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Vertical profiling float

The vertical float (Figure 1), a sophisticated system, operates through two principal modules: the buoyancy and the transmission. The buoyancy module incorporates a water inlet located at the base of the float, a rubble tube, a peristaltic pump, and a syringe (Figure 2). The pump, energized by two battery cases, each housing eight AA alkaline batteries, delivers high voltage and current to the motor, thereby generating a potent suction force. The buoyancy module utilizes a motor to regulate the pump, thereby controlling buoyancy. The output power is governed by the Pulse Width Modulation (PWM) signal generated by the Arduino Board. When the actuator ascends, water is drawn into the syringe due to the negative pressure differential, and conversely, it is expelled when the actuator descends. Approximately 85 ml of water is required to sink the float.

Figure1 Vertical profiling float

DIMENSION:
Height: 55 cm
Diameter: 9 cm
Weight: 4.21 kg

Figure2 peristaltic pump and syringe

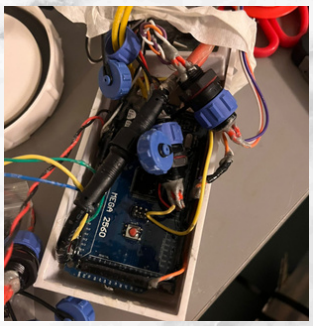
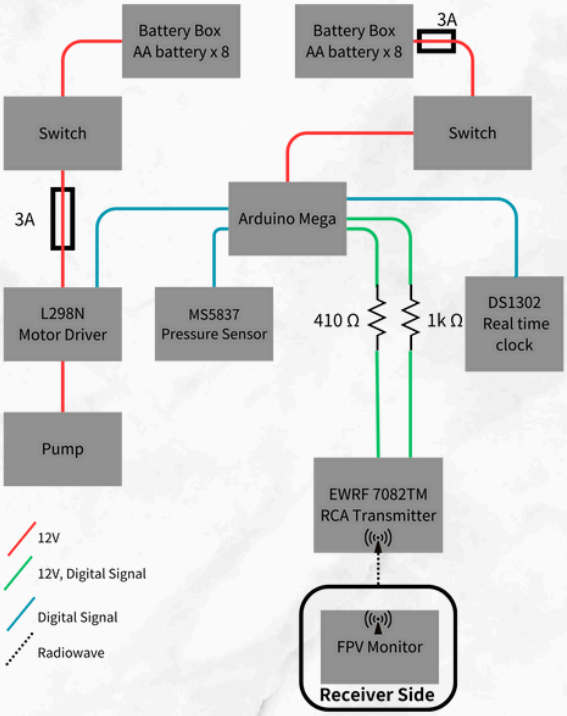


Figure3 Arduino Mega board

Float System Interconnection Diagram



The Arduino Mega board generates a Pulse Width Modulation (PWM) signal, enabling precise control over the output power and direction of the peristaltic pump. This facilitates the careful management of water intake in the syringe, thus allowing the float to ascend or descend effortlessly. The buoyancy module's innovative design capitalizes on the density disparity between the float and the ambient water to stabilize the float's position.