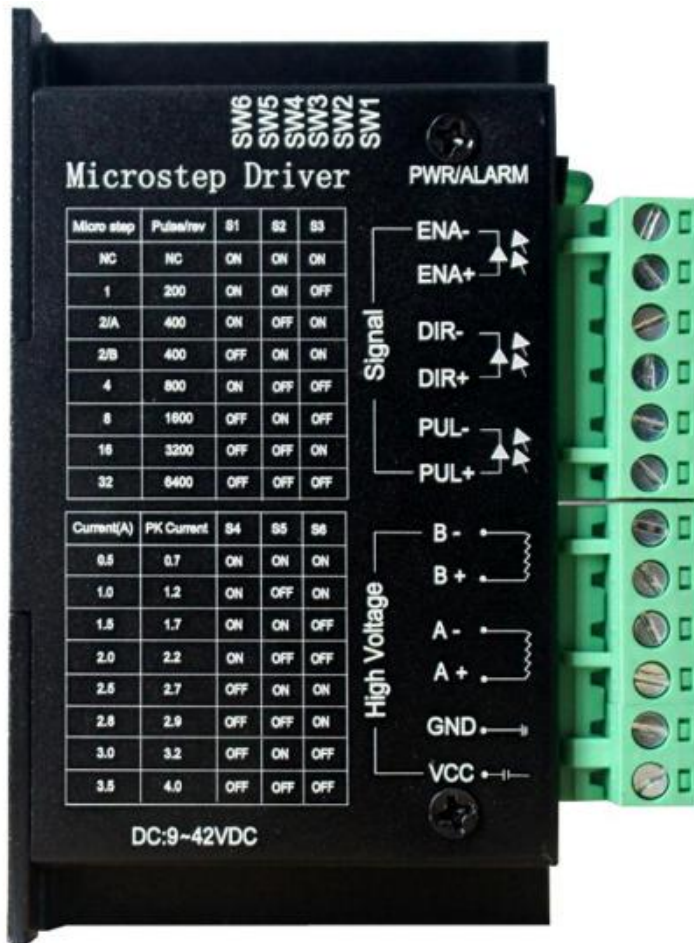


## TB6600 Upgraded Driver



### ! Safety attention matters

- ▶ This driver is powered by DC(direct current) power supply. Please confirm the current's positive and negative, then power on.
- ▶ Please do not plug and unplug the cable with power.
- ▶ Please do not mix screws, metal shavings such conductive foreign objects, or flammable foreign matter. Pay attention to moisture proof when in storage or using.
- ▶ Driver is a power device, try to keep the working environment cool and ventilate.

### One. Brief introduction

TB6600 upgraded one is a kind two-phase hybrid stepping motor driver which suitable for 57/42 phase current below 4.0A. Through 6 digit DIP switch, set 7 subdivisions (1/2A/2B/4/8/16/32) and 8 level output current

( 0.5A/1.0A/1.5A/2.0A/2.5A/2.8A/3.0A/3.5A ). It is widely used in a variety of small automation equipment and hardware, such as engraving machine, marking machine, cutting machine, laser phototypesetting, plotter, CNC machine, crystal grinding machine, automatic assembly equipment.etc. The best application target torque is 1.8N.m and below 57 stepping motor, 42 stepping motor.

## Product feature

- ※DC 9-42V power supply, 12-30V is the best power supply.
- ※Control signal input voltage 3.3-24V universal (do not need series resistance).
- ※Interpolation precision, 1-32 optional.
- ※Output peak current 4.0A.
- ※H-bridge bipolar constant current drive.
- ※Input signal high speed optocoupler isolation.
- ※Built-in temperature protection and over-current protection.
- ※Automatic semi-flow to reduce heat.
- ※Motor noise optimization function.
- ※Small size and save space.

## Electric parameter

Input voltage	DC9-42V
Input current	Recommended switch power supply 5A
Output current	0.5-4.0A
Maximum power consumption	160W
Subdivision	1. 2/A, 2/B, 4, 8, 16, 32
Temperature	Working temperature -10~45℃; storage temperature -40~70℃
Humidity	Cannot have moisture condensation and drop water
Gas	It is forbidden to have flammable gas and conductive dust
Weight	0.2KG

## Input and output port instructions

### ◆ Signal input port

PUL+: pulse signal input +.

PU−: pulse signal input −.

DIR+: motor positive, negative direction reverse control+.

DIR−: motor positive, negative direction reverse control−.

ENA+: motor offline control.

ENA−: motor offline control.

### ◆ Motor winding connecting

A+: connect motor winding A+ phase.

A−: connect motor winding A− phase.

B+: connect motor winding B+ phase.

B−: connect motor winding B− phase.

### ◆ Power supply voltage connecting

VCC: power “+” port.

GND: power “−” port.

**Attention: DC9-42V. Cannot exceed this range, otherwise it won't work properly or even destroy the driver.**

### ◆ Input port wiring instructions

Input signal totally has three routes, they are:

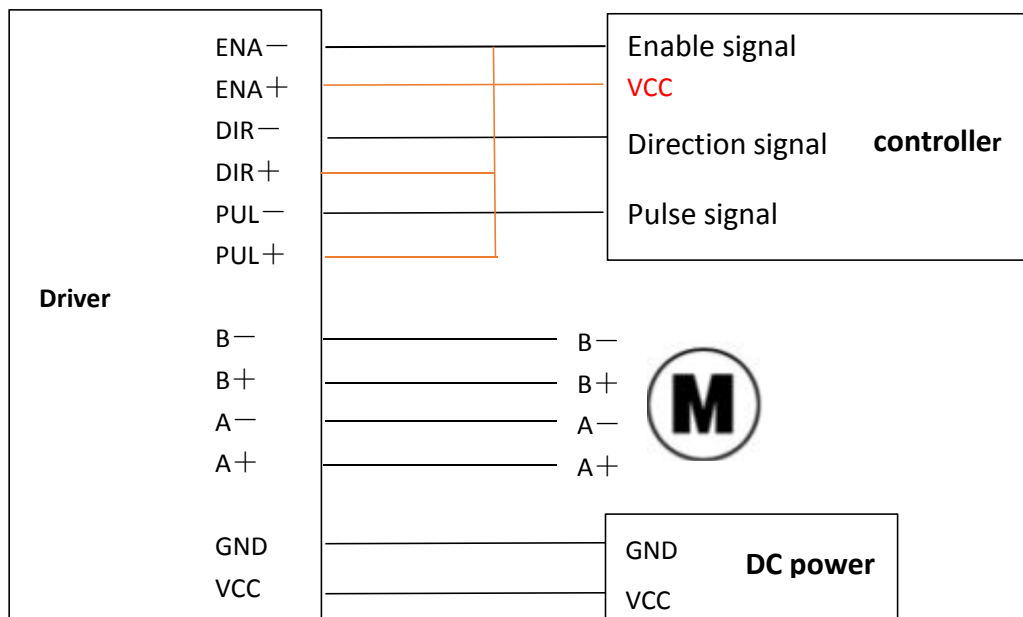
- ① Step pulse signal PUL+, PUL−;
- ② Directional level signal DIR+, DIR−;
- ③ Offline signal ENA+, ENA−.

Input signal port has two connecting ways, user adapts common anode connection or common cathode connection.

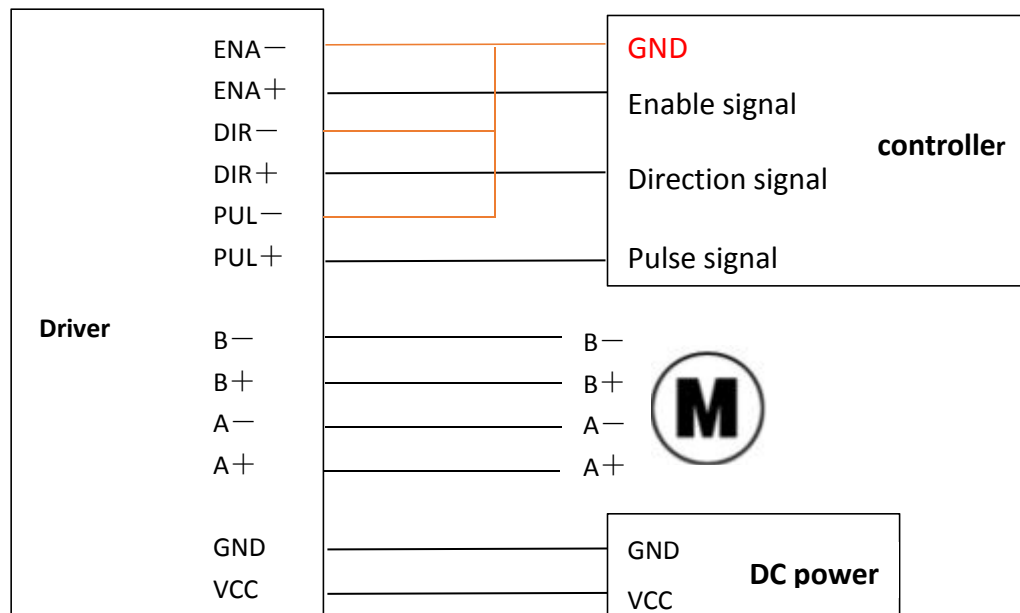
Common anode connection way: separately connect the PUL+, DIR+, EN+ to control system's power supply. This power supply range is +3.3V---+24V. Pulse input signal connect through PUL−, direction signal through DIR−, enable signal through ENA−.

As shown below:

### Common anode connection way(low level is valid)



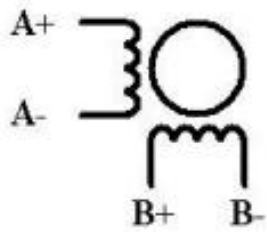
### Common cathode connection way(high level is valid)



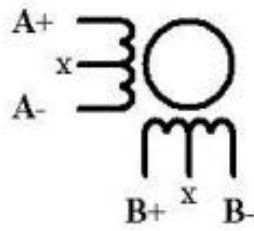
Note: ENA port can connect or not connect, when the ENA is valid, the rotor of the motor is free(offline state), at this time, you can manually rotate the motor spindle and adjust according to your situation. After finish the manual adjusting, set the ENA to invalid state for continuously automatic control.

About the motor wiring:

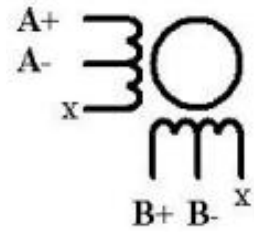
Two-phase 4 wires, 6 wires, 8 wires motor wiring, as the below pictures



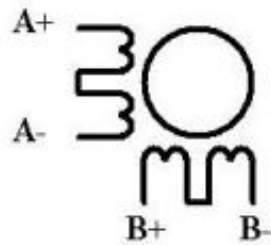
4 wires motor wiring way



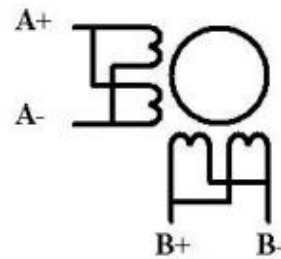
6 wires motor wiring way  
High torque output



6 wires motor wiring way  
High speed output



8 wires motor wiring way  
High torque output



8 wires motor wiring way  
High speed output

## Two. DIP switch set subdivision and current

### Subdivision value setting

Subdivision value set as the DIP switch choice on driver board, the user can set according to the subdivision sheet's data of driver outer box( you'd better set under the situation of power-off). After subdividing, the stepping motor's step angle is calculated as follow:  $\text{step angle} = \text{motor inherent step angle} / \text{subdivision value}$ . For example: one stepping motor, inherent step angle is  $1.8^\circ$ , subdivision value is 4, then the step angle is  $1.8^\circ / 4 = 0.45^\circ$ . Driver board's DIP switch 1,2,3 separately correspond S1, S2, S3.

Subdivision	Pulse	S1 state	S2 state	S3 state
NC	NC	ON	ON	ON
1	200	ON	ON	OFF

2/A	400	OFF	OFF	ON
2/B	400	ON	ON	ON
4	800	OFF	OFF	OFF
8	1600	ON	ON	OFF
16	3200	OFF	OFF	ON
32	6400	OFF	OFF	OFF

### Output current setting

Driver board's DIP switch 4,5,6 correspond S4, S5, S6.

Average current	Peak value current	S4 state	S5 state	S6 state
0.5A	0.7A	ON	ON	ON
1.0A	1.2A	ON	OFF	ON
1.5A	1.7A	ON	ON	OFF
2.0A	2.2A	ON	OFF	OFF
2.5A	2.7A	OFF	ON	ON
2.8A	2.9A	OFF	OFF	ON
3.0A	3.2A	OFF	ON	OFF
3.5A	4.0A	OFF	OFF	OFF

### Three. About offline function(ENA)

After opening offline function, motor's rotor is in free unlocked state, can easily rotate, at this time, input pulse signal without response; after closing this signal, motor receive pulse signal and normally run.

Note: usually can not connect in practical application.

### Four. FAQ(Frequently Asked Questions)

1. Question: For the first time using this stepping driver, how can I get hang of it as

soon as possible?

Answer: After properly connect power and motor, only connect pulse signal PUL(first set the frequency within 1k), subdivision setting is 16, direction and offline hang in the air, at this time, motor default rotate forward after powering up. After running without errors, test the speed-up(improve frequency), direction, subdivision and offline such function one by one.

2. Question: control signal is over 5V, must add series resistance?

Answer: Yes, otherwise it may burn circuit of driver control port.

3. Question: After connect wire, power indicator light is on but motor not rotate, what's the reason?

Answer: If properly connect wire but still not rotate, it means that control part drive ability isn't enough, this situation often occurs in the IO port direct control mode of single-chip microcomputer. Please ensure that the control port has 5mA drive ability.

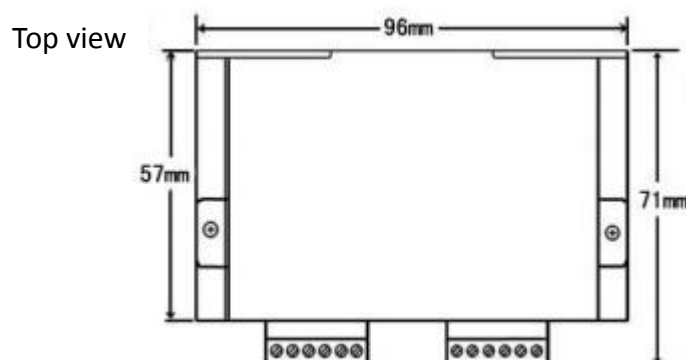
4. Question: How to judge stepping motor 4-wire's definition?

Answer: Connect any two wires together of motor, at this time, forcibly twist motor's rotor, if has resistance, then the two wires is same phase, can connect to driver A+, A-; other two wires still have resistance of short connecting, then connect the two wires to B+ and B-.

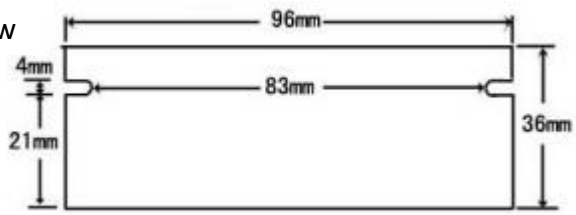
5. Question: Motor's forward-reserve(rotate) situation is opposite to the result actually should be?

Answer: Only need to interchange the two wires of one phase in the motor.

## Five. Dimension drawing



Back view



Side view

