

Creating a Configuration File for PCB Configuration

This document explains how to create a configuration file that specifies settings for configuring a PCB using the provided Python script.

Configuration File Format

The configuration file is a JSON file containing an array of objects, where each object represents the configuration for a specific functionality of the PCB.

Each configuration object must have the following structure:

```
{
  "functionality": {
    "name": "Functionality_Name",
    "outputs": ["Output_Pin_1", "Output_Pin_2", ...],
    "inputs": ["Input_Pin_1", "Input_Pin_2", ...],
    "limits": [min_current, warning_current, fault_current],
    "outputsAsPWM": true|false,
    "setOverCurrentIntegralLimit": over_current_integral_max
  }
}
```

Configuration Object Attributes:

- **Functionality Name:** "name" (String): Specifies the name of the functionality.
- **Output Pins:** "outputs" (Array of Strings): Specifies the output pins associated with the functionality.
- **Input Pins (Optional):** "inputs" (Array of Strings): Specifies the input pins associated with the functionality. This attribute is optional.
- **Current Limits (Optional):** "limits" (Array of Floats): Specifies the current limits for the functionality in the order [min_current, warning_current, fault_current]. This attribute is optional.
- **Outputs as PWM (Optional):** "outputsAsPWM" (Boolean): Indicates whether the outputs of the functionality should be treated as PWM (Pulse Width Modulation). This attribute is optional.
- **Overcurrent Integral Limit (Optional):** "setOverCurrentIntegralLimit" (Float): Specifies the maximum overcurrent integral limit for the functionality. This attribute is optional.

Example Configuration File:

```
[
  {
    "functionality": {
      "name": "left_brush_actuator",
      "outputs": ["VO_24"],
      "limits": [0.0, 2.2, 3.3]
    }
  },
  {
    "functionality": {
      "name": "left_brush_motor",
      "outputs": ["VO_25", "VO_26"],
      "limits": [0.1, 4.5, 6.0],
      "outputsAsPWM": true,
      "setOverCurrentIntegralLimit": 5.0
    }
  },
  {
    "functionality": {
      "name": "right_brush_motor",
      "outputs": ["VO_27", "VO_28"],
      "limits": [0.1, 4.5, 6.0],
      "outputsAsPWM": true
    }
  }
]
```