

HBS860H

Instruction

I、Characteristic：

1. Low noise
2. Max current: 8A
3. Frequency of the pulse response: 200KHz
4. Subdivision：200~51200ppr
5. voltage: 20~80VAC
6. Temperature increase fewer
7. Many protection functions to avoid overvoltage, overcurrent,Tracking Error Exceeding Tolerance
8. 8)Closed loop and vector control mode to avoid losing steps. Keep motor rotary with high torque and high speed.
9. 9)Signal input：Pulse + Direction or Dual Pulse (Differential),compatible with the signal of 5-24v
- 10) Serial port communication function:the current and subdivision could be modified freely.

II：Interface description and electrical parameter index

1· Electrical Index

2· Operational environment and dimension

	Min	Typical	Max	Unit
Max current	-	-	8	A
Input voltage	20	70	75	VAC
logical input current	7	10	16	mA
Frequency of pulse	-	200	-	kHz
Insulation resistance	500			MΩ

Cooling type : Air cooled

Operational environment:keep away from dust, oil, corrosion gas as well as high humidity and strong vibrate place

Operational temperature :0——+50℃

Operational humidity: 40—90%RH

Vibration : 10~55Hz/0.15mm

Storage temperature: 20℃~65℃

3. Port

1. Hybrid servo motor encoder wire colors and definitions

15pin port	color (motor side)	Random color (extension line)	Signal	Description
(pin 13)	White	Yellow (white)	EB+	Encoder channel B positive output
(pin 15)	Gray	Yellow-black (gray)	EB-	Encoder channel B negative output
(pin 5)	Green	Orange (green)	EA+	Encoder channel A positive output
(pin 11)	Brown	orange-black (brown)	EA-	Encoder channel A negative output
(pin 1)	Red	Red (red)	VCC	Encoder +5V power input
(pin 3)	Black	Black (black)	GND	Encoder GND input

2、the color and definition of Hybrid servo motor

Pin	Color	Signal	Description
1	Yellow	A+	Phase A motor winding+
2	Blue	A-	Phase A motor winding—
3	Red	B+	Phase B motor winding+
4	Green	B-	Phase B motor winding—

3) RS232 communication port

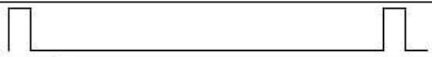
Pin definition of RS232 port :

Pin	Symbol	Name	Description
1	NC		
2	+5V	Positive side of the power	Only for outside STU
3	TxD	RS232	Sending side
4	GND	Ground	0V
5	RxD	RS232	Receiving side
6	NC		

Note: The cable that HBS860H connects to PC, text monitor or STU servo debugger must be the special cable (to be purchased). Please confirm before use to avoid damage.

4) Status indication

Green LED is power indicator, when the driver is powered on, the LED is always on; when the driver is power off, the LED is off. RED LED is fault indicator, when there is fault occurs , the indicator flashes cyclically for 5 seconds; when the fault is cleared out, the red LED is off. the flashing frequency of the red LED is 2Hz, the LED on for 200ms, off for 300ms. The flashing times of red LED in 5 seconds represent different fault information, as follows:

No.	number of flash	the waveform of the RED led flash	description of the fault
1	1		over current
2	2		over voltage
3	7		Tracking Error Exceeding Tolerance

When the drive fails, the driver will stop and the corresponding failure code will be prompted. The fault can only be cleared the driver restart. When there is fault with the driver, the driver will record the latest failures in the EEPROM of the driver in a queue, and the drive will record up to 10 latest historical failures. Users can read the corresponding fault codes through PC and text display.

5) control signal port

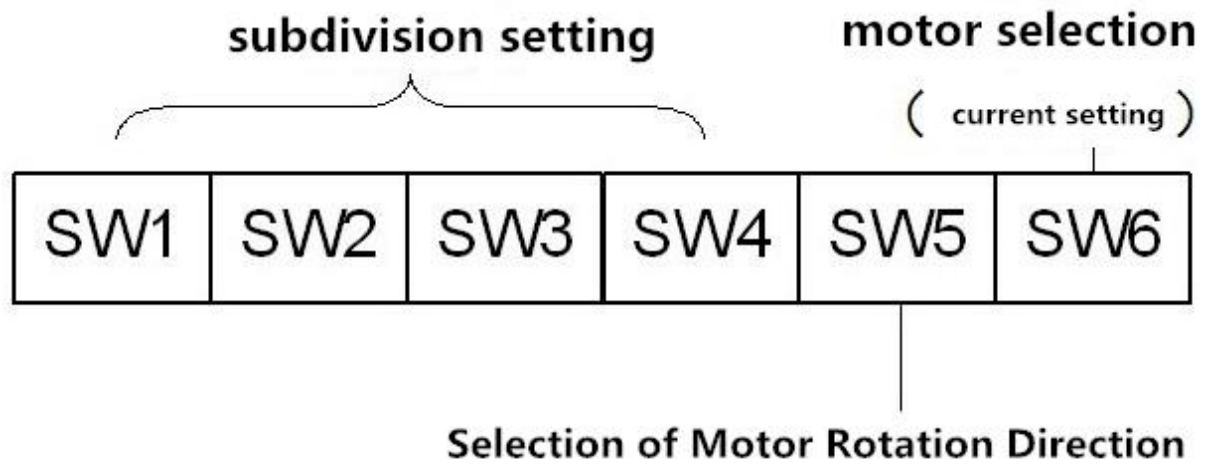
Name	Description
PUL+	Pulse input signal: the effective edge of the pulse is adjustable, and the rising edge of the default pulse is effective; In order to reliably respond to the pulse signal, the pulse width should be greater than 1.2μs. 5~24VDC level compatible. In dual pulse mode: CW
PUL-	
DIR+	Direction input signal: high/low level signal. To ensure reliable commutation of the motor, the direction signal should be established at least 5μs before the pulse signal. 5~24VDC level compatible. In dual pulse mode: CCW
DIR-	
ENA+	Enable control signal, this input signal is used to enable or disable driver output. When ENA is connected to a low level (or the internal optocoupler is turned on), the driver will cut off the current of each phase of the motor to make the motor in a free state and will not respond to the input signal pulse. When this function is not required, the enable signal terminal is suspended. 5~24VDC level compatible.
ENA-	
Pend+	The in-place signal output is in the form of open collector, and the pull-up resistors 5V\12V\24V must be used respectively during use.
Pend-	

	0.5K\1K\2K resistor, in-place output logic can be set by PC software
ALM+	The fault signal output is in the form of open collector, and the pull-up resistors 5V\12V\24V must be used respectively during use.
ALM—	
	0.5K\1K\2K resistor, fault output logic can be set by PC software

IV.Dial setting

HBS860H driver uses six-bit dip switch to set subdivision, motor rotation direction and motor selection, which are described in detail as follows:

Subdivision
settings

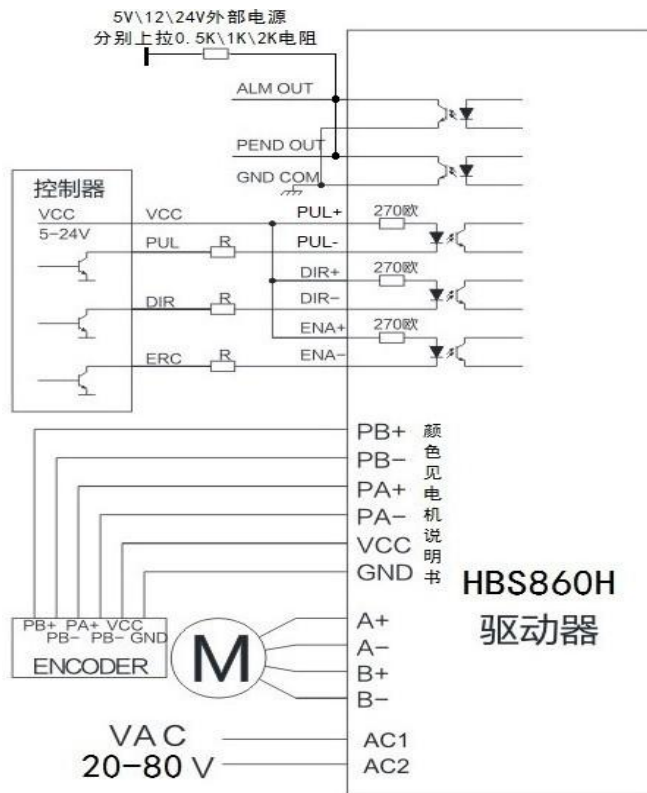


step/circular	SW1	SW2	SW3	SW4
Default	on	on	on	on
400	on	on	on	on
800	off	on	on	on
1600	on	off	on	on
3200	off	off	on	on
6400	on	on	off	on
12800	off	on	off	on
25600	on	off	off	on
51200	off	off	off	on
1000	on	on	on	off
2000	off	on	on	off
4000	on	off	on	off
5000	off	off	on	off
8000	on	on	off	off
10000	off	on	off	off
20000	on	off	off	off
40000	off	off	off	off

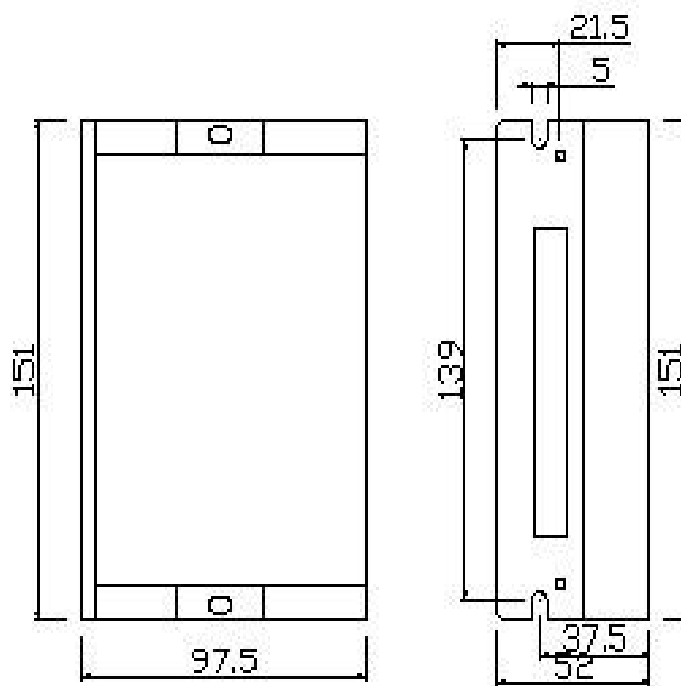
Users can set the subdivision through the upper computer software, with a

minimum of 200ppr and a maximum of 51200ppr.

V · Wiring diagram :



VI · Installation dimension drawing :



VII · Driver Settings (Serial Port Debugging)

1) Introduction to setup

The parameter setting of HBS860H driver must be completed through the RS232 serial communication port of PC, and special debugging software is used to complete the parameter setting. A set of default factory configuration parameters corresponding to the best motor is stored in the driver. Users only need to adjust the internal subdivision number of the driver according to the specific usage. For detailed usage, please refer to the instructions of Pro Tuner debugging software. See the following table for specific adjustable parameters and functions:

Parameter symbol	Parameter name	Parameter range	Remarks
KcP	Proportion coefficient of current loop	0~65535	only used for factory settings and cannot be modified
KcI	Current loop integration coefficient	0~65535	only used for factory settings and cannot be modified
KpP	Proportional coefficient of position loop	0~65535	only used for factory settings and cannot be modified
KpI	Integral coefficient of position loop	0~65535	only used for factory settings and cannot be modified
Kd	Damping coefficient of speed loop	0~100	only used for factory settings and cannot be modified
Kvff	Feed forward coefficient of speed loop	0~100	only used for factory settings and cannot be modified
	Percentage of holding current	0~100%	Factory default settings 40
	Closed loop current percentage	0~100%	Factory default settings 100
	Number of encoder lines	4000	4000
	Tracking error limitation	0~65535	Factory default settings 1000
	Subdivision	200~65535	Factory default settings 1600

Note: The default current loop, position loop and speed loop parameters of the driver factory are the best parameters for the matching motor. Generally, the customer does not need to modify them, but only needs to select the number of motor subdivisions and the percentage of open-closed loop current according to the needs of system control.

2) Serial connection

Note:

- 1、HBS860H Cable connected to PC, text monitor or STU servo debugger must be special cable (to be purchased) Please confirm before use to avoid damage.
2. The wire pressing sequence of RJ11-6P6C connector at both ends of the cable connected to HBS860H and STU servo debugger is reverse. Do not mix it with other cables to avoid damage.
3. When HBS860H is connected to the PC machine, it must be ensured that the power supply to HBS860H is an isolated power supply. If not sure, please isolate the PC with an isolation transformer to avoid damaging the PC machine.

Debugging Line Making Footprint:

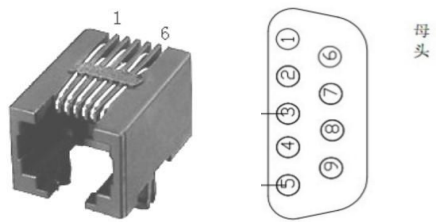


图 2 RS232 接口引脚排列定义

Crystal head pin 3--- 9-core female head pin 2

Crystal head pin 4--- 9-core female head pin 5

Crystal head pin 5--- 9-core female head pin 3