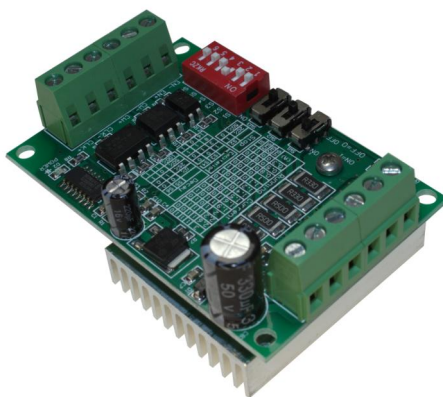# Manual

Nema 17 Stepper Driver

Model# - ZK15004B

⚠️ Read this manual carefully before making connections to the board.
Store this manual away for further reference.

Overview:

Recommended supply voltage DC 10V-24V.

Toshiba TB6560A controller.

High speed opto-couplers.

Low voltage, over heating, and over current protection.

3A Maximum rated output current (3.0A peak).

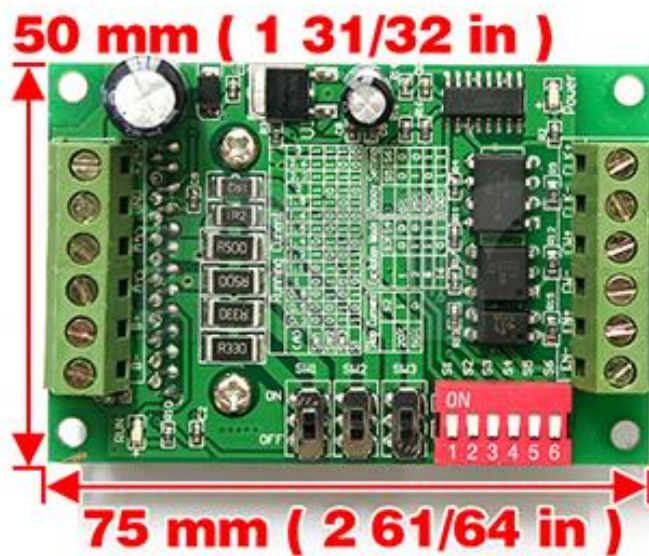Designed for 2/4 phase, 4 or 6 wire stepper motors with a

Maximum load current of 3A.

Adjustable load current protection.

Adjustable decay modes.

Excitation modes: 1/2, 1/8, 1/16 step.

Large cooling fins.

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Safety Notes:

The electronics of the control board is designed to accept DC power ONLY. Ensure that the positive and negative connections are made correctly before powering on the unit. Incorrect wiring will cause damage to the board.

The control board is an open circuit design. Do not allow conductive objects such as small pieces of wire or stray pieces of metal to touch any of part of the circuit. Mount inside an inclosure using insulated (plastic) stand offs or insulating pads. Do not mount directly to any conductive metal or aluminum plates. Handle with care, do not drop or touch the electronic parts on the board.

Keep the board from damp environment.
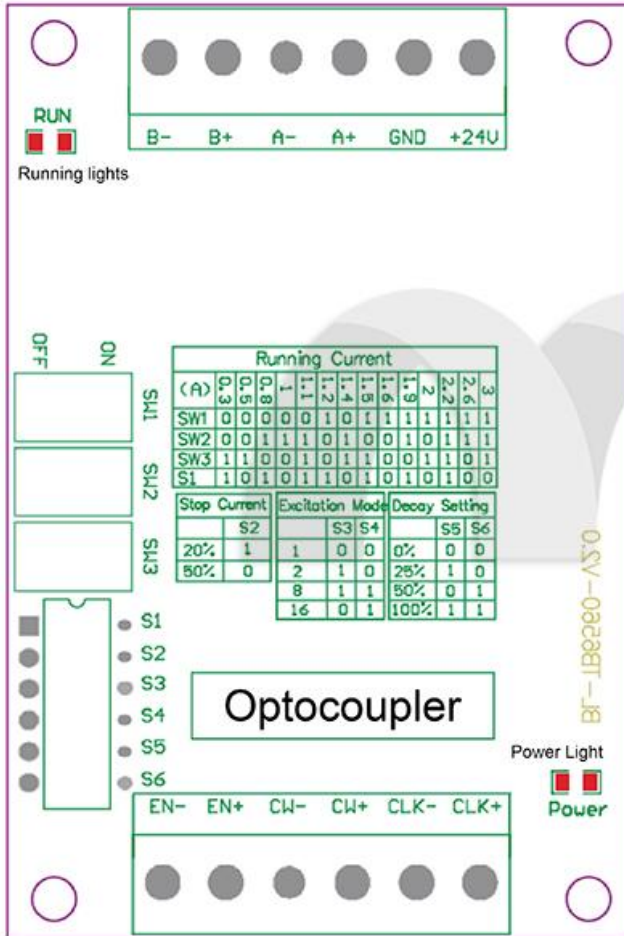Keep the board in adequate ventilation.
Keep the board from mechanical damage.

When making adjustments or changing wiring be sure to always disconnect the power.

Do not install any means of disconnection between the driver and stepper motor.

Always monitor your stepper motors for over heating. If you cannot hold your hand on the motor, check for over current and/or over voltage.

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RUN
Running lights

B- B+ A- A+ GND +24U

OFF ON
SW1
SW2
SW3

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	0	0	0	0	0	1	0	1	1	1	1	1	1	1
SW2	0	0	1	1	1	0	1	0	0	1	0	1	1	1
SW3	1	1	0	0	1	0	1	1	0	0	1	1	0	1
S1	1	0	1	0	1	1	0	1	0	1	0	1	0	0

Stop Current		Excitation Mode			Decay Setting		
	S2		S3	S4		S5	S6
20%	1	1	0	0	0%	0	0
50%	0	2	1	0	25%	1	0
		8	1	1	50%	0	1
		16	0	1	100%	1	1

S1
S2
S3
S4
S5
S6

Optocoupler

Power Light
Power

EN- EN+ CW- CW+ CLK- CLK+

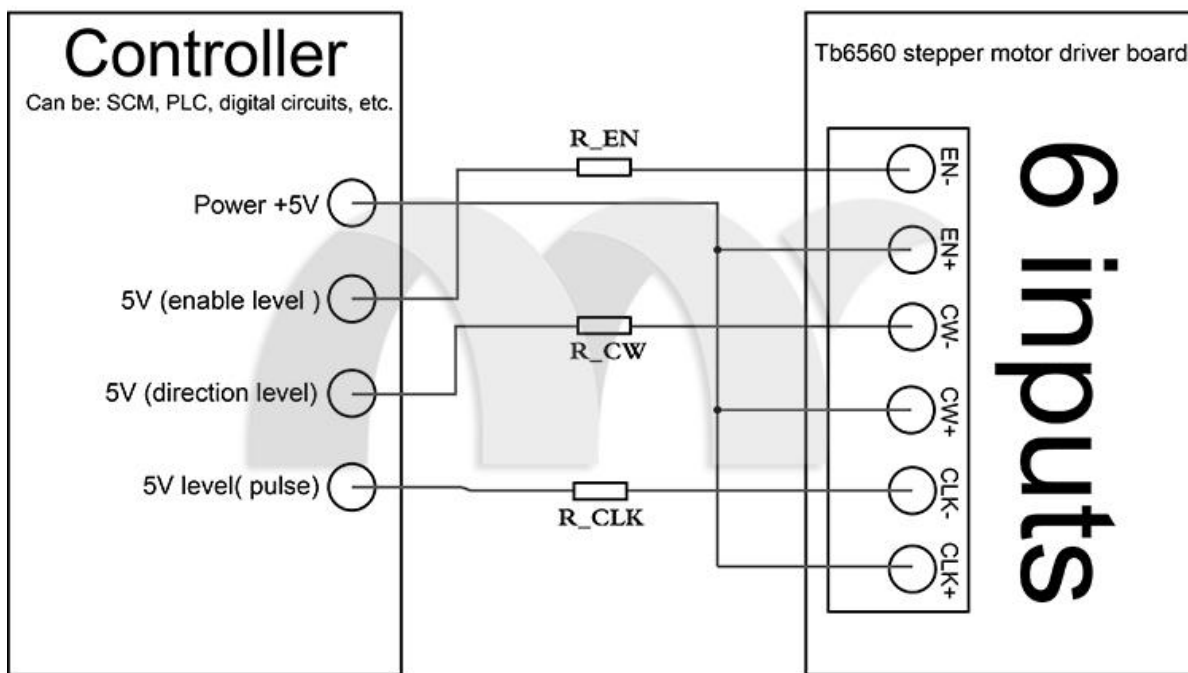| Terminal Name	Meaning
+24V, GND	Positive and negative Power terminal
A+, A-	Phase A
B+, B-	Phase B
CLK+, CLK-	Pulse positive and negative side
CW+, CW-	The direction of the positive and negative side
EN+, EN-	Enabling the positive and negative side

Description:

1. There are six inputs, can be easily connected to a common anode or common cathode input form.

2. Input pulse level is 5V, 12V level pulse if they have a 1K resistor string, if the 24V level pulse train a 2.4K resistor.

3. CLK has a motor pulse, no pulse when automatically set semi-liquid state, locked motor.

4. CW low or floating motor is transferred, the high level inversion.

5. EN low or float operation, the high level offline.

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(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

Inputs: Common Anode Connection (Active Low)

Controller — Can be: SCM, PLC, digital circuits, etc.

- Power +5V
- 5V (enable level)
- 5V (direction level)
- 5V level(pulse)

R_EN, R_CW, R_CLK

Tb6560 stepper motor driver board — 6 inputs

EN-, EN+, CW-, CW+, CLK-, CLK+

Note: If the input control voltage is 5V, then there is no current resistor needed.
If the input control voltage is 12V, then use a 1.5K resistor for R_EN, R_CW, R_CLK.
If the input control voltage is 24V, then use a 3.0K resistor for R_EN, R_CW, R_CLK

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Input: Common Cathode Connection (Active High)
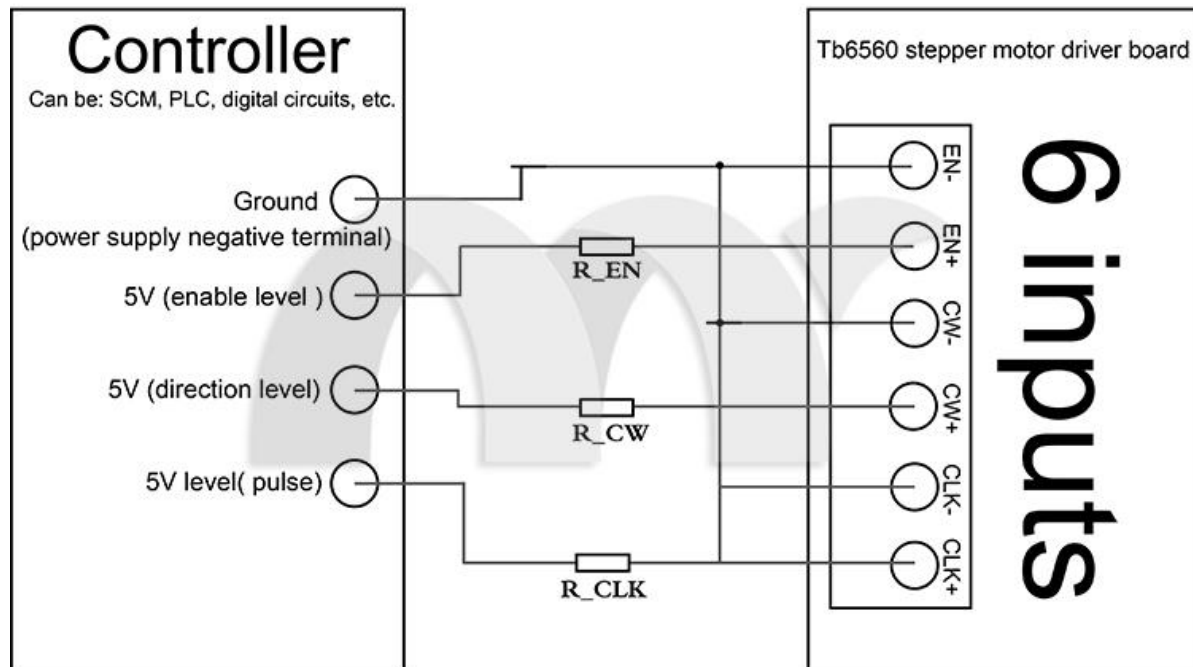
Controller
Can be: SCM, PLC, digital circuits, etc.

Tb6560 stepper motor driver board

6 inputs

- Ground (power supply negative terminal)
- 5V (enable level)
- 5V (direction level)
- 5V level(pulse)

R_EN
R_CW
R_CLK

EN-
EN+
CW-
CW+
CLK-
CLK+

Note: If the input control voltage is 5V, then there is no current resistor needed.
If the input control voltage is 12V, then use a 1.5K resistor for R_EN, R_CW, R_CLK.
If the input control voltage is 24V, then use a 3.0K resistor for R_EN, R_CW, R_CLK

(Excitation Mode)

	S3	S4
Whole step	OFF	OFF
Half-step	ON	OFF
8 subdivision	ON	ON
16 subdivision	OFF	ON

(Decay Setting)

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

(Stop Current)

	S2
20%	ON
50%	OFF

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