StepMotor Driver

Description

StepMotor Driver is adapted to M5 core series, the HR8825 chip solution provides a 3-way bipolar stepper motor control interface. You can implement independent control or multi-axis motor linkage after this module is stacked with M5 core series of the internal ESP32 generates signals directly to the driver chip.

This module integrated TCA9554 IO expansion chip provides 4 sets of input signal terminals + 3 sets of stepper motor subdivision control + 1 set of drive chip enable control , through the I2C interface control, can monitor and control the 8 expansion IO state, as well as for external limit switch, dynamic subdivision adjustment, motor braking. Integrated PWR485 communication interface (RS485 + 9-24V power input) and DC-JACK, which can be used for communication and more flexible power supply. Download the UIFLOW and you're ready to go!

With ESP32-GRBL firmware, web control. It can be easy to configure signal output and very useful when you need to position something very accurately. such as:printers, robotic arms, etc.

> **Note:**
> It is forbidden to plug or unplug the motor when it is powered on. All operations should be performed after the device is powered off to avoid damage to the module.

Product Features

○ Three-axis HR8825 stepper motor driver

○ Suitable for bipolar stepper motors

○ With current regulating potentiometer per circuit, drive current up to 1.5A

○ Support various subdivision modes, up to 1/32 STEP subdivision

○ Multiple signal input interfaces

○ PWR485 communication interface (RS485 + 9-24V power input)

○ DC-JACK terminal input (9-24V)

○ Built-in DCDC, integrated 9-24V to 5V circuit

○ Development platform.

Included

- 1x StepMotor Driver
- 4x 2.54-2P terminals
- 3x 2.54-4P terminals
- 1x 3.96-4P terminals

Applications

- Printers
- Scanners
- CNC engraving machine control
- Motion Module Control

Similar products comparison

Features	GRBL 13.2 MODULE	STEPMOTOR DRIVER
Control method	I2C communication	Pulse signal
Firmware program	Onboard STM32, built-in GRBL firmware	No firmware, can be driven by ESP32 direct signal
Number of modules that can be stacked	2	1
Driver IC	DRV8825	HR8825
Subdivision adjustment	DIP switch	TCA9554 chip control
Interface	3 groups of limit switch interfaces	4 groups of custom signal input interfaces + RS485 communication interface

Specifications

Specifications	parameters
Stepper motor driver chip	HR8825
IO Expansion Chip	TCA9554
Support for segmentation	FULL、1/2、1/4、1/8、1/16、1/32
Maximum drive current per channel	1.5A
Input Signal Terminal Specifications	2.54-2P
Motor terminal specifications	2.54-4P

Specifications	parameters
RS485 terminal specifications	3.96-4P
Net weight	40g
Gross weight	60g
Product Dimensions	54.2 * 54.2 * 13.2mm
Packaging size	95 * 65 * 25mm
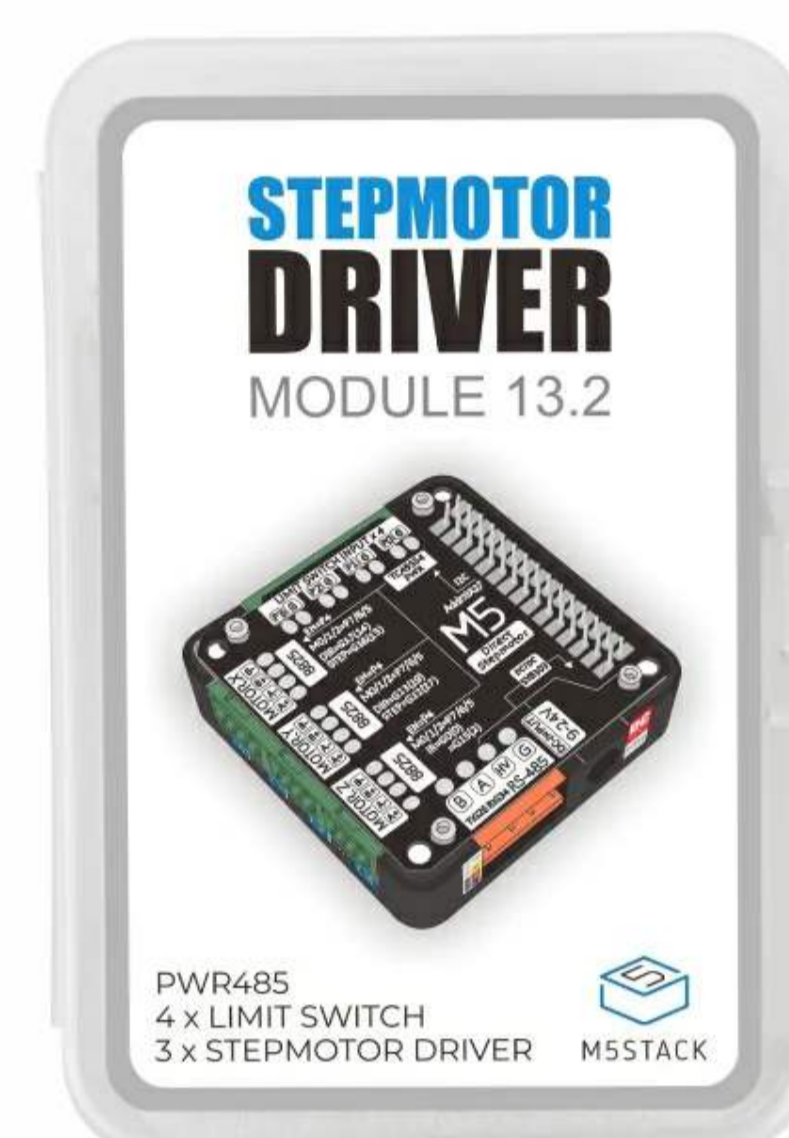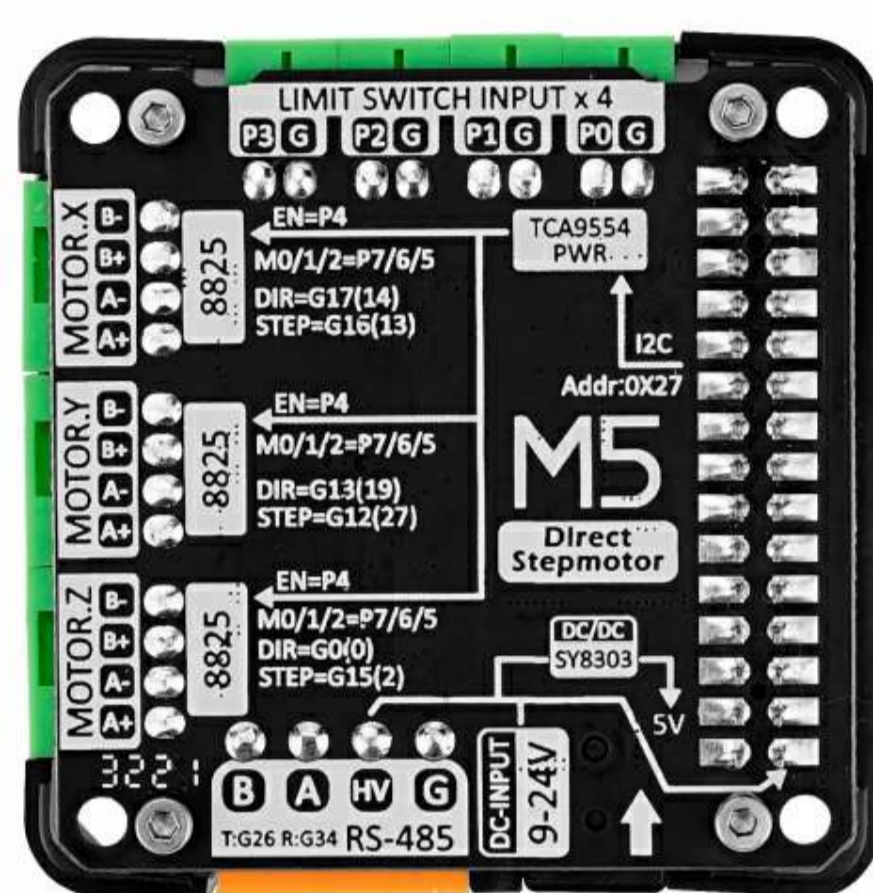
Microstep truth table

M2	M1	M0	Resolution
0	0	0	FULL
0	0	1	1/2
0	1	0	1/4
0	1	1	1/8
1	0	0	1/16
1	0	1	1/32
1	1	0	1/32
1	1	1	1/32

TCA9554寄存器

I2C Addr: 0x27

Use register **0x00** when reading status

Use register **0x01** when writing status

Configure the corresponding bit in register **0x02** to 1 to achieve polarity inversion, and configure it to 0 to not reverse Turn to

The corresponding bit in the register **0x03** is configured as 1 for input mode, and 0 for output mode.
The pin relationship corresponding to the above register bytes is shown in the table below.

Bit	Desc	R/W
7	P7 Subdivision adjustment bit M0	R/W
6	P6 Subdivision adjustment bit M1	R/W
5	P5 Subdivision adjustment bit M2	R/W
4	P4 DRV EN driver chip enable	R/W
3	P3 input signal 3	R/W
2	P2 input signal 2	R/W
1	P1 input signal 1	R/W
0	P0 input signal 0	R/W

Related Links

- HR8825 Datasheet
- TCA9554 Datasheet

Pin Mapping

- HR8825

CORE	G16	G12	G15	G17	G13	G0
HR8825 X	STP X	/	/	DIR X	/	/
HR8825 Y	/	STP Y	/	/	DIR Y	/
HR8825 Z	/	/	STP Z	/	/	DIR Z

- RS485

CORE	G34	G26	GND
RS485	TX	RX	GND

- TCA9554

CORE	G21	G22	5V	GND
TCA9554	SDA	SCL	VIN	GND

Schematics
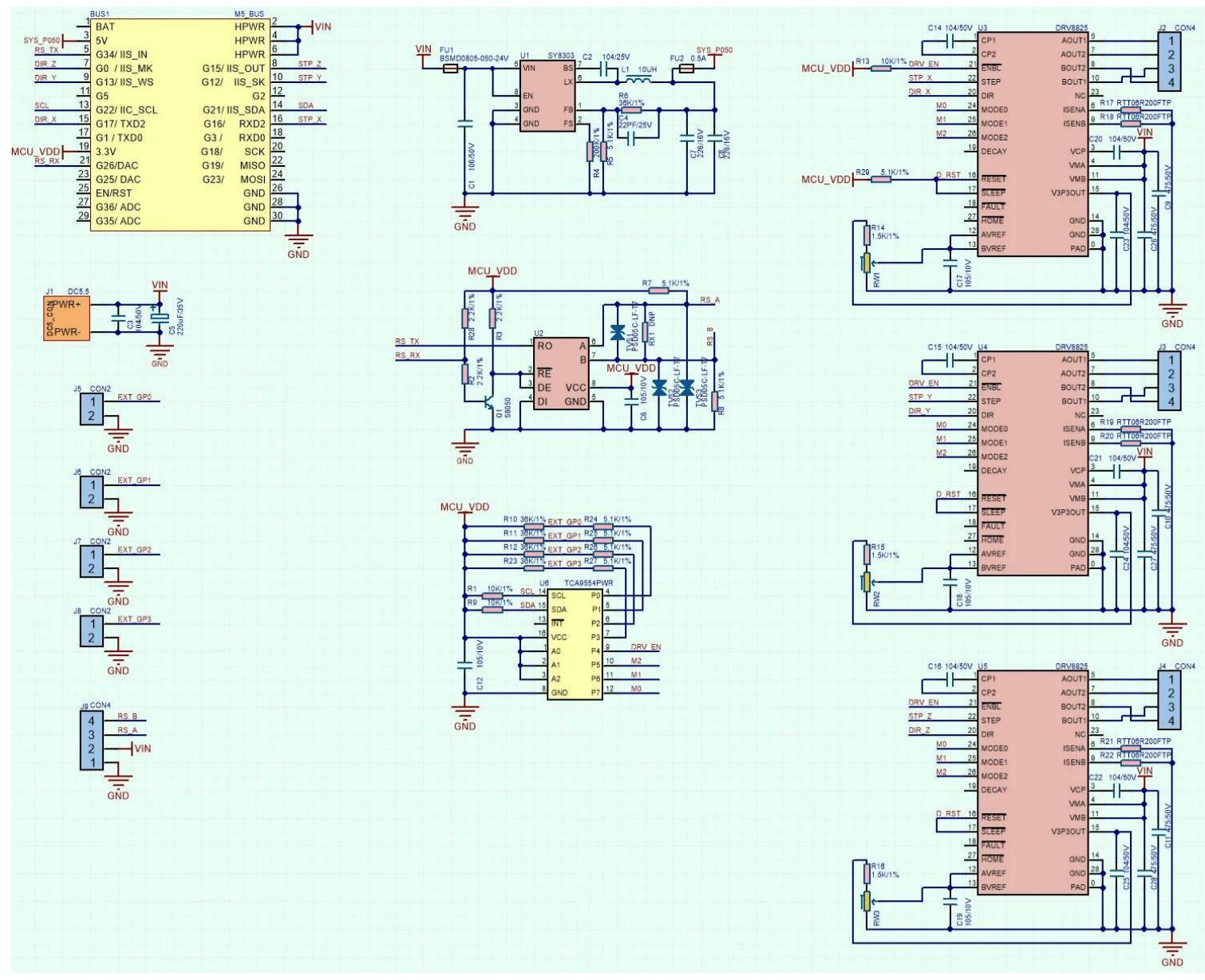
Example

- StepMotor Control

- ESP32-GRBL & WEB-UI

> **Note:**
> ESP32-GRBL & WEB-UI The program requires the use of ESP32 board management **1.0.3** version, which is higher It may not compile normally. Please refer to ESP32-GRBL-WIKI for instructions on use and WEB-UI control

Video