. 7: Fish fry assembly - Violet Brockmann