

# **Technical Reference Manual**

## **DC Motor Position Control With Feedback**

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# **1. Introduction**

## **1.1. Document Identification**

This document describes the design and use of the DC Motor Position Control with Feedback board.

## **1.2. System Overview**

The board can be used together with a Pi to control the position of a DC motor and receive feedback.

## **1.3. Reference Documents**

The present document is prepared on the basis of the following reference documents, and should be read in conjunction with them.

- LTC3638 Datasheet. (<https://www.analog.com/en/products/ltc3638.html>)
- L293D Datasheet(<https://www.ti.com/lit/ds/symlink/l293.pdf>)

# **2. System Description**

This section is intended to give a general overview of the basis for the DC motor control system design, of its division into hardware and software modules, and of its development and implementation.

## **2.1. Introduction**

Position feedback is essential when designing and operating a robot. This is possible using Servo Motors. Servo Motors are expensive to purchase and require complex coding to control. This board enables the use of any affordable DC motor as a servo motor.

## **2.2. System Requirements**

The operational scenarios considered place certain requirements on the whole something system, and on the modules that comprise it.

## **2.3. Module Design**

The board is divided into 3 submodules,

- i) Power Supply Unit
- ii) Led Status LED
- iii) Amplifier

### 3. Hardware Design

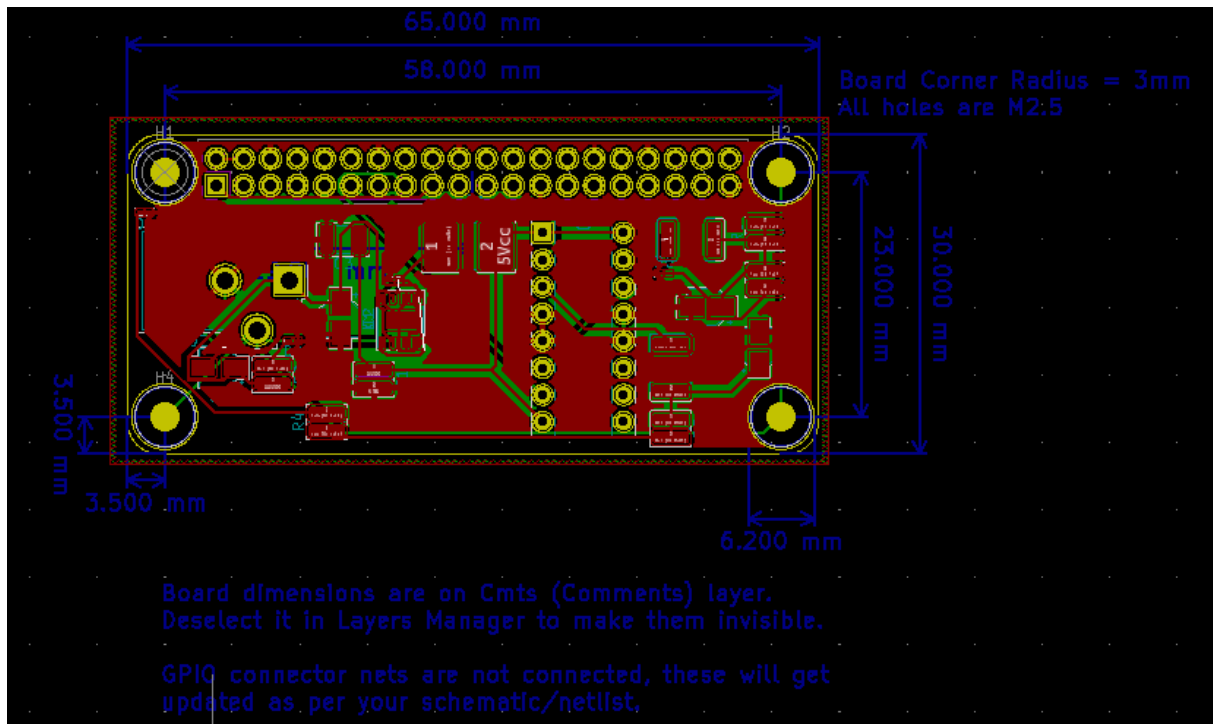


Figure 1: Dimensions of the piHat

The board is 65mm by 30mm wide

#### 3.1. Hardware Design

##### 3.1.1. Power Supply

A female Barrel Jack should be soldered to the board.

The board is powered by +12VDC through this Barrel Jack

An LED should turn on to indicate that the board is powered

##### 3.1.2. Amplifier(Motor Driver)

The motor driver drives the motor.

Solder diodes D1 and D5 of the colour of your choice on the board. This diodes will turn on to indicate that the motor is running.

### 4. Software Design

This board will execute code written on the Pi

### 5. Safety Implications

The board should not be in contact with water.

The board may heat up if the motor runs for a long time

