

Kinco

Stepping Motor Driver (2-phase bipolar microstepping driver)

2M412



Thank you for choosing the Kinco Stepping Motor Driver!
To ensure your safety, please read the information as follows:

■ Safety:

✱ Please keep the manual for your reference when needed!

✱ Please know the following symbols:



Warn: It will injure body if not follow the manual to operate!



Notice: It will damage product or injure body if not follow the manual to operate!



Warn:

- When applying the driver to the machines related to the safety of the body (e.g. Nuclear power control, medical machine, truck, train, plane, amusement and safety devices), please install the fault-proof safety devices to avoid injuring body.
- The installation, connection, debugging, control and maintenance for the driver should carry on by the professional!
- It should be well grounded when installing the driver and the cross sectional area of conductor of earth lead should not less than 1.25 mm².
- Please pre-consider precaution when the power fails before installation. Or else it will lose holding torque and may cause the injury of body!
- The driver is not suitable to install in outdoor. It needs to install in the electrical cabinet according to the Industrial Protection Standard. Note that don't install in the following location: e.g. flammable gas, caustic gas, much vapour and strong shaking which will cause fire or machine damaged.
- Don't touch the enclosure or linking terminal of the driver in 30secs after shutting power off, the remnant current may cause electric shock.
- Don't put anything into the driver. It may cause electric shock or damage the machine.
- Don't unfold or regenerate the driver. If you have any question about technology, please contact us, or else we will be not responsible for the damage of the machine.
- Please use the tools with isolated handle when debugging switch, or else it will cause electric shock.



Notice:

- Don't move, install or maintain the driver when operating.

- Please provide power supply according to the driver parameters in manual, and the cross sectional area of conductor power cable must be not less than AWG 18(0.75mm²).
- Please check all connections before supplying power.
- Please install switch on the circuit linking to power supply that you can cut off power supply in time when needed.
- Please shut down the power as soon as possible when it fails, or else the sudden operation may injure body when the power is free from trouble accidentally.
- Please connect the power of the driver after checking the control signal.
- Should install the emergency stop switch to shut the power off when emergency happened.
- Don't input the FREE signal when the motor loads vertically, or else the falling of the load will injure body.
- If it is needed to keep a vertical load when the power is shut down, the necessary safety device (e.g. brake) should be installed.
- Please shut down the power when the mechanical part of system fails.
- Don't touch the terminal of the driver when doing withstand voltage and isolation test, or else it will cause electric shock.
- Please read the parameters of the manual carefully, or it will cause the damage of the driver if operated illegally.
- Don't use the watery or oily detergent to clean the driver, or else it will damage the driver.
- When abandon the driver, please according to the industrial spoilage treatment standard in order not to pollute the environment.

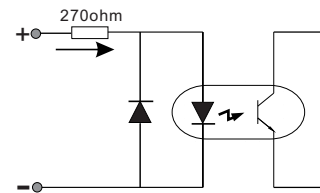
■ Highlight:

- The max voltage of power supply is up to DC40V.
- Bipolar constant-current drive. The max current is up to 1.2A per phase, so it can drive any two-phase Hybrid stepping motor below 1.2A.
- Can adjust the value of output phase current by DIP switch so as to drive different stepping motors.
- Keeping automatic semi-flow under condition of static locking of motor, so it can reduce heat from motor drastically.
- The max subdivision set by DIP switch is up to 256/200, provide the best performance of operation.
- Employ optocoupler devices to isolate on input circuit of control signal in order to reduce electrical noise.

■ Specification:

Supply power	DC 18V ~ 40V
Output Phase-current	0.2A ~ 1.2A
Input Current of Control Signal	6 ~ 20mA
Cooling mode	naturally air cooling
Environment	avoid massive metal powder, oil mist or erosive gas
Temperature	-10°C ~ +45°C
Humidity	<85%
Weight	0.13Kg

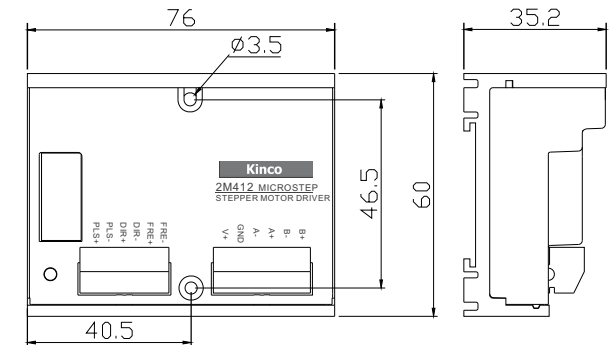
■ Input circuit of control signal:



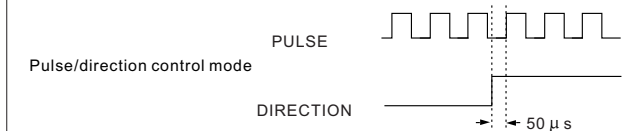
In this driver, all control signals are isolated with reliable optocoupler, so it can reduce the external electrical interference. Resistor of 270ohm on input circuit is used to limit input current. All control signals can connect to the 5V directly. When using control signal with higher voltage, please connect appropriate resistor to limit the current.

■ Mechanical Dimensions:

unit (mm)



■ Control Signal Description:

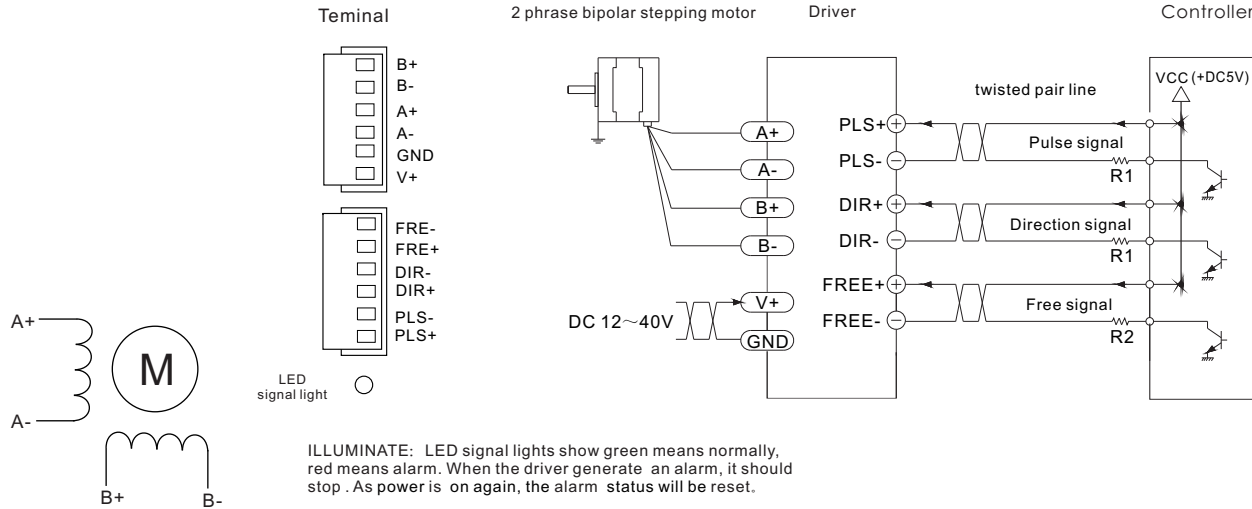


The driver can run only in pulse and direction mode. When inputted pulse signal, stepping motor can revolve according to the initial direction (the initial direction is related to the motor wiring). Exchange two phases can change the initial revolution of the motor. When change the signal's level, the motor will reverse.



When the driver run in the pulse/direction control mode, input port of Dir control signal is input port of direction signal. The change of level can control rotation of motor. To ensure the reliable response, Dir signal must be set before the pulse signal at least 50 μs;

■ Representative wiring diagram:



ILLUMINATE: LED signal lights show green means normally, red means alarm. When the driver generate an alarm, it should stop. As power is on again, the alarm status will be reset.

2-phase bipolar stepping motor winding diagram



When the control signal of controller is 5V, resistor R1 and R2 on linking circuit (see the above wiring diagram) are 0 ohm; when control signal of controller is 24V, R1 is 2K ohm and R2 is 8K ohm in order to ensure current of control signal to conform the requirement of driver.



Free interface is the input port of off-line control signal, When circuit of control signal is connected, driver will shut down the phase-current of output right away, and stepping motor is free then.

■ DIP switch's function:



On the top of driver, there is a red 8-bit DIP function switch, which can be used to set run mode and parameters of driver. Please read the manual carefully before use and shut off the power before adjusting the Dip switch.

The front view of DIP switch:



DIP No.	ON	OFF
DIP1~DIP4	Setting subdivision	Setting subdivision
DIP5	Static current semi-current	Static current full-current
DIP6~DIP8	Setting output current	Setting output current

Subdivision Setting Table is as follow:

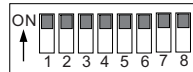
DIP2	DIP3	DIP4	DIP1 is ON	DIP1 is OFF
ON	ON	ON	N/A	2
OFF	ON	ON	4	4
ON	OFF	ON	8	5
OFF	OFF	ON	16	10
ON	ON	OFF	32	25
OFF	ON	OFF	64	50
ON	OFF	OFF	128	100
OFF	OFF	OFF	256	200

■ Adjustment of current description:



On the top of the driver, there is an eight red Dip switch that can also use to set the driver's current; Please read the reference carefully before use.

The front view of DIP switch:



Output phase-current setting table:

DIP6	DIP7	DIP8	output current
OFF	OFF	OFF	0.20A
OFF	OFF	ON	0.35A
OFF	ON	OFF	0.50A
OFF	ON	ON	0.65A
ON	OFF	OFF	0.80A
ON	OFF	ON	0.90A
ON	ON	OFF	1.00A
ON	ON	ON	1.20A

■ Notice for user:

1. POWER SUPPLY:

The DC voltage supplied to driver must be stable, and can not be great than the max. The clients use ripple parameter index of power supply when needed, and make sure the peak voltage must be less than the max, or else driver will be damaged.

2. INPUT SIGNAL:

When using the P/D mode, if you want to change revolution direction of the motor, Dir signal must be set at least 50 us before the pulse signal;

3. CONNECTION OF SYSTEM:

The control signal must use the twisted pair line to transmit, and the cross sectional area of conductor of wire is not smaller than 0.2m², and the wire's length cannot be longer than 2m.

The wire connecting to motor must to withstand a high current. We suggest to use the conductor which cross section area is larger than 0.5m², if necessary, you can choose more thicker wire according to the actual current.

Keep the distance between control signal wire and power wire more than 10cm, even using the shield isolated mode, the driver also must ground separately so that electrical noise from wire of power supply can not interfere control signal.

4. INSTALLATION

Please cling the driver's radiator surface to the metal board in the electrical cabinet to facilitate heat dissipation of driver.

Please keep ventilative to make the driver work continuously for longer time.

5. ATTENTION OF DIP SWITCH:

Some series of driver have been provided the self-test function before power is on, Please make sure the DIP switch for self-test function is shut off to avoid motor running suddenly and damage the equipment or injure personnel! Before the driver work normally, the Dip switch of the self-test function must be off.

Please adjust the output phase-current by DIP switch, stepping motor can not run continually at over-current for a long time. If the output current is too high, the motor will be damaged, and if the output current is too small, the motor cannot run normally.

6. INSTALLATION ENVIRONMENT

The driver can only use in indoor industrial environment. Please don't install the driver outdoor directly, when using outdoor, the driver should be installed in the electrical cabinet conformed to the industry protection requirement, otherwise the driver will be damaged easily!

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