KL-11008 Closed Loop Stepping System

1. Introduction

Descriptions

KL-11008 is a new generation hybrid servo driver, it combines the advantage of the servo system and stepper system， the system acts as nothing more than a high pole servo motor, the classic stepper motor noises and resonances vanish. Because the position is controlled, the motor can also no longer lose any steps up to its maximum torque.

Features

- Closed-loop control, no longer lose any steps, up to its maximum torque;
- higher torque and higher speed;
- Fast response;
- Reduced motor heating and more efficient;
- Zero-speed stability;
- Smooth motion and super-low motor noise;
- No Tuning and always stable;
- Lower cost.

Applications

KL-11008 is a low-cost, high-performance servo systems, suitable for a variety of large-scale automated equipment and instruments, such as low-cost, low vibration, noise, high-precision, high-speed devices, And it is ideal for applications where the equipment uses a belt-drive mechanism or otherwise has low rigidity and you don't want it to vibrate when stopping.

Electrical Specifications

Parameter	Min	Typical	Max	Unit
Input Voltage(AC)	80	110	130	VAC
Output Current	0	-	8.0	A
Pulse Signal Frequency	0	-	200	KHZ
Input Signal Current	7	10	16	MA

2.Connectors and Pin Assignment

The KL-11008 has five connectors, connector for control signals connections, connector for stator signal connections, connector for encoder feedback and connector for power and motor connections.

Control signal Connector

Control Signal connector(CN1)		
Pin	Name	Description
3	PUL+	Pulse signal positive
4	PUL-	Pulse signal negative
5	DIR+	Direction signal positive
6	DIR-	Direction signal negative
11	ENA+	Enable signal positive, usually left unconnected(enable)
12	ENA-	Enable signal negative, usually left unconnected(enable)

Stator Signal Connector

Use the connect cable connect the driver(CN2) and motor.In order to ensure the stable signal transmission, please tighten the screw port ends.

Stator Signal Connector	
Name	Description
Pend+	Alarm Signal: OC output, Normally closed, positive
Pend-	Alarm Signal: OC output, Normally closed, negative
ALM+	Alarm Signal: OC output, Normally open, positive
ALM-	Alarm Signal: OC output, Normally open, negative

Encoder Extension Cable Pin Out

Encoder interface directly use the company's connecting the driver of adapter cable and motor. To ensure the stability of signal transmission, tighten the screws at both ends of the port.

Name	Color
EGND	White
VCC	Red
EA-	Blue
EA+	Black
EB-	Green
EB+	Yellow

Power and Motor Connector

Name	Description
A+	Motor Phase A+(Blue)
A-	Motor Phase A- (Yellow)
B+	Motor Phase B+ (Black)
B-	Motor Phase B- (Red)
AC	Power Supply Input
AC	80~110VAC

In order to ensure the normal operation of the motor，it must be correctly connected terminals in accordance with the motor color, it will cause damage or the police to the driver if color does not correspond .

Control Signal Connector Interface

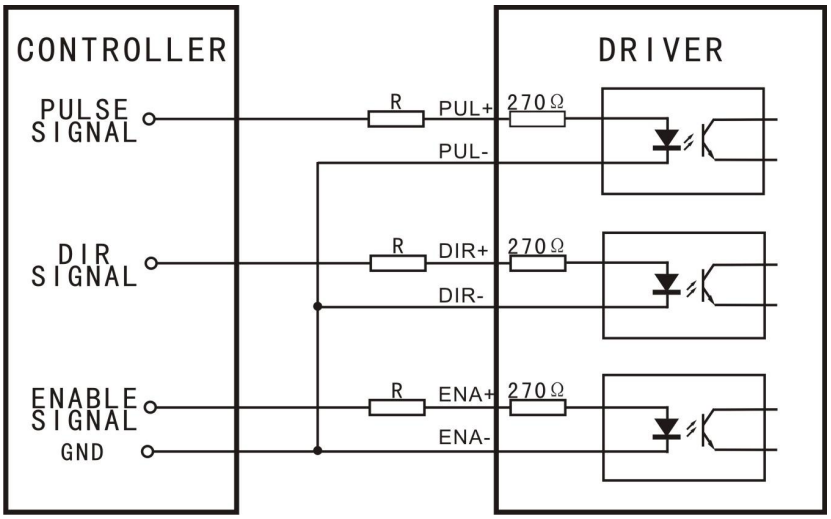


Figure1: Common-Cathode

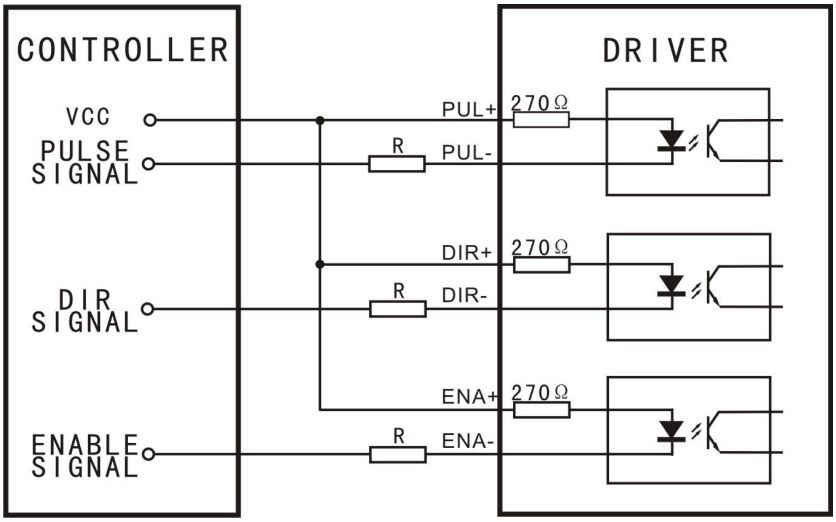


Figure2: Common-Anode

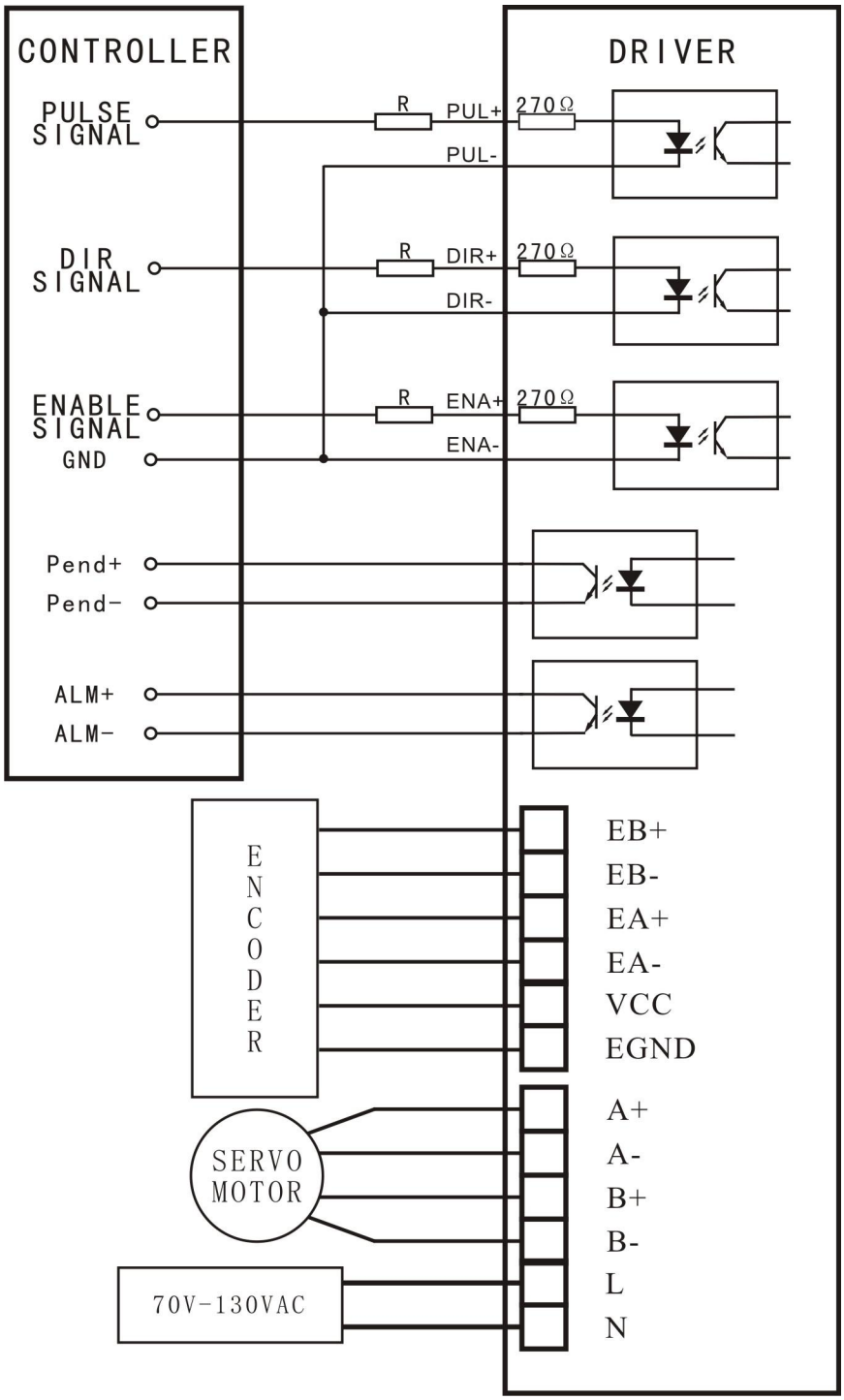


Figure 3: Typical Connection

VCC	R
5V	0
12V	680Ω
24V	1.8KΩ

Table 1

3.Parameter settings

KL-11008 driver parameter is set in one of two ways: one is connected with the driver and the computer through the serial port, set in the host computer; the other is manually set parameters in the drive panel.

The factory parameters of the Drive are optimal parameters, in the normal circumstances, users only need to set the subdivision of the drive and direction of the motor.The following is the specific parameter settings and functional parameters .

Enter the parameter setting interface (PR-DP), press "SET" button to enter the parameter number selection, select the parameters which are required by the customer in the main interface display. Parameter number corresponding parameter definition is described in the following table:

Display settings table				
Number	Definition	Initial value	Range	Parameter Description
dP-00	number of pulses	0		The pulse number driver received
dP-01	Position deviation	0		The actual position deviation

Enter the parameter setting interface (PR-SE), press "SET" button to enter the parameter number selection, select the parameters of the motor.Parameter number corresponding parameter definition is described in the following table:

Parameter setting table				
Number	Definition	Initial value	Range	Description
PR-000	Driver version	10	-	Can’t change
PR-001	Current loop gain	55	0-100	
PR-002	Position loop gain	50	0-100	
PR-003	The current of stop	50	0-100	
PR-004	Open-loop current	70	0-100	
PR-005	Direction	0	0-1	0:CW 1:CCW
PR-006	Enable	0	0-1	
PR-007	Pulse mode	0	0-1	0:Rising edge 1:Falling edge
PR-008	Subdivision	8	4-256	Multiplied by 200 is the number of P/R
PR-009	Position deviation	1000	0-65535	Alarm error
PR-010	Close/Open control	0	0-1	0：Close control 1：Open control

PR-011	ALM	0	0-1	0：OC output, Normally open 1：OC output, Normally closed
PR-012	PEND	1	0-1	0：OC output, Normally open 1：OC output, Normally closed

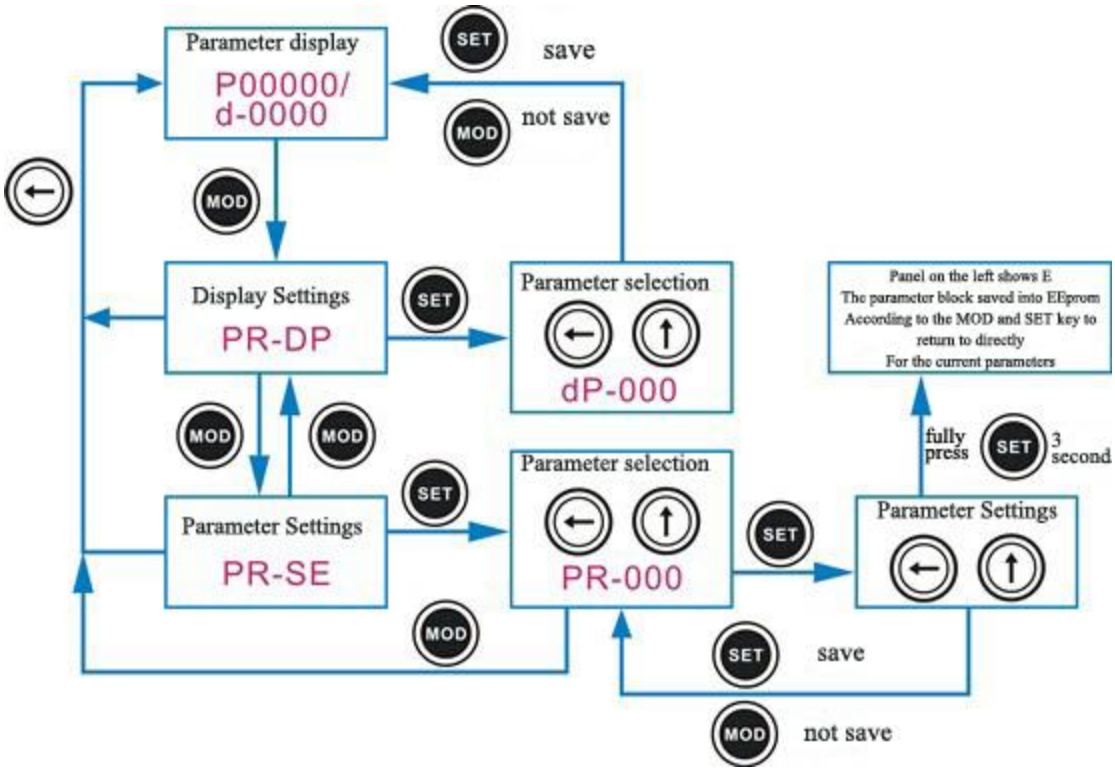
Key setup steps of KL-11008 :

➢ Parameter display interface shows the user to select the information you want, you can set the parameters as follows operational processes.

➢ Setting interface is divided into "Display Settings" interface and "Parameter Settings" screen, Displaying "PR-DP"means display Interface,and displaying "PR-SE" means parameter setting interface.

➢ Enter the parameters selecting or parameter setting interface ， if the parameter requires to be added and subtracted ， please press or for a long time，the data displayed will be quickly added and subtracted.

➢ After the parameters setting, for the next boot with the same parameters, be sure to press the "SET"for three seconds, until the left of the screen display E, the parameters will be saved to the EEPROM.



4. Problems and Solutions

problems	Possible cause	solutions
Motor is not rotating	No power supply	Check the power supply
	No control signal	Check the control signal
	The driver is disabled	Don't connected the enable signal or enable the driver
ALM Err_00	Over-voltage	Check the supply voltage
ALM Err_01	voltage is too low	Check the supply voltage
ALM Err_02	Over current	Check motor lines eliminate the short-circuit
ALM Err_03	Encoder line wrong connect	Check the encoder wiring
	Motor line wrong connect	Check the motor wiring
	Motor or drive failure	Replace the motor or drive
	Lose step	Restart driver
Inaccurate Position	The Micro steps set incorrectly.	Set the correct segments
	Control signal is interfered	Eliminate interference
Motor Stalled	Power supply voltage too low	Increasing the supply voltage
	Accelerating time is too short.	Extend the acceleration time

5. Mechanical Specifications (unit: mm(inch), 1 inch = 25.4mm)