HB3522 three phase digital driver

HB3522 It is a three-phase hybrid stepping motor driver based on DSP control. It is a new generation of digital stepping motor driver composed of advanced DSP control chip and three-phase inverter drive module. The driver voltage is AC110-220V, suitable for various types of three-phase hybrid stepping motors with current below 5.0A and outer diameter of 86-110mm. The driver adopts a circuit similar to the servo control principle. This circuit can make the motor run smoothly without vibration and noise. When the motor is at high speed, the torque is much higher than that of two-phase and five phase hybrid stepping motor. The positioning accuracy can reach 60000 steps / revolution. The product is widely used in large and medium-sized CNC equipment with high resolution, such as engraving machine, medium-sized CNC machine tool, computer embroidery machine, packaging machinery and so on.

Characteristic ：

- It has 16 equal angle constant moment subdivision, with a maximum resolution of 60000 steps / revolution
- The highest reaction frequency can reach 200 KPPS
- When the step pulse stops for more than 1.5s, the coil current will be automatically reduced to half of the set current
- Photoelectric isolation signal input / output
- Drive current 1.3A/phase to 5.0A , 16 gear adjustable
- Single power input, voltage range： AC110-220V
- Phase memory function (Note: after the input stops for more than 3 seconds, the driver will automatically remember the current motor phase, power on again or the WF signal changes from low level to high level, and the driver will automatically restore the motor phase)

Current setting：

The working current of the driver is set by the SW1-SW4 terminal, and the operating current is the normal working output current setting switch (see the table below for details)

Operating current (A)	2.2	2.4	2.6	2.8	3.0	3.2	3.4	3.6
SW1	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
SW2	OFF	OFF	OFF	OFF	ON	ON	ON	ON
SW3	OFF	OFF	ON	ON	OFF	OFF	ON	ON
SW4	OFF	ON	OFF	ON	OFF	ON	OFF	ON
Operating current (A)	3.8	4.0	4.2	4.4	4.6	4.8	4.9	5.0
SW1	ON	ON	ON	ON	ON	ON	ON	ON
SW2	OFF	OFF	OFF	OFF	ON	ON	ON	ON
SW3	OFF	OFF	ON	ON	OFF	OFF	ON	ON
SW4	OFF	ON	OFF	ON	OFF	ON	OFF	ON

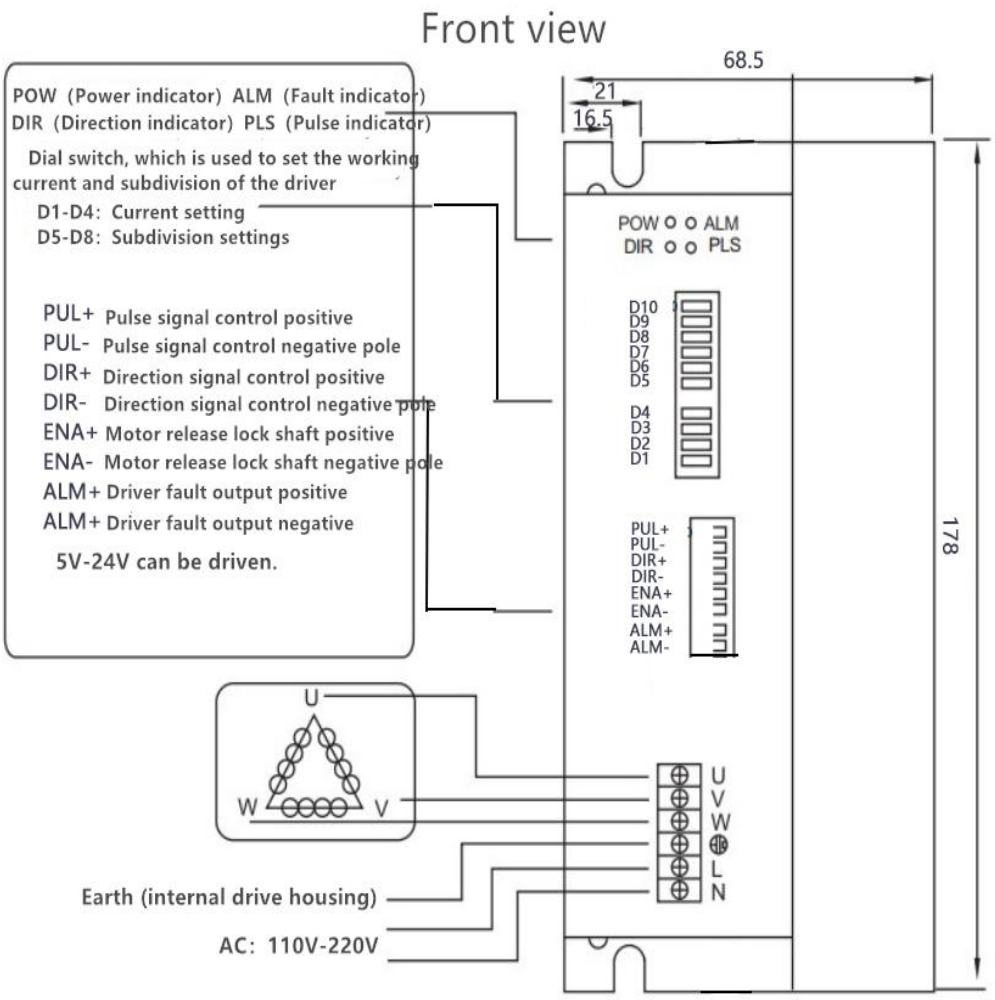
Subdivision settings

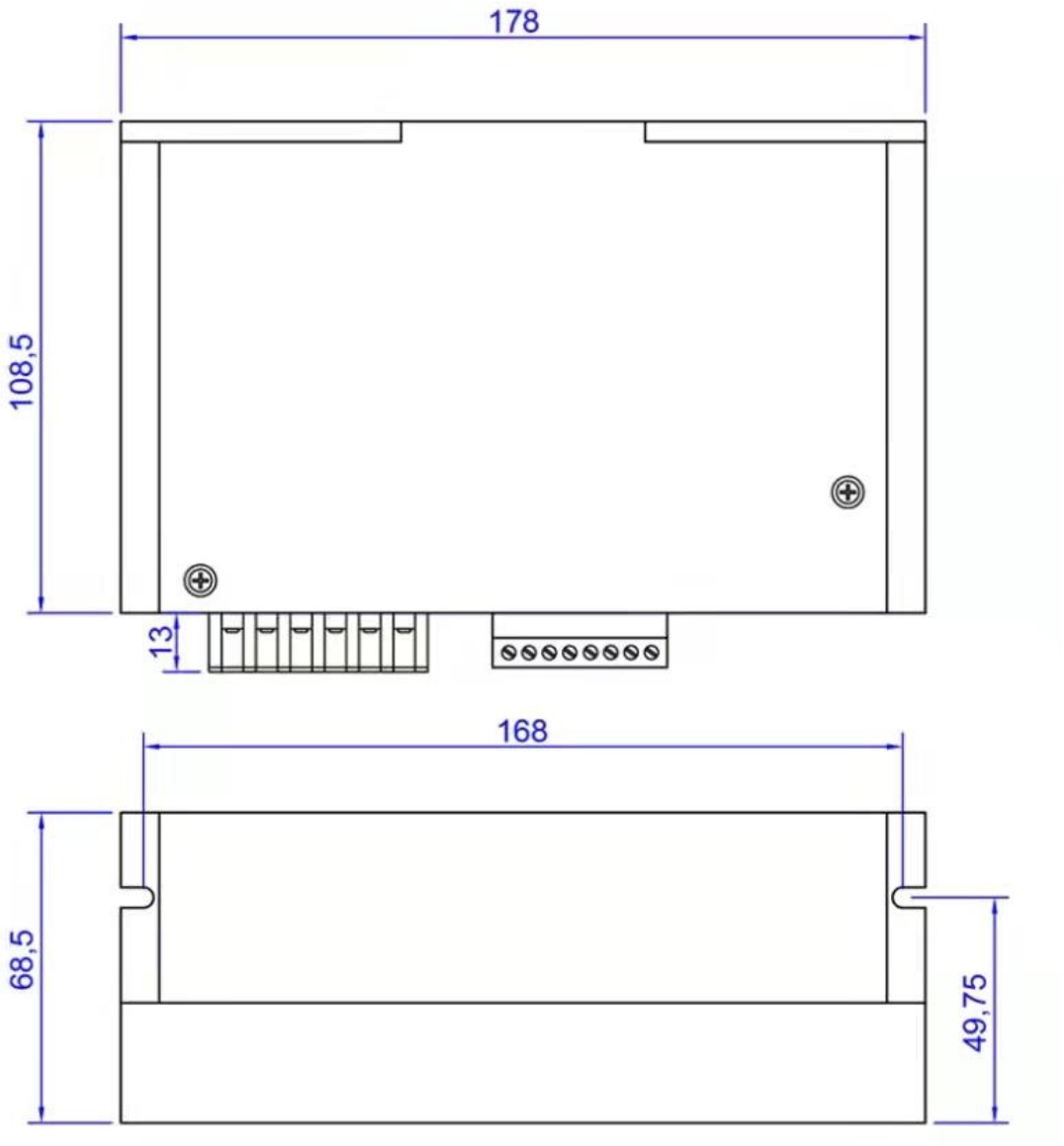
Driver subdivision is set by sw5-sw8 terminals, with a total of 16 gears. SW9 and SW10 are function settings. Attached table e.g.: fraction (pulse / revolution)

Note: sub fractions can be customized according to customer requirements!

Fine fraction	400	500	600	800	1000	1200	2000	3000
SW5	ON	ON	ON	ON	ON	ON	ON	ON
SW6	ON	ON	ON	ON	OFF	OFF	OFF	OFF
SW7	ON	ON	OFF	OFF	ON	ON	OFF	OFF
SW8	ON	OFF	ON	OFF	ON	OFF	ON	OFF
Fine fraction	4000	5000	6000	10000	8000	20000	30000	60000
SW5	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
SW6	ON	ON	ON	ON	OFF	OFF	OFF	OFF
SW7	ON	ON	OFF	OFF	ON	ON	OFF	OFF
SW8	ON	OFF	ON	OFF	ON	OFF	ON	OFF
SW9	ON, double pulse: PLS is forward stepping pulse signal and DR is reverse stepping pulse signal							
	OFF, single pulse: PLS is step pulse signal and DR is direction control signal							
SW10	Automatic detection switch (receives external pulse when off, and runs at the speed of 30 RPM when on)							

Driver wiring and dimension diagram


Front view
68.5
21
16.5
178
POW (Power indicator) ALM (Fault indicator)
DIR (Direction indicator) PLS (Pulse indicator)
Dial switch, which is used to set the working current and subdivision of the driver
D1-D4: Current setting
D5-D8: Subdivision settings
PUL+ Pulse signal control positive
PUL- Pulse signal control negative pole
DIR+ Direction signal control positive
DIR- Direction signal control negative pole
ENA+ Motor release lock shaft positive
ENA- Motor release lock shaft negative pole
ALM+ Driver fault output positive
ALM+ Driver fault output negative
5V-24V can be driven.
POW ALM
DIR PLS
D10
D9
D8
D7
D6
D5
D4
D3
D2
D1
PUL+
PUL-
DIR+
DIR-
ENA+
ENA-
ALM+
ALM-
U
V
W
L
N
Earth (internal drive housing)
AC: 110V-220V



Note：

1、 The input voltage is 220V (+ - 10% voltage fluctuation is acceptable)；

2、 The input control signal level is within the range of 5V-24V. Pay attention to the control signal voltage during wiring；

3、 The falling delay of the input pulse signal is valid；

4、 When the drive temperature exceeds 80 ℃, the drive stops working and the fault indicator ALM is on. Until the drive temperature drops to 50 ℃, the drive needs to be powered on again to resume working. In case of overheating protection, please install a radiator.

5、 The over-current (load short circuit) fault indicator ALM is on. Please check the motor wiring and other short circuit faults. After troubleshooting, it is necessary to power on again for recovery.

6、 No motor fault indicator ALM is on, please check the motor wiring, and power on again after troubleshooting.

Pin function description

Terminal wiring	Pin number	sign	function	notes
Green 8-bit control terminal	1	PUL+	Pulse signal control positive	5V-24V can be driven.
	2	PUL-	Pulse signal control negative pole	The falling edge is valid and the motor starts to rotate after receiving the pulse.
	3	DIR+	Direction signal control positive	5V-24V can be driven.
	4	DIR-	Direction signal control negative pole	The falling edge is valid and the received level changes the direction of the motor.
	5	ENA+	Motor release lock shaft positive	5V-24V are valid.
	6	ENA-	Motor release lock shaft negative pole	After receiving the level, the driver stops working and the motor is in a free state
	7	ALM+	Driver fault output positive	If the driver fails, the signal is valid and the output is low
	8	ALM-	Driver fault input negative	Connect low level 0V
Black motor power terminal	1	U	Motor three-phase line U-phase pole	
	2	V	Motor three-phase line V-phase pole	
	3	W	Motor three-phase line W-phase pole	
	4	NC	Space	
	5	L	220V power input terminal	
	6	N	220V power input terminal	