

### 8.2.5 Full closed loop

1. Refer to Section 5.8.3, Section 5.8.3 Servo Drive Unit Standard Wiring Diagram.
2. For the HSV-180AD-035, 050, 075, 090, 100, 150 drive unit, HSV-180A1D-100, 150, 200, 300 drive unit: no motor encoder cable and motor Power line, connected to three-phase AC AC380V strong power.
3. For HSV-180AD-200, 300, 450 drive unit: no motor encoder cable and motor power line, no three-phase AC AC380V strong power, only single-phase AC AC220V control electricity.
4. Modify control parameters and motion parameters:
  - STA--0 is set to 0 and STA--6 is set to 0.
  - Set STB--14 to 0, select to disable full-closed function,
  - PA--34: set to 2003,
  - PA--25: Motor Encoder Type,
  - PA--26: Encoder Zero Offset,
  - PA--43: According to the drive unit specifications and motor type settings,
  - PA--23: set to 0, the drive unit works in position control mode.

Set pulse command input mode parameter PA--22 as required. Pulse command input mode.

5. After changing PA--34 to 1230, write the parameter setting value to EEPROM to save and turn off the power source and wait for 30 seconds.

6. Connect the encoder cable of the motor.

7. Manually rotate the servo motor and check the DP-PFL DP-PFH value. The feedback value of the encoder) determines the counting direction of the feedback pulse when the motor is positive or negative.

8. STB--14 is set to 1, select to allow full-closed function;

Set the STB--11, STB--12, STB--13 parameters and select the second position encoder type.

Calculate the number of feedback pulses based on the resolution, such as a certain encoder resolution of 0.01um, assuming when the pitch is 10mm, the motor runs one revolution corresponding to the second position encoder feedback pulse number is 1000000Pulses. That is, the number of feedback pulses of the second position encoder =  $10 \times 1000 \text{ um} / 0.01 \text{ um} = 1000000$ .

Then set PB46=100 (the number of full-closed feedback pulses corresponding to one motor running, more than 10,000) PB47=0 (the number of full-closed feedback pulses corresponding to one motor running, less than 10,000) If the motor encoder resolution is lower than the second position encoder, PB54 synchronization error detection the range parameters do not have to be modified, using the default values. If the second position encoder resolution is lower than the motor encoder, for example the second position encoder when the resolution is half of the motor encoder, then PB54=20~30, for example, the second position encoder resolution for motor encoder 1/3, then PB54=30~40, and so on.

The second position encoder type	STB-13	STB-12	STB-11
Square Incremental Encoder (TTL)	0	0	0

9. After changing PA--34 to 1230, write the parameter setting value to EEPROM to save and turn off the power. Source and wait for 30 seconds.

10. Connect the second position encoder.

11. Manually rotate the servo motor and check the DP-FPL DP-FPH value. The feedback value of the two-position encoder ensures that the counting direction of the feedback pulse is

positive and negative when the motor is rotating step 7 is consistent. If the counting direction of the feedback pulse does not coincide with the counting direction of the feedback pulse of step 6 above, Set the PA--10 parameter to 512 to reverse the feedback pulse of the second position encoder.

12. Set other parameters as required, and change PA--34 to 1230 to write the parameter settings. Save in EEPROM, turn off the power, and wait for 30 seconds.

13. Connect the power line of the motor.

14. For HSV-180AD-035, 050, 075, 090, 100, 150 drive units, HSV-180A1D-100, 150, 200, 300 drive unit: just connect three-phase AC AC380V strong electricity. For HSV-180AD-200, 300, 450 drive unit: first connect single-phase AC AC220V Control the power supply, and then connect the three-phase AC AC380V power. Change PA--17, PA--21 parameters, STA--6 to 1, and test with JOG jog. After the test is normal, STA--6 is set to 0, the power is turned off, and waiting for 30 seconds.

15. Connect the CNC system, configure the corresponding system parameters, and modify the system axis parameter pulse equivalent. Molecular, pulse equivalent denominator, electronic gear ratio, pulse number per revolution and other parameters.

16. The CNC system and the drive unit are powered on. For HSV-180AD-035, 050, 075, 100, 150 drive units, HSV-180A1D-100, 150, 200, 300 drive unit: just connect three-phase AC AC380V Strong electricity. For HSV-180AD-200, 300, 450 drive unit: first connect single-phase AC AC220V Control the power supply, and then connect the three-phase AC AC380V power. After confirming that there is no alarm and any abnormal conditions, operate the host computer output servo enable switch output signal to drive unit XS4 command input/output interface 3 pin (EN) for servo enable (EN) ON, at this time, the EN green enable indicator on the drive unit panel lights up (indicating normal), the motor is excited excitation, at zero speed.

17. Operate the host computer to output pulse command to the drive unit. XS4 command input/output interface. Pins 15, 16, and 17 (CP+, CP-, DIR+, DIR-) enable the motor to operate as commanded. Control servo rotate the motor once to view the DP-FPL DP-FPH value (the feedback of the second position is displayed at this time) Value), whether the DP-FPH value is consistent with the PA-46 value, and whether the DP-FPL value is consistent with the PA-47 value. Otherwise you need to check if there is a problem with the encoder installation.

18. The numerical control system sends a position command to the drive unit to make the motor operate according to the command.