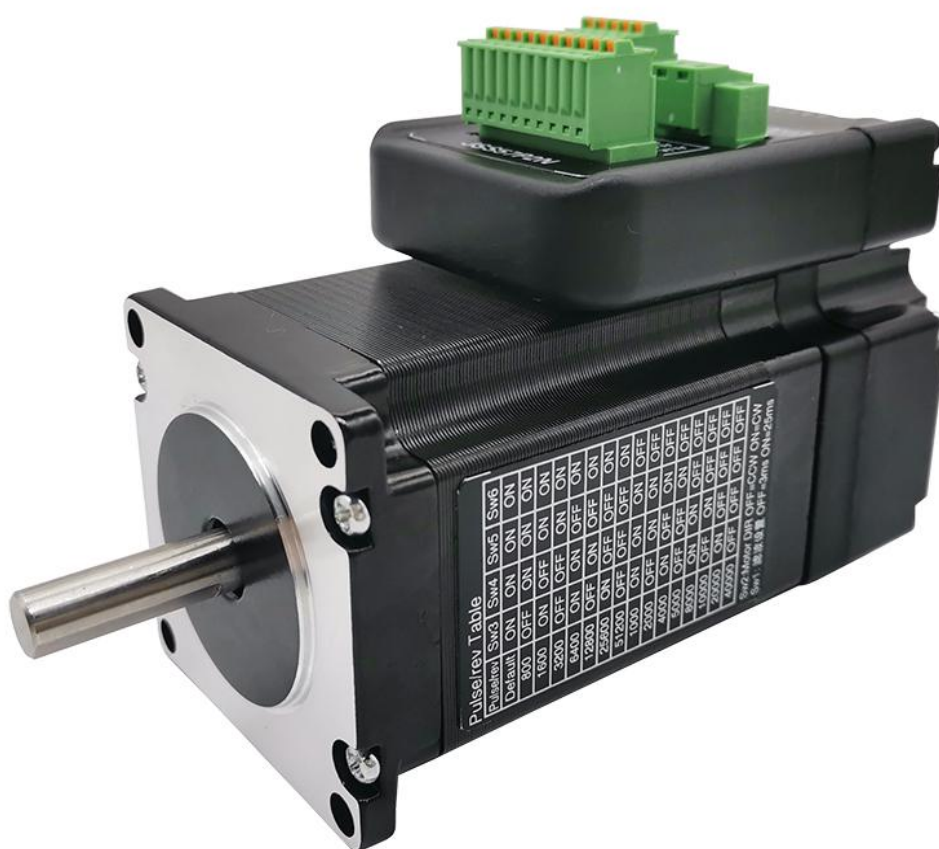


Dewo57P2N

Integrated digital hybrid servo

Instruction manual



I, Product description

1, Overview

JSS57 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.等。
- ◆ Voltage range: DC+24V~48V;
- ◆ With overcurrent, overvoltage, positional tolerance and other protection;

1. 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

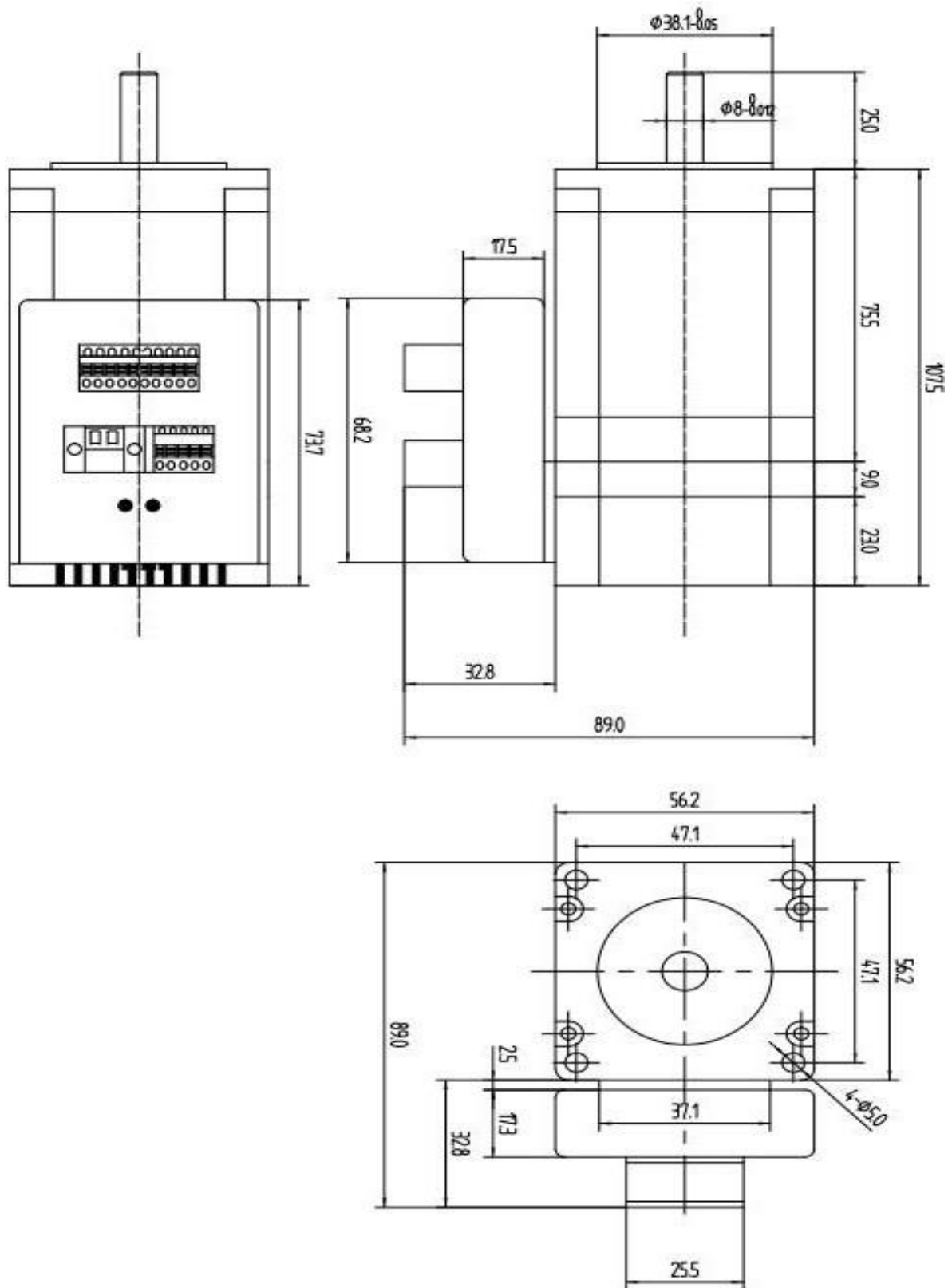
1. Electrical index

| | |
|-----------------------|--------------------------------------|
| Power supply | DC36V Recommended power supply DC36V |
| Output current | Peak 6.0A (current varies with load) |
| Logic input current | 10mA~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 | |
| weight | About 1.3Kg | |

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.

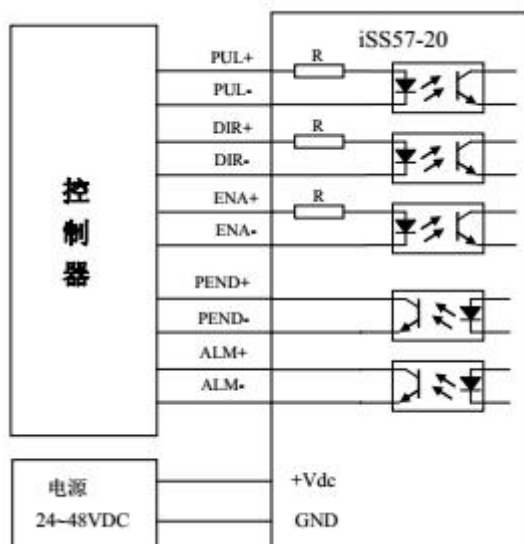
| Parameter number | project | Description | Predetermined area | Defaults | Project note |
|------------------|-----------------------------------|--------------------------------------|--------------------|---------------------------|---|
| 0 | Drive model | Read only | 57 | Corresponding motor model | 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/deceleration algorithm is used. In the continuous operation mode, positive and negative numbers are used to determine the positive and negative reversal. |
| 25 | 最大速度高16bit | | | 0 | |
| 26 | Low target pulse count 16bit | Unit pulse | -2 ³¹ ~2 ³¹ -1 | 3200 | The total number of running pulses of the |

| | | | | | |
|----|--|--|-----|---|--|
| 27 | The total number of pulses in the target stroke is high. 16bit | | | 0 | trapezoidal acceleration/deceleration algorithm. In the fixed-length operation mode, positive and negative numbers are used to determine the positive and negative rotation. |
| 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