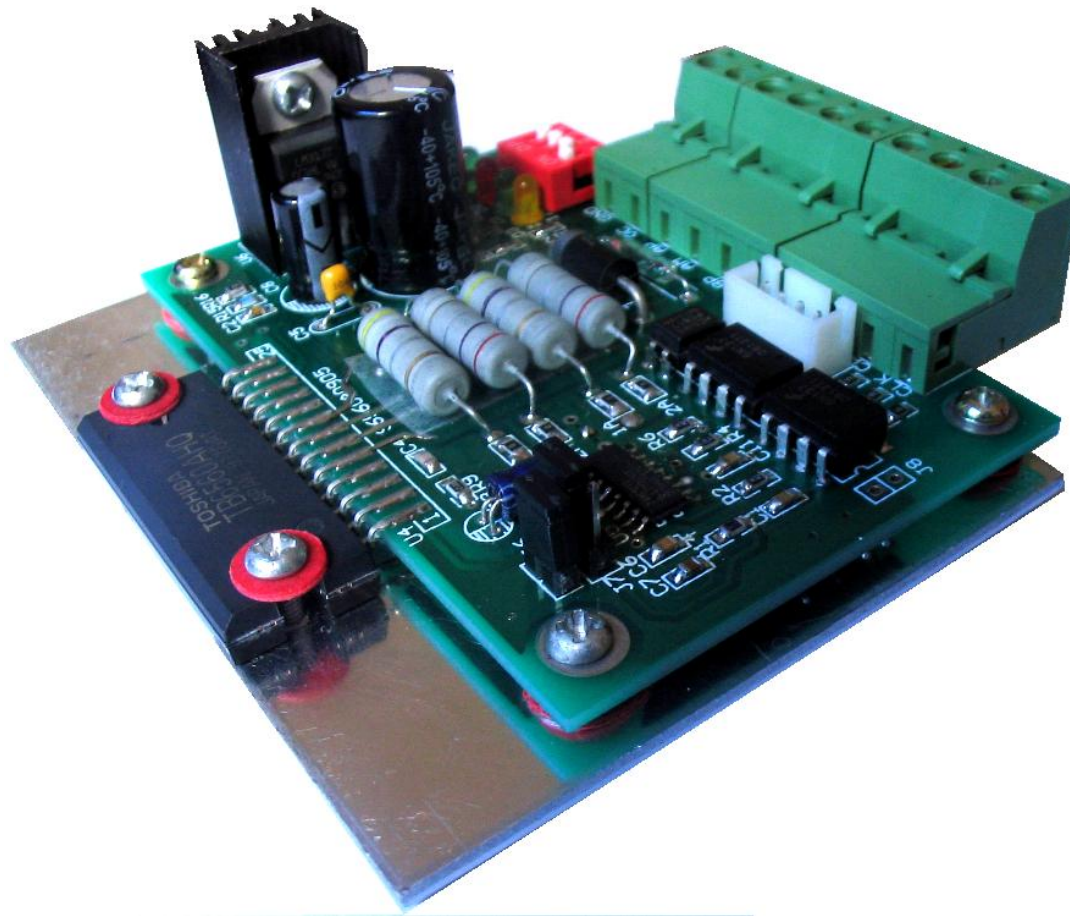


## Cnc stepper motor driver 96560A V1



### I. summary

CNC stepper motor driver board 96560A V1 adopts the new chip TB6560AHQ of TOSHIBA, the max output current can reach to 3.5A , this driver board can drive the 2-phase or 4-phase stepper motor whose current is less than 3A.

The advantages of the TB6560AHQ chip:

- (1) The vibration of the motor is small and low noise: because of the 2/8/16 resolution can satisfy the different speed.
- (2) flush type low heat: The area of the chip can support itself to cool when the current is low
- (3) supports a lot of stepper motors
- (4) the advantages in the high-speed running condition

### II. Features

1: structure:

- ☆the TB6560AHQ adopts the horizontal type install to increase the cooling and the strength of the structure
- ☆it is easy to wire the board , all the connecting ports adopts the anti-inverse interpolation design
- ☆reduce the setup switch to the minimum amount( just 3) , it is easy to operate
- ☆。 All the wire and operating parts are on one side of the board

2: circuit:

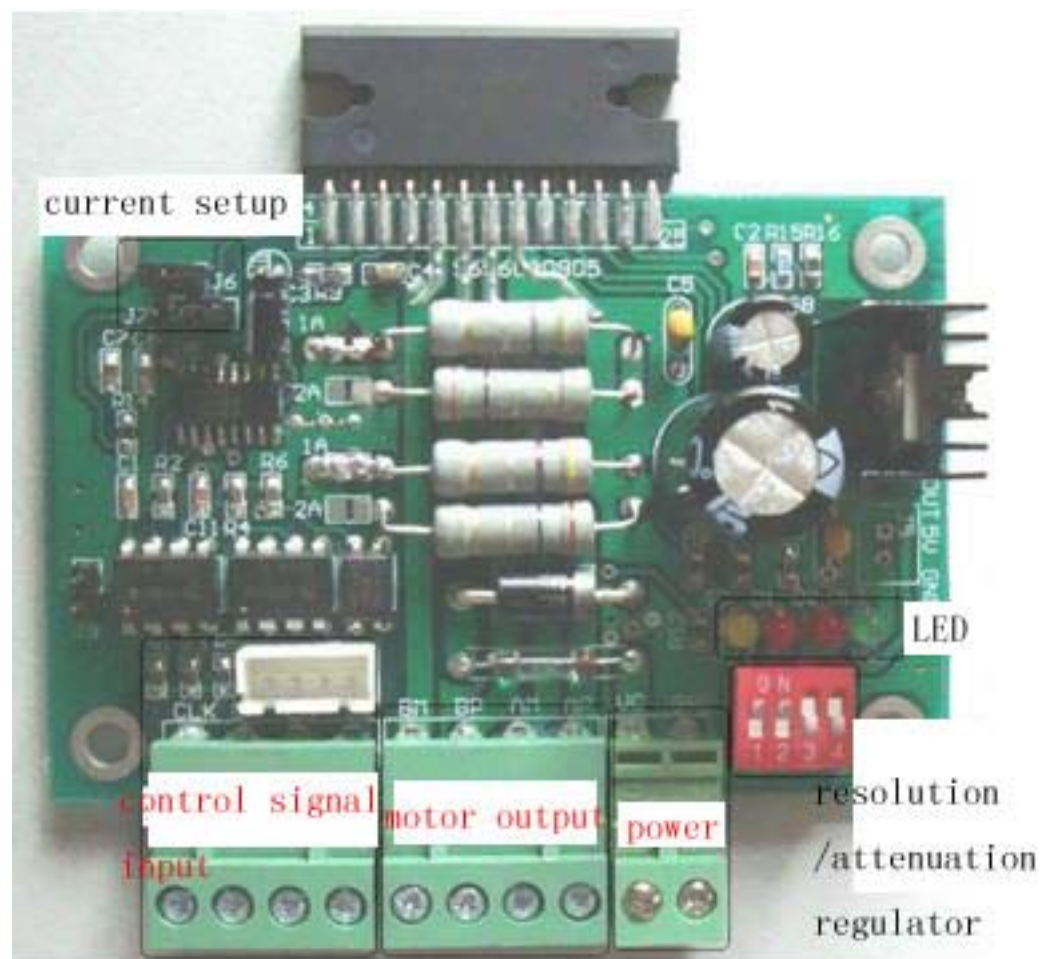
- ☆over-heat auto-protection
- ☆current/attenuation regulation
- ☆when the current is too large, you can choose the semi-flow control to reduce the heat
- ☆the normal cooling method can make the board drive stably the 3A motors
- ☆you can insert a 5V power supply switch
- ☆the control signal port adopts the high-speed coupling 6N137 isolate
- ☆the power supply port adopts the limit device and the anti-inverse interpolation diode device

### III. specifications:

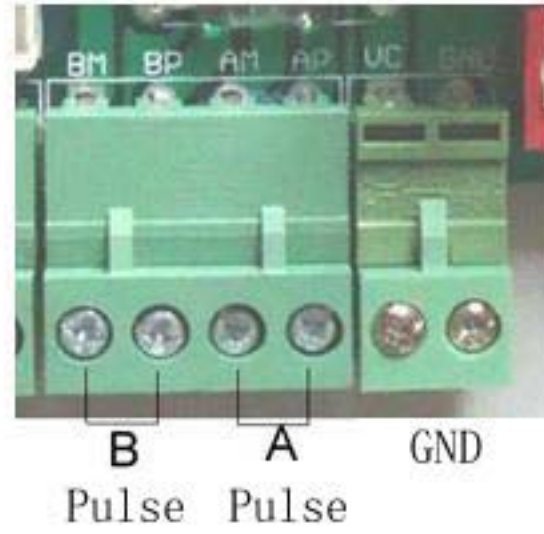
- 1、 environmental requirements: temperature: 0~50°C humidity:  $\leq 90\%$
- 2、 the motors: 2-phase and 4-phase 4-wires or 6-wires stepper motors
- 3、 12V-34V working power: input power 12V-34V
- 4、 the working current: output semi-flow 1.5A , the full current 3A
- 5、 Functions: adopt the constant flow temporary wave double H bridge and the PWM to adjust the phase current , making the driver more stable , resolution: full step--1 , half-step—1/2 , 1/8,1/16 etc.

### IV the connecting port

1. the whole board

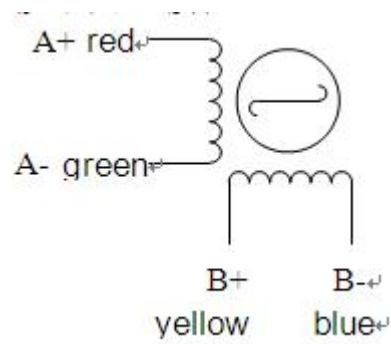


2. the connection of the power and stepper motor

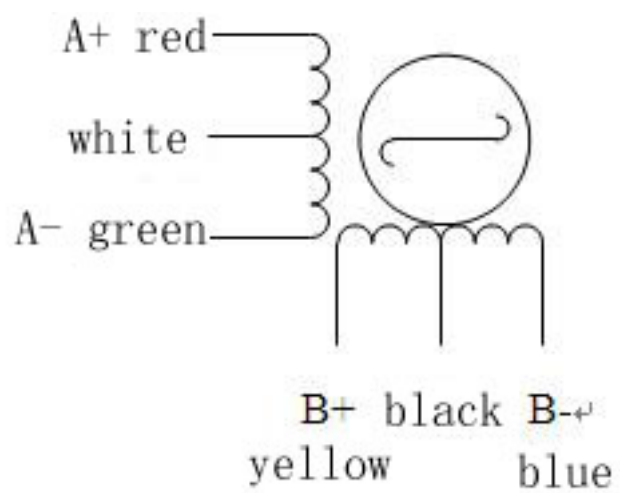


the power supply ---12V-34VDC power switch, the rate voltage should be enough ( linear power supply =12V-34V\*1.5 the switch power supply=12V-34V\*2)  
 the motors: 2-phase and 4-phase 4-wires or 6-wires stepper motors

For the 2-phase 4 wires motor:



For the 4-phase 6 wires motor: ( the wire of the winding you can not use it , but you should not short-circuit it)

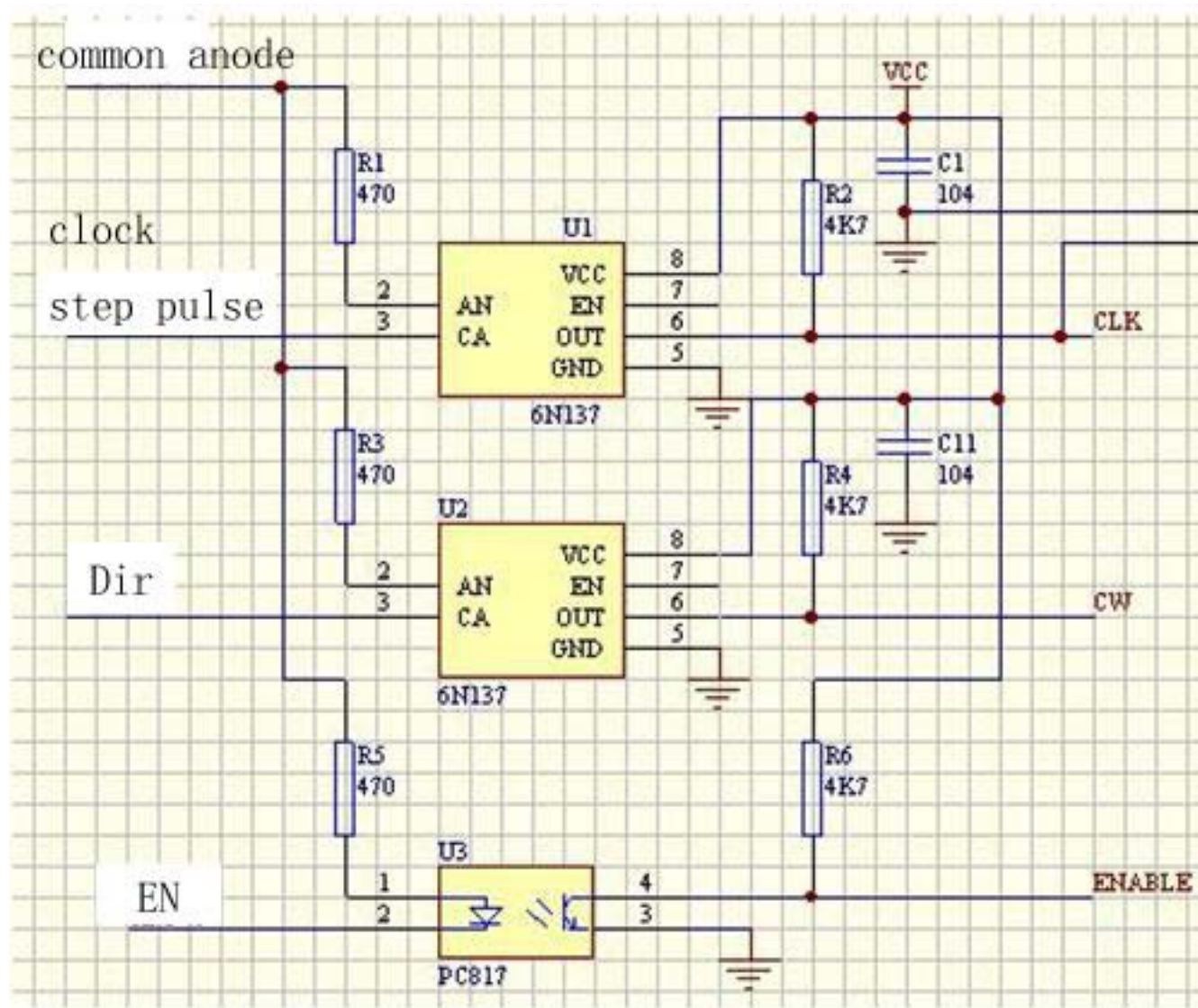




3. the control signal input



Here is the circuit of the control signal of the driver



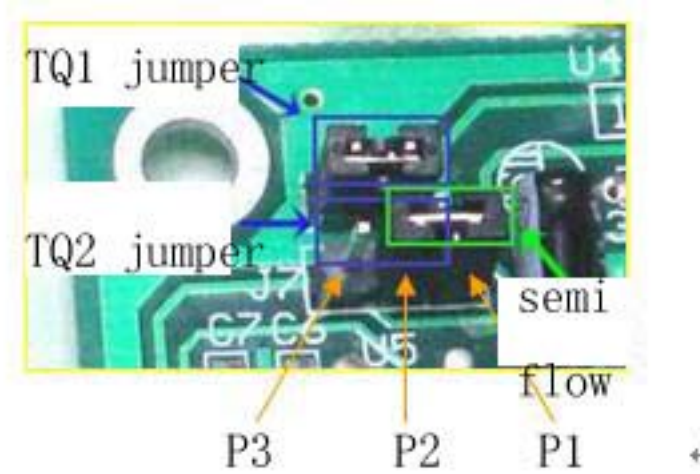
4. Resolution and attenuation setup:



DIP switch		resolution
1	2	
off	off	No resolution
off	on	1/2
on	off	1/16
on	on	1/8

DIP switch		attenuation
3	4	
off	off	No
off	on	25%
on	off	50%
off	on	100%

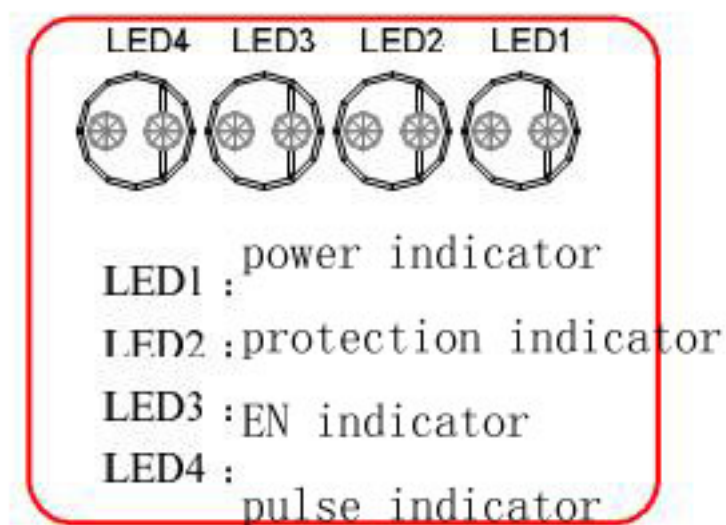
5. Output current and semi-flow control setup:



Semi-flow J7(Pin 1-2)	TQ2 J7(Pin 2-3)	TQ1 J6	current	marks
open	open	open	100%	
open	open	closed	75%	
open	closed	open	50%	
open	closed	closed	20%	
closed	open	open	Current changes from 100% to 50%	Semi-flow
closed	open	closed	Current changes from 75% to 20%	Semi-flow

Attention: J7(1-2) and J7(2-3) can not be short-circuit at the same time.

6. LED indicator:



V. connect the parallel port directly or via the interface board to the PC

## VI. attentions:

- 1、 When the power is on , please do not connect the driver and stepper motor, make sure that all the wiring is ok and then run the motor, the wrong wiring will do damages to the chip
- 2、 Please pay attention to the temperature of the chip, especially the motor runs slowly or locked , because the current is the largest at this time.
- 3、 do not short-circuit the board
- 4、 do not make the liquid into the driver board
- 5、 do not plug in or out the cables of the driver when the power is on
- 6、 do not over voltage
- 7、 the cable of the control signal input should not be too long
- 8、 the cooling condition is very important
- 9、 When the current is 3A, please choose the resolution, otherwise the instant current will be too large