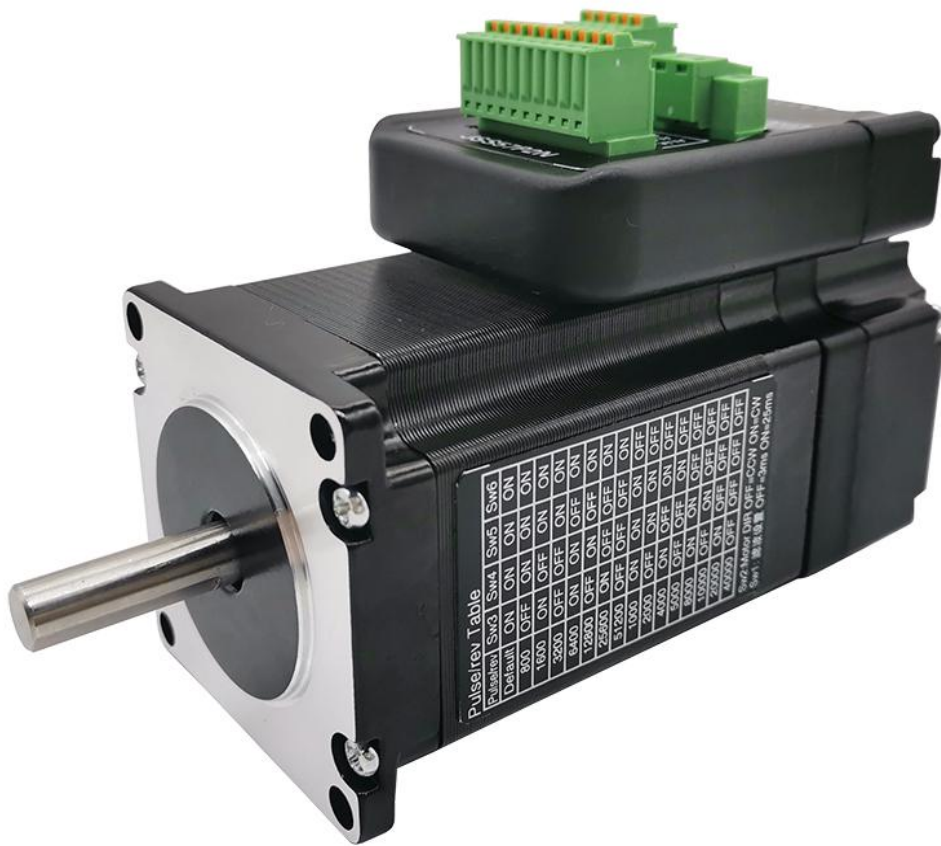


JSS57P

Integrated digital hybrid servo

Instruction manual



I, Product description

1. Overview

JSS57P is a new motor-driven integrated hybrid servo drive system with communication function. Using a new generation of 32-bit DSP control technology and closed-loop control technology, it can prevent out-of-step and ensure the accuracy of the product; High-speed torque attenuation is much lower than traditional open-loop drive, which can greatly improve the high-speed performance and torque of stepper motor. Load-based current control technology can effectively reduce motor temperature rise and extend motor life. Built-in position and alarm output Signal, convenient for monitoring and control of the host computer; The position error alarm function ensures the safe operation of the processing equipment. It is an ideal upgrade for traditional open-loop stepper drives and can replace some traditional AC servo systems at a price of only 50% of the AC servo system.

2. Characteristics

- ◆ Adopt advanced 32-bit motor control dedicated DSP chip and vector closed-loop control technology;;
- ◆ The default work is in closed loop mode, no loss of step, and it also supports working in open loop mode.;
- ◆ Increase the output torque and running speed of the motor;
- ◆ The current level is intelligently adjusted according to the load, reducing the temperature rise of the motor, locking the current, and adjusting the closed-loop peak current.;
- ◆ Adapt to various mechanical load conditions (including low-rigidity loads such as pulleys and pulleys) without adjusting the gain parameters;;
- ◆ The position command smoothing filter can be set, the motor runs smoother, the vibration is lighter, and the acceleration and deceleration dynamic performance is improved.;
- ◆ Zero-speed static capability without vibration after positioning;
- ◆ Support single and double pulse input, pulse response frequency up to 200KHZ;
- ◆ Support 15 fixed subdivisions, and support software to set any subdivision (200~65535);
- ◆ Support modbus RTU protocol on RS232, position and speed control controlled by communication;
- ◆ Support monitoring of motor operating conditions, including speed, position deviation, bus voltage, operating current, etc.
- ◆ Voltage range: DC+24V~48V;
- ◆ With overcurrent, overvoltage, positional tolerance and other protection;

3. Typical application

Suitable for all kinds of small and medium-sized automation equipment and instruments, such as industrial robots, textile machinery, special industrial sewing machines, wire stripping machines, marking machines, cutting machines, laser phototypesetting, plotters, CNC machine tools, engraving machines, automatic assembly equipment, etc. Excellent application in devices where users expect low noise and high speed.

II, Electrical, mechanical and environmental indicators

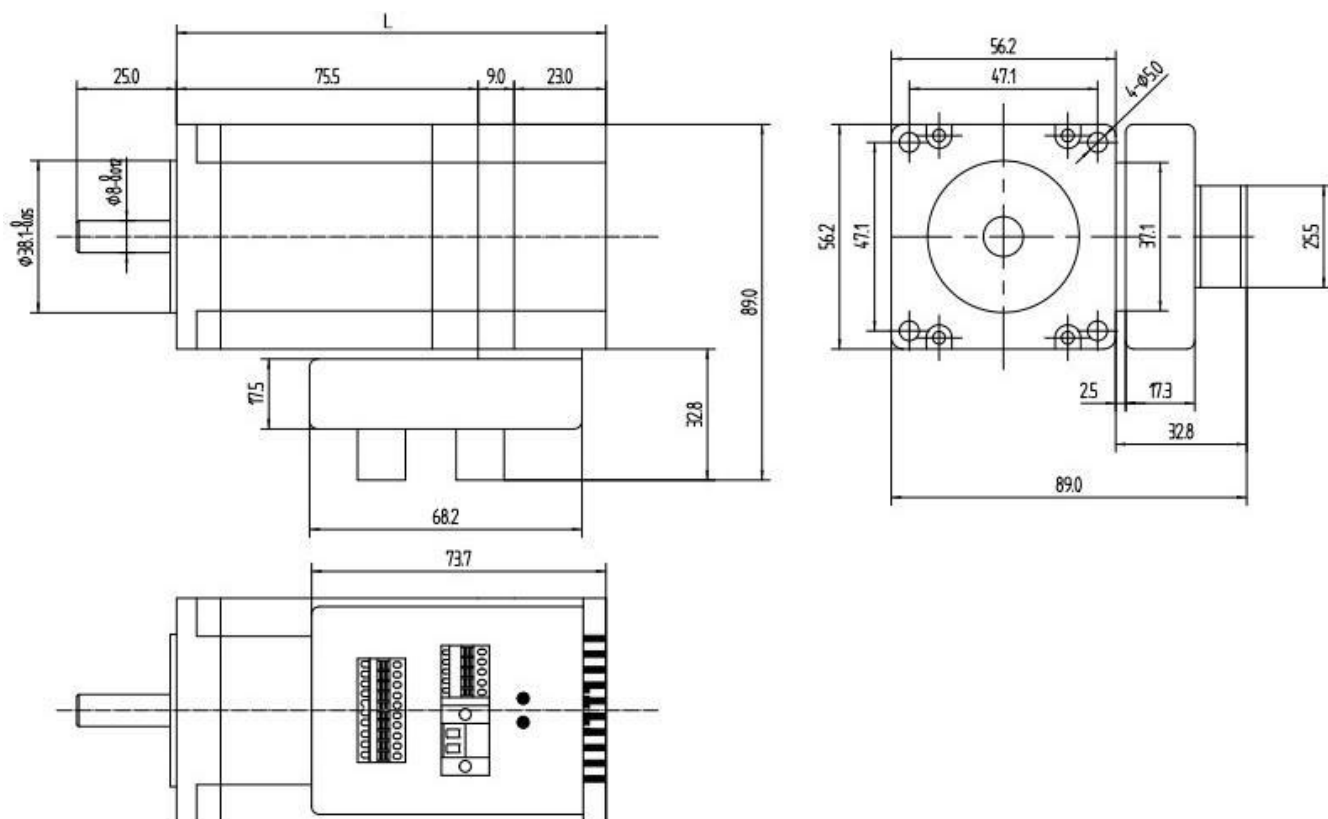
1. Electrical index

Power supply	DC24-48V (Recommended power supply DC36V)
Output current	Peak 6.0A (current varies with load)
Logic input current	10mA7~16mA, recommended 10mA
Pulse frequency	0~200KHz
Encoder line number	1000
Insulation resistance	$\geq 500M\Omega$

2. Use environment and parameters

cooling method	Natural cooling or external heat sink	
Use environment	Use occasion	Try to avoid dust, oil and corrosive gases
	Temperature	0~40°C
	Humidity	40~90%RH
	Vibration	5.9m/s ² Max
Storage temperature	-20°C~80°C	

3. Mechanical installation size



III, Drive interface and wiring introduction

1. Interface definition

(1) Power input port

Terminal number	Symbol	Name	Description
1	+Vdc	DC power positive terminal	DC+24V~48V
2	GND	DC power ground	Recommended DC+36V power supply

(2) Control signal port

Terminal number	Symbol	Name	Description
1	PUL+	Pulse positive input	Support 5~24V
2	PUL-	Pulse negative input	
3	DIR+	Positive input	
4	DIR-	Negative input	
5	ENA+	Enable positive input	
6	ENA-	Enable negative input	

7	PEND+	In-position signal positive output	OC gate output, the default closure indicates that the positioning is completed, and the open indication indicates that the positioning is not completed.
8	PEND-	In-position signal negative output	
9	ALM+	Alarm signal positive output	OC gate output, the default close indication has an alarm signal, and the open indication indicates no alarm signal.
10	ALM-	Alarm signal negative output	

(3) RS232 communication port

Terminal number	Symbol	Name
1	+5V	Positive power terminal
2	TXD	RS232 sender
3	GND	Power ground
4	RXD	RS232 receiver
5	NC	

(4) Status indication

PWR: Power Indicator. The green indicator lights when power is applied.

ALM: Fault indicator. Red light flashes 1 time within 3 seconds: Overcurrent or phase-to-phase short-circuit fault; red light flashes continuously 2 times in 3 seconds:

Overvoltage fault; red light flashes continuously in 7 seconds 7 times: position error tolerance alarm.

IV. DIP switch setting

JSS57 uses a six-digit dial switch to set the filter time, motor rotation direction and subdivision accuracy.

SW1, filter time setting. The default on=3ms, off=25ms, the larger the filtering time, the smoother the motor runs and the lower the noise. Moreover, in the on state, the filtering time can be flexibly set by the upper computer software setting.

SW2, motor rotation direction setting.

On=CW, off=CCW.

SW3、SW4、SW5、SW6: Subdivision setting。

Steps / circle	SW3	SW4	SW5	SW6
default	on	on	on	on
800	off	on	on	on

1600	on	off	on	on
3200	off	off	on	on
6400	on	on	off	on
12800	off	on	off	on
25600	on	off	off	on
51200	off	off	off	on
1000	on	on	on	off
2000	off	on	on	off
4000	on	off	on	off
5000	off	off	on	off
8000	on	on	off	off
10000	off	on	off	off
20000	on	off	off	off
40000	off	off	off	off

The default file segmentation defaults to 400, which can be modified by the host computer software.

V, Drive parameter settings

The parameter setting of SS57 integrated hybrid servo drive must pass the RS232 serial communication port of PC, and the special debugging software is used to complete the parameter setting. The driver has a set of default factory configuration parameters corresponding to the motor. The user only needs to follow the specific use. Adjust the number of subdivisions inside the drive. For details, see the Protuner debugging software instructions. The specific adjustable parameters and functions are shown in the table below.

Parameter number	project	Description	Predetermined area	Defaults	Project note
0	Drive model	Read only	57	Corresponding motor model	Read only, no need to modify
1	Open loop closed mode selection	0-open loop mode, 1-closed loop mode	0~1	1	In open loop mode, set the motor current with parameter 11, the value of the open loop holding current. In closed loop mode, the current is automatically adjusted according to the load.
2	Motor type	No need to modify	0~2	0	No need to modify

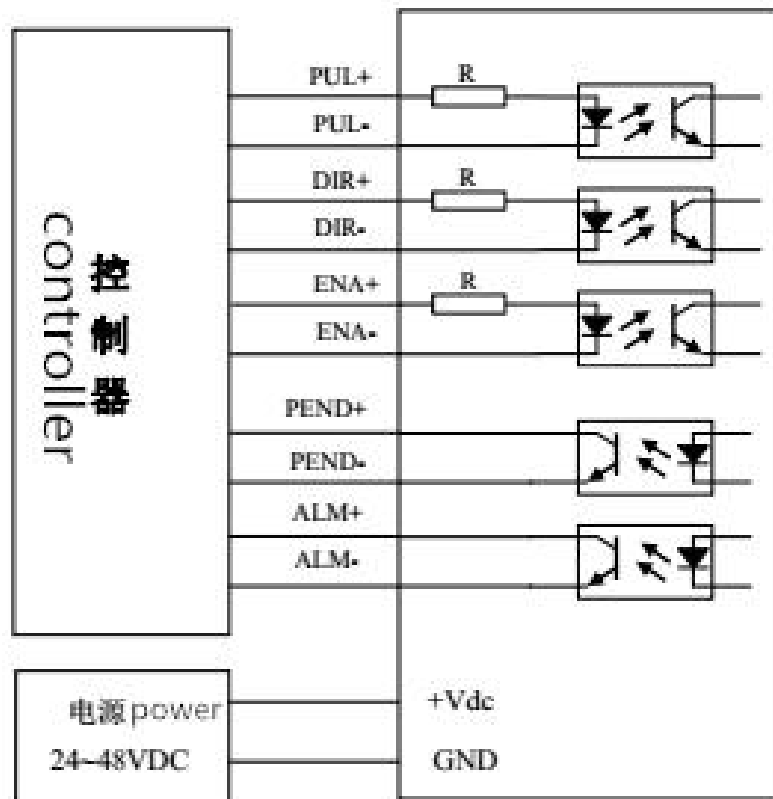
3	Current loop proportional gain Kp	Read only			Read only, no need to modify
4	Current loop integral gainKi	Read only			Read only, no need to modify
5	Position loop proportional gainKp		0~1000	300	The larger the setting, the higher the gain and the greater the stiffness, but the value is too large to cause oscillation or overshoot.
6	Speed loop proportional gain Kp		0~1000	400	The larger the setting value, the higher the gain and the higher the stiffness. In general, the load inertia needs to be set larger.
7	Speed loop integral gain Ki		0~300	80	The larger the setting, the higher the gain and the greater the stiffness, but the value is too large to cause oscillation or overshoot.
8	The number of pulses per revolution corresponding to the dial switch of the default file		200~65535	400	Any number of other subdivisions other than the 15 fixed subdivisions
9	Encoder resolution	Default 1000 line encoder, 4 times frequency	200~20000	4000	Default 1000 line encoder, 4 times frequency
10	Tracking error alarm threshold	Encoder pulse number	40~65535	1000	In the case of some tracking error alarms, this value can be solved by raising this value.
11	Open loop holding current	Unit 100mA	0~80	30	
12	Closed loop hold current peak	Unit 100mA	0~80	60	

13	Pulse command filtering time	Unit 50us	0~600	60	The larger the value, the smoother the motor runs and the noise, but the position tracking lag time also increases.
14	Enable level polarity	When the optocoupler is turned on, the enable signal is valid. When the 1-optocoupler is not turned on, the enable signal is valid.	0~1	1	Generally do not need to modify
15	Fault output level polarity	0- When the alarm signal is valid, the optocoupler is turned on, and when the 1-alarm signal is valid, the optocoupler is not turned on.	0~1	0	Generally do not need to modify
16	Pulse input mode	0-PUL/DIR , 1-CW/CCW	0~1	0	PUL/DIR single pulse, CW/CCW double pulse
17	Pulse effective edge	0-up and down edge, 1-down edge	0~1	0	
18	PEND output function selection	0-bit output 1-Brake output	0~1	0	PEND defaults to the in-position output signal. If it is needed to control the brake device, you can set this value to 1 to control the relevant brake coil.
19	PEND output level polarity	When the 0-PEND signal is valid, the optocoupler is turned on, and when the 1-PEND signal is valid, the optocoupler is not turned on.	0~1	0	Generally do not need to modify
20	Low acceleration 16bit	Unit pulse/s ²	0~2 ³¹ -1	6400	Acceleration of trapezoidal acceleration and deceleration algorithm
21	High acceleration 16bit			0	

22	Low deceleration 16bit	Unit pulse/s ²	0~2 ³¹ -1	6400	Deceleration of trapezoidal acceleration and deceleration algorithm
23	High acceleration 16bit			0	
24	Low maximum speed 16bit	Unit pulse/s	-2 ³¹ ~2 ³¹ -1	1600	The maximum speed of the trapezoidal acceleration/decelera tion algorithm is used. In the continuous operation mode, positive and negative numbers are used to determine the positive and negative reversal.
25	High maximum speed 16bit			0	
26	Low target pulse count 16bit	Unit pulse	-2 ³¹ ~2 ³¹ -1	3200	The total number of running pulses of the trapezoidal acceleration/decelera tion algorithm. In the fixed-length operation mode, positive and negative numbers are used to determine the positive and negative rotation.
27	The total number of pulses in the target stroke is high. 16bit			0	
28	Motion control instruction	Motion control commands (1-position, fixed length operation, 2-speed, continuous operation, 3-deceleration stop, 4-stop immediately)	0~4	0	
29	Position mode	Position mode (0-increment, 1-absolute)	0~1	0	It is valid in the fixed-length operation mode. Increment refers to the current position as the reference for each stroke, and

					absolutely refers to the zero position of the above electric power as a reference. .
30	Absolute position is low16bit	Unit pulse, read only		0	
31	Absolute position16bit			0	
32	Internal pulse state	Internal pulse state (1-internal pulse is sent, 0-internal pulse has not occurred)	0~1	1	Read-only, indicating the current motion control status
33	Save parameter	Write 1 save parameter to EEPROM	0~1	0	
34	reset	Write 1 to factory settings	0~1	0	

VI. Typical wiring diagram



Typical wiring diagram