Pi Stepper Motor Driver Hat

This board was designed and built by Geppetto
Free automated documentation anytime.
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No Minimum Order    Automated Supply Chain    Reduce Cost and Errors
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One Stop Design-to-Order
Simply place displays, sensors, processors, and Geppetto connects it all.
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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
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Built in Geppetto
No engineering required.
Delivered in 15 days.
1 Modules on Board

1.1 COM Connectors

1.1.1 Raspberry Pi HAT Connector (v5) (1)

The Raspberry Pi Hardware Attached on Top (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:


This LDO regulator receives 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

Raspberry Pi HAT Connector

GPIO04
GPIO05
GPIO06
PWM

Stepper Motor Driver

Figure 1: excludes power modules
3 Module Power Graph