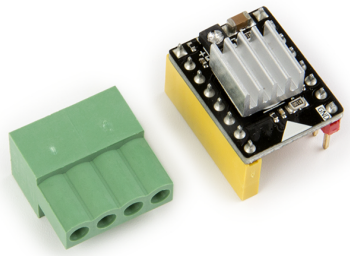
MegaPi Pro Stepper Motor Driver Module



overview

The MegaPi Pro stepper motor driver module is used to drive stepper motors and is suitable for MegaPi and MegaPi Pro main control boards. Using DRV8825 chip, the maximum driving current is 2.5A. DRV8825 is a complete micro-stepping motor driver with built-in converter for easy operation. It can be used to drive bipolar stepper motors operating in 1/2, 1/4, 1/8/1/16 or 1/32 step modes. It also comes with an on-board potentiometer to easily adjust the current to the motor. With the screw mechanism, it can be used for precise motion control, and can be used for industrial-grade linear motion control, such as XYZ structure machines such as 3D printers and laser cutting machines.

technical specifications

- Motor driver: DRV8825
- Output current: 1.75A (under proper conditions of 24V and 25°C heat dissipation)
- Maximum current: 2.5A (pay attention to heat dissipation)
- Driving voltage: 8.2V-45V **Note:** The maximum power supply voltage of MegaPi is 12V. • Logic voltage: 5V • Dimensions: 1.5cm x 2.0cm

Features

- Compatible with 4-wire bipolar stepper motors
- On-board potentiometer to control the current of the stepper motor
- Onboard heatsink for heat dissipation
- Can drive a stepper motor (green interface)
- Male and female pins are color-coded to ensure proper connection
- Small size for easy connection
- There is an Arduino library for easy programming
- Support graphical programming software mBlock3 and mBlock
- Support Raspberry Pi Python programming

programming guide

• Arduino programming (take MegaPi Pro as an example)

function	Function

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MeStepperOnBoard (uint8_port)	Select interface (stepper_1(1) ~ stepper_4(4))
move(position)	Move to the specified position (non-negative integer)
setSpeed(speed)	Set the speed (the maximum speed is determined by the motor model)

programming example

After the following program runs, the stepper motor 1 rotates to the specified position at a speed of 3000/RPM, stops for 1 second, and repeats this process.

```
#include <Arduino.h>
#include <Wire.h>
#include <SoftwareSerial.h>

#include <MeMegaPiPro.h>
MeStepperOnBoard stepper_1(1);

void setup(){
    TCCR1A = _BV(WGM10);//PIN12
    TCCR1B = _BV(CS11) | _BV(CS10) | _BV(WGM12);
    stepper_1.setMicroStep(16);
    stepper_1.enableOutputs();
}

void loop(){
    stepper_1.move(1000);
    stepper_1.setMaxSpeed(3000);
    stepper_1.setSpeed(3000);
    delay(1);
    stepper_1.move(0);
    stepper_1.setMaxSpeed(0);
    stepper_1.setSpeed(0);
    delay(1);
    loop();
}
```

Download sample program

● **mBlock programming**

Instructions for building blocks (take MegaPi Pro as an example)

building blocks	illustrate
	设置接口（接口1~接口4）；设置速度（–3000~+3000）；设置距离（非负整数）

以下程序运行后 MegaPi Pro 接口 1 的步进电机以 3000 的速度运动 1000 距离，停止运动 1 秒，以 –3000 的速度运动 1000 距离，停止运动 1 秒，重复此过程。

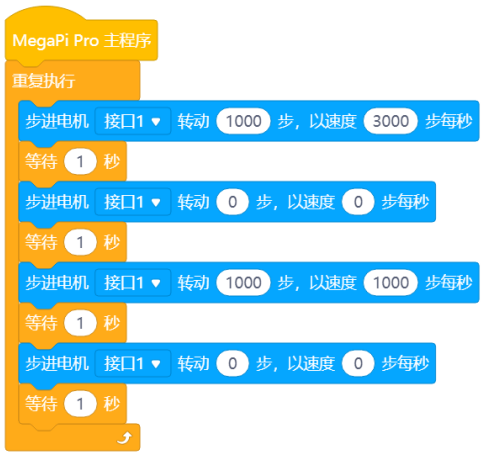
下载示例程序

- **慧编程编程**

积木块说明

积木块	说明
	设置接口（接口1~接口4）；设置距离（非负整数）；设置速度（–3000~+3000）

以下程序运行后 MegaPi Pro 接口 1 的步进电机以 1000 的速度运动 1000 距离，停止运动1 秒，以 –1000 的速度运动 1000 距离，停止运动 1 秒，重复此过程。



下载示例程序

- **Python3 编程**

1、主控板 MegaPi Pro 和树莓派连接。
2、树莓派安装最新的 makeblock 库 `pip3 install makeblock --upgrade`。
3、新建 Python 文件，后缀为 .py。
4、在 Python 文件里写入程序。
5、运行 Python文件，如 “python123.py ”。

函数功能说明

函数	功能

StepperMotor(port)	创建步进电机对象。 port：MegaPiPro.PORT1~MegaPiPro.PORT4
run(speed)	以指定速度旋转。 speed：转速
move_to(position,speed,callback)	以指定速度旋转到指定位置。 position:目标位置；speed：转速；callback：达到目标位置时触发回调
set_home()	设置当前位置为原点

示例程序 1

After the following program runs, the stepper motor of MegaPi Pro interface 1 rotates at a speed of 50 for 2 seconds, stops for 1 second, rotates at a speed of -50 for 2 seconds, stops for 1 second, and cycles according to this process.

```
from time import sleep
from makeblock import MegaPiPro
board = MegaPiPro.create()
stepper = board.StepperMotor(MegaPiPro.PORT1)
while True:
    stepper.run(50)
    sleep(2)
    stepper.run(0)
    sleep(1)
    stepper.run(-50)
    sleep(2)
    stepper.run(0)
    sleep(1)
```

Download sample program

Sample program 2

After the following program runs, the stepper motor of MegaPi Pro interface 1 rotates to the specified position.

```
from time import sleep
from makeblock import MegaPiPro
board = MegaPiPro.create()
stepper = board.StepperMotor(MegaPiPro.PORT1)
position = 0
def on_finished(value):
    position = 5000 - position
    stepper.move_to(position,100,on_finished)

on_finished(position)
```

Download sample program