This is a brief, surface-level overview of the systems and basic concepts utilized in Pacific Impulse’s motor-actuated valve and its controller. This guide was written by someone with minimal-to-no formal training in any of the concept matter, so while I hope to avoid outright errors, some information may go against convention or be otherwise off putting to someone who knows what they are talking about. If that is you, my apologies, and please reach out to me so I may make corrections.

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# System Overview

The system consists of 3 main subsystems: the valve and gearbox; the motor, motor controller, and power supply; and the system control board. For clarity, unless a “board” is specifically stated to be the “motor controller” or “motor control board”, the “board” in question being referred to is the system control board.

Diagram

Description automatically generated

Figure 1: Basic System Diagram (note that the valve does not administer a mixture of fuel and oxidizer, but rather the same system is used for both the fuel valve and oxidizer valve)

## Valve hardware

## Motor hardware

## Controller hardware

# Electronics Overview

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## Motor selection

## 3 Phase BLDC overview

## Schematic overview

## Connector choices

# Controls Overview

## Intro to General Concepts

### Microcontrollers/Arduino

### Digital vs. Analog

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