

# YH-3722

## Safety precautions:

1. the safety instructions

- ◆ The driver only can be used or installed by professional technical staff.
- ◆ Prevent accidents.
- ◆ Pay attention to the installation of machinery and coordination to general electric equipment .
- ◆ Avoid electromagnetic interference.
- ◆ The drive housing cover should be connected to ground.

## Attention:

- ◆ Signal cable and motor cable must be shielded and connected separately, the farther the distance, the better of the effect.
- ◆ Motor cable length not more than 50 meters
- ◆ The extra line of signal cable and motor cable must be cut and insulating.
- ◆ Motor cable double end should be shielded, one end is connected to motor housing, the other end is connected with the drive end PE, and connect to ground.
- ◆ The drive and motor need to connect to ground.
- ◆ Make sure the power is off when re-make wiring connection, installation and settings. Do not make any parameters setting or measurement when the power on
- ◆ Do not energized the step driver before connect with the motor.
- ◆ The input voltage must accord with the requirements of step driver.
- ◆ Before power on, ensure that the power supply cable, motor cable and signal cable have a correct connection.
- ◆ Do not open the step driver by yourself, once you open the driver, will lose warranty qualifications
- ◆ The input voltage for this step driver should not exceed 270V
- ◆ The drive will stop to work when its temperature over 75 degrees, red and green lights at the same time, then please check the drive work environment is ventilation, and check the drive fan is normal,

if the drive fan work in abnormal operation, please contact the agents to send the parts or replace by yourself. When you replace the fan by yourself, please note that the rated voltage of the fan is DC12V. installation direction should make sure the fan blow to the inside of driver.

- ◆ When the red light, It means there are over current or short circuit, please check the connection of the motor and other short circuit fault, after eliminating the need to power recovery.

## **1.Introduction**

YH-3722 is the newest 3 phase high voltage step motor drive, it increase the advanced intelligent control algorithms based on high speed DSP + IPM digital three-phase stepper motor drive. the motor suitability, adaptation of external signals, receives the pulse frequency, service life, reliability and stability has greatly improved compare with ordinary DSP + IPM mode, almost no vibration and noise. It can match with various models of the three-phase hybrid stepping motor that under 7.0A, diameter 57-130mm (torque 2NM-60NM. Positioning accuracy up to 60000 steps per revolution. This main features of this series products is some of them can have motion control function, support touch screen control and data input. According to user needs can preload punch

cutting system, automatic feeding and cutting system or customized some complex single axis motion control function. The drive internal integrated IO port of 4 input and 2 output digital, can meet the general motion control demand. The products are widely used in high resolution, large and medium-sized CNC equipment., such as engraving machine, crystal grinding machine, and medium-sized CNC machine computer embroidery machine, packaging machine suitability system and so on.

## **2.Features**

- Dual mode for high and low voltage, suitable for the 50V to 300V motor
- Dual mode for single and double pulse, suitable for pulse + direction mode and CW, CCW double pulse mode.
- Have a big torque communication control mode.

- Integrated motion control function, no need to use PLC or motion controller.
- Through the touch screen, can do the direct control or parameter Download.
- It is provided with 16 micro step setting of equal angle and constant torque, maximum resolution of 60000 step per revolution.
- The highest reaction frequency up to 500Kpps, is 2.5 times of traditional driver.
- The step pulse stop more than 100ms, coil current automatically reduced to half of the setting current.
- The photoelectric isolation signal input / output
- The 5V, 12V, 24V signal input are compatible, no need to add external resistor to limit current.
- The drive current effective value from 1.2A /phase to 7.0A / phase,
- The single power input, voltage range: AC80V–240V,

### 3.The current is set by DIP1.

(Note: the current value is effective value)

Running current(A)	1.2	1.5	2.0	2.3	2.5	3.0	3.2	3.6	4.0	4.5	5.0	5.3	5.8	6.2	6.5	7.0
01	OFF	ON														
02	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON	ON
03	OFF	OFF	ON	ON												
04	OFF	ON														

### 4.Micro step setting

Micro step setting is set by DIP–2, There are 16 choice in total and was set by the D1–D4 switch,D5–D6 switch are function setting.

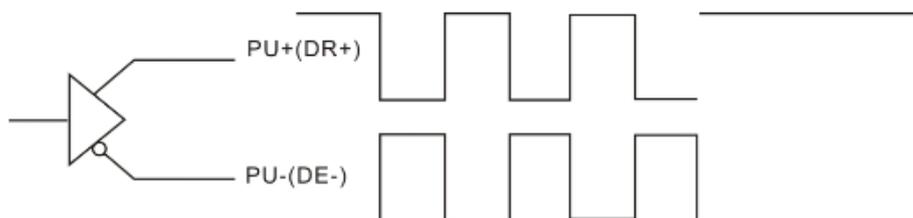
The following is the form:

Step /rev	400	500	600	800	1000	1200	2000	3000	4000	5000	6000	10000	12000	20000	30000	60000
D1	ON	ON	ON	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
D2	ON	ON	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF	OFF	OFF	OFF
D3	ON	ON	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF
D4	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF
D5	ON, M=dual pulse control mode, MA=high torque mode, MB=serial mode, MC=control function, MD=match with low voltage motor OFF, M=single pulse control mode, MA, MB, MC, MD=common mode															
D6	Auto detect switch (OFF=receive outside pulse, ON=The stepper motor drive rotate at 30RPM)															

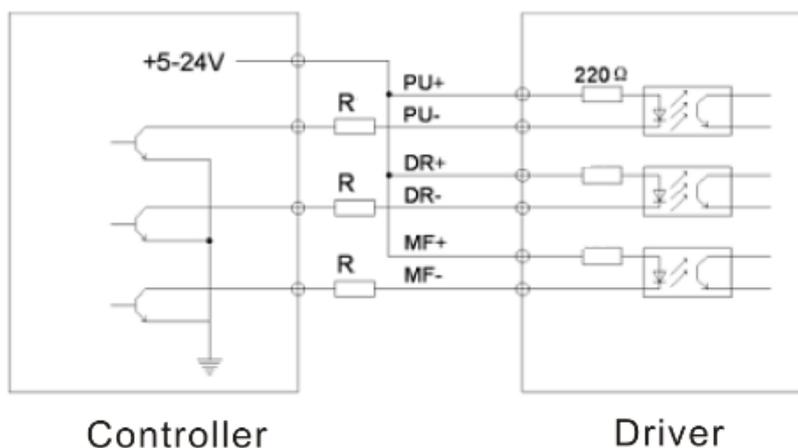
## 5. Control signal input

All signals input through photoelectric isolation, signal interface has 5V interface and 12V / 24V interface, users do not need to external current limit resistor. Support for the differential mode input, also supports common anodal or common cathode input.

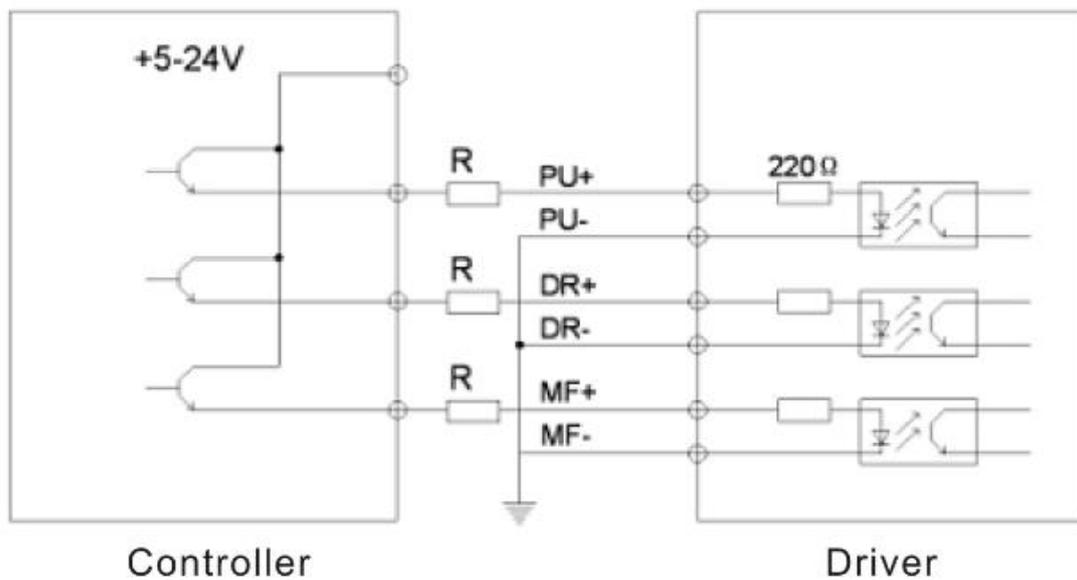
### 5.1 Differential mode signal connection method



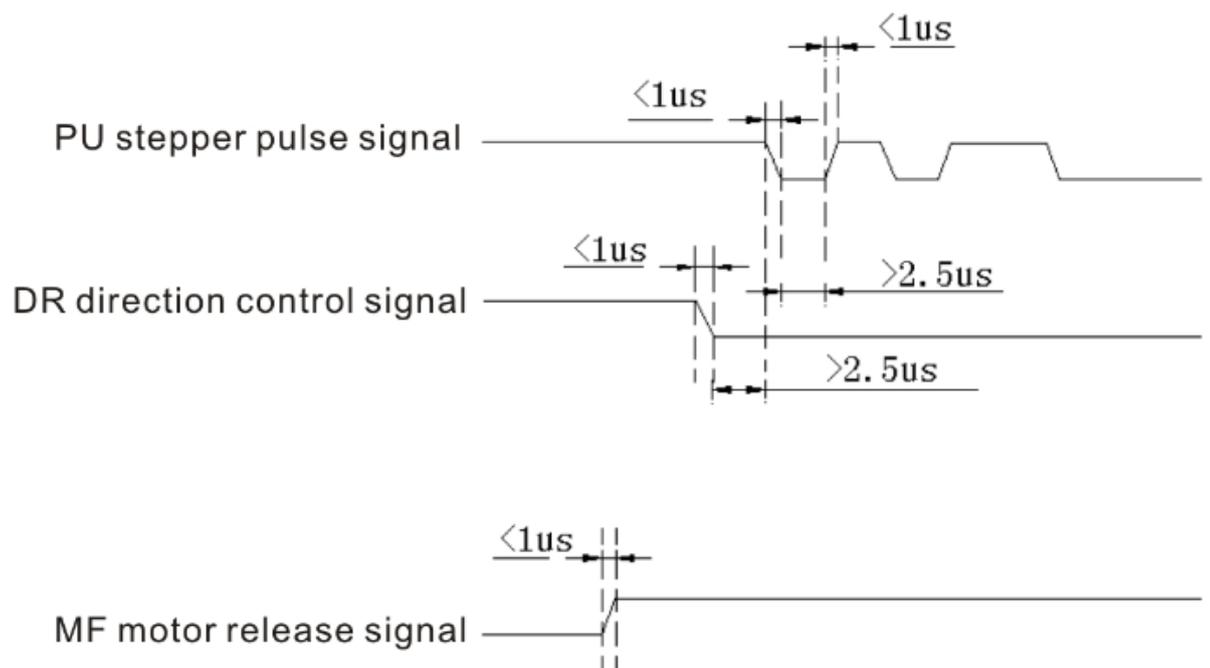
### 5.2 Common anodal connection



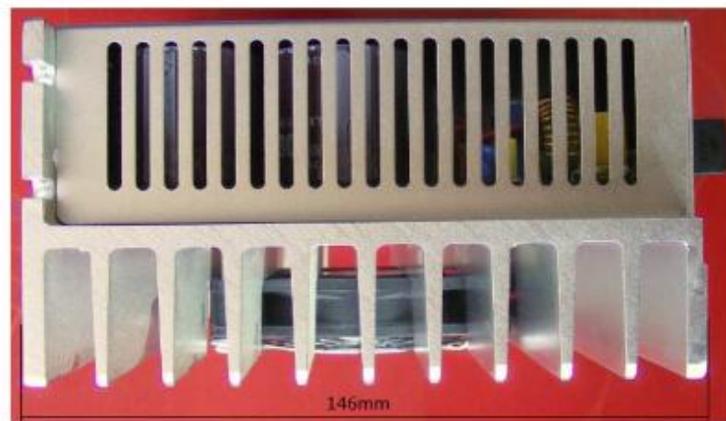
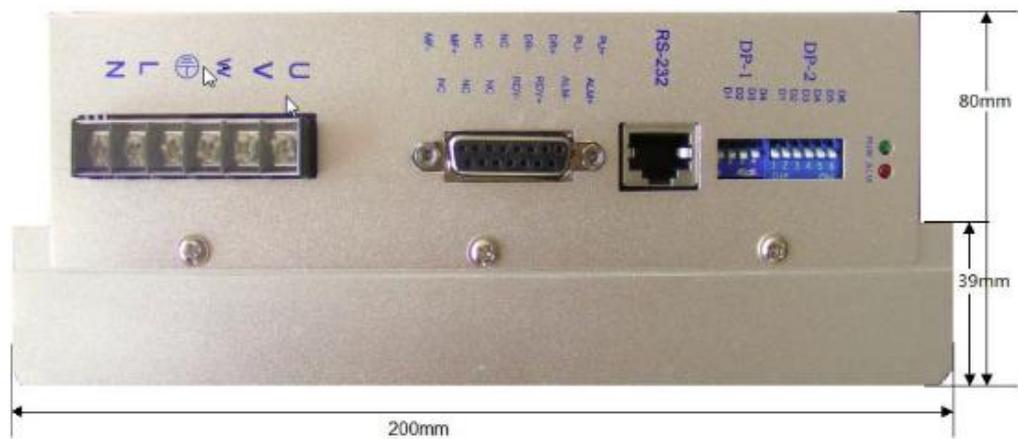
### 5.3 Common cathode connection



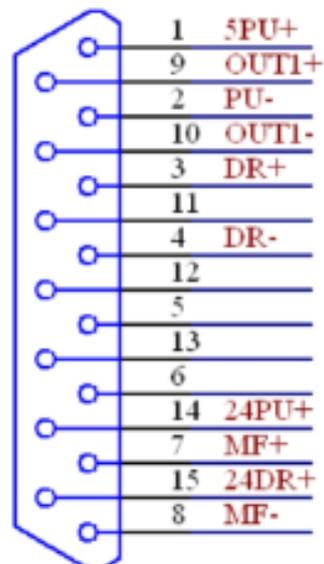
### 5.4 Input signal waveform sequence diagram



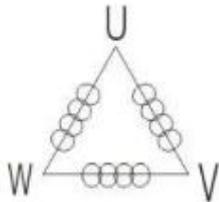
## 6.Dimension of the stepper motor drive (Unit : mm)



## 7. Pin function



Port definition	Pin no	Sign	Function	Description
RS-232	1	RX	Receive data	Connect to RX (some model support)
	2	TX	Send data	Connect to TX (some model support)
	8	GND	Ground wire	Connect to ground (some model support)
	1	5PU+	5V pulse signal photoelectric isolation positive input	Connect to PU+, 5DR+, MF+ and PU-, DR-, MF- ; when outside signal is 5V. When outside signal is 12V or 24V, Please connect to 24PU+, 24DR+, MF+ and PU-, DR-, MF-
	2	PU-	Pulse signal photoelectric isolation positive input	
	3	5DR+	5V direction signal photoelectric isolation positive input	
	4	DR-	Direction signal photoelectric isolation negative input	
	7	MF+	Motor release signal photoelectric isolation+	
	8	MF-	Motor release signal, the motor is in free status when it is effective	
	14	24PU+	12V/24V pulse signal photoelectric isolation positive input	
	15	24DR+	12V/24V direction signal photoelectric isolation positive input	

9	OUT1+	False signal output +	This signal is also called ALM signal, when there is no fault, resistance between OUT+ and OUT- more than 1M, When there is fault, the resistance between the pins less than 10 ohm, please limit the current, the driver inside can only under stake 100mA
10	OUT2-	False signal output -	
5、6、11、12、13	NC	Function reservation	Keep hang in the air status
1、2	L, N	Power supply	Recommend :AC110~240V undertake max:270V
3	PE	Earth wire	Recommend:AC110~240V,max voltage:270V earth(connect to cover of driver)
4	U	Motor wiring	
	V		
5	W		
6			

## 8. Troubleshooting

Port definition	Cause	Solve the problem
Motor can not be self-locked, stop to rotate, both red and green light are off	No power supply to the drive	Please check whether the power supply work in normal condition
Motor can not be self-locked, stop to rotate, red light is on, green light is off	Over current protection	Please check the connection between the stepper drive and motor, and check whether the motor is broken
Motor stop to rotate, both red light and green light are on	Overheating protection	Please check the fan of stepper motor drive and make sure it can release heat
Motor can be self-locked, but stop to rotate, green light is on, red light is off	No pulse input	Please check whether controller or PLC have pulse output and inspect PU signal connection at the same time
Motor vibrate, green light flash, red light is off	Motor is stalled because the motor is too fast or the load is too heavy	Please check the outside control signal frequency and the micro step setting of the driver, replace with a much bigger motor.
Motor can not be self-locked, green light flash, red light is off	The release signal is effective	Please check whether the control of controller or PLC to the driver's MF signal is normal
Motor run, green light flash, with abnormal whistlers	The operation current of the driver is not matched with the rated current of the motor	Set the operation current of the driver as rated current of themotor
	The working mode of the driver is not matched with the motor, especially the high and low voltage mode	Please make the 5 bit of DP2 in the ON status
	The load of motor is too heavy	Change the motor or increase the operation current of the driver
Incorrect position	Out of step because initial velocity is too high or Acceleration /deceleration time is too short	Change the initial velocity or change the Acceleration deceleration time

	Incorrect micro step	Choose the correct micro step
	There is a mistake for the controller or PLC	Please check the control program
The driver can only rotate in one direction	Single pulse and double pulse driver, the outside pulse is double pulse, however the driver work under in single pulse mode	Please adjust the 5 bit of DP2 to ON status
Cree page	The driver and motor are not connect to ground	Please connect the driver and motor to ground

## 9.Short circuit protection range

The protection range is defined according to the general rules in the industry of inverter, servo driver and stepper motor driver. Short circuit protection range only limited to the short circuit during U,V,W. If you need special protection, we are pleased to provide extra service.

## 10 .Protection in resisting the effect of high voltage and high frequency pulse

This product can resist the effect of interference pulse. It can resist the Differential mode interference of 2600V and common mode interference of 2300V. However, make sure PE connect to the ground.