

# UK 2 HSS86 Servo Stepper Driver



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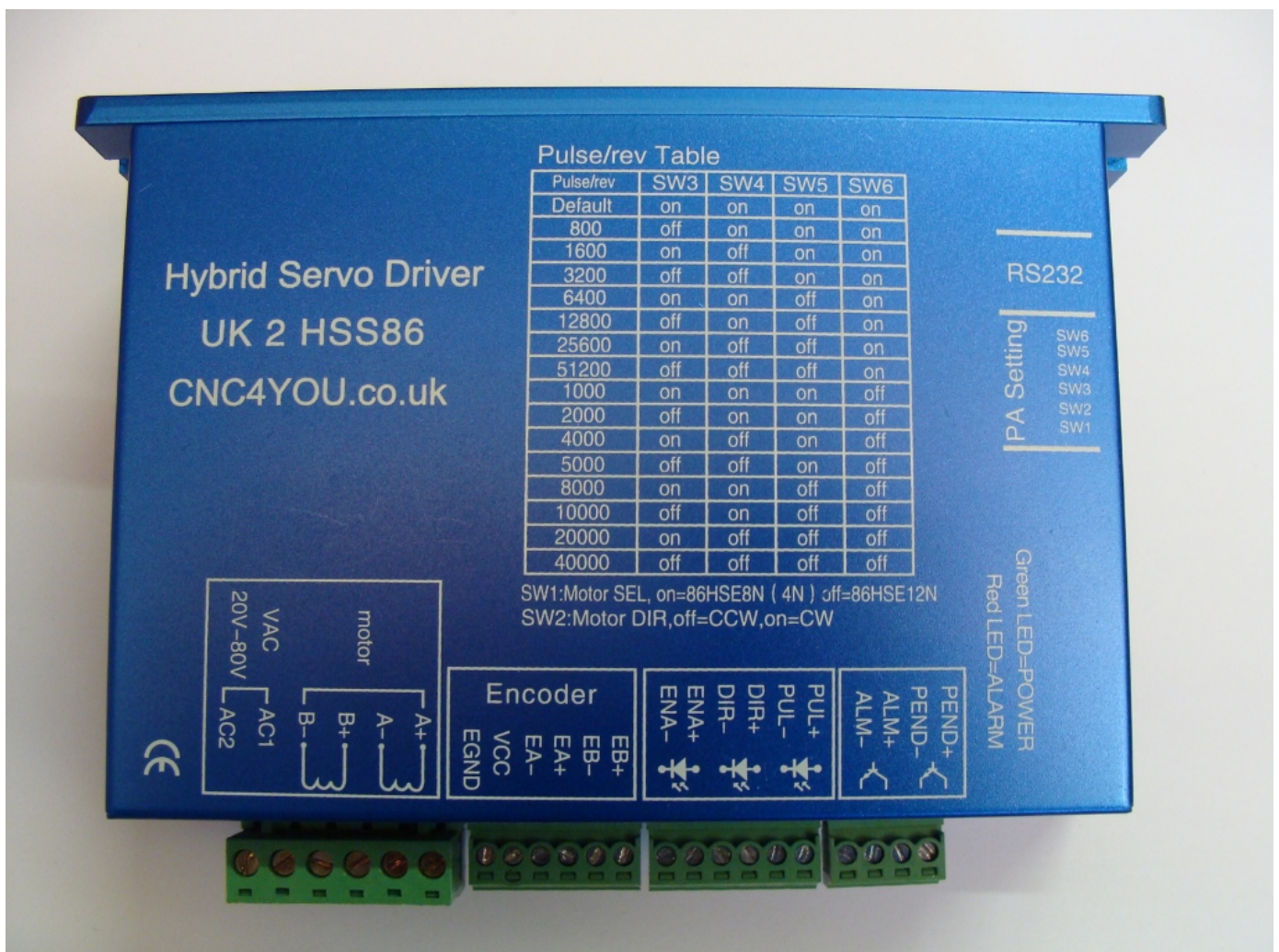
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These drawings are supplied as a guide no guarantees are implied or given.  
Caution when wiring and check with a qualified professional if unsure.  
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# UK 2 HSS86

## 2-phase Hybrid Stepper Servo Driver



## 1. Instruction

### 1.1 Overview

UK 2 HSS86 is a 2 phase Nema 34 frame size series Hybrid Stepper Servo Driver. It adopts new generation 32 bit DSP and vector control technology, which can avoid the stepper motor losing steps and ensure the positional accuracy of the motor. The torque reduction is reduced over conventional open loop stepper motor systems when running at higher speeds, therefore high speed performance and torque are enhanced. Meanwhile the current control is based on the load at any given instant which can reduce the running temperature of the Servo Stepper motor and also respond to transient load increases as the output current will increase to try and compensate for load fluctuations. The build-in encoder on the Stepper Motor in conjunction with the closed loop driver can generate an alarm output signal when position is lost or Stepper Driver goes into fault condition shutting down the driver until power is removed and reapplied. This signal can be used to stop the machine on error critical movements and can stop or reset machine this can save valuable time and or expensive material loss. Unnoticed position loss can cause batch production errors causing loss of time and productivity and where offsets and jigs are deployed, loss of tools due position error and damage to expensive Jigs. The closed loop system is an ideal for fault or position intolerant designs and have benefits of Servo motors with improved holding torque and slow speed torque over similar sized servo motors, and generally more cost effective depending on application and no tuning required.

### 1.2 Features

- 1.2.1 Stepper Motor closed loop system, never lose steps.
- 1.2.2 Improved motor output torque and working speed.
- 1.2.3 Automatic current adjustment based on load, lower temperature increase.
- 1.2.4 Suitable for all mechanical load conditions (include low rigidity belt<sup>drive</sup> systems using pulley's and drive wheels), no need to adjust gain parameter.
- 1.2.5 Stepper Motors work smoothly with low vibration, high dynamic performance of acceleration and deceleration.
- 1.2.6 Very low vibration from high speed to zero speed.
- 1.2.7 Drive Nema 34 series motors from 4N.m – 12.5Nm closed loop stepper motor.
- 1.2.8 Input step frequency 200KHZ
- 1.2.9 16 microstep choices, ranging from 400 to 51200 microsteps / rev.
- 1.2.10 Voltage range: AC24~80V or DC30V~110V
- 1.2.11 Over-current, over-voltage and position ultra-difference protection function.

### 1.3 Applications

Closed loop stepper systems can be used on all kinds small automatic equipment and Instruments, such as engraving machine, special industrial machines, stripping machines, marking machines, Dispensing machines, cutting machines, laser photo typesetting, graph plotters, NC machine, and automatic assembly equipment etc.

## 2. Electrical, mechanical, environment Parameter

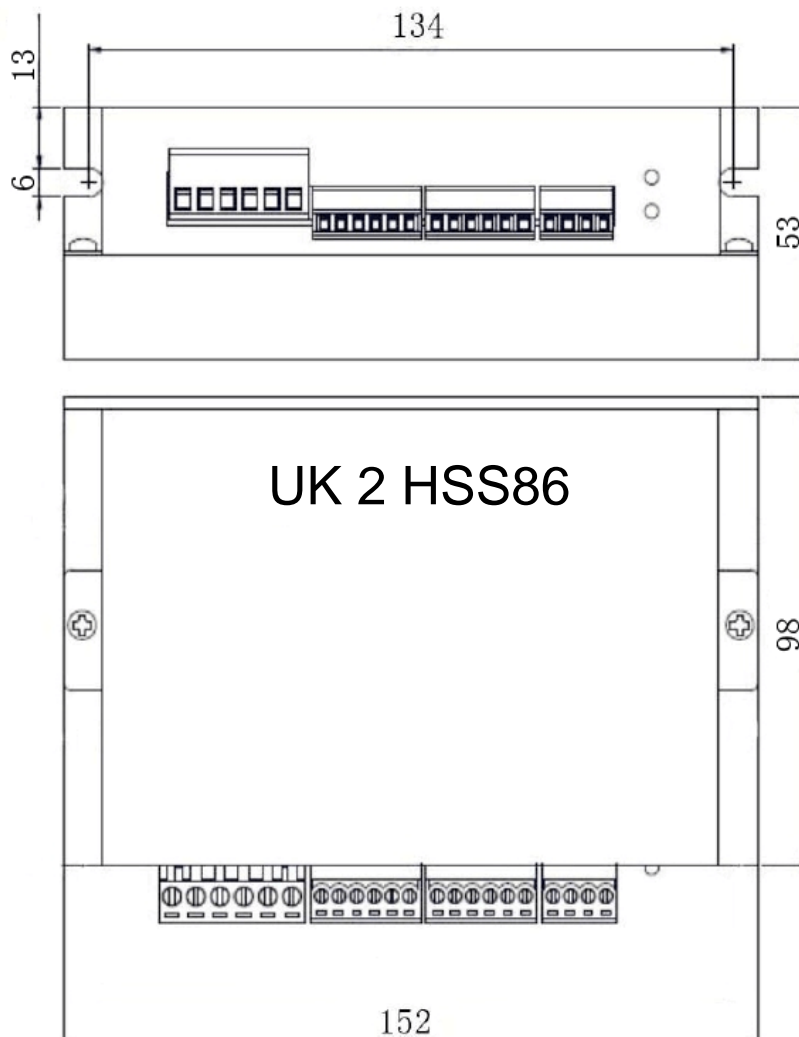
### 2.1 Electrical Parameter

Voltage range	AC20~80V or DC30~110V
Peak current	Peak 8.0A (current variable according to load)
Logic input current	7~20mA
frequency	0~200KHz
Suitable motor	86HSE12N, 86HSE8N, 86HSE4N
Encoder lines	1000
Insulation resistance	$\geq 500M\Omega$

### 2.2 Environment Parameter

Cooling method	Natural or radiator	
Operating environment	Operating Occasions	try to avoid dust, oil, corrosion gas
	Operating temperature	0~50°C
	Operating humidity	40~90%RH
	Vibration	5.9m/s <sup>2</sup> Max
Storage temperature	-20°C~65°C	
Weight	About 560g	

### 2.3 Installation Dimension



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### 3. Driver connector, indicator and wiring diagram

#### 3.1 motor and power supply input port

Port NO.			Motor Wire color
1	A+	A phase winding +	red
2	A-	A phase winding -	green
3	B+	B phase winding +	yellow
4	B-	B phase winding -	blue
5	AC1	Input voltage	AC20~80V or DC30~110V
6	AC2		

#### 3.2. Encoder input port

Port NO.			Encoder Wire color
1	EB+	Encoder B phase input+	yellow
2	EB-	Encoder B phase input-	green
3	EA+	Encoder A phase input+	black
4	EA-	Encoder A phase input-	blue
5	VCC	Encoder voltage (+5V)	red
6	EGND	Encoder Grand (0V)	white

(The encoder wires misconnected will lead to the damage of driver or encoder.)

#### 3.3. Signal controller port

Port NO.			
1	PUL+	Pulse input +	If the signal control voltage is +5V, then the signal control input port do not need to connect an extra resistance. If the signal control voltage is +12V, then the signal control input port need to connect to a 1K resistance. If the signal control voltage is +24V, then the signal control input port need to connect to a 2K resistance.
2	PUL-	Pulse input -	
3	DIR+	Direction input +	
4	DIR-	Direction input -	
5	ENA+	Enable input +	
6	ENA-	Enable input -	
7	PEND+	Position signal output+	OC output, closed indicate finish the position, open circuit indicate position is not finished.
8	PEND-	Position signal output-	
9	ALM+	Alarm signal output+	OC output, there is alarm signal when closed, no alarm signal when open circuit.
10	ALM-	Alarm signal output-	

### 3.4. Switch setting

SW1: NC.

SW2: Rotate direction setting.on=CW, off=CCW.

SW3、SW4、SW5、SW6: Microstep setting

Micorstep/rev	SW3	SW4	SW5	SW6
Default (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



### 3.5. Status indication

**PWR:** Power indicator light: When power is ON, the green light is ON.

**ALM:** Alarm indicator light: If the red light is flashes see below

One Flash within 3 seconds, that means over current or interphase short circuit this normally due to incorrect phase wiring or short circuit condition.

Red light is flashes twice within 3 seconds over voltage condition this normally happens when motor generates excessive backemf reduce speed.

Red light is flashes three times within 3 seconds, that means position ultra-difference or the encoder connector is disconnected check for excessive top speed or excessive acceleration if not these check machine for mechanical faults or binding.

### 3.6. Wire diagram

