

Low-Cost Water Quality Instruments for Non-Government Organizations

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Objective and Background

Many Non-Government Organizations must carefully allocate funds to current and future restoration projects due to extremely low budgets. Budgeting can be difficult while maintaining staff, equipment, projects, etc.

Instruments used to monitor water quality parameters (temperature, dissolved oxygen, pH, conductivity, ORP, turbidity, algae) may cost thousands of dollars. The construction of low-cost water quality monitoring instruments and the dissemination of the processes used may be able to play a positive role in NGO assistance and growth.

Design Goals and Functionality

Accessibility

Build materials must consist of low-cost parts that are easily purchased through local providers or web-based commerce.

Utility

Each completed low-cost instrument must be comparable to professionally manufactured instruments. Keys to quality include durability, deployability, and accuracy.

Replicability

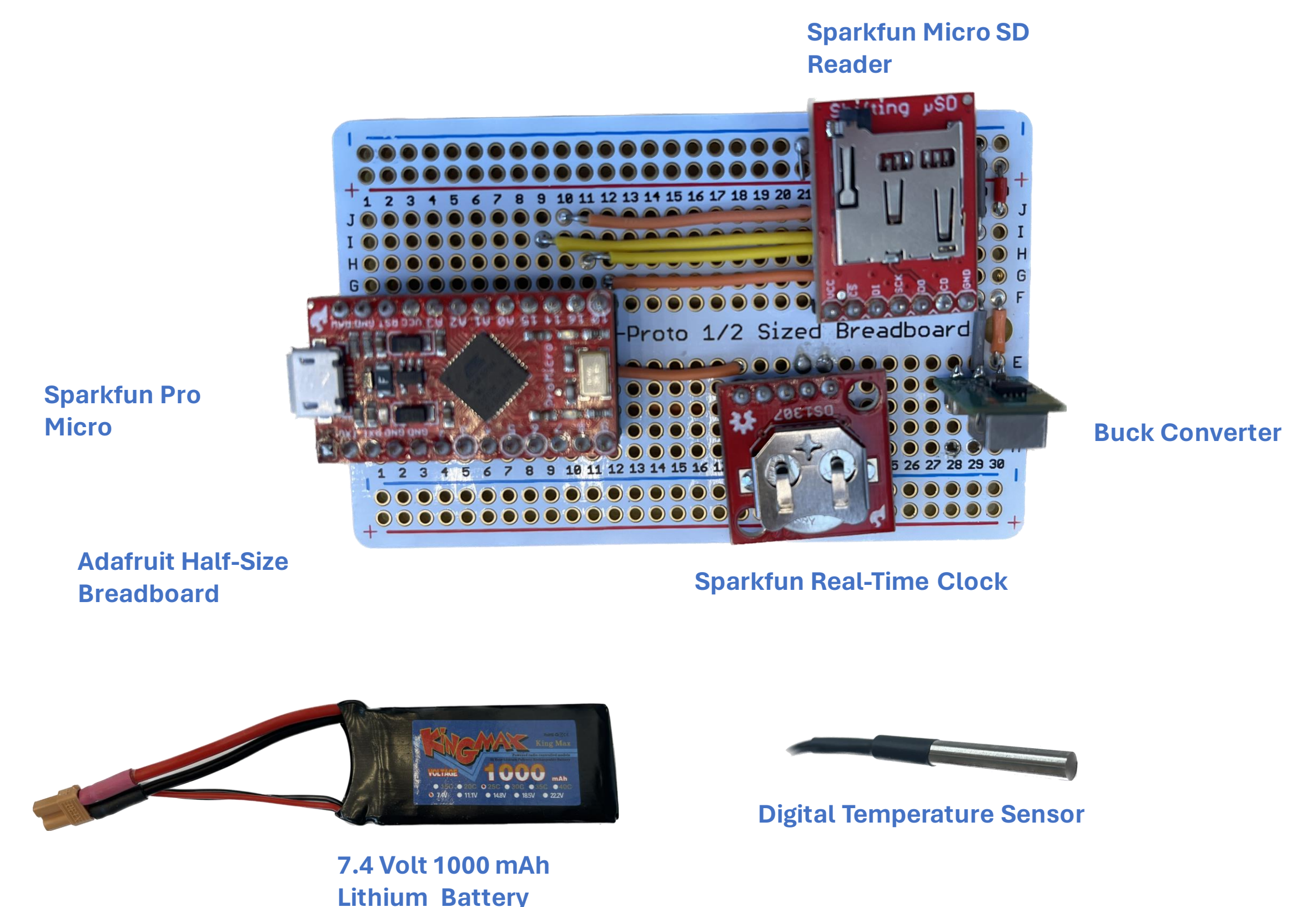
Records of parts and processes will be kept during the build and distributed amongst organizations in need of low-cost water quality monitoring options.

Progress and Development

Temperature Logger

- ✓ Electronics design consisting of Sparkfun Pro Micro microcontroller, digital temperature sensor, Sparkfun SD card reader, Sparkfun real-time clock, power source, and buck converter.
- ✓ Arduino code written and uploaded allowing for 2-week duration of temperature logging during field deployment with a 60 second sampling rate to allow for ample data collection.
- ✓ Durable, waterproof PVC housing built with accessibility to circuit board and SD card for easy removal.
- Field deployment calibration with professionally manufactured temperature logger to ensure accuracy, durability, and deployability.

Low-Cost Temperature Logger Electrical Components



Total cost of electronics: **\$44.44**

Housing Components



Total cost of housing: **\$35.04**

Final Design and Cost

