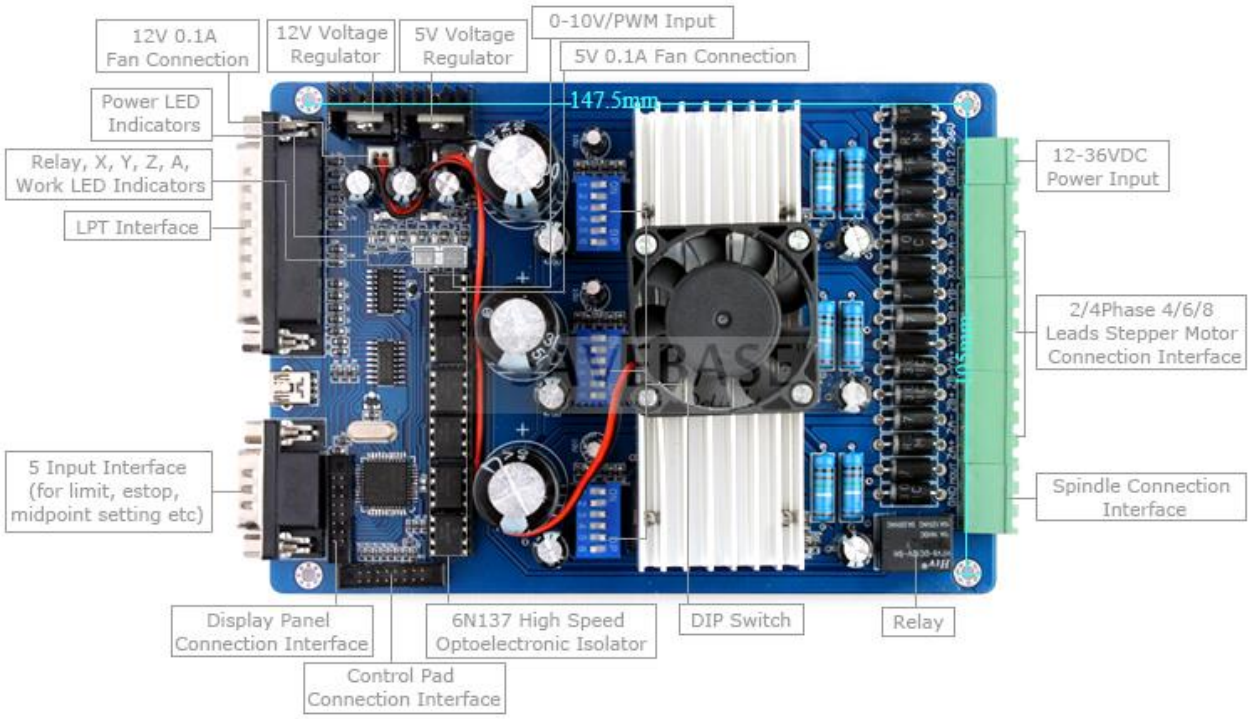
The Latest 3rd Generation Revolutionary & Standard TB6560 3 Axis Stepper Driver Set (TB3CD-S)
+ 3 x Nema23 1.2Nm/175 Oz-in 57BYGH56-401A Stepper Motors
+ 1 x 360W 24V15A Switching Power Supply



I: PCB Instructions & Specifications

Descriptions

The latest 3rd generation TB6560 Stepper Driver has been upgraded to the intelligent, professional and **industrial-level drive set** by **re-designing** the PCB board, **embedding** intelligent **memory chip(professional version)** and **upgrading** the external manual control tools (control pad and display panel).

Actually, the 3rd generation TB6560 Stepper Drivers have two types of versions, one is the **standard version**, and another is the **professional version**. Compare to the standard version, the professional version mainly has two more functions than the standard version, one is the "**computer G-code recording function**", and another is the "**manual programing function**". Except these two functions, these two types of versions have no other differences.

Firstly, both of these two types of versions have upgraded their PCB boards, the re-designing the PCB board will avoid the TB6560 chip on the board being easily blown as the previous version.

With the embedded intelligent memory chip, the professional version of this 3rd generation 3 Axis TB6560 Stepper Driver can easily **record the G-code** running on the CNC software (e.g. **Mach3, EMC2, KCAM4**, etc..) of the computer, and then **rerun the recorded G-code** to make the stepper motor work without the computer any more.

Furthermore, the upgraded external manual control tools (display panel and control pad) on the professional version can be not only used for manually controlling the stepper motor, but also **manually**

programming the G-code. All the manually Programmed G-code will also be recorded in to the embedded intelligent memory chip, and then we also can easily run the recorded G-code to control the stepper motor. Considering that the computer G-code recording function is enough for all the three axis working without computer, to avoid repeated function, the manual programming function is mainly designed for one axis to make linear motion, therefore, the three axis cannot be manually programmed simultaneously. This function is widely used on working which just need one Axis, such as RBI machine, Conveyor etc.

- Lately, both of these two types of versions adopt the totally enclosed **optical isolation** and **bipolar constant-current chopper** to insure working at low noise & vibration, and avoid creeping at a low speed. It is very suitable for driving the 2-phase and 4-phase hybrid stepping motors.

- In short, the qualities and functions of the new 3rd generation advanced 3 Axis TB6560 Stepper Driver are revolutionized from the previous version. So, we believe that these two types of versions must satisfy different users on CNC DIY.

- The item you are watching is the **3 Axis Standard Version (TB3CD-S) CNC kit with stepper motors and power supply**, if you need the other versions, please feel free to contact with us.

Features

- High performance, cost-effective.

- Automatic **idle-current reduction**.

- To manually control the stepper motor, both of the standard and professional drivers have been **equipped with the display panel and control pad**.

- Automatically identify both of the computer and control pad, functions of the computer and control pad can be **switched intelligently** for each other without any interference.

- Display panel can **real-time trail the running path of G-Code** on the computer or input by the control pad, and then completely and Simultaneous display the changing of each axis'(X, Y, Z axis etc.) values on its screen.

- Both of the standard version and professional version are compatible with the **Mach2, Mach3 (Default Software) , LinuxCNC (EMC2), KCAM4 CNC Software**, etc.. Besides, the professional version also can automatically trail the path running path of G-Code from the CNC software (e.g. **Mach3, EMC2, KCAM4**, etc.) of the computer and record the G-code into the memory chip; Easy to repeatedly run the G-code to control the stepper motors without computer.

- The professional version also support **manual programming** via the control pad, as long as input the required values on one axis and record them in the memory chip of the driver, and then run these recorded values to drive the axis to make linear motion, widely used on RBI machine, Conveyor and so on.

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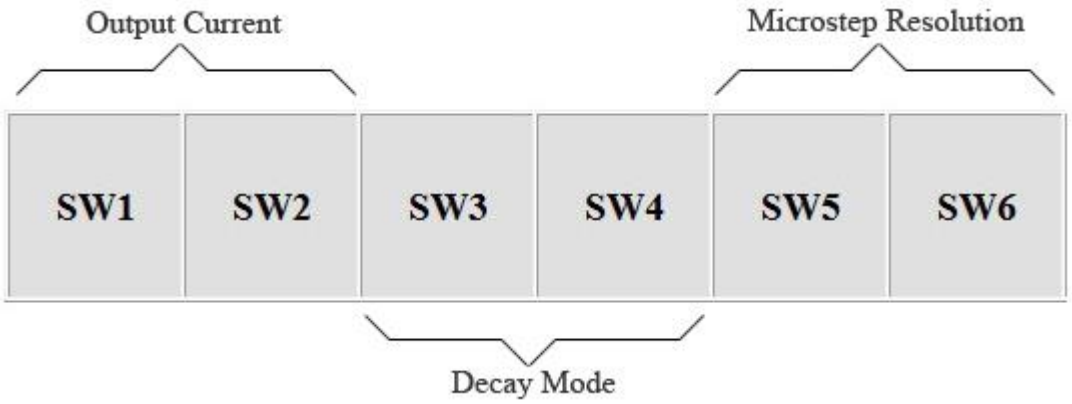
- **Automatically finish Tool-settings** on X, Y, Z Axis via the control pad, without the support of the computer.
- Compatible with all the motors with **0.5A-3.5A** (peak) rated current, four types of adjustable output current can be set on the driver board.
- 1, 2, 8, 16 adjustable microstep control, motors run more precisely and smoothly.
- Overload, overcurrent, overvoltage, overheat protection to avoid damaging your computer and devices.
- Totally enclosed **optical isolation** and **bipolar constant-current chopper** to insure motors work at low noise & vibration, and avoid motors creep at a low speed.
- With one **0-10V PWM Signal output** port for speed adjustment and one Relay control port.
- 5 types of input control in manual control interface, to set **Limit, Estop, Midpoint-Setting, Cutter-presetting / Tool-Setting** etc...

Applications

- For processing various pattern mould.
- For advising, such as brand, architecture mould, badge, nameplate, display boards, doorplate, furniture decoration, etc..
- For carving portrait, scenery, handwriting, sealing, etc..
- Suitable for any small-and-medium automatic equipment with CNC controller, such as X-Y-Z tables, labelling machines, laser cutters, engraving machines, and pick-place devices.

Dip Switch Settings



II: DIP Switch Settings

Microstep Resolution Selection

Output Current Selection

Output Current	SW1	SW2
100%	ON	ON
75%	ON	OFF
50%	OFF	ON
25%	OFF	OFF

Decay Mode (Buffer) Selection

Decay Mode (Buffer)	SW3	SW4
25%	ON	ON
50%	ON	OFF
75%	OFF	ON
100%	OFF	OFF

Microstep Resolution	SW5	SW6
1	ON	ON
2	ON	OFF
8	OFF	OFF
16	OFF	ON

Note: If the drive board has abnormal noise under working or locking condition, you can solve the problem by adjusting the decay mode.

Further Details

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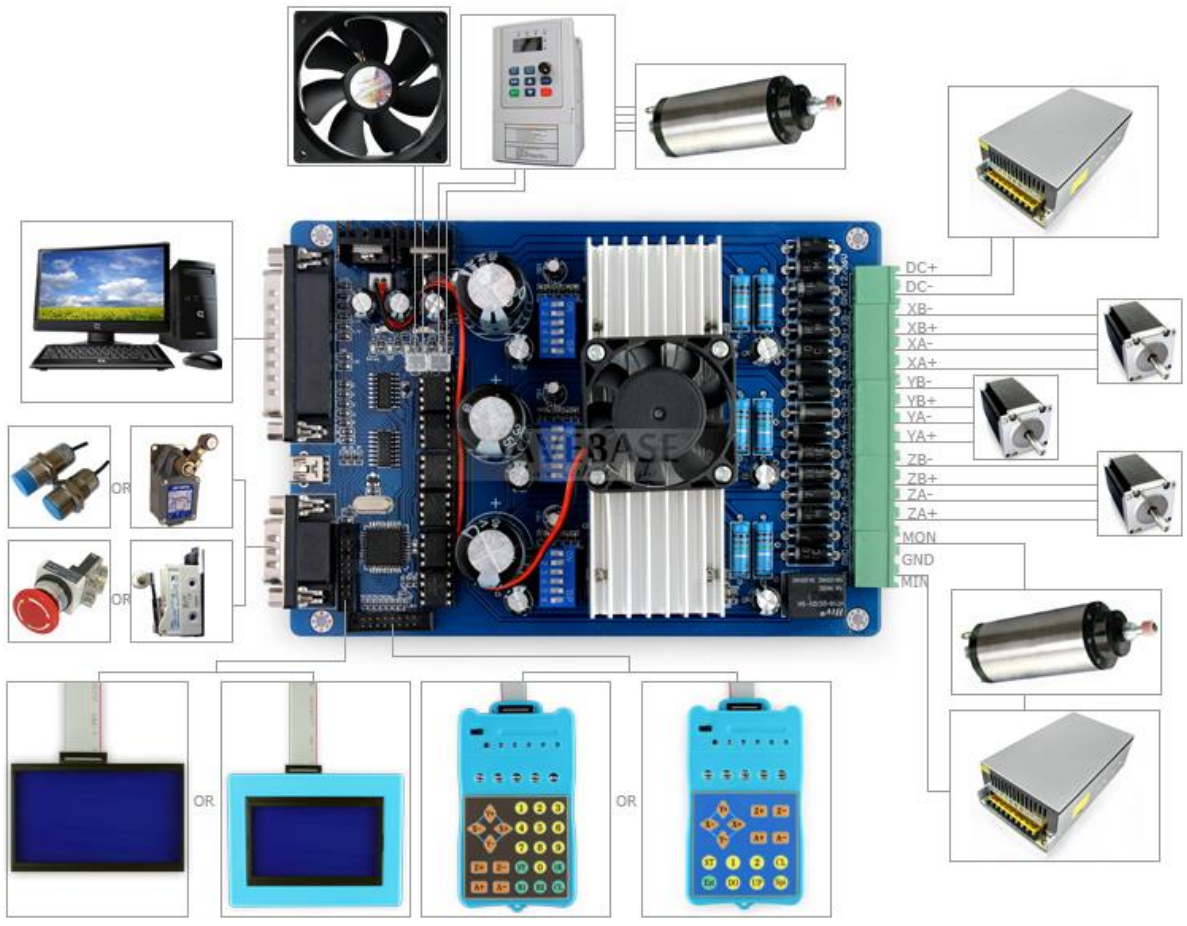
- DC 12-36V power supply selection

Voltage Selection :
12-16V DC power supply for Nema 17 stepper motors
16-24V DC power supply for Nema 23 stepper motors
24-36V DC power supply for Nema 34 stepper motors
(High voltage will burn up the chips or stepper motors!!!)
Current Selection:
Output current of the power supply can be calculated by the following formula:
Output current = Rated current of your stepper motors * quantity + 2A
(For example, if you want to drive 3 * 2A Nema 23 stepper motors, theoretically 24V 8A DC power supply is recommended, but higher power such as 24V 10A/15A also will be good. If you are not sure about the selection of power supply, please feel free to contact us for help.)

- **Please SHUT DOWN the power before you plug or unplug the connectors to avoid burning up the board**

Connection Diagram For Reference



III: Connection Diagram

The Latest 3rd Generation Revolutionary & Standard TB6560 3 Axis Stepper Driver Set (TB3CD-S)
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SPECIFICATIONS

Electrical Specifications Of Stepper Driver		
Input voltage		12V-36V DC
Output current		0.5A-3.5A (Peak)
Drive type		Pulse + Direction + Enable Signal Control (Bipolar constant-current PWM output)
Suitable motor		Nema17, Nema23, Nema24, Nema34 (Rated current: 0.5A-3.5A)
Net weight		305g (Driver)
Dimensions		173*113*38mm
Operationg Environment & Other Specifications Of Stepper Driver		
Cooling	Natural Cooling or Fan Forced cooling	
Operating Environment	Environment	Avoid dust, oil fog, corrosive gas
	Ambient Temperature	0°C-50°C (32°F-122°F)
	Humidity	40%RH-90%RH
	Operating Temperature	70°C (158°F) Max
Storage Temperature	-20°C-65°C (-4°F-149°F)	
Total Weight	Approx. 535g (Driver + Control Pad + Display Panel)	

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Specifications Of Power Supply	
Input voltage	100-120V AC and 200-240V AC
Input frequency	50/60hZ
Output voltage	24V
Total current	15A
Vout adjustable range	24V±10%
Size	210*115*50mm
Weight	1100g
Specifications Of Stepper Motor	
Model	57BYGH56-401A
Shaft	Single Shaft (Diameter:6.35mm; Length:21mm)
Rated voltage	3.36VDC
Rated current	2.8A/Phase
Step angle	1.8°±5%
Phase	2 Phases
Phase resistance	0.9x(1+10%)Ω/Phase
Phase inductance	2.5x(1+20%)mH/Phase
Holding torque	1.2Nm (Approx. 175 Oz-in)
Positioning torque	500gf.cm
Insulation resistance	≥100MΩ (500VDC)
Insulation class	Class B
Weight	0.7Kg/Piece

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CONTENTS

- 1 x The 3rd Generation 3 Axis TB6560 Stepper Driver (**Standard Version**)
- 1 x External Control Pad (**Standard Version**)
- 1 x External Display Panel (**Universal**)
- 3 x 57BYGH56-401A Stepper Motors
- 1 x 24V15A Power Supply
- 1 x LPT Parallel Cable
- 1 x CD

Click here for the detailed schematic diagram of the stepper motor

Click here for the Mach3 software

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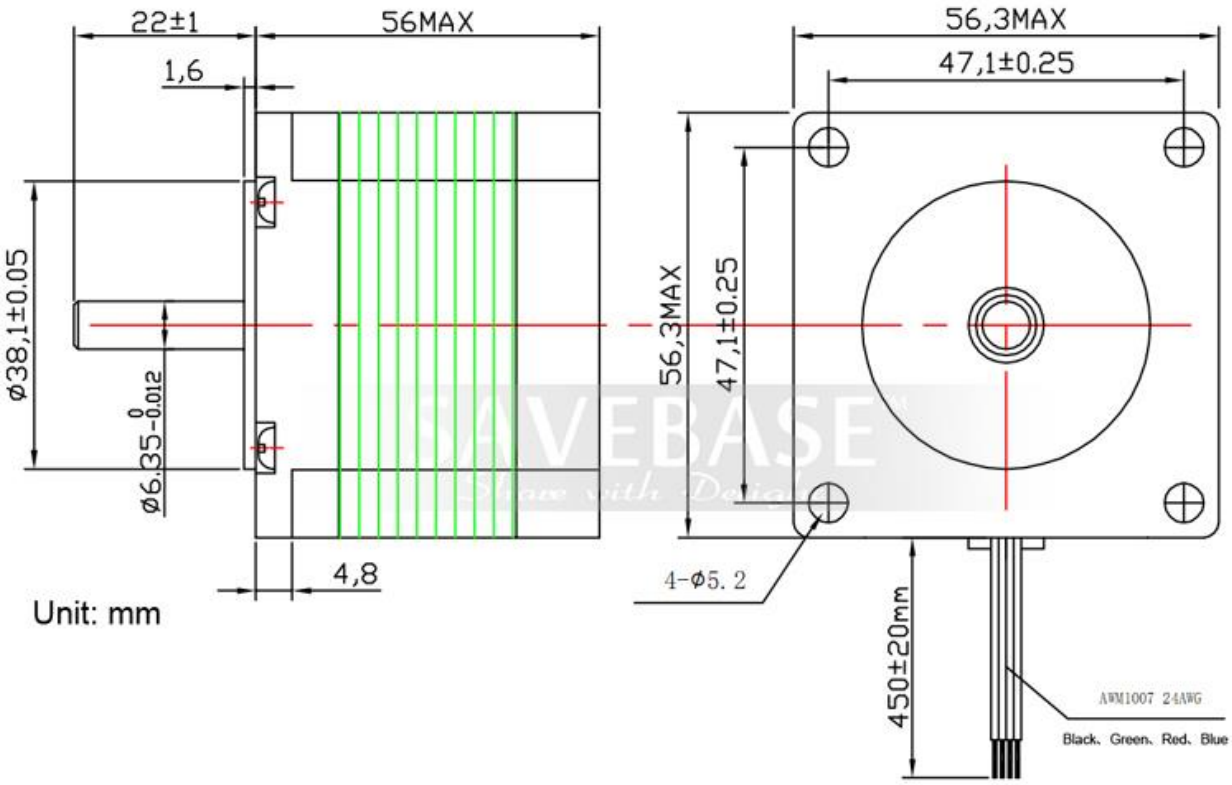
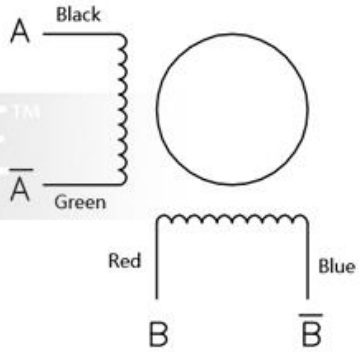


Motor specifications	
Model	57BYGH56-401A
Rated Voltage	3.36VDC
Rated Current	2.8A/Phase
Step Angle	1.8°±5%
Phase	2
Phase resistance	0.9×(1+10%)Ω/Phase
Phase inductance	2.5×(1+20%)mHPhase
Holding torque	1.24Nm (approx. 175 Oz-in)
Positioning torque	500gf.cm
Insulation resistance	≥ 100MΩ （500VDC）
Insulation class	CLASS: B
Weight	0.7kg



Wiring Diagram