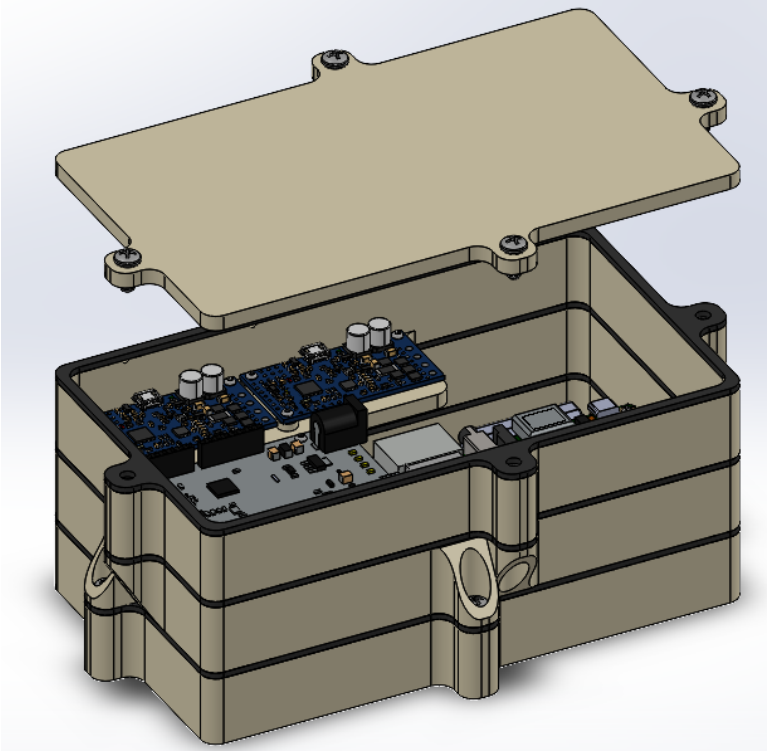
Clear Blue Sea

Cleansing the Oceans of Plastic Pollution

Enclosure for Aquatic Testing of Micro-Fred Electronics & Software



Designed By: Tony Korol

Project: Software Development Prototype

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Requirements:

1. Enclosure must prevent leakage into the interior while fully submerged
2. Enclosure must accommodate power bank, batteries, and electronics
3. Enclosure must allow access to all wiring and pins
4. Enclosure must be compact within 8” x 8” x 8” and weigh less than 1/3 lb
5. Enclosure must be simple to manufacture and assemble
6. Enclosure must be inexpensive to produce

Design Abstract:

The first consideration in designing this enclosure was the method of production. Given the size of the enclosure and the weight constraint, the most convenient option is to manufacture this enclosure from PLA printed material (fig 1). Because of this decision, the design of the enclosure is mostly planar and rounded at the edges for efficient printing. The next objective was to orient the electronics within a 8” cubed area without accessibility issues. It was determined that a layered system would maximize usable volume while limiting outer volume and allowing access to all components (fig 2). All outer fasteners are M4 bolts with M4 heat-inserts for simple interface with hulls (fig 3). Placing the fasteners outside of the enclosure simplifies assembly and isolates seams from the body of the enclosure. To address faults in printing, rubber gaskets complete the seal between each layer.

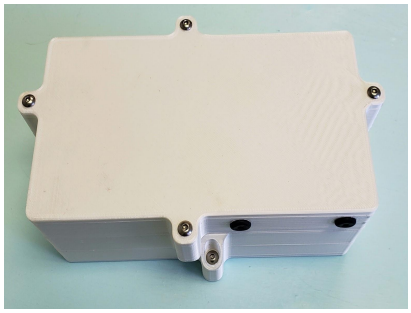

Fig 1

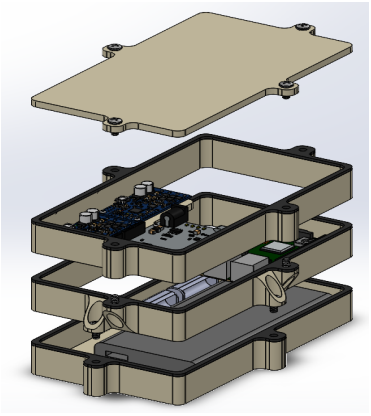

fig 2

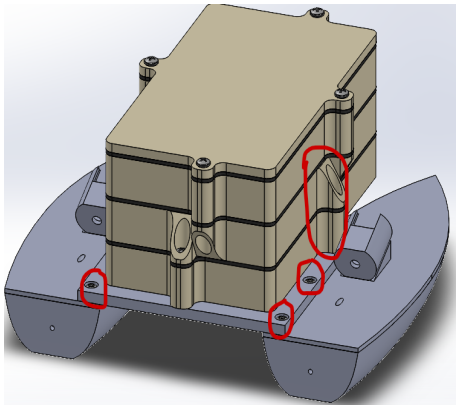

fig 3