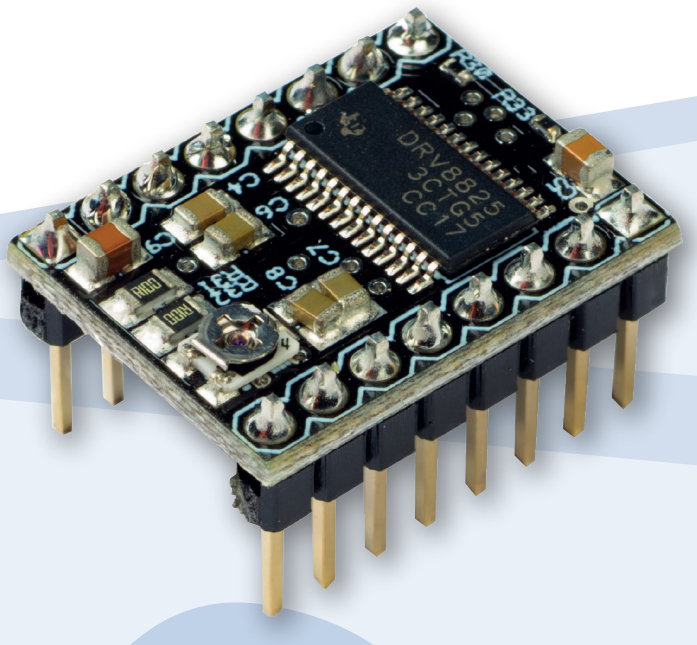
Stepstick DRV8825 Datasheet



Product Overview

The Stepstick DRV8825 is a breakout board for the Texas Instruments DRV8825 stepper motor controller. You can use the board as an interface between a microcontroller and a stepper motor. The Stepstick DRV8825 delivers up to 2.5A and can be operated with a simple step/direction interface. The controller has a resolution of at least 1/32 step and has protective functions against overcurrent, short circuit and overheating.

The Stepstick DRV8825 is a replacement for the Stepstick A4988 which is no longer available.

Safety Warnings

Always disconnect the board from the power source before disconnecting the stepper motor or making adjustments to the current. Failure to do so may result in permanent damage to the board or injury due to high voltage peaks.

The step driver can get very hot. So do not touch the device after use until it has been used for a few minutes after it has cooled down.

It is recommended to use the stepper motor at the lowest possible current to reduce power consumption and improve longevity.

It is not recommended to rotate the stepper motor when it is connected to the electronics. During the day rotating the stepper motor, large voltages can be emitted from the VMOT pin, causing the could damage electronics.

Technical specifications

Controller	DRV8825
Operating voltage (logic)	3 - 5.25V
Operating-voltage (vmot)	12-24V
Max. current	2.5A
Dimensions	20.4 x 15.6mm

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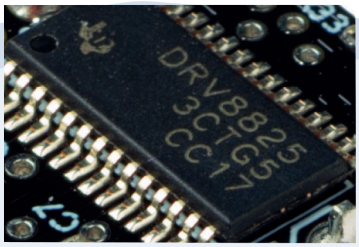
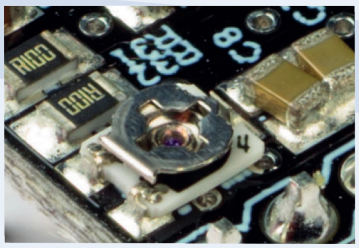
Most important features

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



Adjustable current

Using the potentiometer on the board you can easily raise and lower the output current. Turn left to decrease flow and right to increase flow.



Other characteristics

- Four-layer, high-quality PCD board
- Pre-soldered, headers no longer need to be soldered

Sample Circuit

The following diagram shows the pins and shows an example circuit.

Name	Description
Enable	Enabling/Disabling the Step Driver Low – enabled* High – disabled
M0-M2 Reset	Steps Resolution setting, see chapter 'Step Resolution configuration' Enable/disable H-bridge output* Low-disable* High-enable
SLEEP	Enable/Disable the power-saving sleep mode Low – sleep mode* High – active
STEP	From low to high increases one step
DIR	Low and high change the direction
VMOT	Engine power
GND	System ground
FAULT	Low – if the step driver has a malfunction. About this pin you can provide 5V for compatibility with Stepstick A4988.

* This is the default setting when the pin is not connected.

Step resolution configuration

Step Resolution Configuration Stepstick DRV8825 has six step resolutions, which can be configured using pins M0-M2. The table shows the step resolution settings.

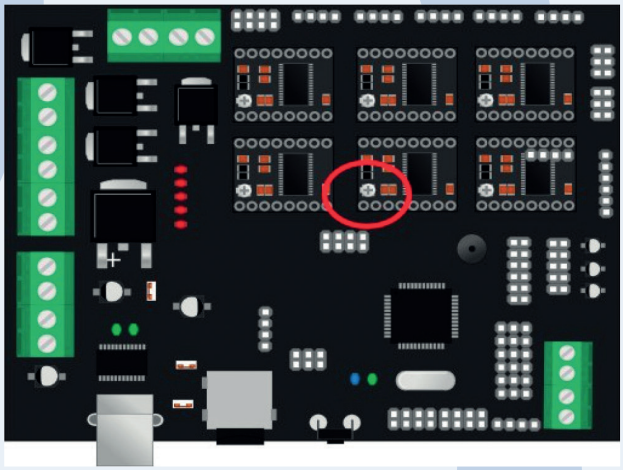
M0	M1	M2	Resolution
Low	Low	Low	Full step
High	Low	Low	Half step
Low	High	Low	1/4 step
High	High	Low	1/8 step
Low	Low	High	1/16 step
High	Low	High	1/32 step
Low	High	High	1/32 step
High	High	High	1/32 step

Compatibility with RepRap hardware

Stepstick DRV8825 is compatible with most common RepRap hardware. The images below show how DRV8825 can be integrated into the most popular RepRap hardware.

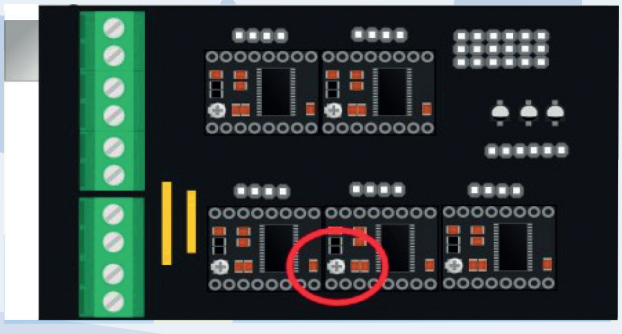
Megatronics

The orientation of the Stepstick is indicated by the depot meter circled in red.



RAMPS

The orientation of the Stepstick is indicated by the potentiometer circled in red.



Troubleshooting

The stepper motor does not have sufficient power (you can stepper motor easy with turn the hand).	• Make sure the power is on • Is the 'Enable' pin set to 'low'? • Are 'Sleep' and 'Reset' set to 'high'?
The motor loses steps while spinning.	• When the chip overheats, the thermal protection switches the device off automatically. Lower the potentiometer and/or add heatsinks to the DRV8825 chip with a fan. • The stepper motor does not have enough power. Turn the potentiometer to the right to increase power.