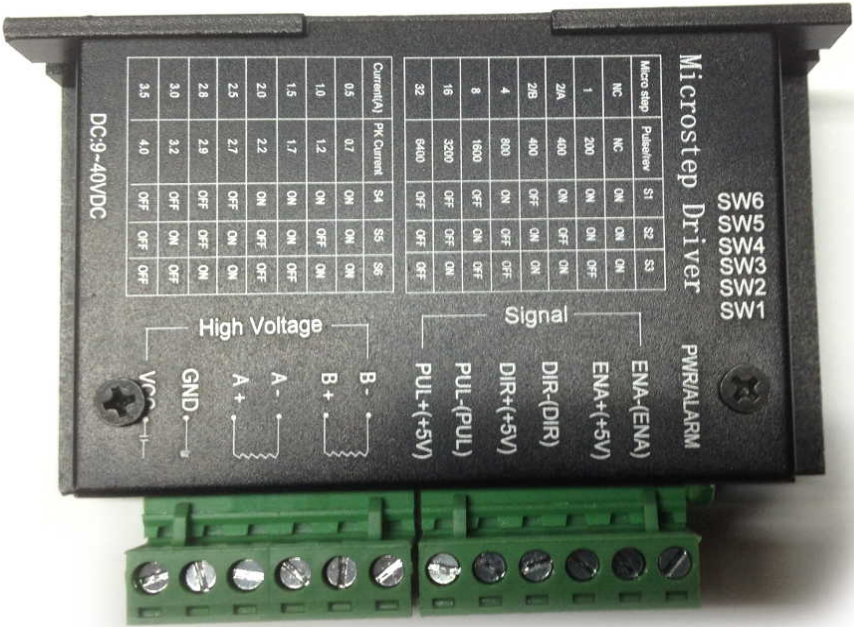# User's Manual
For

TB6600
Stepper Motor Drive

Safety Statement

The author of this document is not liable or responsible for any accidents, injuries, equipment damage, property damage, loss of money or loss of time resulting from improper use of electrical or mechanical or software products.

Assembling electrical CNC machine components like power supplies, motors, drivers or other electrical components involves dealing with high voltage AC (alternating current) or DC (direct current) which can be extremely dangerous and needs high attention to detail, experience, knowledge of software, electricity and electro-mechanics or mechanics.

BEFORE MAKING ANY CONNECTIONS OR DISCONNECTIONS POWER MUST BE REMOVED FROM THE DEVICE AND THE CONTROLLER. FAILURE TO DO SO WILL VOID ANY AND ALL WARRANTIES.

Introduction

The TB6600 Stepper Motor Driver 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 switches. 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. All signal terminals adopt high-speed optocoupler isolation, enhancing its anti-high-frequency interference ability.

Features

- Supports 8 levels of current control
- Supports 7 levels of micro step adjustment
- 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℃
- Humidity: No Condensation
- Weight: 0.2 kg
- Dimensions: 96x56x33 mm

Application

Suitable for a variety of small and medium sized automation equipment and instruments, such as: engraving machine, marking machine, cutting machine, laser typesetting, plotters, CNC machine tools, handling the devices.

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:

1. Step pulse signal PUL +, PUL-;

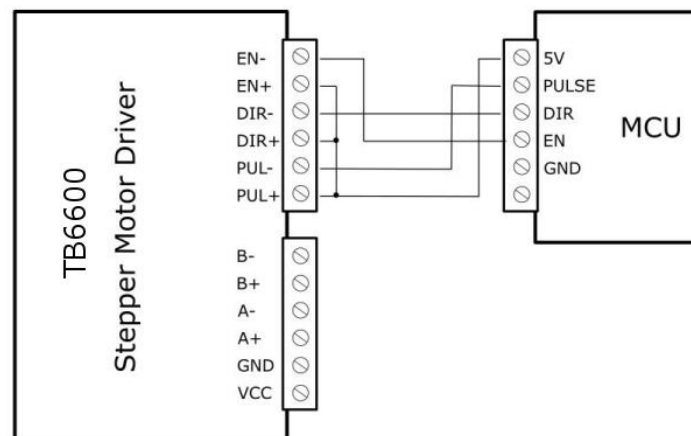2. Direction signal   DIR +, DIR-;

3. Enable signal   EN +, EN-.

The driver supports common-cathode and common-anode circuit, you can select one according to your requirements.

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, a current limiting resistor R must be added externally to ensure that the controller pin can output 8 - 15mA current to drive the internal optocoupler.
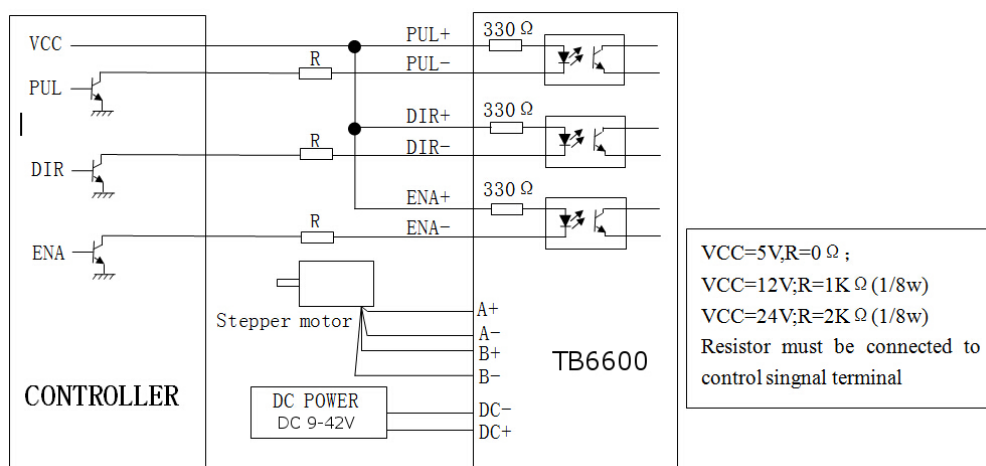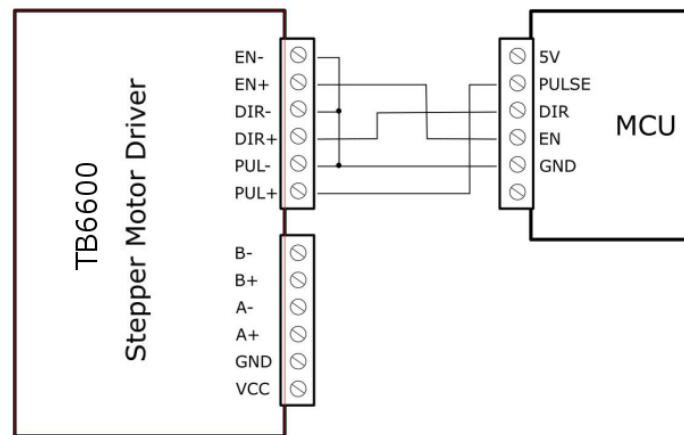

Pulse signal connects to PUL-; direction signal connects to Dir- ; Enable signal connects to EN-. As shown below:

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 state (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.
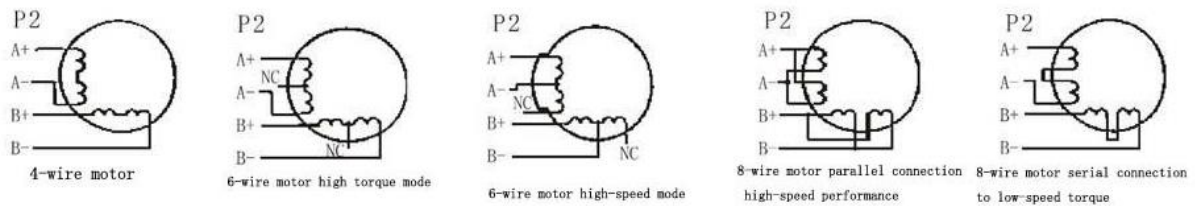
Microcontroller Connection

Below is a common-anode connection ("EN" not connected).
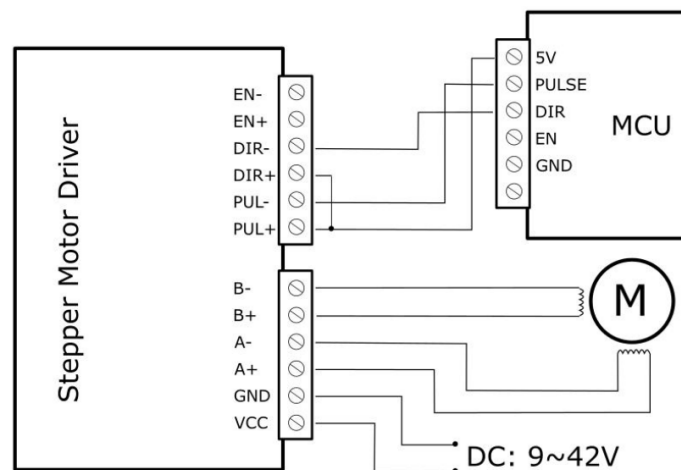
Note: Always disconnect the power when making connections and ensure the power polar is correct. Or it will damage the controller.

Stepper Motor Wiring

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

DIP Switch Settings

Micro-Step Setting

The follow table shows the TB6600 Driver Micro step settings. The first 3 DIP switches are used to set the micro steps.

Step Angle = Motor Step Angle / Micro Step

E.g. A stepper motor with a 1.8° step angle, the final step angle under "Micro step 4" will be 1.8°/4=0.45°

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

Enable / Off-Line Function

If you turn on the Enable / Off-line function, the motor will enter a free state, you will be able to turn the motor shaft freely and any pulse signal will be ignored. If you turn it off, the driver will be in automatic control mode.

Note: Generally, EN terminal is not connected.

Images