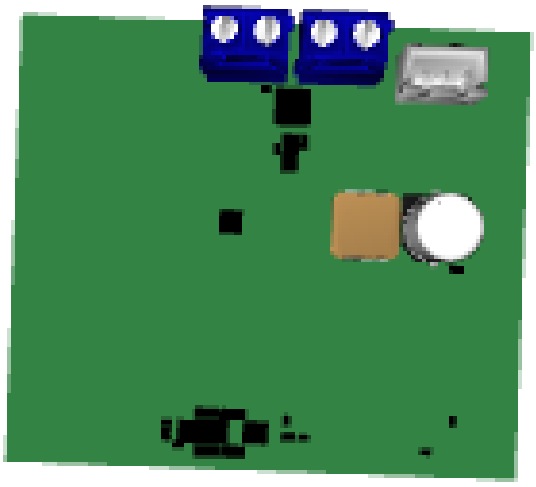
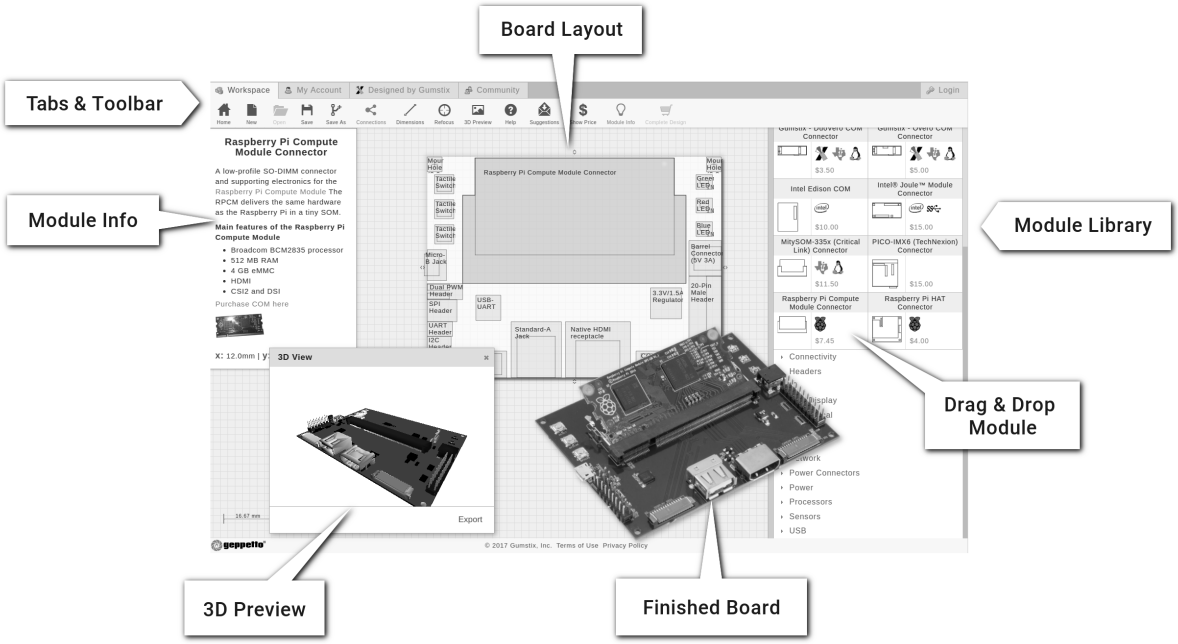
Pi Stepper Motor Driver Hat



Thanks for using Geppetto to design this board!

One Stop Design-to-Order

Simply place displays, sensors, processors, and Geppetto connects it all.
No routing needed.



Board Description

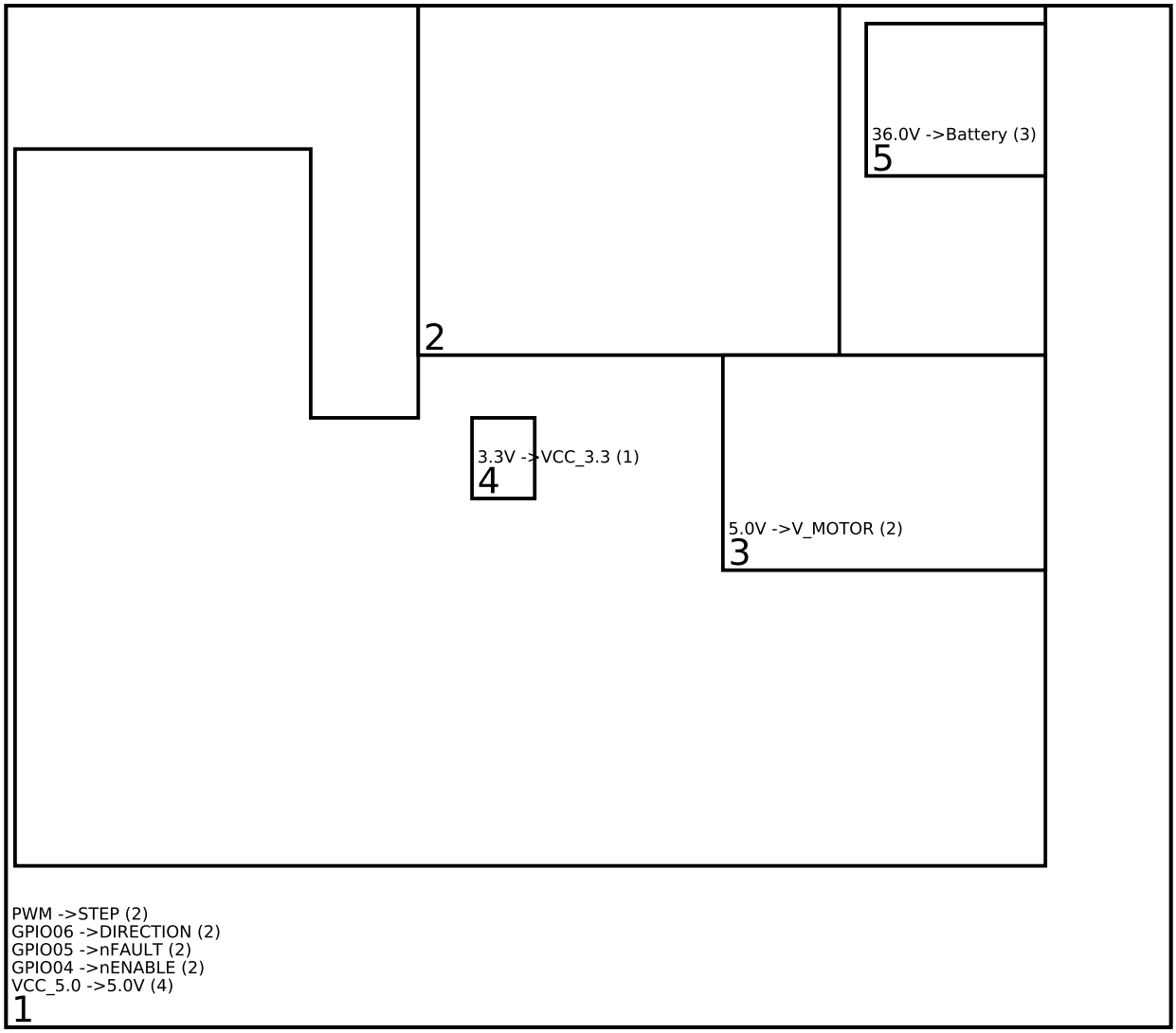
Stepper Motor Driver Hat for Raspberry-Pi. Requires a 6-36V input via the battery connector to run the stepper motors.

Board Dimensions

6.5cm x 5.7cm

Contents

1 Modules on Board



1.1 COM Connectors

1.1.1 Raspberry Pi HAT Connector (v5) (1)

The Raspberry Pi **H**ardware **A**ttached on **T**op (**HAT**) Module provides many GPIO, serial and special purpose signals from the Raspberry Pi B+ SBC to custom Geppetto expansion boards.
Specifications, mechanical drawings and design guidelines for HAT expansion boards are available from:

https://github.com/raspberrypi/hats

Requires:

- VCC_3.3 from 3.3V/0.15A LDO (4)

The Raspberry Pi HAT connector provides the following outputs:

- VCC_5.0 to 3.3V/0.15A LDO (4)
- GPIO04 to Stepper Motor Driver (2)
- VLOGIC to Stepper Motor Driver (2)
- GPIO05 to Stepper Motor Driver (2)
- GPIO06 to Stepper Motor Driver (2)
- PWM to Stepper Motor Driver (2)

1.2 IO

1.2.1 Stepper Motor Driver (v2) (2)

The Stepper Motor Driver can drive a stepper motor with up to 1.4A. It is controlled by a single PWM signal and direction pin.

The motor is powered by 5.0V on 5V/5A Regulator (3). This module requires the following interfaces:

- nENABLE to GPIO04 on Raspberry Pi HAT Connector (1)
- nFAULT to GPIO05 on Raspberry Pi HAT Connector (1)
- DIRECTION to GPIO06 on Raspberry Pi HAT Connector (1)
- STEP to PWM on Raspberry Pi HAT Connector (1)

1.3 Power

1.3.1 5V/5A Regulator (v7) (3)

Takes 6 - 36V input from Battery 2-Cell Balance Connector (5) and provides up to 5A at 5V to:

- Stepper Motor Driver (2)

1.3.2 3.3V/0.15A LDO (v4) (4)

This efficient and precise low-voltage low-dropout DC regulator is optimized for ultra-low noise applications. The module's Micrel MIC5255-3.3YM5-TR provides power to noise-sensitive modules that require a 3.3V input.

The datasheet for the Micrel MIC5255-3.3YM5-TR is available at:

`http://media.digikey.com/pdf/Data%20Sheets/Microchip%20PDFs/MIC5255.pdf`

This LDO regulator recieves 5.0V from Raspberry Pi HAT Connector (1) and provides 3.3V DC to:

- Raspberry Pi HAT Connector (1)

1.4 Power Connectors

1.4.1 Battery 2-Cell Balance Connector (v6) (5)

This is a standard 2S Lithium Polymer (LiPo) balance connector (XH Type). Although it's a 2S connector, it can provide either 16.0V or 36.0V.

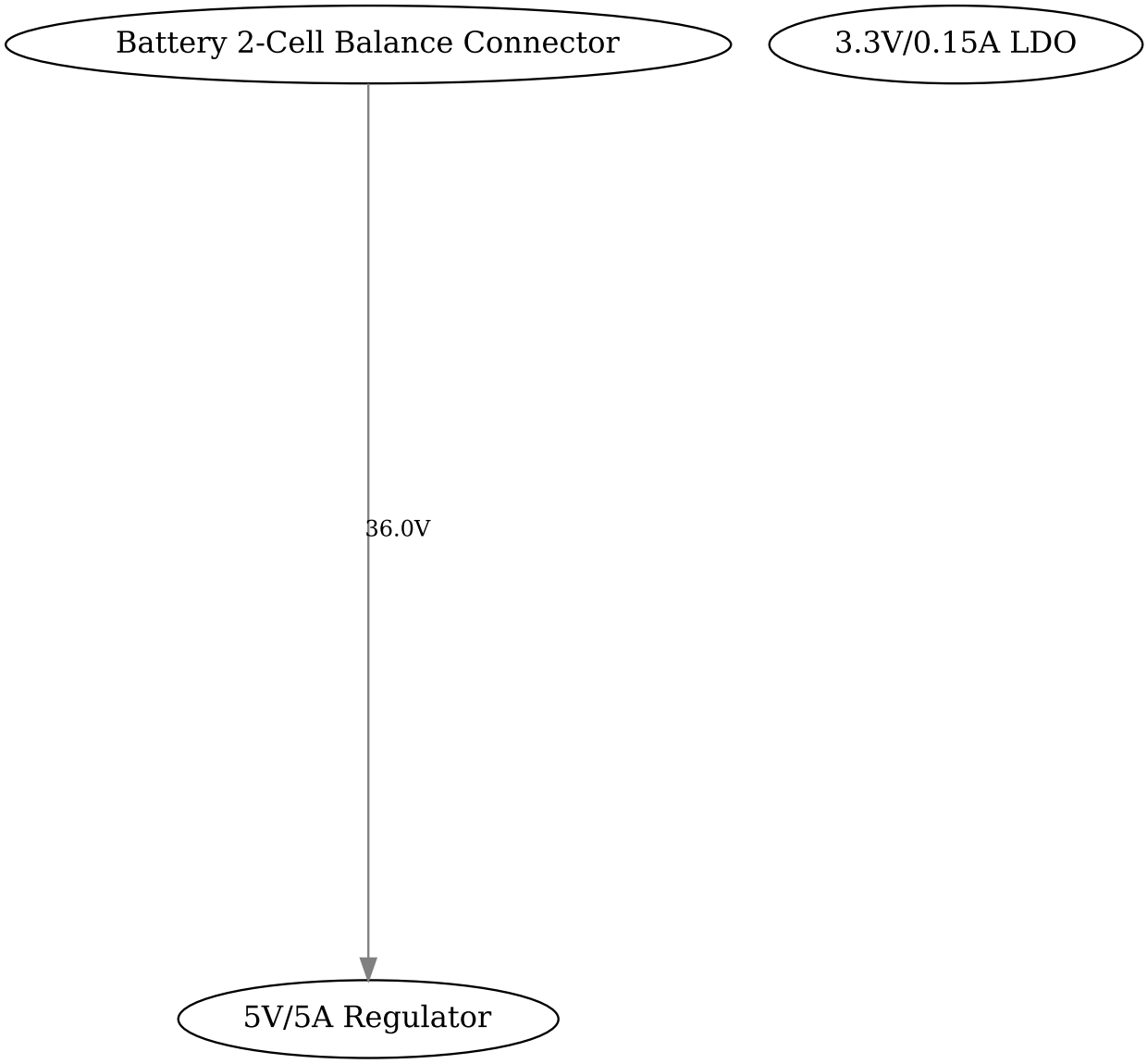
This connector provides 36.0V to:

- 5V/5A Regulator (3)

2 Module Connections Graph

Figure 1: excludes power modules

3 Module Power Graph



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