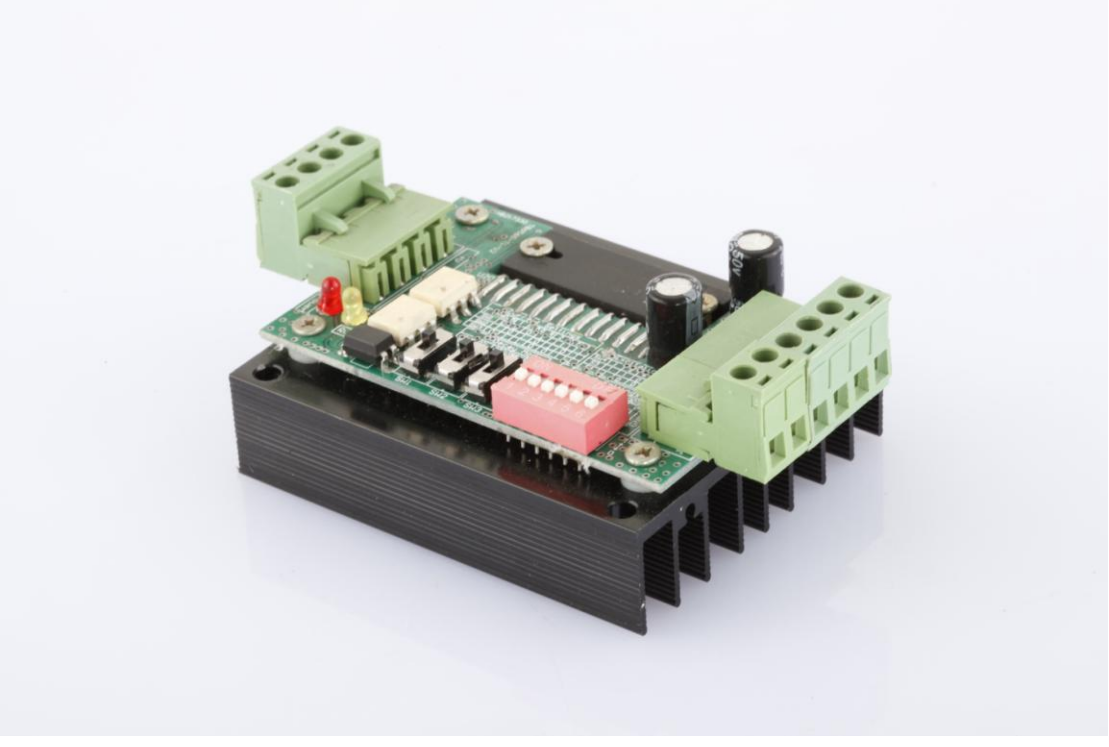
Datasheet-TB6560 3Axis Stepper Motor Driver



1.Introduction

The TB6560-3 Axis Stepper Motor Driver is a excellent microstepping driver that use TOSHIBA TB6560 Chip,based on pure-sine current control technology.Owing to the above technology and the self-adjustment technology (self-adjust current control parameters) according to different motors, the driven motors can run with smaller noise, lower heating, smoother movement and have better performances at higher speed than most of the drives in the markets. It is suitable for driving 2-phase and 4-phase hybrid stepping motors.

2.Features

- Low cost and good high-speed torque
- Supply voltage up to +32 VDC
- Output current up to 3.0A
- Pulse frequency up to 20 KHz
- Suitable for 2-phase and 4-phase motors
- Over-voltage and short-circuit protection
- 7 output current choices, max 3200 steps/rev
- Automatic idle-current reduction
- Slim size (96x61x37mm)

3.Applications

Applications

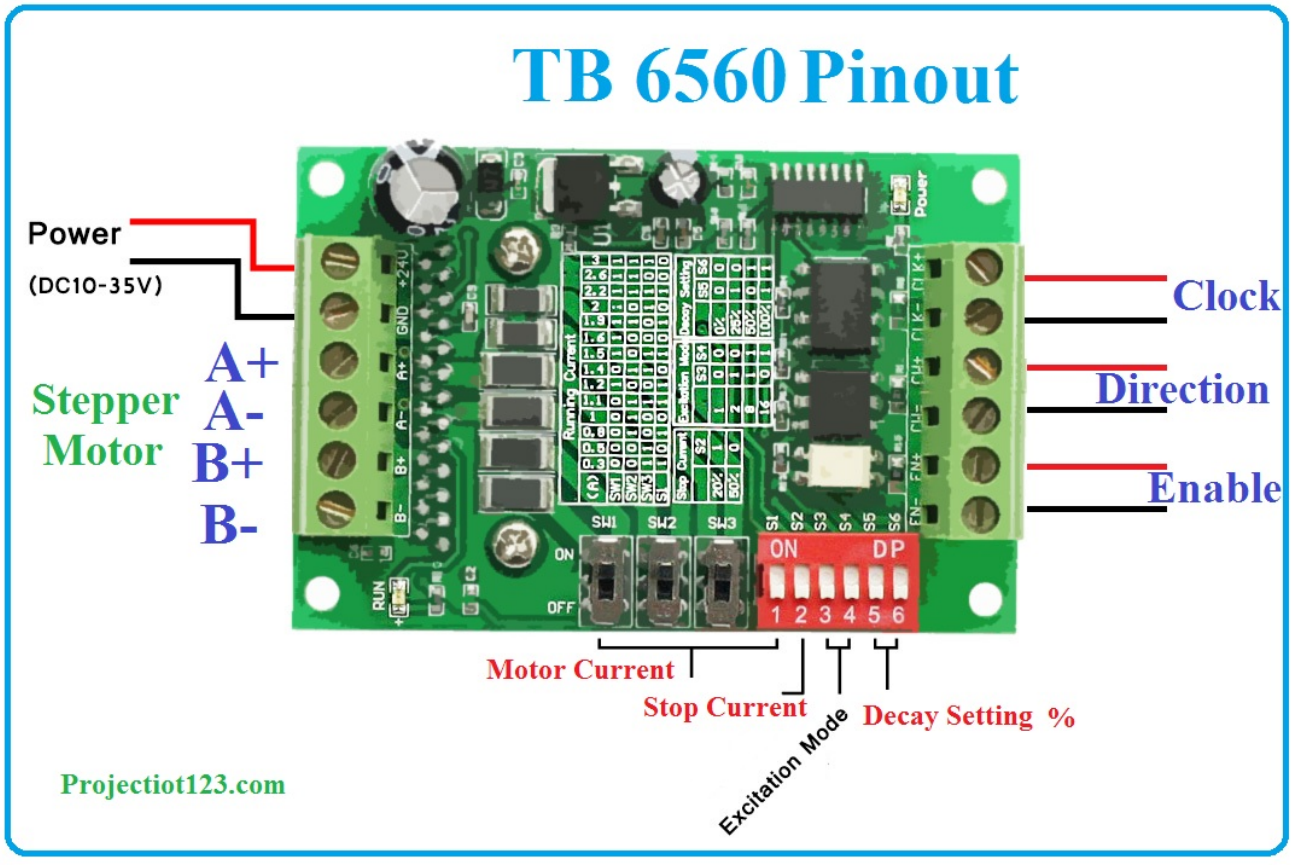
Suitable for a wide range of stepping motors from NEMA size 17 to 23. It can be used in various kinds of machines, such as X-Y-Z tables, labeling machines, laser cutters, engraving machines,pick-place devices, and so on. Particularly adapt to the applications desired with low vibration,high speed and high precision.

4. Specifications and Operating Environment

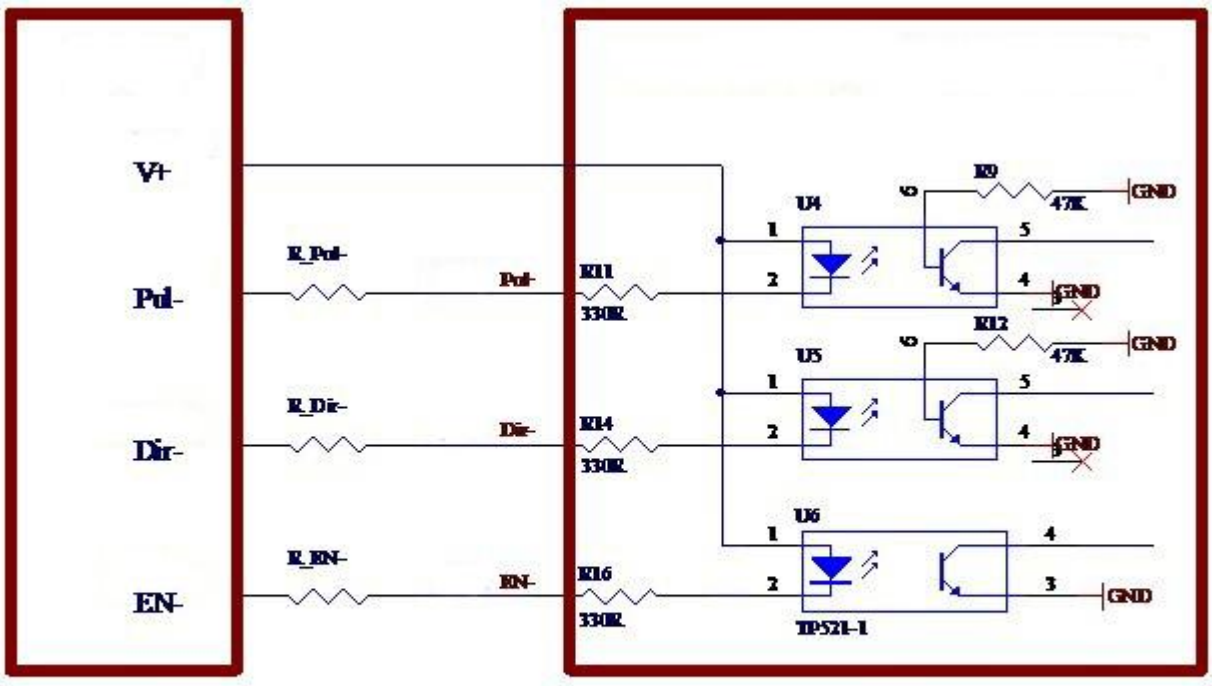
Electrical Specifications(Tj=25°C)

Parameters		TB6560-3AXIS			
		Min	Typical	Max	Unit
Output current		0.6	-	3	A
Input voltage		7	24	32	VDC
Inner Frequence		640		20000	Hz
Outer input frequency		0	-	16000	Hz
Connector Voltage	H	4.5	5	5.5	VDC
	L	0	0	0.5	VDC

TB6560-3Axis Interface Definition



TB6560-3Axis Wiring Diagram



5V : R_Pul- = R_Dir- = R_EN- = 0 Ω
12V : R_Pul- = R_Dir- = R_EN- = 1K Ω
24V : R_Pul- = R_Dir- = R_EN- = 2.7K Ω

Ps:

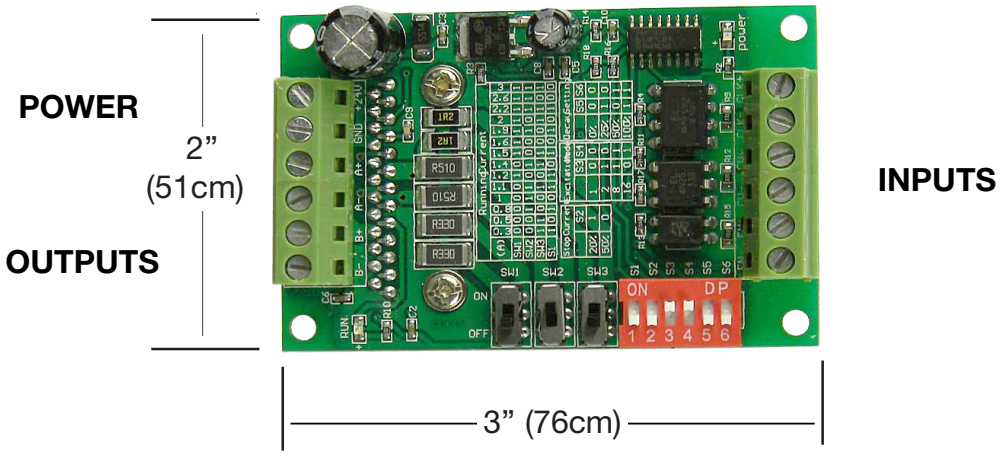
EN- inputs high level or being hanged, optocoupler U6 light off, step motor=working

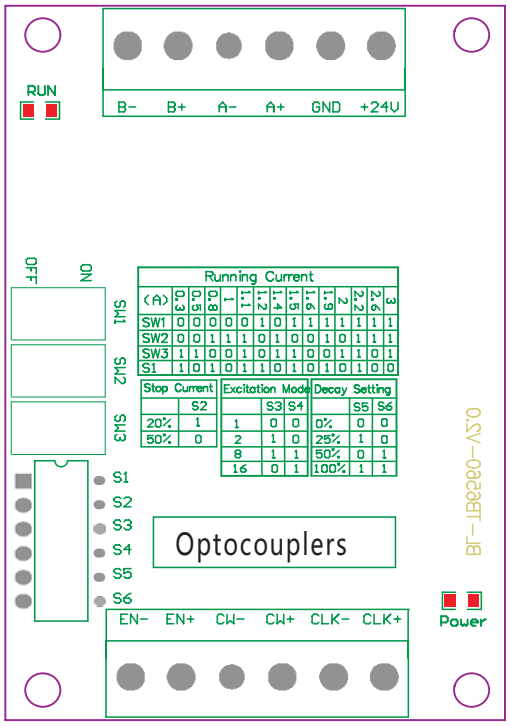
EN- inputs low level, optocoupler U6 light on, step motor= not working

31306-MS

3A FULL BRIDGE STEPMOTOR DRIVER

INPUT: 10-35VDC (24 Nominal)
OUTPUT: Selectable up to 3A max.
STEP: Full & 1/2-1/8-1/16 Microstep
Full bridge driver for 4 or 6 wire hybrid stepmotors. Automatic drop to Hold current with no step Input. Switch Selectable output current. .3A-3A
Over temperature & current Protected. Under Voltage Shutdown
Opto isolated Step, Direction & Enable Inputs. (+5V Level) Terminal strips in/out.
Power and Run LEDs





Wiring Terminal symbol	Description
+24V, GND	Power positive and negative
A+, A-	Motor phase A
B+, B-	Motor phase B
CLK+, CLK-	Pulse positive and negative
CW+, CW-	Direction positive and negative
EN+, EN-	Enable positive and negative

Warning:

1: Check the connection twice! The6560 chipset can be damaged if the motor or the power supply are not connected properly.

2: Don't connect a motor with a rated current in excess of 3A to this driver.

3: Do not set the current higher than the motor rated current!

MARLIN P. JONES & Assoc., INC.
P.O. Box 530400 Lake Park, Fl 33403
800-652-6733 FAX 561-844-8764
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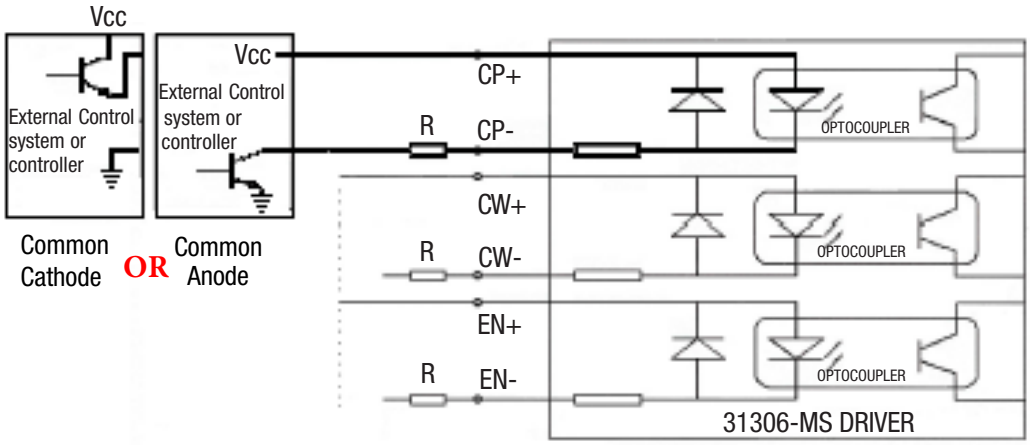

Note:

1: 6 input terminals can be connected as common anode or cathode.

2: The normal input voltage is 5V. If more than 5V, then a series resistor **R** is needed For 12V this resistance is 1K, For 24V the resistance is 2.4K..

3: When pulses are applied to **CP**, the motor will rotate.
Motor will stop when there is no **CP** pulse, and the driver will change to a holding current of 50% or 20% of the Running Current & S2 setting

4: Motor will rotate clockwise when **CW** is low level and counter clockwise when **CW** is a High level

5: Motor is enable when **EN** is low level and disable when **EN** is high level.

Running Current														
(A)	0.3	0.5	0.8	1	1.1	1.2	1.4	1.5	1.6	1.9	2	2.2	2.6	3
SW1	OFF	OFF	OFF	OFF	OFF	ON	OFF	ON	ON	ON	ON	ON	ON	ON
SW2	OFF	OFF	ON	ON	ON	OFF	ON	OFF	OFF	ON	OFF	ON	ON	ON
SW3	ON	ON	OFF	OFF	ON	OFF	ON	ON	OFF	OFF	ON	ON	OFF	ON
S1	ON	OFF	ON	OFF	ON	ON	OFF	ON	OFF	ON	OFF	ON	OFF	OFF

Stop Current	
	S2
20%	ON
50%	OFF

Excitation Mode		
Step	S3	S4
whole	OFF	OFF
half	ON	OFF
1/8	ON	ON
1/16	OFF	ON

Decay Setting		
	S5	S6
0%	OFF	OFF
25%	ON	OFF
50%	OFF	ON
100%	ON	ON

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Intro: ARDUINO UNO + TB6560 Stepper motor driver

Hi. Good day

What you need to have?

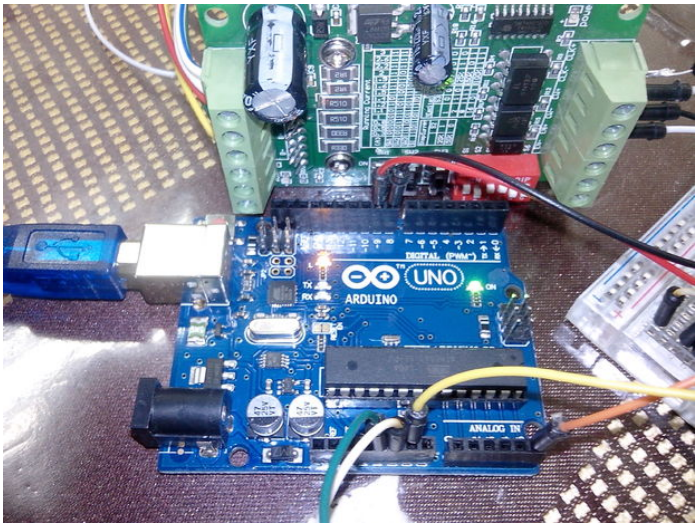
1 Arduino Uno

1 Stepper motor (Nema 17 @ Nema 23)

1 TB6560 Driver

1 Power supply (12V adapter works fine, support 10-35 V)

few Jumper wires and breadboard



Step 1: CONNECTION FROM ARDUINO to TB6560 driver

Connection to arduino

pin 9 (Step pin) to CLK+,

pin 8 (Dir pin) to CW+,

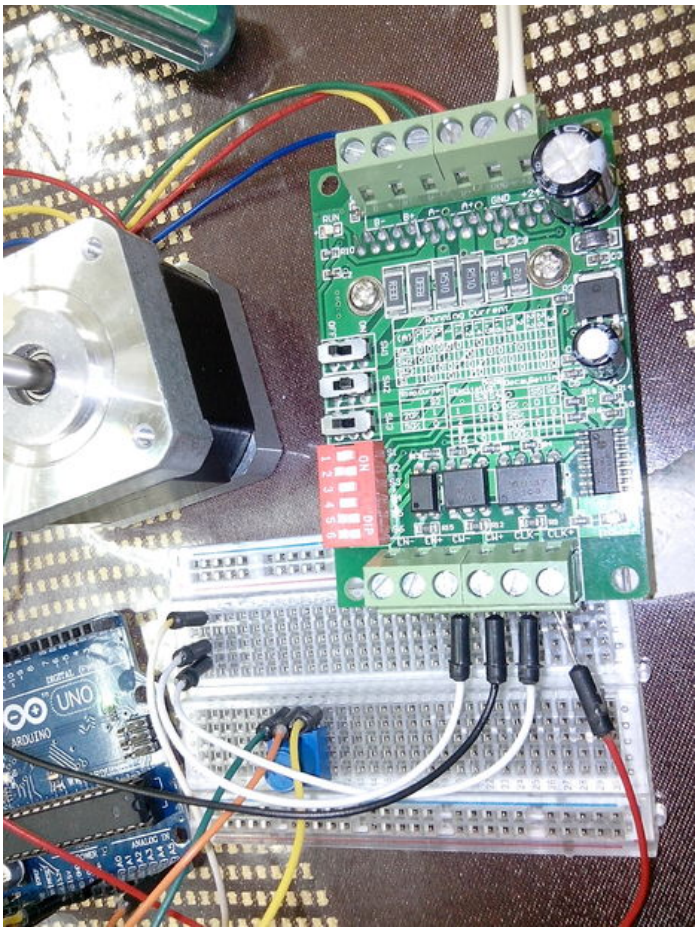
CLK- and CW- connect to GND arduino.

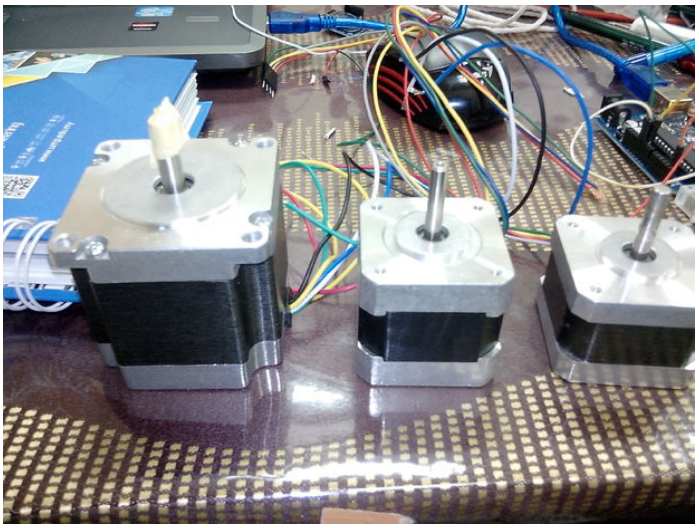
Do not connect EN+ and EN- to any ARDUINO PIN.

Stepper motor connection, you need to know which color is A+, A-, B+ and B-, according to the stepper motor spec. sheet.

It only works for 1/8 step (S3 and S4 on) and 1/16 step (S4 only on), half and full bridge does not work (for my case).

Amp setting can be change according to the table on the DRIVER.





Step 2: THE CODE

/*Code from http://www.schmalzhaus.com/EasyDriver/Examples/Ea... */

int Distance = 0; // Record the number of steps we've taken void setup() {

pinMode(8, OUTPUT);

pinMode(9, OUTPUT);

digitalWrite(8, LOW);

digitalWrite(9, LOW);

}

void loop() {

digitalWrite(9, HIGH);

delayMicroseconds(100);

digitalWrite(9, LOW);

delayMicroseconds(100);

Distance = Distance + 1; // record this step // Check to see if we are at the end of our move

// two rotation for 1/8 bridge and 1 rotation for 1/6 bridge (for this code)

if (Distance == 3200) { // We are! Reverse direction (invert DIR signal)

if (digitalRead(8) == LOW) {

digitalWrite(8, HIGH); }

else {

digitalWrite(8, LOW);

} // Reset our distance back to zero since we're // starting a new move

Distance = 0; // Now pause for half a second delay(500);

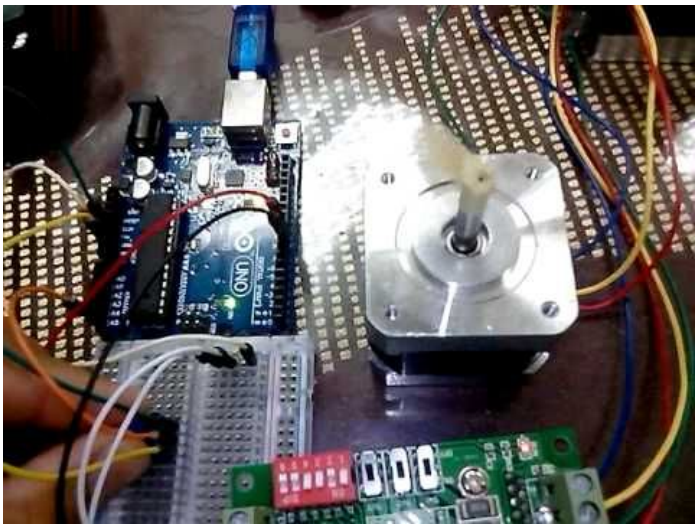
}

}

Step 3: The result

Here is the result in youtube.

Any question, do not mind asking. In this video, i actually modified the code given so i can change the delay using a potentiometer.



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Comments

1 comments **Add Comment**

crank_girl says: Jul 3, 2014. 1:08 AM **REPLY**

Excuse my ignorance but what would you use this for? (I'm trying to increase my technological knowledge.)