OCTOBOT'S
Kwazii

COMPONENTS

1. RF Transceiver Antenna
2. PHT Sensor
3. 12V Battery Pack
4. Air Pump
5. 3-Way Air Valve
6. Analog Pressure Sensor
7. Bladder
8. 3D Printed Bladder Cage

QUICK SPECS

- Height: 71.9 cm
- Diameter (with Cage): 17.6 cm
- Mass: 2.70 kg

The Lancer Lumineers' Kwazii (Fig. 1) is a vertical profiling float designed to complete two full descent-ascent cycles in a body of water. Through these cycles, it collects and transmits essential data—such as travel time, depth, and water temperature—to the Lancer mission station.

Kwazii is powered by a 12V battery pack connected to a 5V regulator board, which supplies power to key components including an Arduino Nano, a real-time clock (RTC) module, an analog pressure sensor, a pressure-humidity-temperature (PHT) sensor, and an RF transceiver antenna. A separate driver board supplies power to a 3-way air valve and air pump. To protect the system, a 2A fuse is placed between the battery and the 12V distribution board.

The float employs a pump-bladder buoyancy system for underwater navigation. During descent, the air pump remains inactive, allowing Kwazii to sink under its own weight. As it descends, the PHT sensor records temperature, pressure, and humidity data, which are stored in the EEPROM alongside timestamps from the RTC. Upon reaching the target depth, the system activates the air pump to inflate the bladder, increasing buoyancy and initiating ascent. Once at the surface, Kwazii transmits the stored data to the Lancer mission station via its radio transceiver.