

**Note:**

A. There are two internal position steps switch mode which set by parameters “Next step No.” (PA707, PA70F, PA717~~~~PA77F).

1. Default value of (PA707, PA70F, PA717~~~~PA77F) is -1, in this way, switch the internal position through different combinations of DI.

2. Switch by setting “Next step No.” as a Non-“-1” value, for example, set PA707=1, PA70F=2, PA717=3, PA71F=0, then the motor will run in cycles according to steps 0-1-2-3-0-1.....

B. Whether it is single-axis or dual-axis drive, there are only 8 DI. Therefore, if you want to implement all the functions and realize 16 internal position switching through different combinations of DI, the number of DI is definitely not enough. So, please use DI according to your actual application.

C. Set the electronic gear ratio parameters PA20E=16384, PA210=10000, so 10000 pulses correspond to one revolution of the motor

D. After modifying any parameter, you need to restart the drive for the modification to take effect.

**HSD7-BS-xxA00, Homing&Auto switch internal position test example:**

1. **Use FA005 to restore the factory value**, restart the drive (power off and then power on), and ensure that the motor code is set correctly and the JOG mode (FA002) is operating normally.

**2. Set and make sure parameters as below:**

PA000=00c0; Internal position mode

PA00B=0100; Bypass .F10 alarm (using single-phase AC220V as power supply)

PA20E=16384; Numerator of electronic gear ratio

PA210=10000; Denominator of electronic gear ratio

PA50A=6801; DI function selection

PA50B=8887; DI function selection

PA633=0001; Home method selection

PA640=3812; DI function selection

PA641=8854; DI function selection

PA700=0001; Relative position

PA701=10000; Target position of Step0

PA703=100;

PA704=0000;

PA705=1000; Waiting time is 1000ms after Step0 finished

PA706=1; The number of times of step0 needs to be performed

PA707=1; The next step No

PA708=0001; Relative position

PA709=-20000; Target position of Step1

PA70B=100;

PA70C=0000;

PA70D=2000; Waiting time is 2000ms after Step1 finished

PA70E=1; The number of times of step0 needs to be performed

PA70F=2; The next step No

PA710=0001; Relative position

PA711=30000; Target position of Step2

PA713=100;

PA714=0000;

PA715=3000; Waiting time is 3000ms after Step2 finished

PA716=1; The number of times of step0 needs to be performed

PA717=3; The next step No

PA718=0001; Relative position

PA719=10000; Target position of Step3

PA71B=100;

PA71C=0000;

PA71D=1000; Waiting time is 1000ms after Step3 finished

PA71E=1; The number of times of step0 needs to be performed

PA71F=0; The next step No

According to the above parameter settings, DI functions are allocated as follows:

	DI(Pins)	Allocated functions
DI	IN0 (CN1-18)	Servo ON /SON
	IN1 (CN1-3)	Program table change step /PGM-STEP
	IN2 (CN1-19)	Program table Start-stop /PGM-START
	IN3 (CN1-4)	Home start /HOME-START
	IN4 (CN1-10)	Step selection input 0 /SEL0
	IN5 (CN1-26)	Step selection input 1 /SEL1
	IN6 (CN1-11)	POT (Positive over-travel limit switch)
	IN7 (CN1-27)	NOT (Negative over-travel limit switch)

The relationship between DI combination and internal position as below:

**Note:** In this **Auto switch internal position** mode, can't switch internal position through DI combination.

	Step0	Step1	Step2	Step3
/SEL0	0	1	0	1
/SEL1	0	0	1	1

### 3. Homing function test.

Step1: Enable IN0, IN6, IN7, make sure servo is on “RUN” status.

Step2: Enable IN3, the motor start to run.

Step3: Disable IN7, enable IN7 again, the motor will run in another position, then stopped at Index (home) position.

Note: You can select the home mode by setting PA633.

### 4. Auto switch internal position test.

Step1: Enable IN0, IN6, IN7, make sure servo is on “RUN” status.

Step2: Make sure IN3 is disabled.

Step3: Enable IN2.

Step4: Enable IN1, the motor will run in cycles according to steps 0-1-2-3-0-1.....

## HSD7-BS-xxA00, Homing&use DI to switch internal position test example:

**Note: Compared with the auto switch mode, only the “Next step No.” parameters is set to "-1", all other parameters are exactly the same.**

1. Use FA005 to restore the factory value, restart the drive (power off and then power on), and ensure that the motor code is set correctly and the JOG mode (FA002) is operating normally.

**2. Set and make sure parameters as below:**

PA000=00c0; Internal position mode  
PA00B=0100; Bypass .F10 alarm (using single-phase AC220V as power supply)  
PA20E=16384; Numerator of electronic gear ratio  
PA210=10000; Denominator of electronic gear ratio  
PA50A=6801; DI function selection  
PA50B=8887; DI function selection  
PA633=0001; Home method selection  
PA640=3812; DI function selection  
PA641=8854; DI function selection

PA700=0001; Relative position  
PA701=10000; Target position of Step0  
PA703=100;  
PA704=0000;  
PA705=1000; Waiting time is 1000ms after Step0 finished  
PA706=1; The number of times of step0 needs to be performed  
[PA707=-1; The next step No](#)

PA708=0001; Relative position  
PA709=-20000; Target position of Step1  
PA70B=100;  
PA70C=0000;  
PA70D=2000; Waiting time is 2000ms after Step1 finished  
PA70E=1; The number of times of step0 needs to be performed  
[PA70F=-1; The next step No](#)

PA710=0001; Relative position  
PA711=30000; Target position of Step2  
PA713=100;  
PA714=0000;  
PA715=3000; Waiting time is 3000ms after Step2 finished  
PA716=1; The number of times of step0 needs to be performed  
[PA717=-1; The next step No](#)

PA718=0001; Relative position  
PA719=10000; Target position of Step3  
PA71B=100;  
PA71C=0000;  
PA71D=1000; Waiting time is 1000ms after Step3 finished  
PA71E=1; The number of times of step0 needs to be performed  
[PA71F=-1; The next step No](#)

According to the above parameter settings, DI functions are allocated as follows:

	DI(Pins)	Allocated functions
DI	IN0 (CN1-18)	Servo ON /SON
	IN1 (CN1-3)	Program table change step /PGM-STEP
	IN2 (CN1-19)	Program table Start-stop /PGM-START
	IN3 (CN1-4)	Home start /HOME-START
	IN4 (CN1-10)	Step selection input 0 /SEL0
	IN5 (CN1-26)	Step selection input 1 /SEL1
	IN6 (CN1-11)	POT (Positive over-travel limit switch)
	IN7 (CN1-27)	NOT (Negative over-travel limit switch)

The relationship between DI combination and internal position as below:

	Step0	Step1	Step2	Step3
/SEL0	0	1	0	1
/SEL1	0	0	1	1

### 3. Homing function test.

Step1: Enable IN0, IN6, IN7, make sure servo is on “RUN” status.

Step2: Enable IN3, the motor start to run.

Step3: Disable IN7, enable IN7 again, the motor will run in another position, then stopped at Index (home) position.

Note: You can select the home mode by setting PA633.

### 4. DI switch internal position test.

Step1: Enable IN0, IN6, IN7, make sure servo is on “RUN” status.

Step2: Make sure IN3 is disabled.

Step3: Enable IN2.

Step4: Enable IN1, The motor will run according to the steps corresponding to the combination of IN4 and IN5;

For example: when 00, Enable IN1, motor will run to step0 position;

when 01, Enable IN1, motor will run to step1 position;

when 10, Enable IN1, motor will run to step2 position;

when 11, Enable IN1, motor will run to step3 position;

**Note: You need to enable IN1 every time when you switch steps.**

### Additional:

1. I strongly suggest that you test the single-axis driver (HSD7-BS) first, which will be relatively simple and easy to understand; after the it is successful, then test the dual-axis drive (HSD7-BW).

2. I have backed up the test parameters.

You can use Iwatch to download the backup parameters to the drive for testing.

3. For the dual-axis drive test, it is exactly the same as the single-axis drive. I also have made a backup of the parameters.

4. For the dual-axis drive test, the A-axis and B-axis use exactly the same parameter settings