

STEPSTICK DRV8825 v1.0 DATASHEET



Author

Date

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PRODUCT OVERVIEW

The stepstick DRV8825 is a breakout board for the Texas Instruments DRV8825 stepper motor controller. You can use this board to act as interface between your microcontroller and stepper motor. The DRV8825 is able to deliver up to 2.5A and can be controlled with a simple step/direction interface. The controller has a resolution of min. 1/32 step and protective features for over-current, short circuit and over-temperature. See the DRV8825 Datasheet for details on the DRV8825 controller.

The stepstick DRV8825 supersedes the stepstick A4988, which has been discontinued. The aim is for the stepstick DRV8825 to be a drop-in replacement for Stepstick A4988.

SAFETY WARNINGS

Always disconnect the power source from the board before unplugging the stepper motor and/or adjusting the current. Failure to do so may result in permanent damage to the board and/or injuries due to high voltage spikes.

The stepper driver may get **HOT**, do not touch the device until it had a few minutes to cool down after operation.

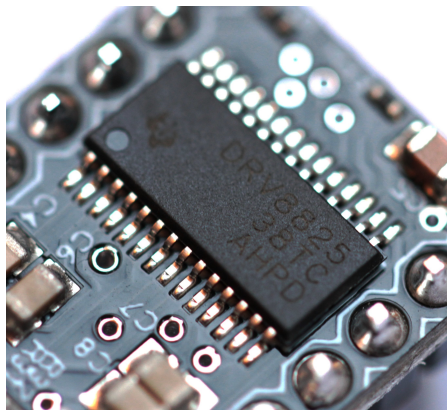
It is recommended to drive the stepper motor on current as low as possible to reduce power consumption and increase lifespan.

It is **NOT** recommended to turn the stepper motor while connected to the electronics. While turning the stepper motor, large voltages may be emitted through the VMOT pin, which can damage the electronics.

TECHNICAL SPECIFICATION

| | |
|----------------------------------|-------------|
| Controller | DRV8825 |
| Operating Voltage (logic) | 3-5.25V |
| Operating Voltage (vmot) | 12-24V |
| Max current | 2.5A |
| Dimensions | 20.4x15.6mm |

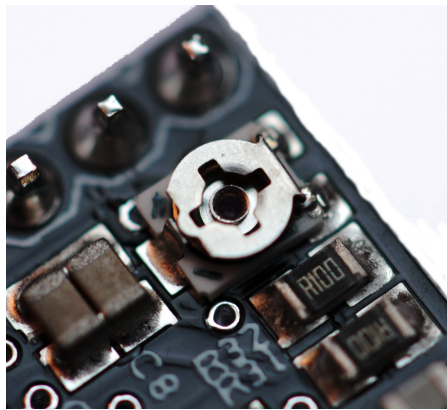
MAJOR FEATURES



DRV8825

Powerful DRV8825 with

- High current driver capable up to 2.5A
- Six different step resolutions: full-step, half-step, 1/4-step, 1/8-step, 1/16-step, and 1/32-step
- Protection against over-temperature and over-current
- No logic voltage required



Adjustable current

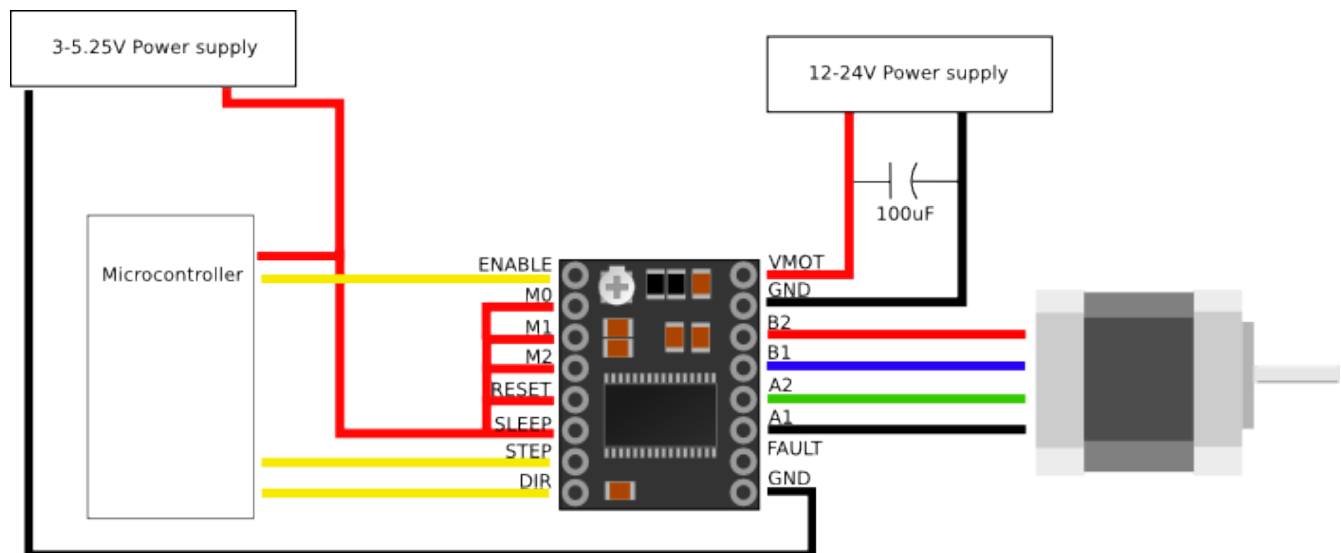
Using the trimpot on the board you can easily turn the current up or down. Turn left to lower the current, right to output a higher current.

OTHER FEATURES

- Four layer high quality PCB board
- Pre-soldered, no need to solder the headers

EXAMPLE CIRCUIT

The following diagram lists the pins and show an example circuit.



| Name | Description |
|---------|--|
| Enable | Enable/disable the stepper driver HIGH - Disable LOW - Enable * |
| M0 - M2 | Step resolution setting, see chapter 'step resolution configuration' |
| RESET | Enable/disable the H-bridge output * LOW - Disable * HIGH - Enable |
| SLEEP | Enable/disable low-power sleep mode LOW - Sleep * HIGH - Active |
| STEP | LOW → HIGH, move one step |
| DIR | LOW / HIGH switches direction |
| VMOT | Motor power (12-24V) |
| GND | System ground |
| FAULT | LOW when the stepper driver is in fault condition. You can provide 5V on this pin for compatibility with stepstick A4988 |

* this is the default state when the pin is not connected

STEP RESOLUTION CONFIGURATION

The DRV8825 has six step resolution modes, which can be configured using the M0-M2 pins on the stepstick DRV8825. The following table lists the step resolution settings:

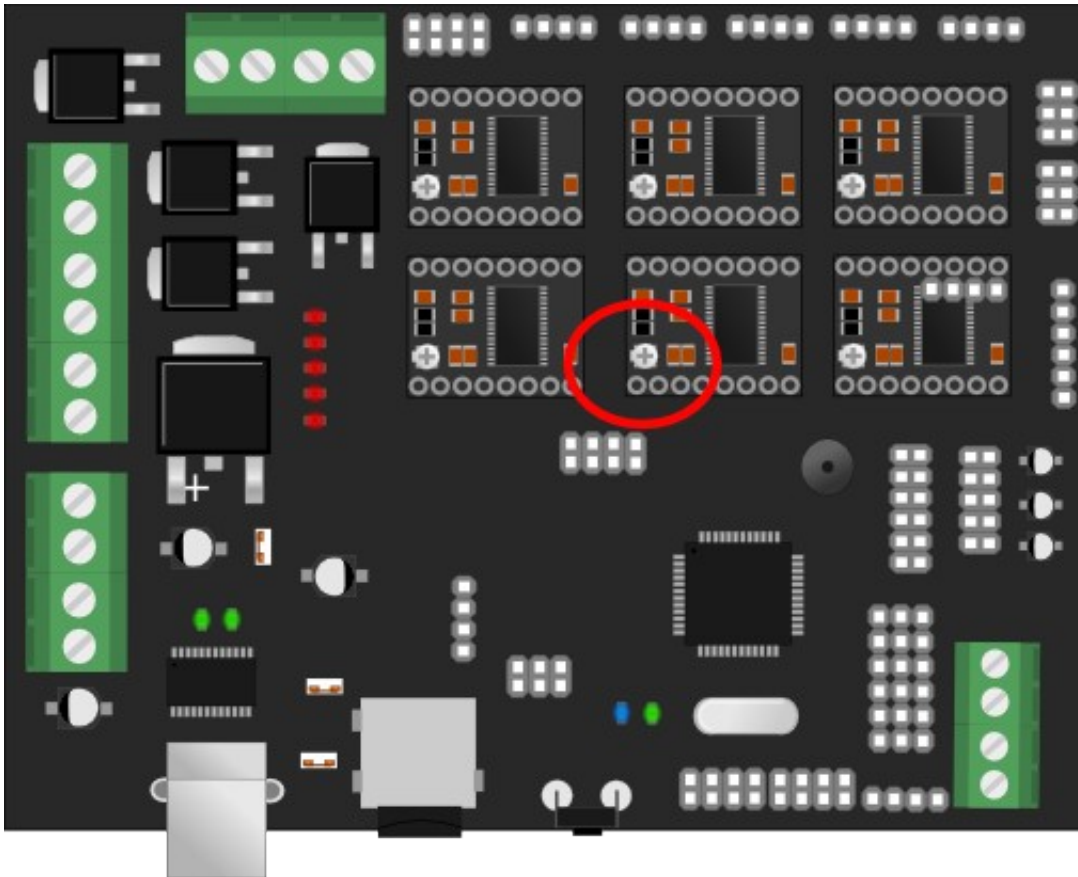
| M0 | M1 | M2 | Resolution |
|-----------|-----------|-----------|-------------------|
| Low | Low | Low | Full step |
| High | Low | Low | Half step |
| Low | High | Low | 1/4 step |
| High | High | Low | 1/8 step |
| Low | Low | High | 1/16 step |
| High | Low | High | 1/32 step |
| Low | High | High | 1/32 step |
| High | High | High | 1/32 step |

COMPATIBILITY WITH REPRAP HARDWARE

The stepstick DRV8825 should be compatible with most RepRap hardware available. The following images show how to insert the stepstick DRV8825 in the most popular RepRap hardware.

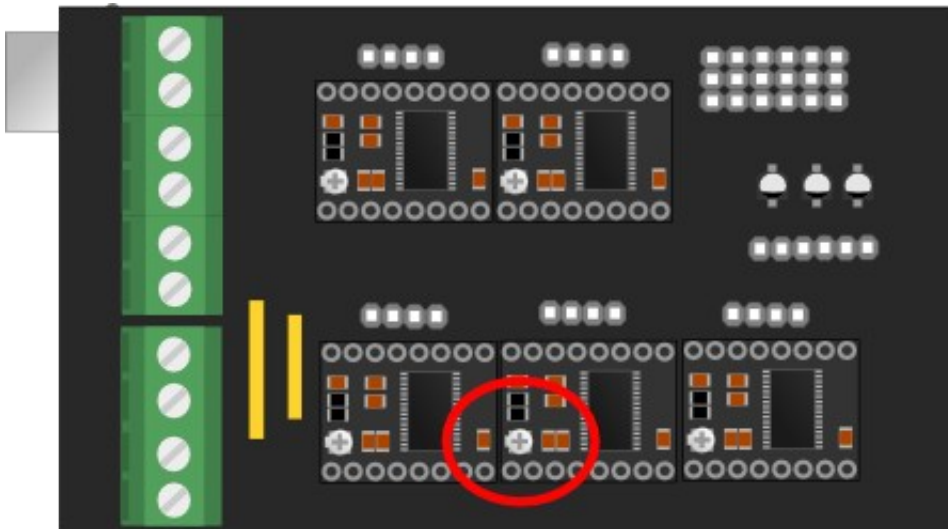
Megatronics

The orientation of the stepstick is indicated with the trimpot, marked with a red circle.



RAMPS

The orientation of the stepstick is indicated with the trimpot, marked with a red circle.



TROUBLESHOOTING

| | |
|---|---|
| The stepper motor does not hold torque (you can rotate the stepper motor by hand) | <ul style="list-style-type: none">- Check if the power is enabled- Is the ENABLE pin LOW?- Are SLEEP and RESET put HIGH? |
| The motor is losing steps while turning | <ul style="list-style-type: none">- When the chip overheats the thermal protection will disable the device. Turn down the trimpot.- You may have not enough torque, turn the trimpot to the right to increase current. |