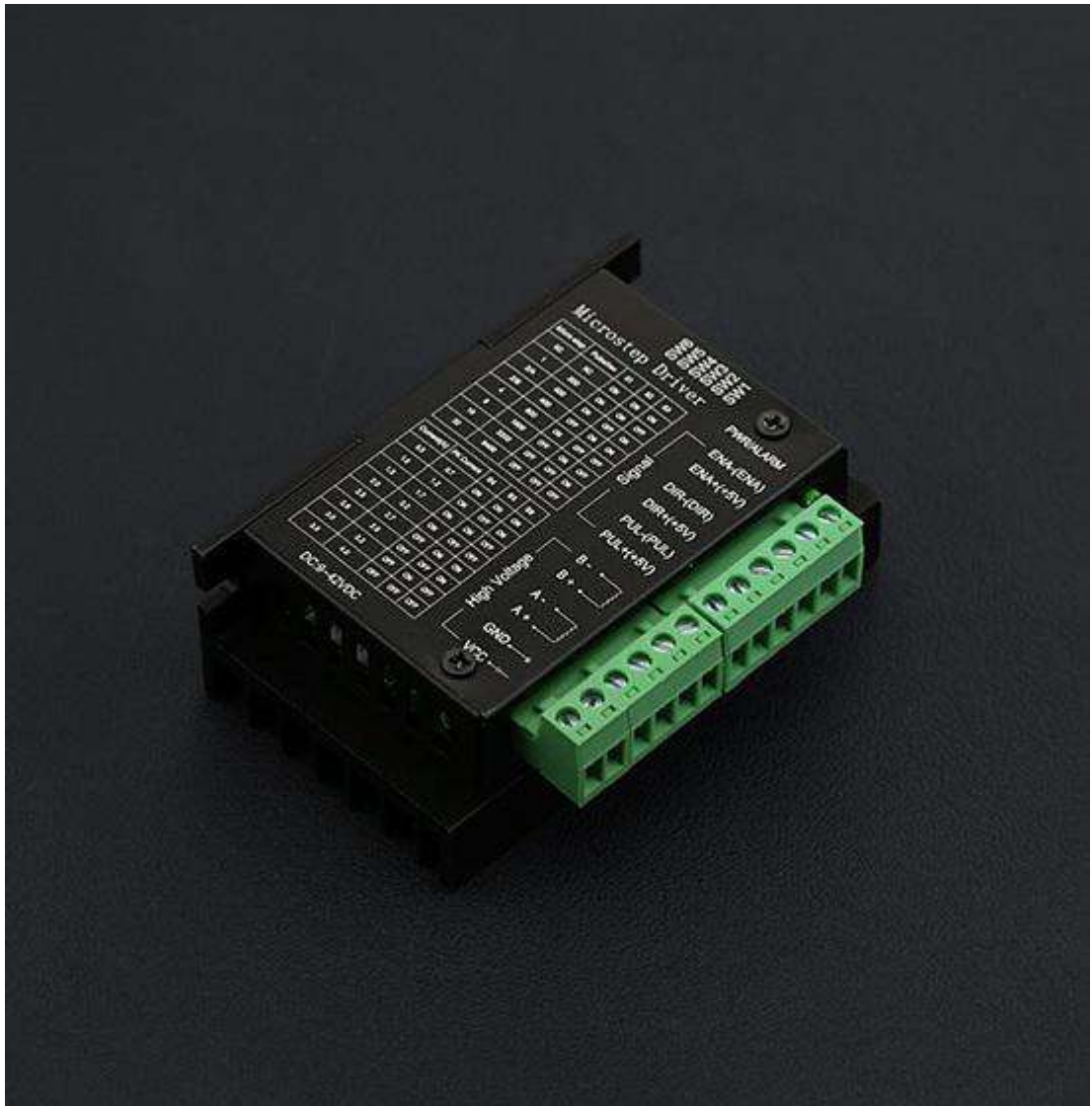


# TB6600 Stepper Motor Driver User Guide



Version: V1.2

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Safety Precautions:

- Before using this product, please read this instruction manual carefully
- Keep this manual in a safe place for future reference
- The appearance of the picture is just for reference, please prevail in kind
- ❖ This device is driven by DC power supply, make sure the power positive and negative before you power it.
- ❖ Please do not electrified plug
- ❖ Please do not mix conductive foreign matter such as screws or metal
- ❖ Please keep it dry, and pay attention to moisture-proof
- ❖ The equipment should be clean and well ventilated.

# 1. Introduction

This is a professional two-phase stepper motor driver. It supports speed and direction control. You can set its micro step and output current with 6 DIP switch. There are 7 kinds of micro steps (1, 2 / A, 2 / B, 4, 8, 16, 32) and 8 kinds of current control (0.5A, 1A, 1.5A, 2A, 2.5A, 2.8A, 3.0A, 3.5A) in all. And all signal terminals adopt high-speed optocoupler isolation, enhancing its anti-high-frequency interference ability.

## Features:

- ※ Support 8 kinds of current control
- ※ Support 7 kinds of micro steps adjustable
- ※ The interfaces adopt high-speed optocoupler isolation
- ※ Automatic semi-flow to reduce heat
- ※ Large area heat sink
- ※ Anti-high-frequency interference ability
- ※ Input anti-reverse protection
- ※ Overheat, over current and short circuit protection

## Electrical Specification:

|                |                           |
|----------------|---------------------------|
| Input Current  | 0~5.0A                    |
| Output Current | 0.5-4.0A                  |
| Power (MAX)    | 160W                      |
| Micro Step     | 1, 2/A, 2/B, 4, 8, 16, 32 |
| Temperature    | -10 ~ 45°C                |
| Humidity       | No Condensation           |
| Weight         | 0.2 kg                    |
| Dimension      | 96*56*33 mm               |

## INPUT & OUTPUT:

- **Signal Input:**

|      |                           |
|------|---------------------------|
| PUL+ | Pulse +                   |
| PUL- | Pulse -                   |
| DIR+ | Direction +               |
| DIR- | Direction -               |
| EN+  | Off-line Control Enable + |
| EN-  | Off-line Control Enable - |

- **Motor Machine Winding:**

|    |                  |
|----|------------------|
| A+ | Stepper motor A+ |
| A- | Stepper motor A- |
| B+ | Stepper motor B+ |
| B- | Stepper motor B- |

- **Power Supply:**

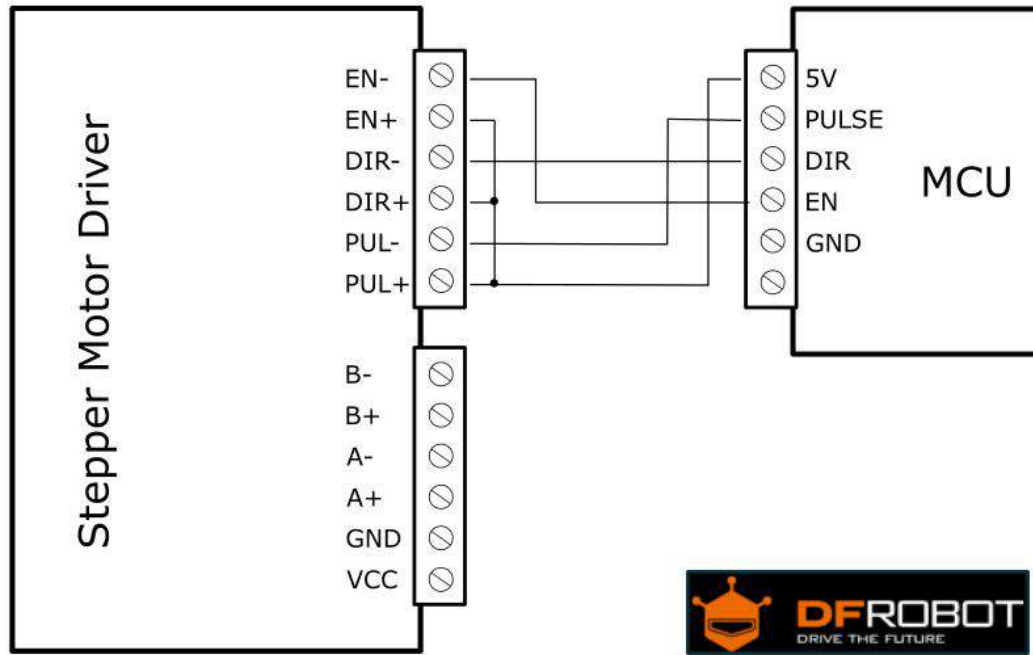
|     |               |
|-----|---------------|
| VCC | VCC (DC9-42V) |
| GND | GND           |

- **Wiring instructions**

There are three input signals in all: ① Step pulse signal PUL +, PUL-; ② Direction signal DIR +, DIR-; ③ off-line signal EN +, EN-. The driver supports common-cathode and common-anode circuit, you can select one according to your demand.

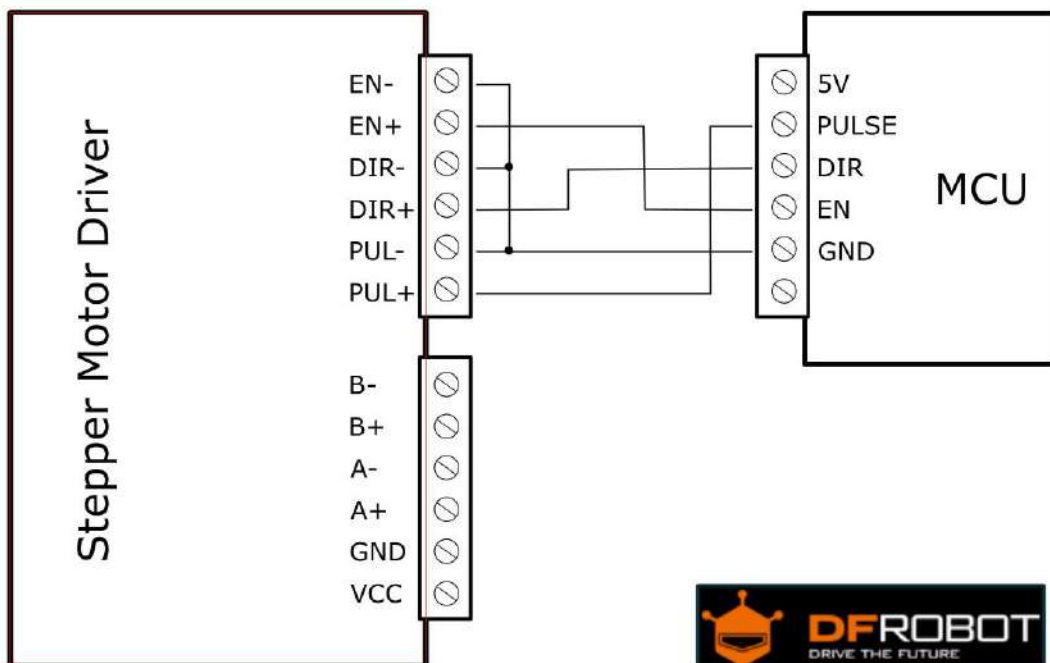
**Common-Anode Connection:**

Connect PUL +, DIR + and EN + to the power supply of the control system. If the power supply is + 5V, it can be directly connected. If the power supply is more than + 5V, the current limiting resistor R must be added externally. To ensure that the controller pin can output 8 ~ 15mA current to drive the internal optocoupler chip. Pulse signal connects to PUL-; direction signal connects to Dir- ; Enable signal connects to EN-. As shown below:



#### Common-Cathode Connection:

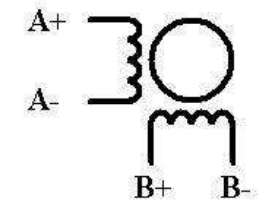
Connect PUL -, DIR - and EN - to the ground terminal of the control system. Pulse signal connects to PUL-; direction signal connects to Dir- ; Enable signal connects to EN-. As shown below:



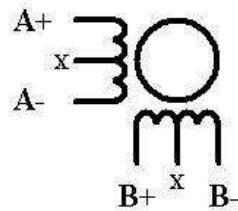
Note: When "EN" is in the valid state, the motor is in a free states (Off-line mode). In this mode, you can adjust the motor shaft position manually. When "EN" is in the invalid state, the motor will be in an automatic control mode.

## 2. Stepper Motor Wiring:

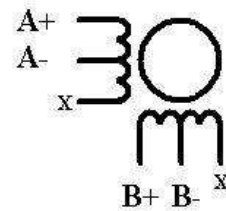
Two-phase 4-wire, 6-wire, 8-wire motor wiring, as shown below:



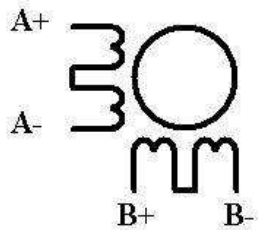
四线电机接线方法



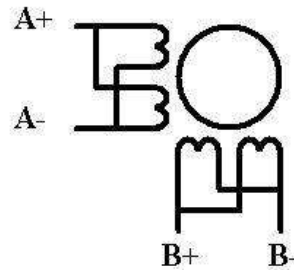
六线电机接线方法  
高力矩输出



六线电机接线方法  
高速度输出



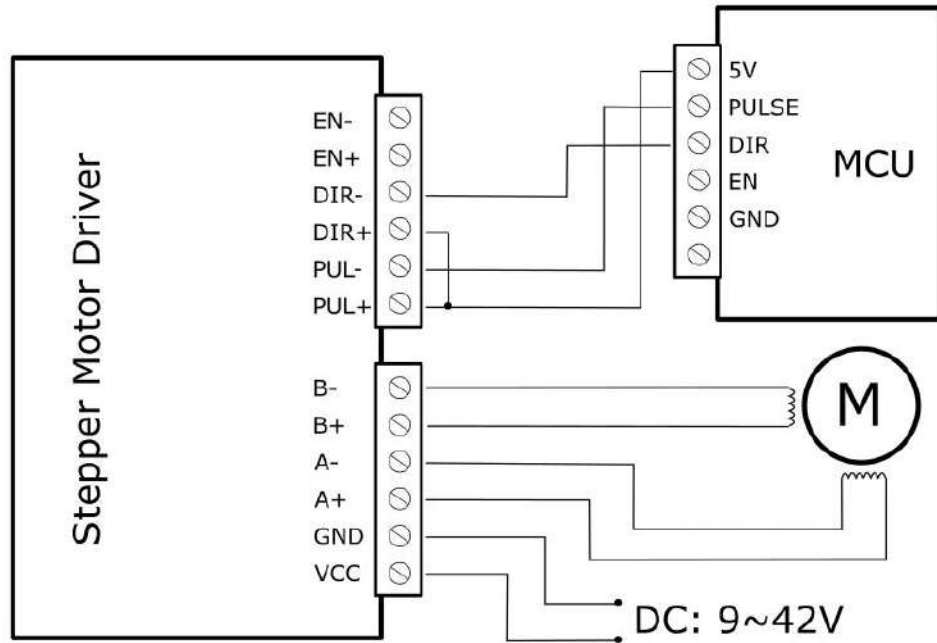
八线电机接线方法  
高力矩输出



八线电机接线方法  
高速度输出

### 3. Microcontroller Connection Diagram:

This is an example for the common-anode connection. ( "EN" not connected )



Note: Please cut off the power when you connect the system, and ensure the power polar is correct. Or it will damage the controller.



## 4. DIP Switch

### Micro Step Setting

The follow tablet shows the driver Micro step. You can set the motor micro step via the first three DIP switch.

Step Angle = Motor Step Angle / Micro Step

E.g. An stepper motor with 1.8° step angle , the finial step angle under "Micro step 4" will be  $1.8^{\circ}/4=0.45^{\circ}$

| Micro Step | Pulse/Rev | S1  | S2  | S3  |
|------------|-----------|-----|-----|-----|
| NC         | NC        | ON  | ON  | ON  |
| 1          | 200       | ON  | ON  | OFF |
| 2/A        | 400       | ON  | OFF | ON  |
| 2/B        | 400       | OFF | ON  | ON  |
| 4          | 800       | ON  | OFF | OFF |
| 8          | 1600      | OFF | ON  | OFF |
| 16         | 3200      | OFF | OFF | ON  |
| 32         | 6400      | OFF | OFF | OFF |

### Current Control Setting

| Current (A) | S4  | S5  | S6  |
|-------------|-----|-----|-----|
| 0.5         | ON  | ON  | ON  |
| 1.0         | ON  | OFF | ON  |
| 1.5         | ON  | ON  | OFF |
| 2.0         | ON  | OFF | OFF |
| 2.5         | OFF | ON  | ON  |
| 2.8         | OFF | OFF | ON  |
| 3.0         | OFF | ON  | OFF |
| 3.5         | OFF | OFF | OFF |

## 5. Off-line Function (EN Terminal):

If you turn on the Off-line function, the motor will enter a free state. You can adjust the motor shaft freely, and the pulse signal will be no response. If you turn it off, it will be back into automatic control mode

**Note: Generally, EN terminal is not connected.**

## 6. FAQ

1. Q: If the control signal is higher than 5V, how do I connect?

A: You need add a resistor in series

2. Q: After connected the power, why the motor doesn' t work? The PWR Led has been ON.

A: Please check the power supply, it must higher than 9V. And make sure the I/O limited current is higher than 5mA

3. Q: How do we know the right order of the stepper motor?

A: Please check the motor specification, it show you the right order. Or you can measure it with a multimeter.

## 7. Dimension (96\*56\*33)

