

# HS1-57

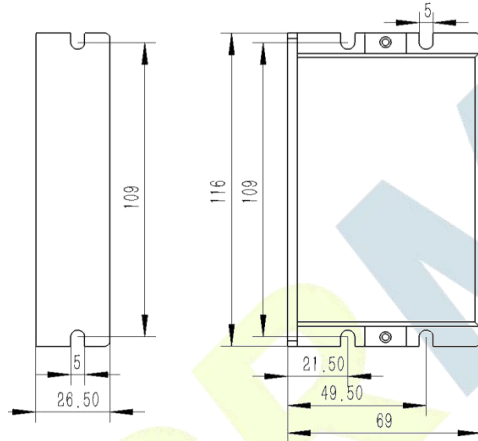
## AC-DC pulse type closed-loop stepper driver

### Preparation before use

Make sure the following items are ready before you start using HS1-57:

- DC 24-50V power supply
- AC 18-36V power supply
- Pulse signals and directional signals
- Two-phase hybrid stepper motor with outer diameter 57mm

### Mechanical installation drawing



### Line connection

- Connect the pulse signal "+" terminal to the driver "PU+", the pulse signal "-" terminal to the driver "PU-", and the rest of the control signals as the same
- The product supports AC and DC power supply, both positive and negative
- Connect the PB+ and PA+ of the encoder to the PB+ and PA+ ends of the driver, and the PB- of the encoder to the PB- end of the driver. Connect the VCC and GND of the encoder to the VCC and GND of the driver in turn. The positive and negative values cannot be switched



### InPut signal interface (5-24V) :

PU+	Pulse control signal: +5V-+24V can be driven, the rising edge is effective, every time the pulse from low to high, the motor takes a small step. In order to reliably respond to the pulse signal, the pulse width should be greater than 2.5 $\mu$ s.
PU-	
DR+	Direction control signal: +5V-+24V can be driven, high/low level signal. In order to ensure the reliable commutation of the motor, the direction signal should be established at least 50 $\mu$ s before the pulse signal.
DR-	
EN+	Enable control signal: +5V-+24V can be driven, high/low level signal. Used to enable or disable the operation of the motor. When EN+ is connected to +5V and EN- is connected to low voltage level, the driver will cut off the current of each phase of the motor so that the motor is in a free state, and the stepping pulse is not responded at this time. When this function is not required, enable the signal terminal to hang. In addition, the EN end can also be used to clear out-of-tolerance alarm signals.
EN-	

#### Strong electrical signal interface:

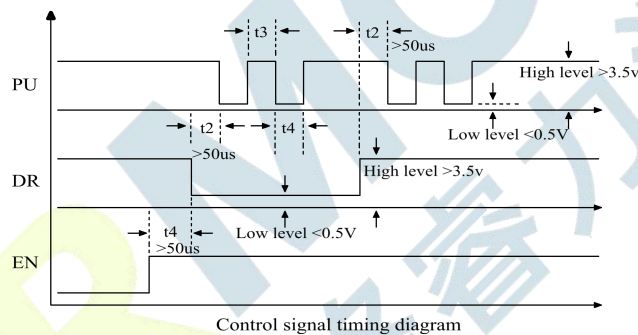
A+、A-	Motor A phase coil
B+、B-	Motor A phase coil
V+/AC1	Support AC and DC power supply, range: DC24~50V/AC18~36V
V-/AC2	

#### Encoder interface:

PB+、PB-	Encoder B phase input interface, pay attention to the line sequence.
PA+、PA-	Encoder phase A input interface, pay attention to the line sequence.
VCC	Encoder 5V power supply positive end.
GND	Encoder 5V power supply negative end.

#### Control signal timing diagram:

In order to avoid some misactions and deviations, PU, DR and EN should meet certain requirements, as shown in the following figure:



#### Annotation :

- 1) t1: EN(Enable signal) should be DR in advance at least 5ms, determined as high. In general, it is recommended that EN+ and EN- be suspended.
- 2) t2: DR at least PU fall along 50 $\mu$ s in advance to determine whether its state is high or low.
- 3) t3: Pulse width is not less than 2.5 $\mu$ s.
- 4) t4: Low level width is not less than 2.5 $\mu$ s.

#### Dip switch function setting:

The HS1-57 driver uses an 8-bit dip switch to control the driver and motor. Detailed description is as follows:

SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
Subdivision setting				Direction	Alarm polarity	Algorithm selection	Smoothing factor

#### Direction setting:

SW5 sets the initial rotation direction of the motor. When SW5=off, it is positive rotation. When SW5=on, it is rotated in the opposite direction.

► Note: After the DIP switch of direction setting is modified, it takes effect only after the device is powered on again.

#### Alarm polarity setting:

SW6 sets the default output signal resistance state of alarm. When SW6=off, it is normally on. If SW6=on, the state is normally closed.

#### Algorithm selection:

SW7 is used to select the control algorithm of the driver. When SW7=off, it is algorithm A. When SW7=on, it is algorithm B.

#### Smoothing coefficient setting:

SW8 is used to select the smoothing coefficient. When SW8=off, it is the smoothing coefficient 1. When SW8=on, the smoothing coefficient is 2.

#### Subdivide Settings:

SW1-SW4 Sets the subdivision of the drive, a total of 16 subdivisions can be set, the dip corresponding to the default subdivision Settings, as shown in the following table: You can also set the corresponding subdivision size of each file independently through the PC software.

steps/rev	SW1	SW2	SW3	SW4	Subdivision specification
400	on	on	on	on	The user can independently set the size of each file subdivision through the PC software, setting the range of 200-60000, and the resolution is 1.
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	
3600	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	
7200	off	off	off	off	

#### Warn

- Without permission, it is not allowed to disassemble, debug or maintain this product, otherwise we will not be responsible for the consequences
- Please read the manual carefully before installation.
- The product contains electrostatic sensitive components, improper contact may cause product failure.