

Micro-Step Stepper Motor Driver

Hardware Manual Rev 1r0



FEATURES & SPECIFICATIONS

Compatible with both Bipolar and Unipolar stepper motor

User selectable 1 to 16 microstep function significantly reduce motor vibrations for quiet and more reliable stepper motor operation. Automatic reduction of current drive during hold state keeps your stepper motor running cool.

Two modes of operation:

Pulse Mode - Pulse input determines the speed and position.

Command mode - Just specify the speed and stop position, and the PWM driver does the rest for you. This includes acceleration and deceleration ramping.

VM - Power Input 7-24V

Run & Holding Current Adjustor - for fast and easy motor revolution adjustment.

MAJOR COMPONENTS PRESENTATION & PIN OUTS DESCRIPTION

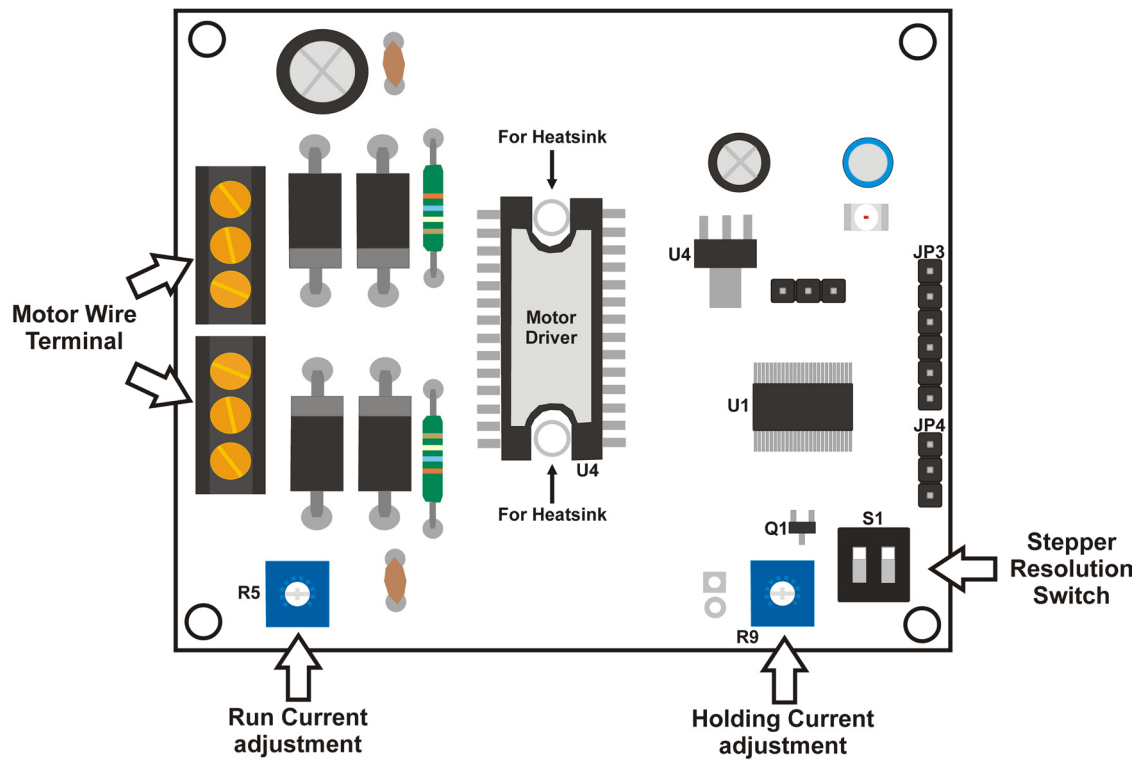


Figure 1. Micro-Step Stepper Motor Driver's Major Components illustration

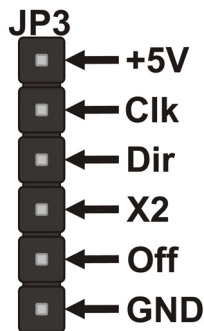


Figure 2. JP3 Pin Assignments.

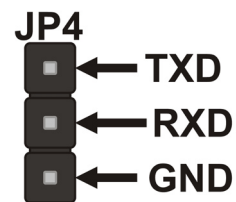


Figure 3. JP4 Pin Assignments.

Table 1. JP3 Pin Assignments & Description.

| Pin I.D. | Description |
|----------|-----------------------|
| +5V | +5V power supply |
| Clk | Clock(Hi,Lo) |
| Dir | Direction Input |
| X2 | *2 Stepper resolution |
| Off | Motor Off Input |
| GND | Ground |

Table 2. JP4 Pin Assignments & Description.

| Pin I.D. | Description |
|----------|--------------|
| TXD | Transmission |
| RXD | Reception |
| GND | Ground. |

MOTOR RESOLUTION, CONNECTION & ADJUSTMENTS

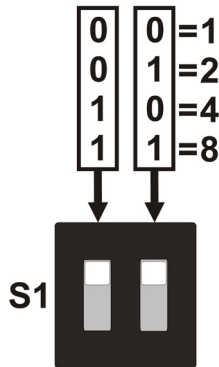


Figure 4. Stepper motor resolution switch combination.

The connected stepper motor's revolution can be adjust by the stepper motor resolution, the switch code is determined by 0 & 1, 1 = 'UP' and 0 = 'DOWN', the switch's resolution code combination is illustrated above (Figure 4.).

The switch is also depending on 'JP3' 'X2' pin, if the 'X2' pin is 'Lo' the stepper behavior is *2.

Note: When 'X2' pin is 'Hi' stepper motor is half step and when it is in 'Lo' state the stepper motor is at full step.

The higher the stepper behavior is, the vibration lessens and vice-versa the lower the stepper behavior is, the vibration increases.

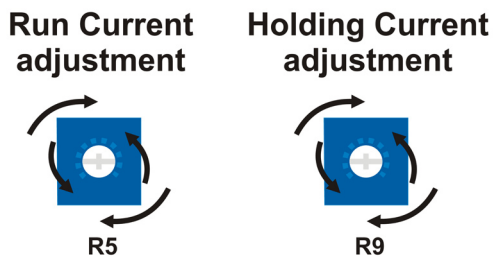


Figure 6. Motor Run & Hold adjustment.

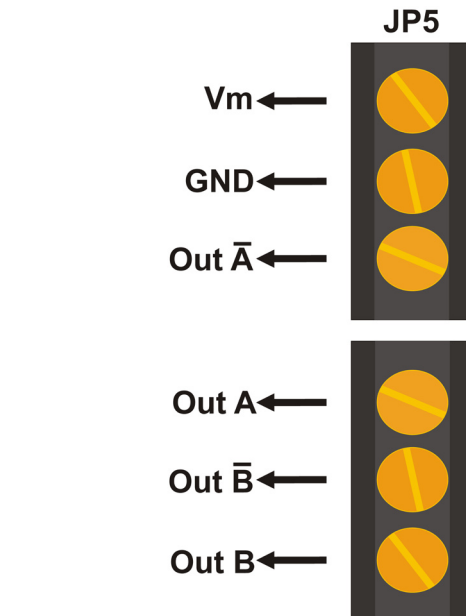


Figure 5. Motor Connection Port details.

Table 3. JP5 Port Assignments & Description.

| Pin I.D. | Description |
|---------------|----------------------|
| Vm | Vmotor |
| GND | Ground |
| Out \bar{A} | for motor wire (-) A |
| Out A | for motor wire (+) A |
| Out \bar{B} | for motor wire (-) B |
| Out B | for motor wire (+) B |

In this function the R5 or Run Current adjustment is the one who controls the motor speed, adjusting it may affect the stepper motor's revolution, you can lessen or increase the motor revolution speed by just rotating the white part of the adjustor.

The Holding Current adjustment is where you can adjust the hardness of the motor shaft's rotation when the motor is in stop or idle state, just like the run current adjustment, just rotate clockwise or counter-clockwise the white part of the adjustor.

CONNECTING A MOTOR (UNIPOLAR & BIPOLAR)

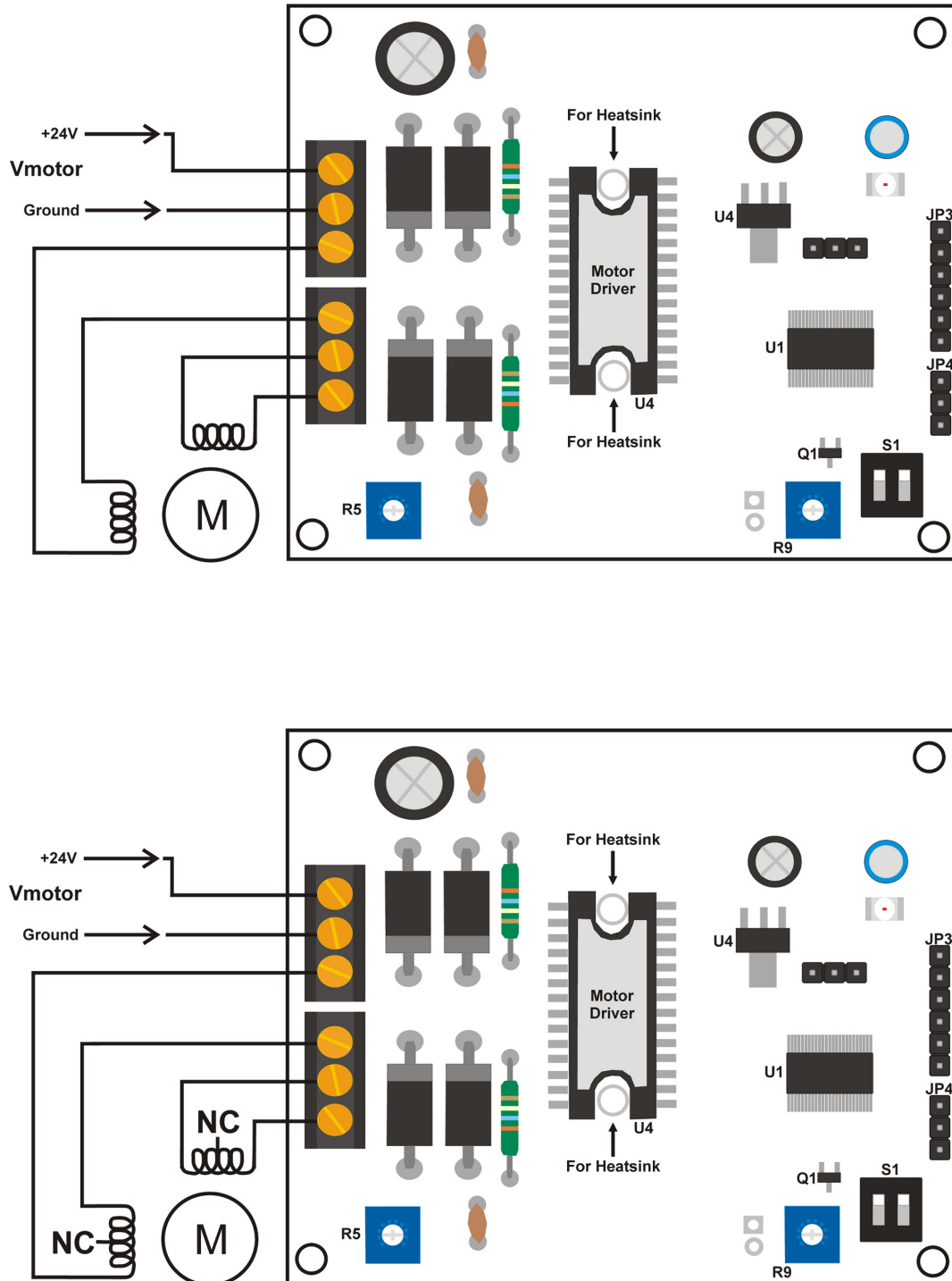


Figure 6. Illustration on how the bipolar motor (Top) and unipolar motor (Bottom) is connected to the 'JP5' Motor Port.

CONNECTING MICROCONTROLLERS

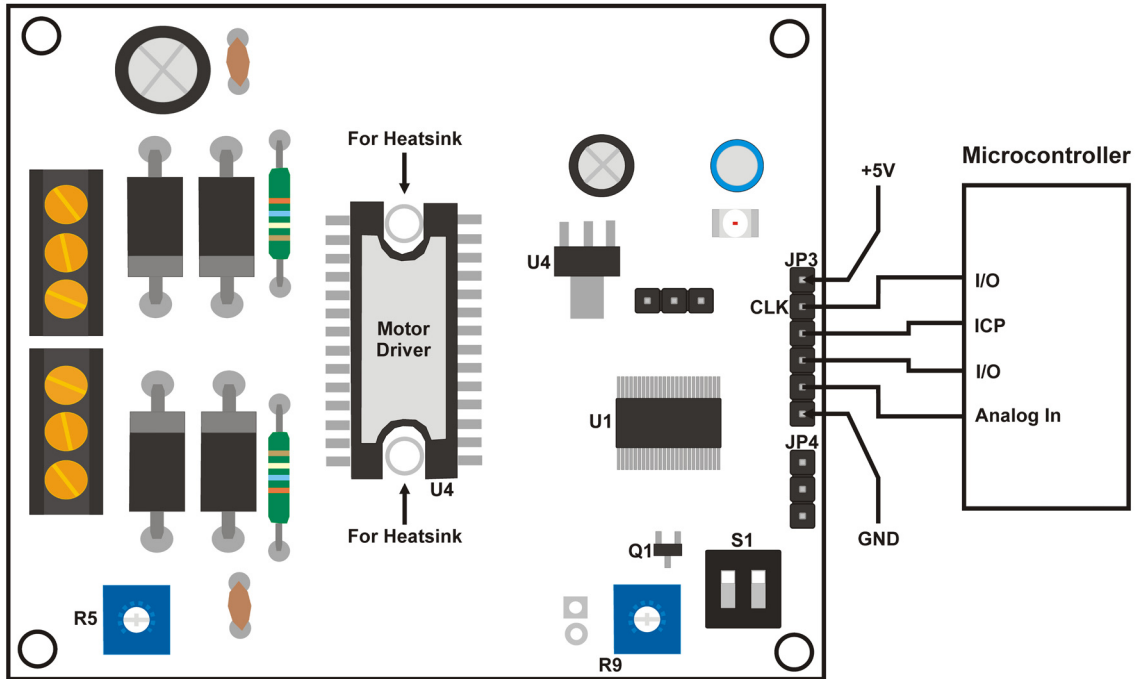
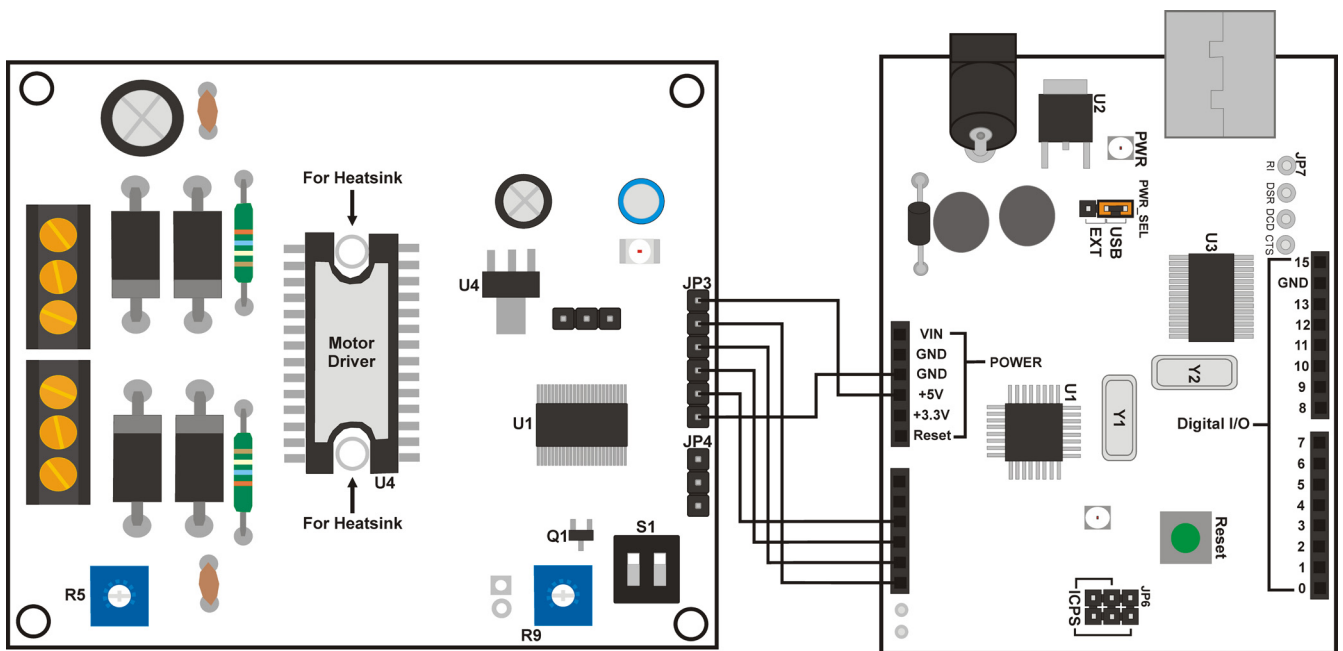


Figure 7. Example Connection of Micro -step stepper motor driver to a microcontroller.



Gizduino Microcontroller

Figure 8. Example wiring connection of Micro -step stepper motor driver to gizduino microcontroller.

PCB BOARD PRESENTATION

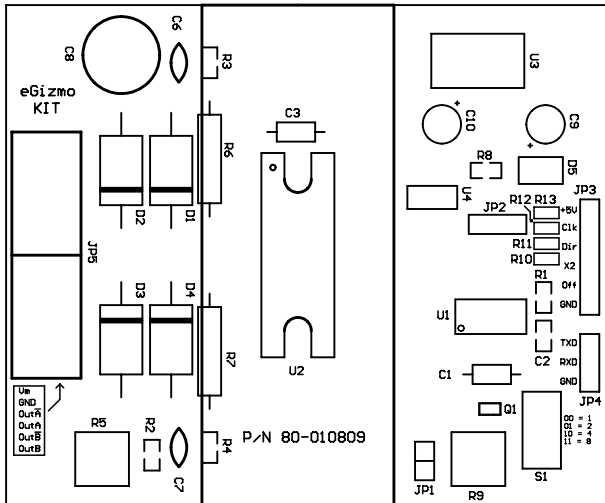


Figure 10. Micro-Step Stepper Motor Driver PCB (silkscreen layout)

Figure 11. Micro-Step Stepper Motor Driver PCB Copper Pattern (Top Layer)

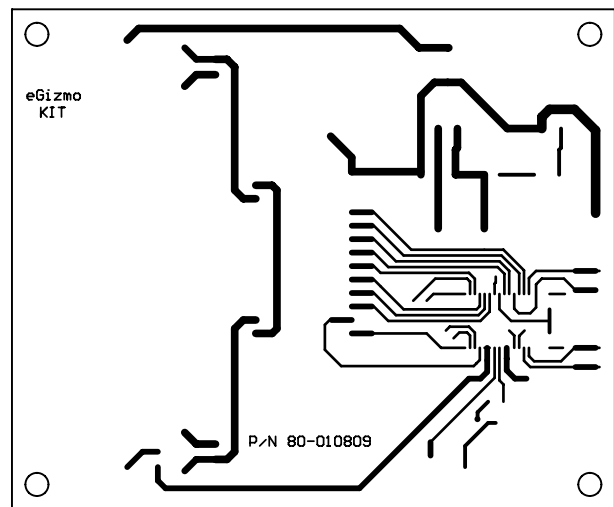


Figure 12. Micro-Step Stepper Motor Driver PCB Copper Pattern (Bottom Layer)

