Hybrid Servo Motor Driver KL-8080L

1.Introduction

Descriptions

KL-8080L is a new generation of high-performance digital closed-loop stepper servo drives, which combines the advantages of servo and stepper systems. When running ,it close to a multistage servo. More advanced motor current control algorithm makes vibration and noise disappears; increasing the closed loop of position   to prevent the phenomenon of motor lost step.

The driver's voltage range is 70-110VDC / 50-80VAC, It is suitable for various types of two-phase hybrid stepping motor of closed loop whose current is 8.0A or less, with automatic semi-flow, self-test, over-voltage, under-voltage and over-current protection.

Features

- High-performance, low price
- micro-step
- Automatic idle-current reduction
- Optical isolating signals I/O
- Max response frequency up to 200Kpps
- Low temperature rise, smooth motion
- Online adaptive PID technology

The main application areas

KL-8080L is a low cost, high performance servo systems, for a variety of large-scale automation equipment and instruments, it is better for user to expect with low-cost, low vibration, low noise, high-precision, high-speed equipment, more suitable lower rigidity actuator load, such as a belt type than conventional servo .

Electrical parameters

parameter	Min	Typical values	Maximum	Unit
Input voltage	50	80	80	VAC
Peak output current	0	-	8.0	A
Pulse frequency	0	-	200	KHZ
Input signal current	7	10	16	mA

2.Interface and wiring instructions

There are three control ports and two strong electric ports for KL-8080L.The three control ports are CN1, CN2 and CN3. CN1 are the control signal port and alarm output port; CN2 is encoder signal port; CN3 is the serial port. Strong power port is divided into the power port and the motor ports. Please refer to the following instructions for all   wiring, be sure the wiring is accurate.

Control signal interface CN1

The internal signal   interface circuit of KL-8080L stepper motor drives   are used optocoupler signal isolation, the R is an external limiting current resistor figure.

Control signal portCN1		
Pin No.	Name	Description
3	PUL+	Pulse positive input
4	PUL-	Pulse negative input
5	DIR+	The direction of the positive input
6	DIR-	The direction of the negative input
11	ENA+	Enable positive input , not connected in normal(enable)）
12	ENA-	Enable negative input , not connected in normal(enable)

Stator Signal Connector

When the drive alarm, the output state of alarm   will change , "Pend" is fully closed, it is fully open after alarm; "ALM" port is normally open,it is normally closed   after alarm . Users can connect "Pend" or "ALM" port based on the type of alarm input of controller or control card, triggering   controller or control card to alarm under the drive alarm, pausing the processing .

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- (Red)
B+	Motor Phase B+ (Green)
B-	Motor Phase B- (Black)
L	Power Supply Input
N	50~80VAC
PE	GRAND

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

VCC	R
5V	Without
12V	680 Ω
24V	1.8K Ω

Table 1

3.Parameter settings

The parameters setting of KL-8080L driver in two ways: one is connecting the drive and the computer through the serial port, settings in the PC ; second is to manually set the parameters on the drive panel.

The factory parameters inside driver are optimal parameters, in normal , the user can only set up the driver with the motor running segmentation and orientation.Specific parameter settings and parameters function as follows.

Entering the parameter setting interface (PR-DP), pressing "SET" button to enter the selection of parameter number , choose the parameters that customers need to displayed in the main interface. Parameter number corresponding parameters are defined as follows:

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), pressing the "SET" button to enter the parameter number selection, setting the motor running parameters. Parameter number corresponding parameters are defined as follows:

| 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

setup steps of key for KL-8080L

➢ 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.
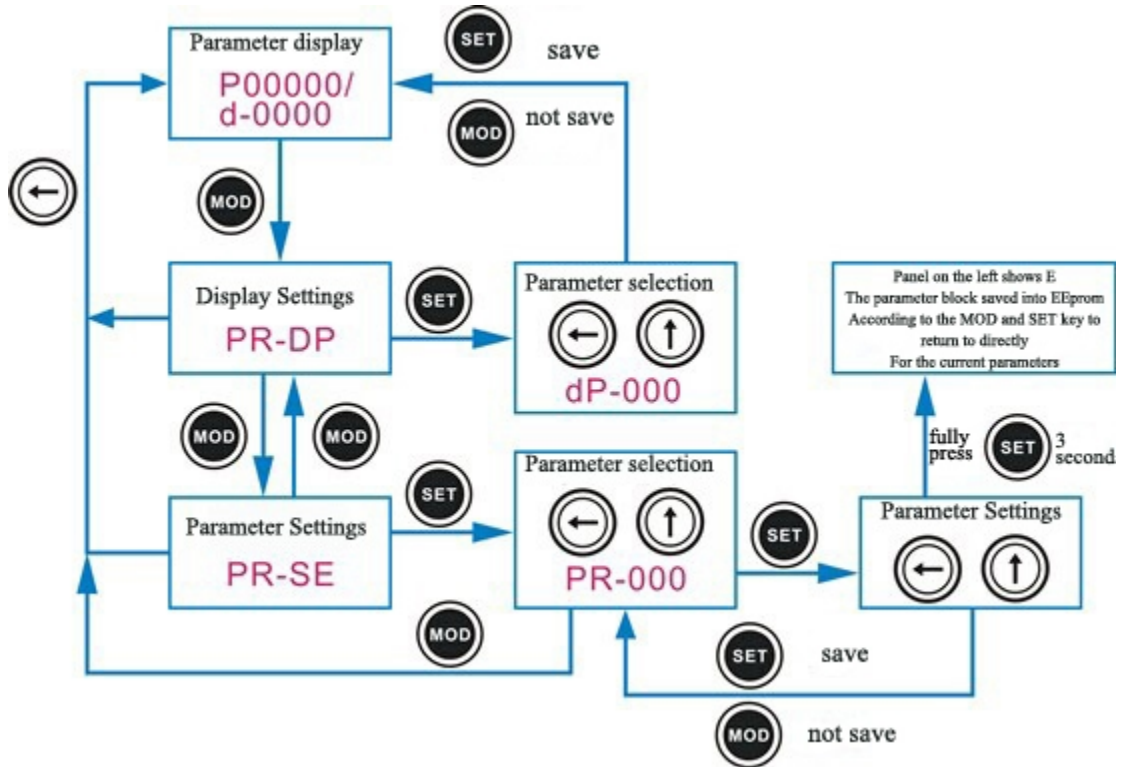
4.Problems and Solutions

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

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