

The Husky ROVER has the capability to deploy a vertical profiling float which is designed to complete multiple vertical profiles to monitor circulation, chemistry, biology, and overall ocean health. This profiler has a goal of being simple, and power efficient. The profiler runs off a single 9V battery, which is controlled by a power switch inside of the profiler, this is then connected to a 3 amp fuse, which is placed in order to prevent any overloading and damage to other components in case of any electrical errors. This is then connected to a 9 Volt to 5 Volt USB step down converter, which then plugs into the NodeMCU ESP8266 development module, using a Micro-USB cable. The ESP8266 is an amazing alternative to other boards such as an arduino due to its cost-effectiveness, and ability to connect to a wireless network connection and send POST methods, which is the main method that the profiler uses to communicate with the control system and deck crew. The ESP8266 then takes advantage of a DS3231 RTC Module, which has the time in Universal Coordinated Time (UTC) stored, in order for the ESP8266 to obtain the time. The ESP8266 is also connected to a FS90R servo motor, which is mounted to a custom linear actuator mount which controls a 60 mL syringe. This syringe is the buoyancy engine of the system, as the profiler is positively buoyant, it will intake water, then causing the profiler to sink. After the profiler reaches the top or bottom of the pool, will then send a POST request to the control interface on deck with the time in UTC, along with our company number. This process is then repeated twice in order to complete two entire vertical profilers, which in turn completes the task.