

PEP24

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Power and Control

Batteries

Battery 1

Capacity: $71,688\text{mah} + 17,457\text{mah} + 14,206\text{mah} = 103,351\text{mah}$

Battery 2

Capacity: $90,007\text{mah} + 12,816\text{mah} = 102,823\text{mah}$

Battery 3

Battery 4

PCB Iterations

V0.1 (Breadboard)

Pre-PCB design that often was multiple parts of the system that would eventually become one.

Pros

- Easy to add/change components for testing

Cons

- Unreliable connections

Components

- [ESP32-WROOM-32U](#)
- [FLIPSKY 75100 VESC](#)
- [Stepper motor driver DM542T](#)

- [SparkFun Logic Level Converter - Bi-Directional](#)

V0.1 (Breadboard)

V1

Version one was created by Brandon Marcellus & Juan Silva early on in the start of the project after we had started some of the basic wiring of control and data collection.

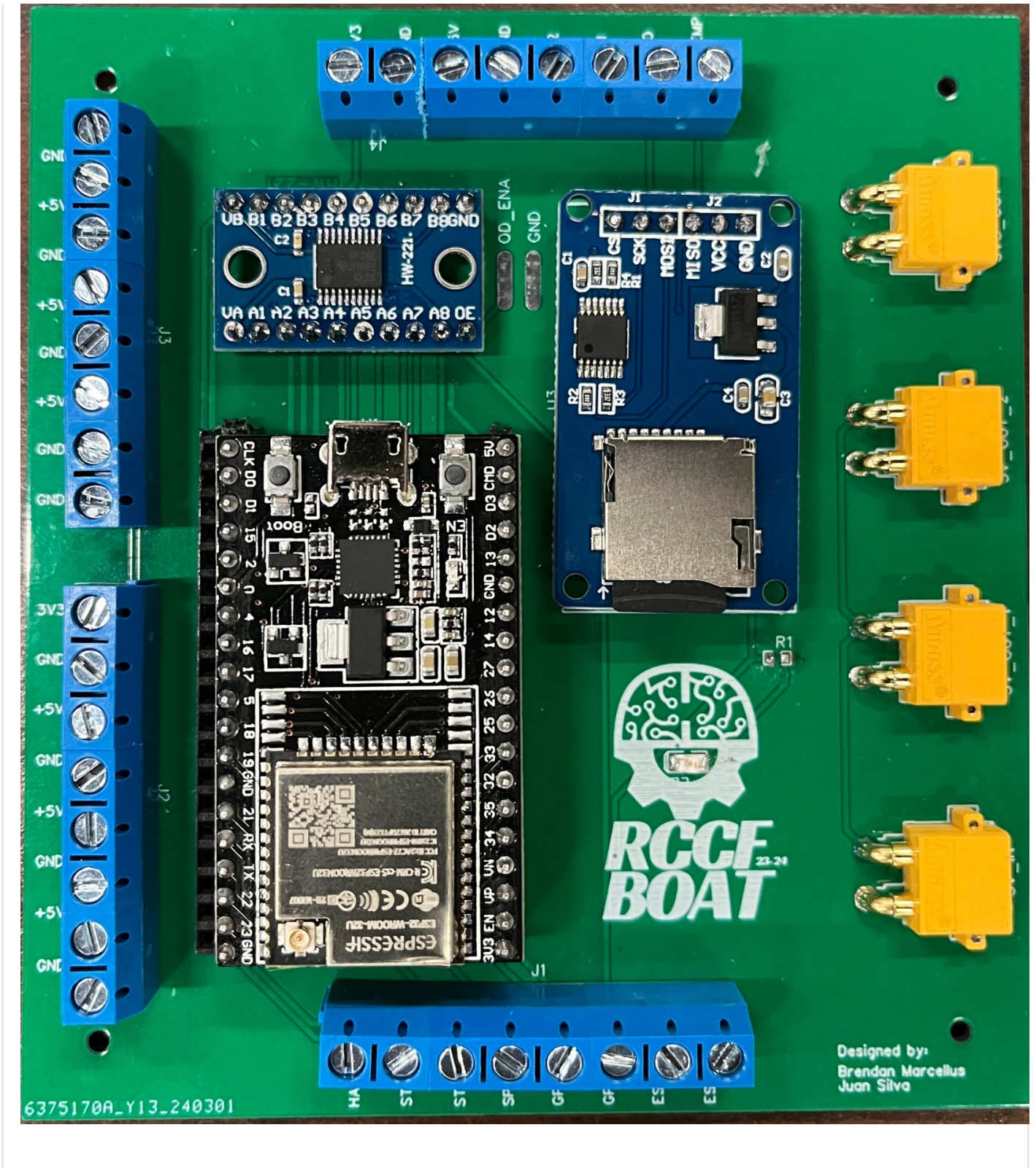
Pros

- Organization greatly improved
- Power distribution
-

Cons

- Logic level shifter was not wired correctly
- Not enough IO ports were available for use
- SD Card module VCC pin was connected to 3.3V instead of 5V

V1



V 1.1 (Breadboard)

V2

PEP24 Overview

PEP24 was RCCF's first time competing.

Our boat was a catamaran constructed out of layered XPS foam wrapped in fiberglass.

This year provided a strong foundation for future years. The Lithium Iron Phosphate batteries, selected for their long life span, continued to power the team through the next two years.

2024 Whitepaper:

[2024 Google Photos](#)

