

Design

Ponyo is Fish Logic's second vertical profiling float. Within its acrylic watertight housing, an array of electronics drives the buoyancy engine which gives Ponyo the ability to complete the 2 vertical profiles and transceive data wirelessly to the mission station. These electronics are divided into the buoyancy engine, and the detection system. The buoyancy engine consists of a 12-volt peristalsis pump and a sports drinking bag serving as a bladder. The system is waterproofed with silicon tubing, forming a closed water loop. The detection system consists of 2 hall-effect sensors. A magnet suspended in water by floats will activate a hall-effect sensor when the float reaches the water surface. Similarly, a magnet will be pushed towards another hall-effect sensor, activating it when the float reaches the bottom of the pool. The overall dimension of Ponyo is 90mm diameter x 790mm height.

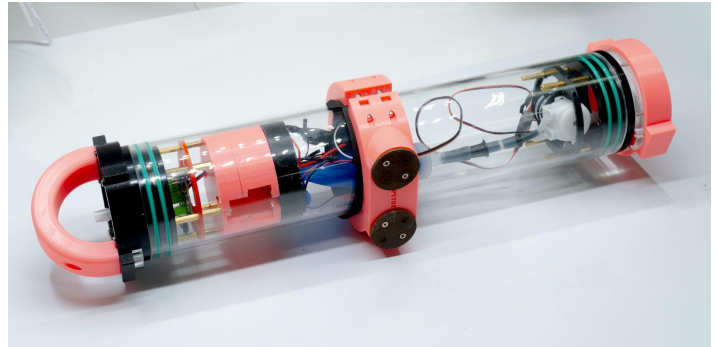


Figure Picture of Float

Power

The Ponyo uses 16 AA alkaline batteries for its power source as it is able to be contained in the tight space the canister provides. The batteries are divided into 2 battery boxes, each with 8 cells connected in series to provide a total voltage of 12V. The battery boxes are connected in parallel, yielding a 4 ampere-hour capacity. The batteries are secured into brass pillars attached to the internal frame. A 3A fuse is installed under the frame and behind the flange.



Figure Battery Box

Safety Measures

O-rings are used to install flanges and to waterproof the piston inside the canister, no screws are used to keep the flange connected to the canister. In scenarios where the internal pressure of the canister exceeds the pressure outside, the flanges will pop out of the canister. Pressure relief plugs or pressure release valves are not used in the Ponyo.

External Connections

A waterproof socket incorporated into the acrylic cap is connected to an external antenna, allowing the Ponyo to transmit and receive data from the mission station reliably when it reaches the water surface. This connector is closed with a waterproof cap when not in use.



Figure Electrical System