HBS57 instructions

I. Functional characteristics:

1. Ultra-low vibration noise

2. Maximum peak current :5 A

3. Pulse response

frequency :200 KHz 4.

  Subdivision :200~512

00 ppr 5.

  Voltage :24~60 VDC

6. Variable current control, motor heating greatly reduced

7. Over-voltage, over-current, tracking error over-difference protection functions

8. Closed loop vector control ensures high speed and high torque output of motor and ensures that motor does not lose step

9. Signal input: pulse + direction or double pulse (differential), compatible with 5~24 V signal without series resistance

10. Serial communication function, current, subdivision can be adjusted arbitrarily, signal along, alarm output logic and other functions adjustable

II. OVERVIEW:

  HBS57 adopt the latest special motor control DSP chip and vector closed-loop control technology to completely overcome the problem of open-loop stepping motor losing step, at the same time obviously improve the high speed performance of the motor, reduce the motor heating and reduce the motor vibration, improve the machine processing speed and precision, and reduce the machine energy consumption. When the motor is continuously overloaded, the driver outputs the alarm signal in time and has the same reliability as the AC servo system.HBS57 adapts 57 series closed loop stepping motor, which is convenient to upgrade the traditional stepping system, and the cost is only 50% of the AC servo system.

Interface description and electrical parameters:

1. electrical indicators

	Minimum Value	Typical values	Maximum value	Unit
Maximum peak current	-	-	5	A
Input voltage	24	70	60	VDC

2. Environment and Parameters

Cooling mode	Natural cooling
Use Environment	occasion	Avoid dust, oil, corrosive gas, high humidity and strong vibration
	Temperature	0——+50℃
		40-90 per cent RH
		10~55 Hz/0.15mm
	Humidity	-

3. interface

1. hybrid servo motor encoder lead color and definition

Pin 15 pin port	Color (motor port)	Random colors (extension lines)	Signal	Description
(13 feet)	White	Yellow (white)	EB+	encoder B channel positive output
(15 feet)	Grey	Yellow and black (gray)	EB-	Encoder B channel negative output
(5 feet)	Green	Orange (green)	EA+	encoder A channel positive output
(11 feet)	Brown brown	Orange black (brown)	EA-	Encoder A channel negative output
(1 foot)	Red	Red (red)	VCC	encoder +5 V power

				input
(3 feet)	Black	Black (black)	*GND*	Encoder GND input

2. hybrid servo motor line color and definition

Pin pin	Color	Signal	Description
1	Yellow	*A+*	+ of A phase motor winding
2	Blue	*A-*	A phase motor windings −
3	Red	*B+*	+ of B phase motor winding
4	Green	*B-*	B phase motor windings −

3) RS232 communication port
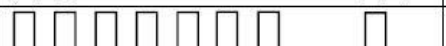
RS232 interface pin alignment is defined in Figure 2 below:

Terminal number	Symbol	Name of name	Note
1	NC		
2	+5 V	Positive power supply	External STU only
3	TxD	RS232	Sender
4	GND	Power ground	0V
5	RxD	RS232	Recipient
6	NC		

Note: HBS57 cable connected to PC machine, text display or STU server debugger must be special cable (to be purchased) please confirm before use to avoid damage.

4) status indicator

The green LED is a power indicator. When the driver is connected to the power supply, the LED is always on; when the driver is cut off, the LED is extinguished. The red LED is the fault indicator lamp, when the fault occurs, the indicator lamp flashes in a cycle of 5 seconds; when the fault is cleared by the user, the red LED is often extinguished. Red LED

序号	闪烁次数	红色 LED 闪烁波形	故障说明
1	1		过流故障
2	2		过压故障
3	7		跟踪误差超差

flashing frequency 2 Hz, of which LED bright 200 ms ,300 A red LED flashes in 5 seconds to represent different fault information, as shown in the following table:

When the driver fails, the driver will stop and prompt the corresponding fault code. Users need to power off, and re-power, the fault can be cleared. when the driver fails, the driver will save the latest fault in the EEPROM of the driver in queue form, and the driver will save up to 10 latest historical faults. A user can read the corresponding fault code through a PC machine and a text display.

5) control signal port

Name of name	Note
PUL + PUL -	Pulse input signal: pulse effective edge adjustable, default pulse rising edge effective; for reliable response to pulse signal, pulse width should be more than 1.2μs.~24 VDC level compatible. Dual pulse mode: CW
DIR + DIR -	Direction input signal: high / low level signal, in order to ensure the reliable commutation of the motor, the direction signal should be established at least 5μs before the pulse signal.~24 VDC level compatible. Dual pulse mode: CCW
ENA + ENA -	Enable control signal, this input signal is used to enable or disable drive output.ENA the low level (or internal optocoupler conduction) is connected, the driver will cut off the current of each phase of the motor so that the motor is in a free state and does not respond to the input signal pulse. When this function is not required, the end of the enable signal can be suspended.~24 VDC level compatible.

3

Pend +	A pull-up resistor of 5 V\12V\24V must be used in the open circuit form of collector
Pend -	
	0.5 K\1K\2K resistor (this signal can be extended, with reserved socket when the driver lid is opened)
ALM +	Fault signal output, collector open circuit form, must use pull up resistance 5 V\12V\24V respectively
ALM -	
	K\1K\2K resistance, fault output logic can be set by PC software

IV. Code setting

HBS57 driver uses six-bit dial code switch to set subdivision, motor rotation direction,

细分设定   电机选择
（电流设定）

| SW1 | SW2 | SW3 | SW4 | SW5 | SW6 |

电机旋转方向设定
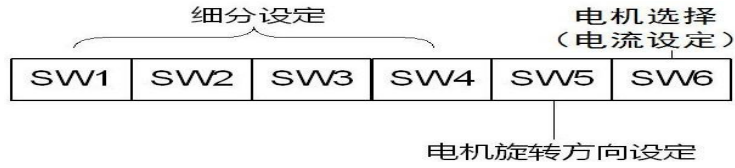
motor selection, detailed description as follows:

Breakdown

Number of steps/circles	SW1	SW2	SW3	SW4
Default	on	on	on	on
400	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

Users can subdivide through the upper computer software settings,

a minimum of 200 ppr, a maximum ppr .51200**V. Wiring schematics:**

VI. Installation dimensions:

Driver Settings (Serial Debugging)
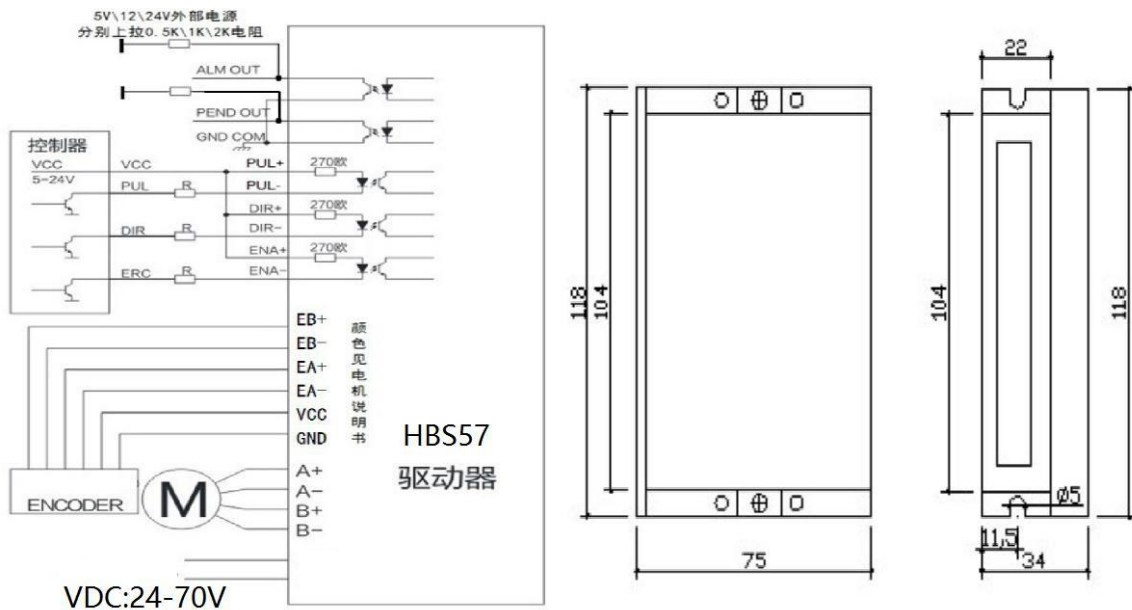
1) Setup Brief

HBS57 parameters of the driver must be set through the RS232 serial communication port of the PC machine, and the special debugging software is used to complete the parameter setting. Users only need to adjust the internal subdivision of the driver according to the specific use, please refer to the Pro Tuner debugging software instructions. Specific adjustable parameters and functions are shown in the table below:

parameter symbol parameter name parameter range

parameter symbol	parameter name	parameter range	
KcP	Proportional coefficient of current loop	0～65535	Only for factory setting, no modification
KcI	Integral coefficient of current loop	0～65535	Only for factory setting, no modification
KpP	Proportional coefficient of position ring	0～65535	Only for factory setting, no modification
KpI	Integral coefficient of position ring	0～65535	Only for factory setting, no modification
Kd	Velocity ring damping coefficient	0～100	Only for factory setting, no modification
Kvff	Speed loop feedforward coefficient	0～100	Only for factory setting, no modification
	Maintain current percentage	0～100%	Factory Default 40
	Closed-loop current percentage	0～100%	Factory Default 100
	Encoder Line Number	4000	4000
	Tracking error limits	0～65535	Factory Default 1000
	Breakdown	200～65535	Factory Default 1600

Note: the default current ring, position ring and speed ring parameters of the driver are the best parameters of the matching motor. Customers generally do not need to modify, only need to select the motor fine fraction and the percentage of open and close ring current according to the need of system control.

2) serial connection note:

1. HBS57 cable connected with PC machine, text display or STU server debugger must be special cable (need to purchase) please confirm before use to avoid damage.

2. HBS57 the opposite of the pressing order of the crystal head at both ends RJ11-6P6C the cable connected to the STU server debugger, do not mix with other cables to avoid damage.

3. HBS57 connection with the PC machine must ensure that the supply of HBS57 power supply is isolated power supply, if not sure, please use isolation transformer to isolate the PC to

驱动器

RS232 接口   专用电缆

PC 机或其他调试器

串口

avoid damage to the machine.
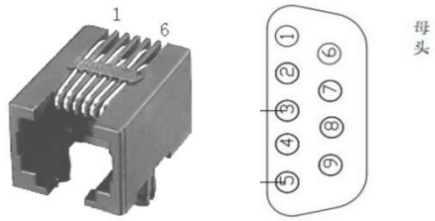
Debug line to make foot diagram:

图 2 RS232 接口引脚排列定义

Crystal head 3 feet9 core female 2 feet
Crystal Head 4------- 9 core female head 5 feet
Crystal Head 5------- 9 core female head 3 feet