

# Wireless Independent Noble Gas Sampler: Software Overview

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## Introduction

Radioactive noble gas monitoring contributes significantly to underground nuclear explosion monitoring because noble gases are more mobile through soil and rock. The Wireless Independent Noble Gas Samplers (WINGS) are inexpensive, autonomous, portable sampling systems that allow for multiple units to be placed in-field for improved temporal and spatial resolution of noble gas tracking.



### Physical components:

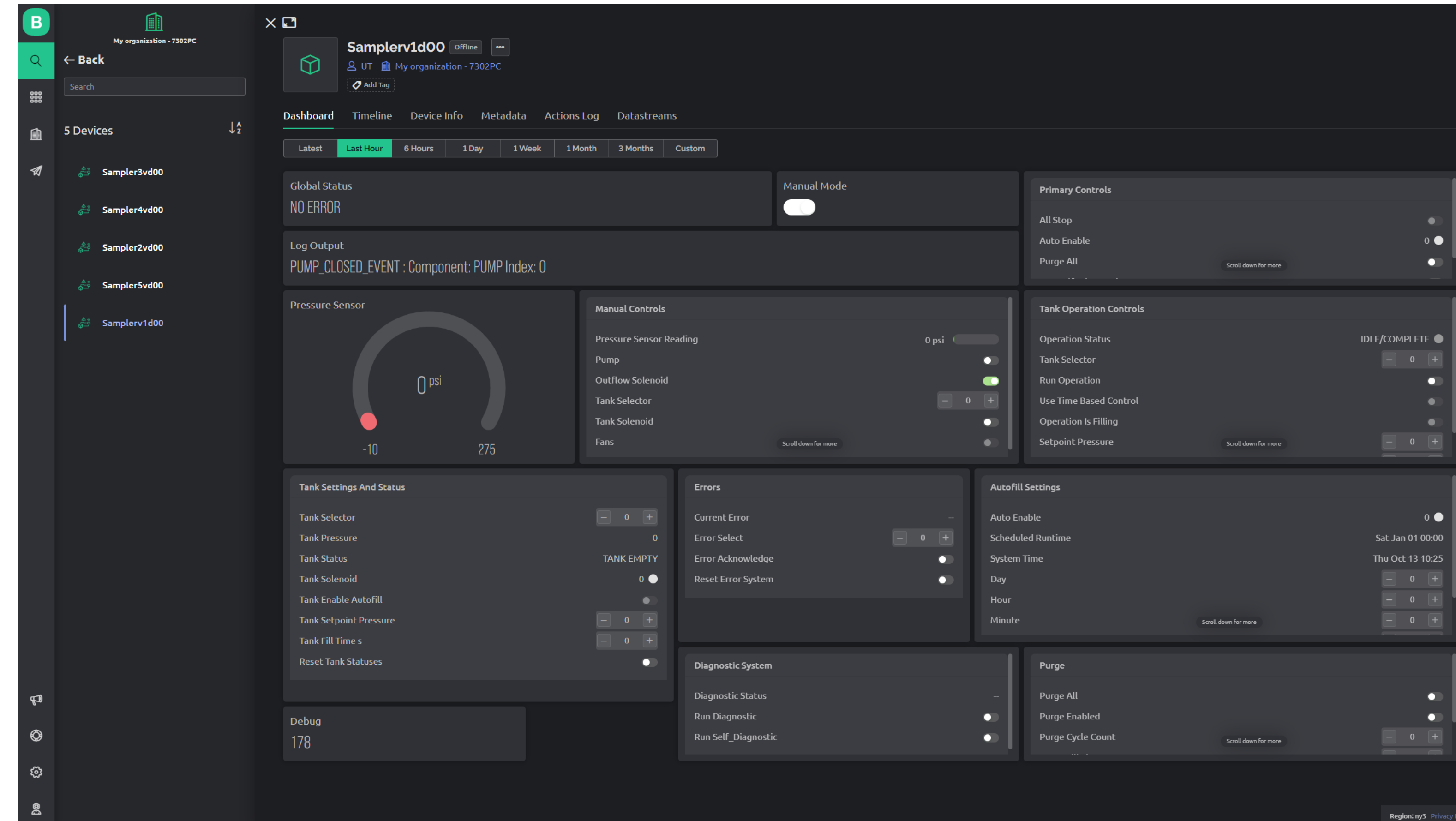
- 14 3.4 Liter Sample Tanks
- 14 Electric Ball Valves
- Vent Solenoid
- 12V Battery
- Air Compressor
- Air Line with Quick Connects
- Electrical Control Box
- Storage Crate

### Focuses:

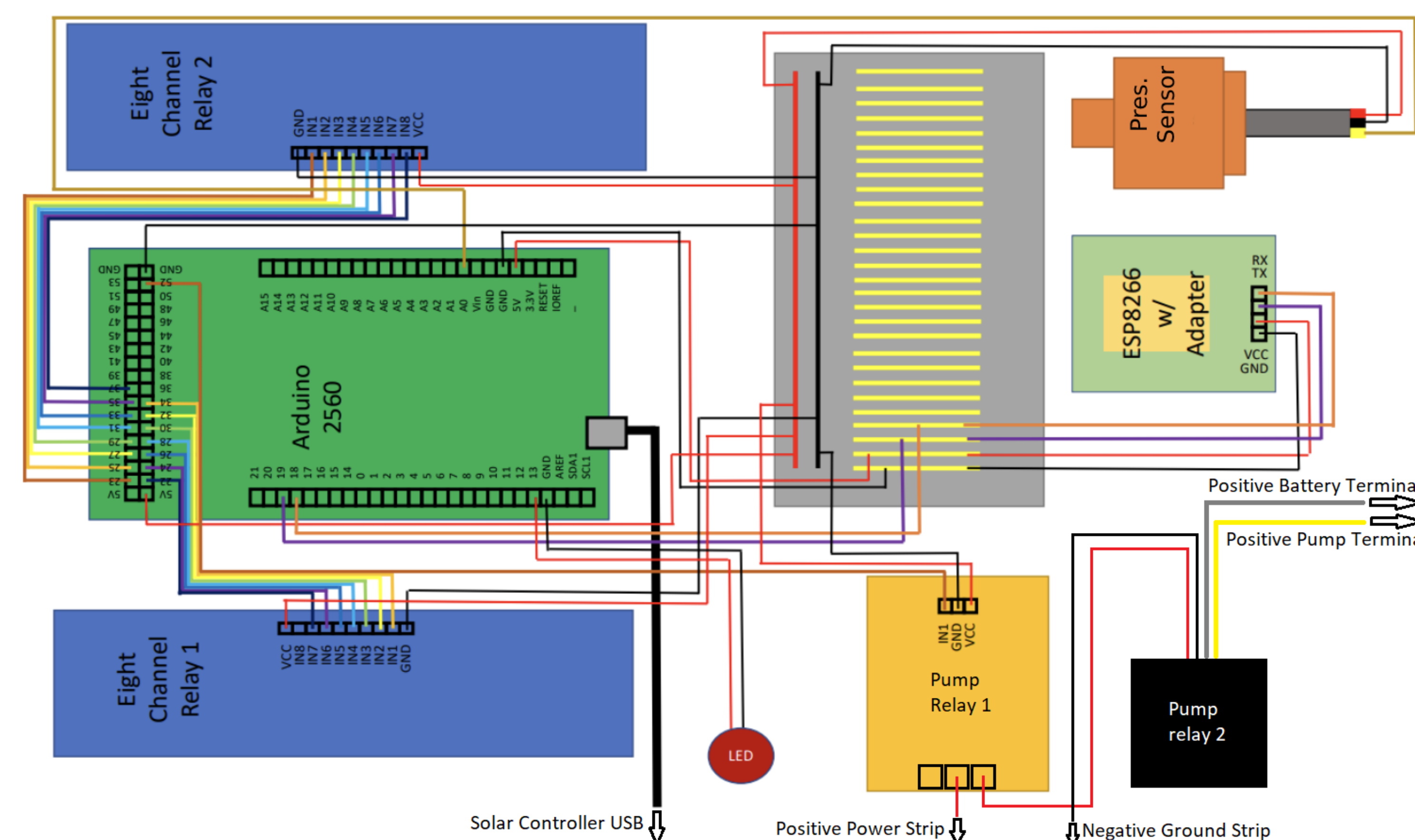
- Automation
- Wireless Control
- Low Idle Power Consumption



## Software and Controls System

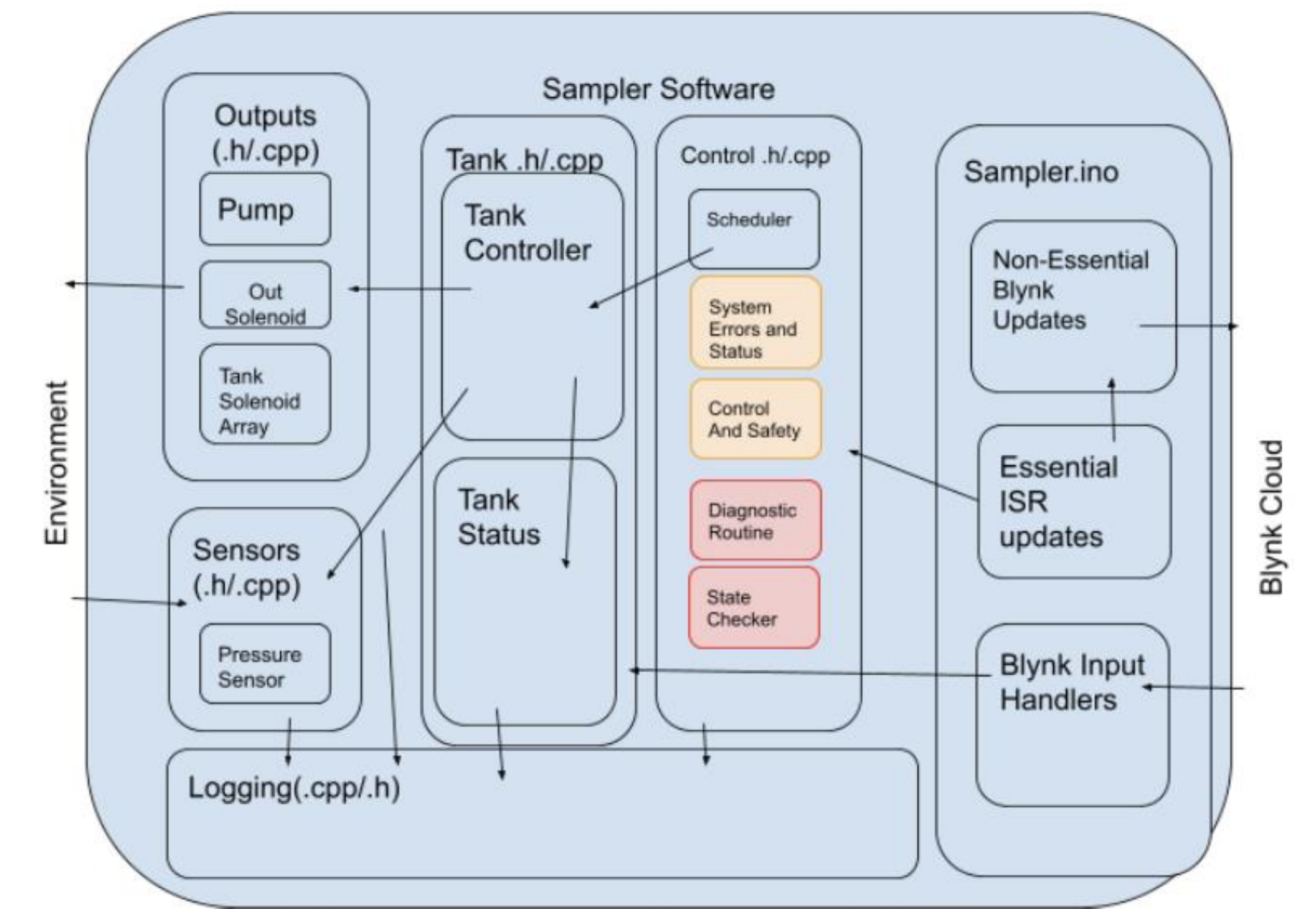


The Blynk interface provides an intuitive and easy to use control panel that provides feedback data from the sampler as well.



Wiring diagram depicting all electrical components within the control box.

## Conclusion



### Future Improvements:

- More robust error handling
- Continued operations with loss of connection
- More user-friendly interface
- Battery voltage display
- Operate on UTC for time zones
- Improved preliminary testing

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