



TB6600 Stepper Motor Driver Wiring & Set Up Guide



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0.0 Safety Statement

All machinery, especially CNC or automated machinery, has inherent dangers and risks. It is the responsibility of the system designer to ensure that any systems built using any Viking Machinery Ltd. products are safe for use. Any technical information is provided as a reference only, and does not constitute a recommendation as to the fitness of use in any particular application.

Viking Machinery Ltd. strongly urges customers to seek expert advice when dealing with potentially dangerous electrical voltages and sources of mechanical energy. Information contained in this document should not be considered as a substitute for expert advice.

1.0 Product Overview

- Input Current: 0 – 5A
- Input Voltage Range: 9-40V DC (12-36V DC Recommended)
- Output Phase Current: 0.5 – 4.0A
- Maximum Power Dissipation: 160W
- Microstepping Resolutions Available: 1, 2, 4, 8, 16, 32
- Weight: 200g
- Maximum operating frequency: 20kHz
- Suits Bipolar Stepper Motors

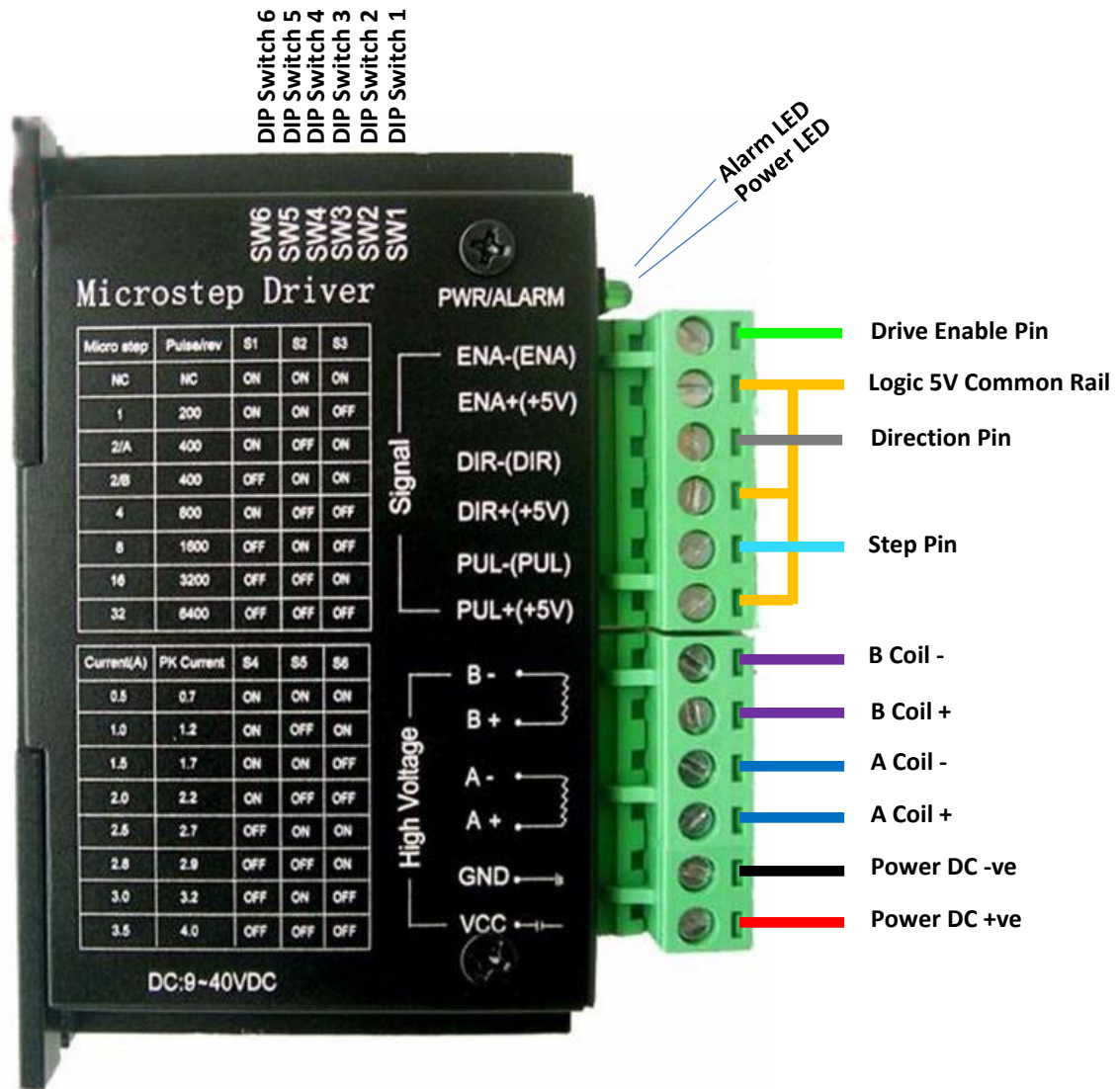
2.0 Scope of Document

This document is designed to give an overview of the wiring and set up options for the TB6600 chip-based stepper motor driver. Examples are given for both CNC applications and microcontroller-based applications.

To set the driver correctly, you will need to know the details of your stepper motor. Generally, this will be provided by your motor supplier.

3.0 Pin Map & Conenctions

The diagram below identifies the input and output connections of the driver, as well as the location of the DIP switches and status LEDs.



4.0 Motor Coil Identification

Your stepper motor will generally have between 4 and 8 wires leading from it. This document will only briefly cover the methods for identifying the coils and the benefits for each selection.

As a general rule, you will require a multi meter set on the continuity setting to identify your phase wiring. 4 and 6 lead stepper motors are by far the most commonly available, so we will discuss working with them, although the 8 lead motors are dealt with in broadly the same manner.

Assuming your coils are not identified, you will want to start by measuring the resistance between each wire and all of the others. If you record the wires resistances in a table, you will quickly see which have continuity with which, and also the case of the 6 wire motors; the resistance values will let you identify the mid point and end points of the coils.

The designation of A coil and B coil are arbitrary – you can nominate them as you see fit. The + and – designations are also arbitrary for the Bipolar wiring options shown in the table below.

The four lead connection is the most simple and offers no wiring options. The 6 lead motor however can either be connected in half winding mode (labelled “Unipolar Connection” below) or else in series winding mode (labelled “Bipolar Connection” below). If the motor is used wired in series, you must set the drive current to HALF of the motors current rating.

Wire Connection Diagrams

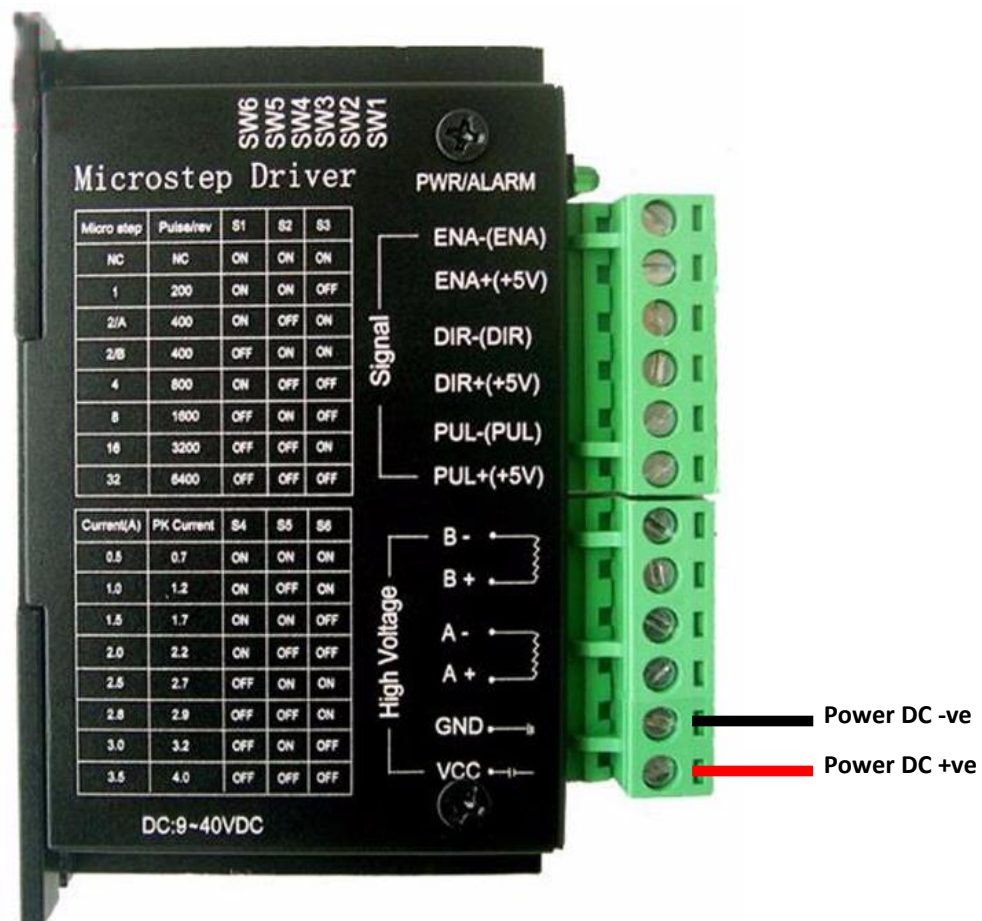
4 Lead Bipolar Connection	6 Lead Unipolar Connection	6 Lead Bipolar (Series) Connection
8 Lead Unipolar Connection	8 Lead Bipolar (Series) Connection	8 Lead Bipolar (Parallel) Connection

5.0 Power Wiring

Your stepper drive requires a DC supply voltage of between 12 and 36 Volts, capable of supplying at least 5 amps continuously.

Please be aware of the polarity of your power supply – connecting the wires backwards will result in damage to your components.

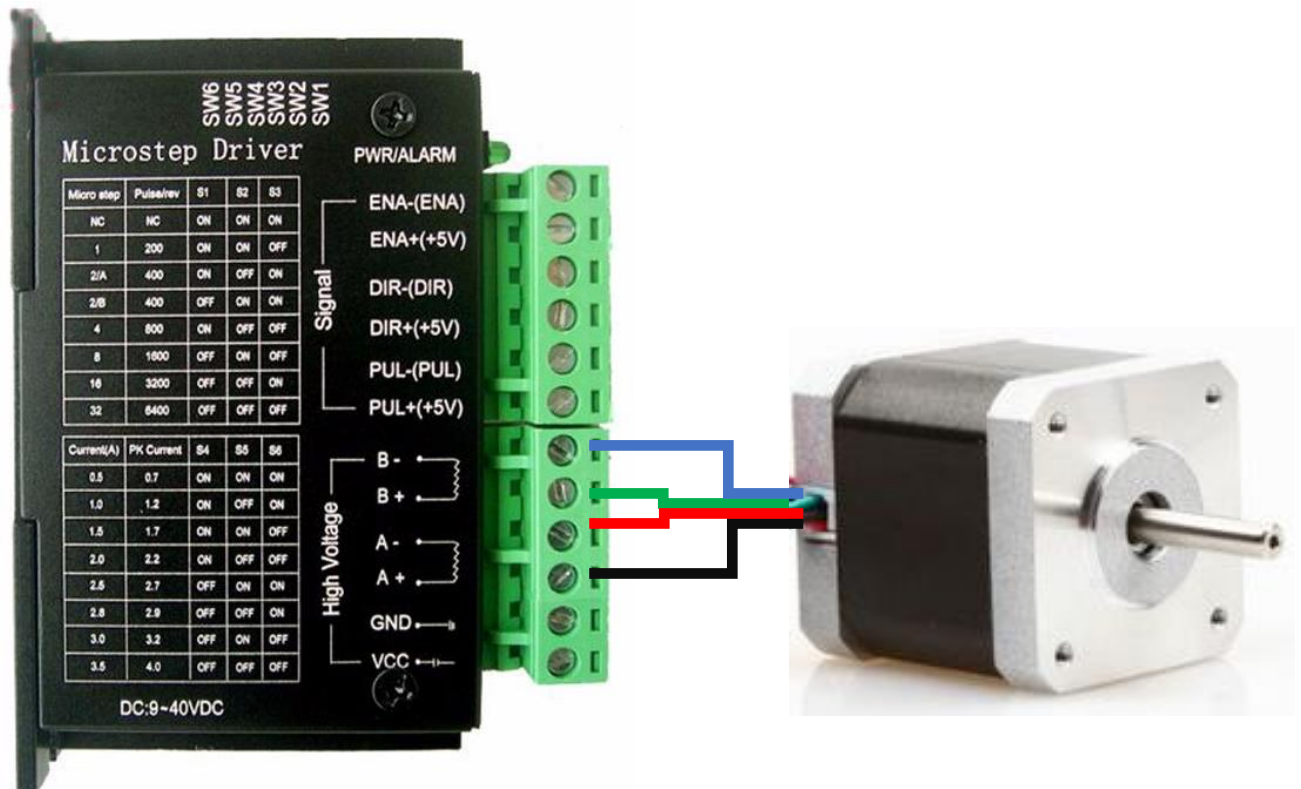
The power connection is shown below.



6.0 Output Wiring

The diagram below shows the typical wiring for a four wire stepper motor. To avoid damage to the driver, it is essential that you do not ever connect or disconnect a stepper motor while the drive is powered on.

Please note that your stepper motors wire colour may vary from that shown.

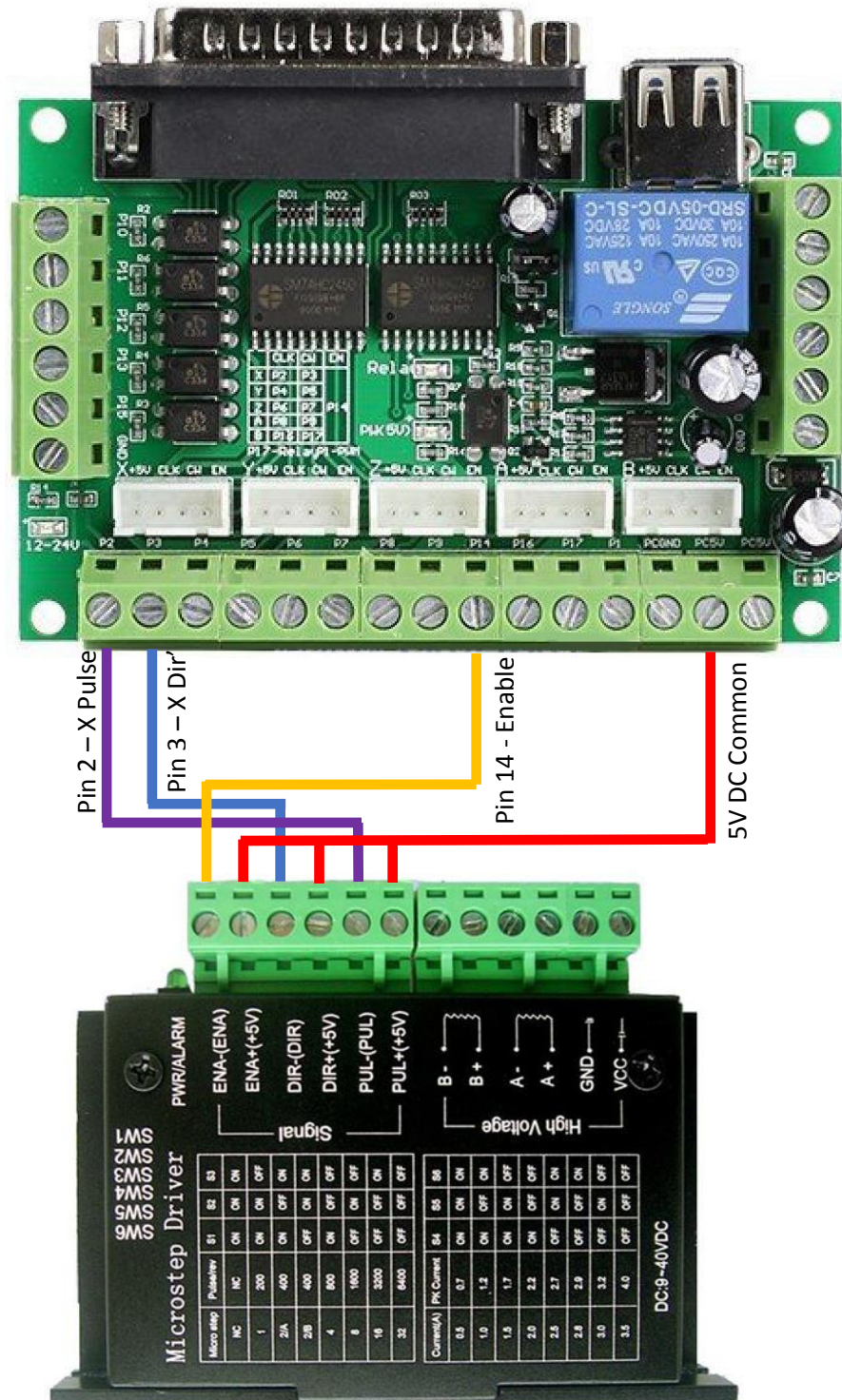


7.0 Input Wiring - CNC

Below is a diagram showing the typical wiring of this drive to our DB25 Break Out Board (BOB).

It is important to only use the 5V supply from the controller to power the logic side of your drive. Using an external power supply for this can cause performance issues.

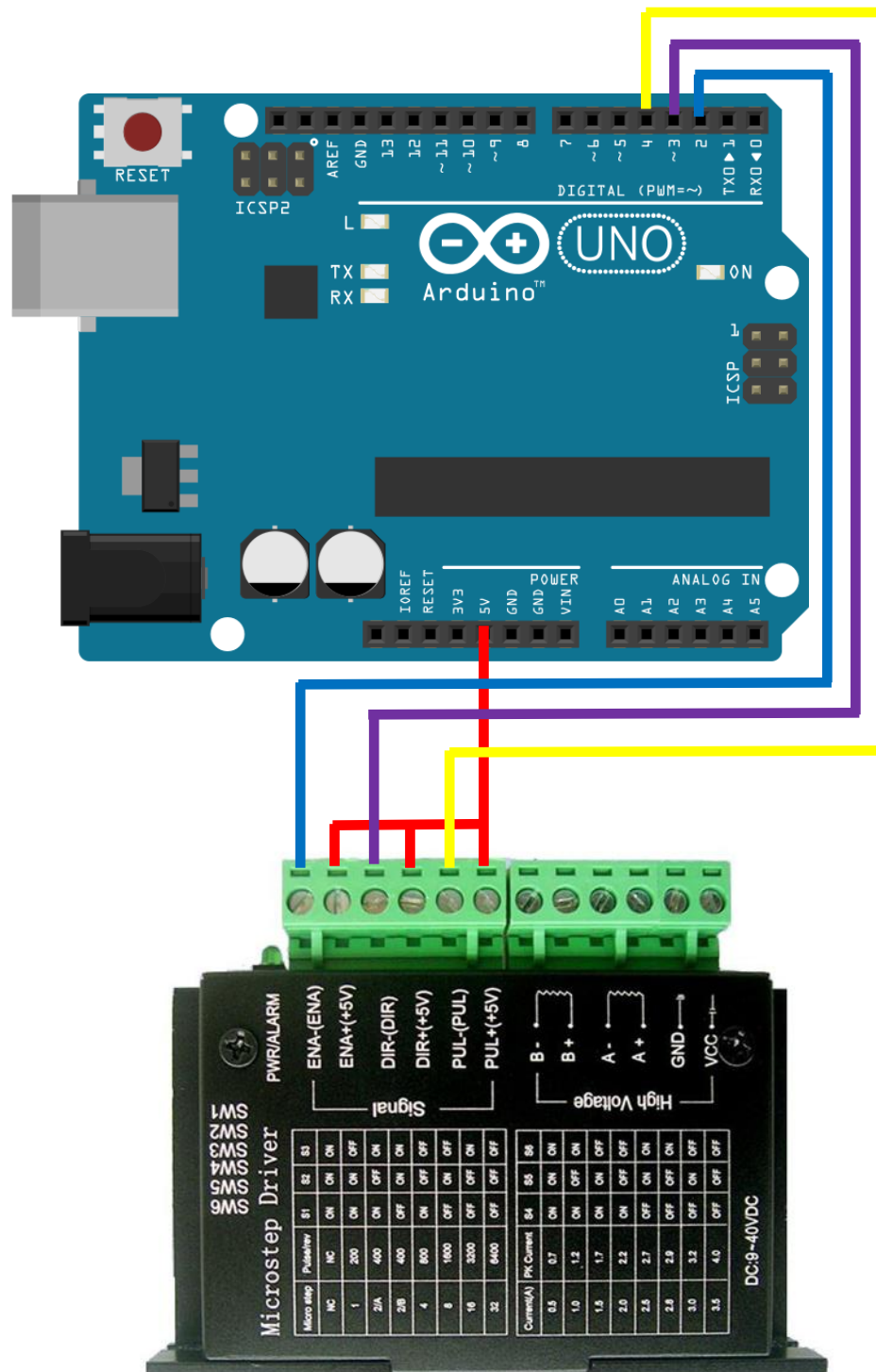
The enable pin is optional – if you leave it disconnected the drive will always be enabled as long as the main power is on.



8.0 Input Wiring - Arduino

Below is a diagram showing the typical wiring of this drive to an Arduino Uno board. In this example, we are using pins 2, 3, and 4 as the enable, step and pulse pins respectively.

To send a signal to the drive, the Arduino pin needs to be pulled low.



7.0 Reference Links

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Viking Machinery - TradeMe Store

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