



An open source and low-tech CTD to calibrate

Type of the project

Semester project

Laboratory

Smart Environmental Sensing in Extreme Environnements – SENSE LAB

Professor

Professor Jérôme Chappelaz

Supervisor

Professor Jérôme Chappelaz

Contact person at Sailowtech

Alexandre Tellier, Bénédicte Lunven

Student

To be determined

Context

Sailowtech is an association and a MAKE project that aims to raise awareness of environmental issues, especially those related to aquatic environments. It promotes frugal and citizen field science, open source science and a low-tech approach. To achieve this, Sailowtech organises scientific sailing expeditions in lakes, seas and oceans to discover field science, test protocols and devices built by students during the semester.

One of the current projects is the construction of a CTD (Conductivity Temperature Depth) probe, which measures the electrical conductivity, temperature and depth of water. This instrument is used as the basis for all oceanographic research and provides important metadata. Our probe is designed to be low-tech, open source, sustainable and useful.

Description of the project

The project includes a series of laboratory tests to calibrate the different sensors and compare their performance. The probe will then be tested on the Explore platform on the lake at Pully.

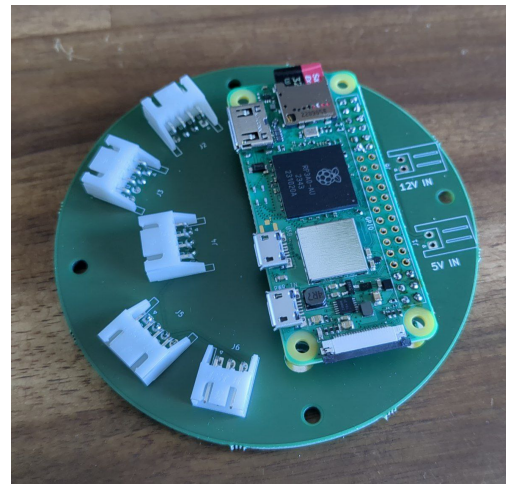
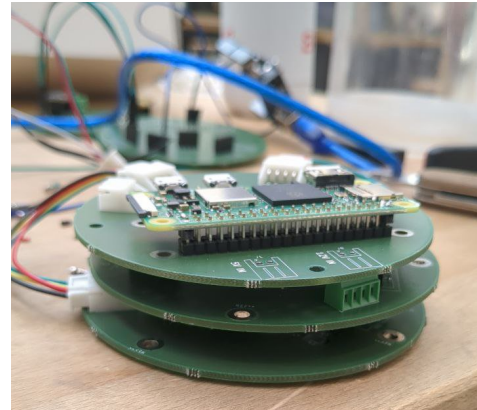
This project is recommended for students with a basic knowledge of electronics and programming. They will be supervised by the student who built the probe, but a good degree of autonomy is required.



This project has been set up in partnership with the SenseLab laboratory of Professor Jérôme Chappellaz. The student will have to travel to Sion at least 6 times during the semester for calibration. The other phases of the project can be carried out on the EPFL campus in Lausanne. 4 credits are required for this project.

Overview of the CTD :

Structure and PCBs:





Indicative calendar

TBD

Deliverables

1. An assessment of the state-of-the-art of CTD.
2. Calibrated CTD sensors that can be used on a future Sailowtech cruise. Results of the tests.
3. A document explaining the various protocols.
4. A written report presenting the results and work accomplished during the project.
5. An oral presentation at the end and in the middle of the semester to present the results of the project.

Documentation

As a starting point, you can find informations about our current CTD on this link:

<https://github.com/Sailowtech/Sailowtech-CTD/>

Planned interaction with Sailowtech

The objective of this whole project is to develop a device that can be used during a Sailowtech cruise or instruments tests campaign. Consequently, there will be several meetings with Sailowtech (approximately three or four per semester, or as required) to monitor progress. Furthermore, the relevant technical staff at Sailowtech will be available for advice and assistance.

Finally, you will be counted as a member of Sailowtech, and will therefore be able to take part in the various activities and potentially test the device during one of our expeditions.

Contact

Bénédicte Lunven- vp.science@sailowtech.ch