

Vertical Profiling Float

Vertical Profiling systems are devices designed and produced to travel vertically through open waters and collect data at different depths. The Vertical Profiling system for this year's MATE ROV competition is a non-ROV device required to autonomously profile the height of the pool twice, similar to previous challenges, but is now also required to communicate with the base team before and after each profile.

The primary operation of the vertical profiler (Figure 1, Figure 2) is the variable buoyancy engine, which consists of an air bladder driven by a linear actuator, that is controlled by an Arduino Mega. The system is powered by a 12 V battery pack, attached to a 7.5 A fuse. Communication between the profiler and the base is achieved with a Bluetooth antenna connected to the Arduino. The Arduino is then connected to an android phone, and operated with an .APK program on the phone. The shell of the profiler is built with clear plastic tubing, with caps on either end of the tube. The electronics are held in place with a 3D printed interior frame.

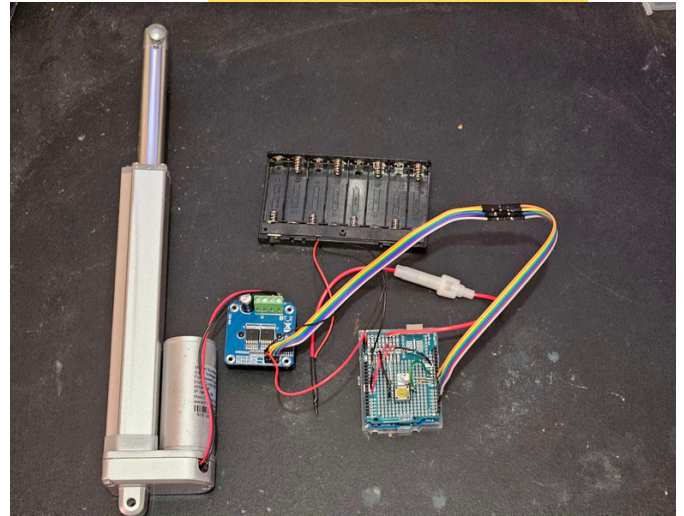


Figure 1. Vertical Profiler components

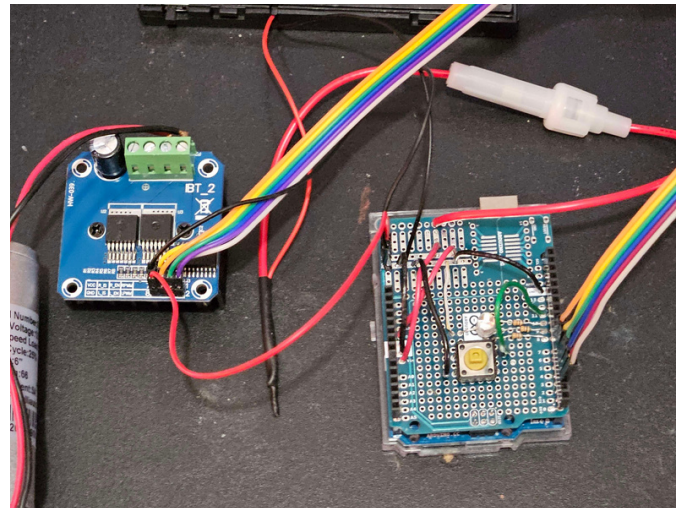


Figure 2. Vertical Profiler electronics

