

**AIGT** 森川

用户手册/User's Manual

# DS-758

数显闭环步进驱动器

使用手册

Closed loop step Drive

User's Manual



济南壹先领自动化技术有限公司

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## 前言/Foreword

感谢您使用本公司闭环步进驱动器。

**Thank you for using our Closed loop step drive.**

在使用本产品前，请务必仔细阅读本手册，了解必要的安全信息、注意事项以及操作方法等。错误的操作可能引发极其严重的后果。

**Before using this product, please read this manual carefully to understand the necessary safety information, precautions, and operation methods. Incorrect operation can have extremely serious consequences.**

本产品的设计和制造不具备保护人身安全免受机械系统威胁的能力，请用户在机械系统设计和制造过程中考虑安全防护措施，防止因不当的操作或产品异常造成事故。

**This product is designed and manufactured without the ability to protect personal safety from mechanical system threats. Users are advised to consider safety precautions during mechanical system design and manufacturing to prevent accidents caused by improper operation or product abnormalities.**

由于产品的改进，手册内容可能变更，恕不另行通知。用户对产品的任何改装我公司将不承担任何责任。阅读时，请注意手册中的以下标示：

**Due to product improvements, the contents of this manual are subject to change without notice. Our company will not be responsible for any modification of the product by the user.**

**When reading, please pay attention to the following signs in the manual:**



**注意：提醒您注意文字中的要点。**



**小心：表示错误的操作可能导致人身伤害和设备损坏。**

本产品经过国家强制 3C 认证，CE 认证，ROHS 认证

**This product has passed the national mandatory 3C certification, CE certification, ROHS certification**



## 1 概述/Overview

### 1.1 产品介绍/Product Introduction

DS-758 是本公司基于十几年步进与闭环步进经验开发的一款混合伺服驱动器，采用最新专用电机控制 DSP 芯片和应用矢量型闭环控制技术，从而彻底克服开环步进电机丢步的问题，同时也能明显提升电机的高速性能、降低电机的发热程度和减小电机的振动，并且提升机器的加工速度和精度以及降低机器的能耗。此外，在电机连续过载时，驱动器会输出报警信号，具有与交流伺服系统同样的可靠性。DS-758 适配电机安装尺寸与传统的 86 系列步进电机完全兼容，传统步进驱动方案极易升级。

DS-758 is the company based on a closed loop stepper stepper ten years experience in the development of hybrid servo drives, motor control using the latest dedicated DSP chip and a closed-loop vector control technology application, thus completely overcoming the problem of lost open-loop stepper motor steps , but also can significantly improve high speed performance of the motor, and reduce the degree of heat in the motor to reduce vibration of the motor, and improve processing speed and accuracy of the machine and reduce the energy consumption of the machine. In addition, in continuous motor overload, it outputs an alarm drive signal, having the same reliability and AC servo system. DS-758 fully compatible with the conventional motor mounting dimensions adapted to the stepper motor 86, the stepping conventional driving scheme can easily be upgraded.

### 1.2 特性/Characteristics

- 工作电压：输入电压交流20V-80V  
Operating voltage: input voltage AC 20V-80V
- 连续输出电流最大值8.0A  
Maximum continuous output current 8.0A
- 可接受差分 and 单端式脉冲/方向/脱机指令  
Acceptable differential and single-ended pulse/direction/off-line instructions
- 采用FOC磁场定位控制技术和空间矢量脉宽调制（SVPWM）闭环控制技术  
Using FOC field orientation control and space vector pulse width modulation (of SVPWM) loop control technology
- 采用了先进的变电流技术和变频技术，有效的降低了电机和驱动器的发热  
The use of advanced technology and frequency-varying current technology, effective to reduce the heat of the motor and drive
- 有故障输出指示接口功能  
Fault output indication interface function
- 每圈脉冲数可通过调试软件或拨码设定（细分）  
The number of pulses per turn can be set by debugging software or by dialing (subdivision)
- 具有过压、欠压、过流等保护功能  
It has the protection functions of overvoltage, undervoltage and overcurrent.
- 控制指令最大脉冲频率为500KHz（出厂默认为200KHz）  
Maximum control command pulse frequency is 500KHz (factory default is 200KHz)
- 脉冲，方向和脱机信号输入接口电平为4.5-28V兼容  
Pulse, direction and off-line signal input interface levels are 4.5-28V compatible
- 具有USB串口TTL电平（RS232 MODEL BUS协议）调试功能，但需使用本公司专用的串口调试线缆  
USB serial TTL level (RS232 MODEL BUS protocol) debugging function, but need to use the company's dedicated serial debugging Cable

## 1.3 应用领域/Application areas

适合各种中小型自动化设备和仪器，例如：锂电设备、3C 电子设备、雕刻机、打标机、切割机、激光照排、雕刻机，绘图仪、数控机床、自动装配设备等。在用户期望小噪声、高速度的设备中应用效果特佳。

Suitable for all kinds of small and medium-sized automation equipment and instruments, such as: lithium battery equipment, 3C electronic equipment, engraving machine, marking machine, cutting machine, laser phototypesetting, engraving machine, plotter, CNC machine tool, automatic assembly equipment, eDS. It is especially effective in applications where users expect small noise and high speed.

## 2 性能指标/Performance Index

### 2.1 电气特性/Electrical characteristics

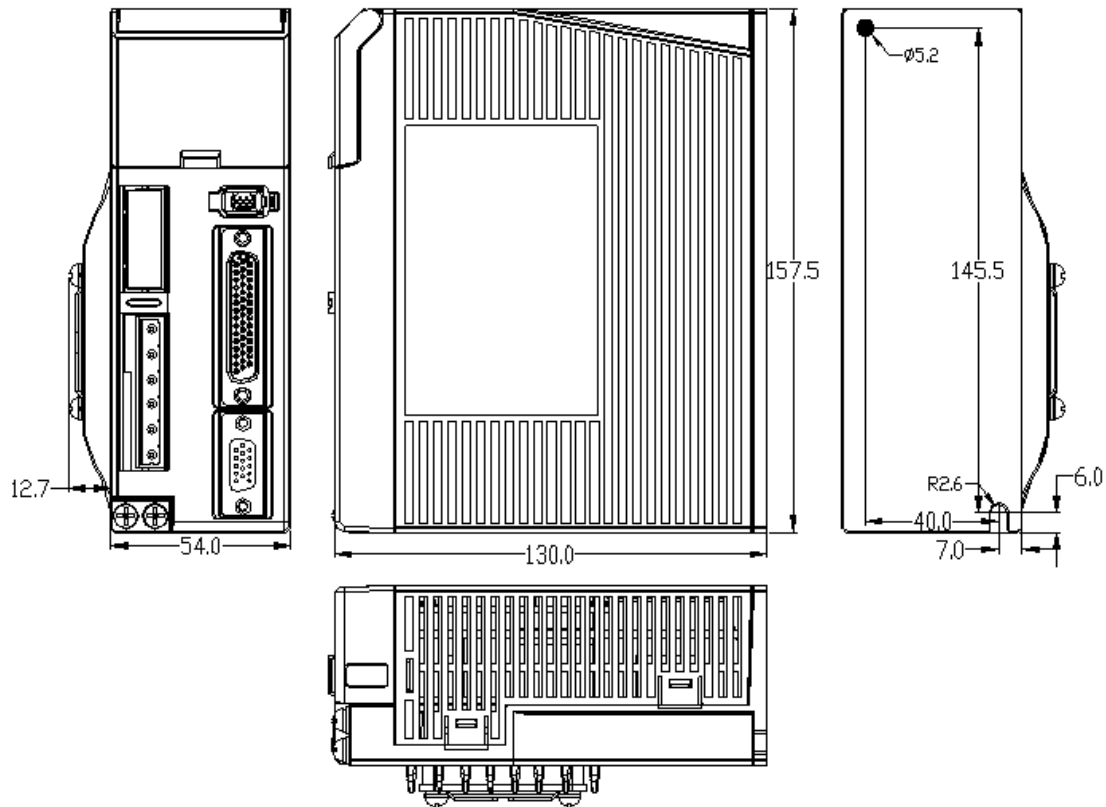
说明 Explanation	DS-758			
	最小值 Minimum Value	典型值 Typical Value	最大值 Maximal Value	单位 Unit
连续输出电流 Continuous output current	0.5	-	8	A
电源电压（交流） Supply Voltage (AC)	20	60	75	VAC
逻辑输入电流 Logic input current	7	10	20	mA
逻辑输入电压 Logical input voltage	4.5	5	24	Vdc
脉冲频率 Pulse Frequency	0	200	500	kHz
脉冲高电平宽度 Pulse high width	1.5	-	-	uS
位置误差控制精度 Position Error Control Accuracy	-	±1	-	Pulse
速度控制精度 Speed Control Accuracy	-	±2	-	rpm
最高加速度（空载） Maximum acceleration (no load)	-	100	-	rpm /ms
过压保护电压 Overvoltage Protection Voltage	80	85	90	VAC
绝缘电阻 Insulation Resistance	100	-	-	MΩ

## 2.2 使用环境/Use environment

冷却方式 Cooling Mode		自然冷却或强制风冷 Natural Cooling or forced air cooling
使用环境 Service Environment	场合 Occasion	不能放在其它发热的设备旁, 要避免粉尘、油雾、腐蚀性气体, 湿度太大及强振动场所, 禁止有可燃气体和导电灰尘; Can not be placed next to other heating equipment, to avoid dust, oil mist, corrosive gases, humidity is too large and strong vibration sites, prohibited combustible gases and conductive dust;
	温度 Temperature	-10°C ~ +50°C
	湿度 Humidity	40 ~ 90%RH
	振动 Vibration	5.9m/s <sup>2</sup> MAX
保存温度 Storage temperature		-20°C~60°C
使用海拔 Use Elevation		1000 米以下 Below 1000 meters
重量 Weight		1.5KG

### 3 安装/Installation

#### 3.1 安装尺寸/Mounting dimensions



#### 3.2 安装方法/Installation method

驱动器的可靠工作温度通常在 60℃ 以内，电机工作温度为 80℃ 以内；

The reliable operating temperature of the driver is usually within 60℃, and the motor operating temperature is within 80℃;

建议使用时选择自动半流方式，马达停止时电流自动减一半，以减少电机和驱动器的发热；

It is recommended to use the automatic semi-flow mode when using the motor. When the motor stops, the current is automatically reduced by half to reduce the heat of the motor and the drive;

安装驱动器时请采用竖着侧面安装，使散热齿形成较强的空气对流；

Install the drive with vertical side mounting so that the heat dissipating teeth form a strong air convection;

必要时机内靠近驱动器处安装风扇，强制散热，保证驱动器在可靠工作温度范围内工作；

Install a fan near the drive when necessary to force heat dissipation to ensure that the drive works within a reliable operating temperature range;

## 4 驱动器端口与接线/Driver ports and wiring

### 4.1 接线示意图/Schematic diagram of wiring

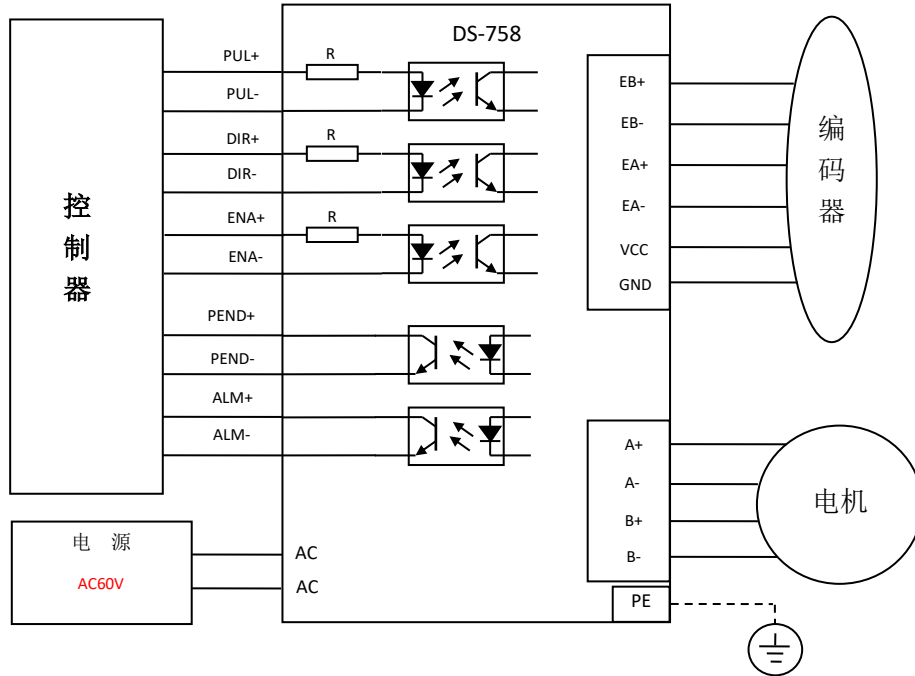


图 7 典型接线图

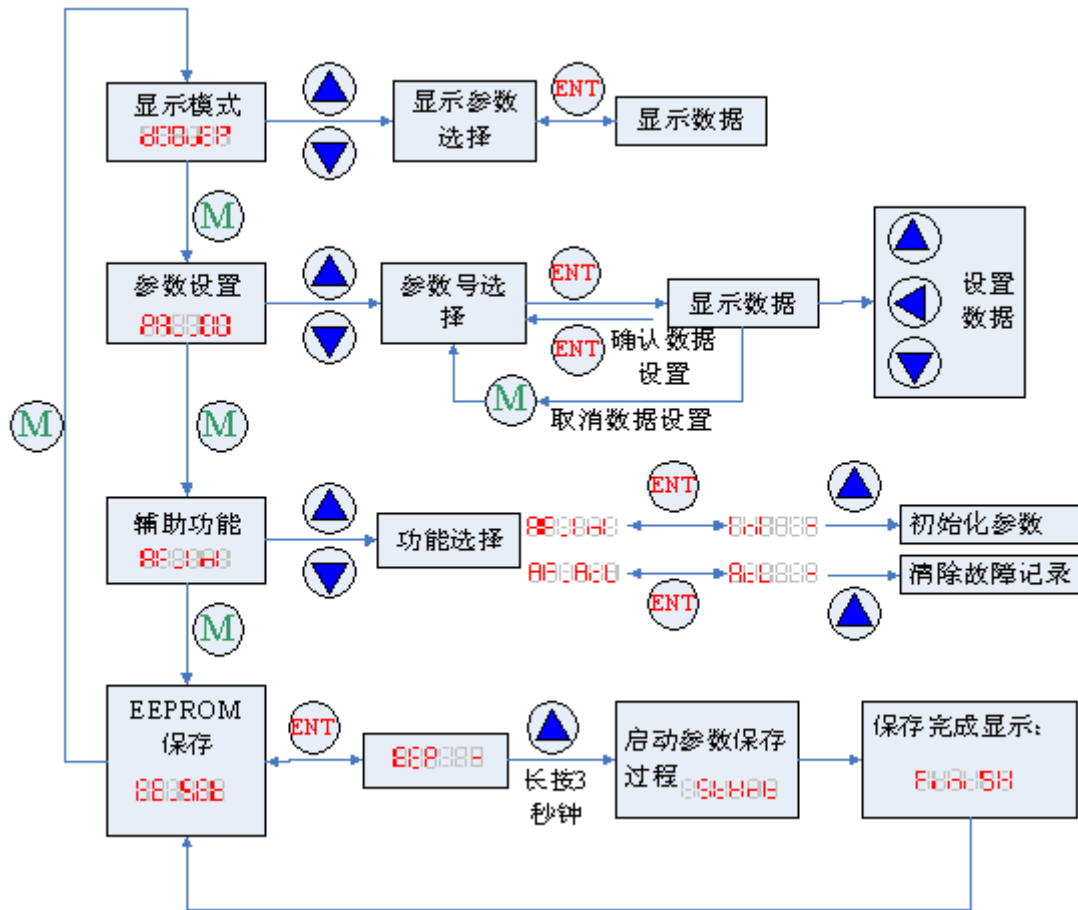


## 4.2 端口定义/Port Definition

### 4.2.1 LED 数码管状态指示/Status indication LED digital

DS-758 有一个 LED 指示电源和六位数码管显示状态，数码管面板操作请参考说明。显示参数定义如下表：

DS-758 an LED to indicate power status and six digital display, LED panel operation Please refer. Display parameters defined as follows:



显示模式:

显示参数的含义如下:

LED 显示 LED display	含义 Meaning	备注 Remark
888888	数据低位 Low Level Data	数据地位与高位之间用 With high status and data between
888888	数据高位 High Level Data	
888888	位置误差 Position Error	为驱动器接收脉冲与编码器反馈的误差。范围为 32 位。查看此项时，分为 L 和 H 两个查看项，分别表示低位和高位。 Receives the error pulse and encoder feedback to the driver. 32-bit range. When viewing this, L and H are divided into two viewing entries represent the low and high.
803588	电机速度: RPM Motor speed: RPM	
802588	给定速度: RPM Given speed: RPM	
803888	脉冲反馈脉冲数: Number of pulse feedback pulses:	
804888	脉冲给定脉冲数: Pulse given number of pulses:	
805888	峰值电流给定: (毫安) Peak current given: (mA)	
888888	驱动器故障代码: Drive Fault Code: 0001——过流保护 0001 -- Overcurrent Protection 0002——过压保护 0002 -- Overvoltage Protection 0008——刹车故障 0008 -- Brake Fault 0020——超差保护 0020 -- Override Protection	
888888	经过整流后的母线电压: Bus voltage after rectification: 电压=显示的数据/10; voltage = displayed data/10;	
888888	驱动器的版本号: Version number of the drive:	

### 4.2.2 控制信号输入端口/Control Signal Input Port

控制信号接口

Control Signal interface

接口名称 Interface name	功能 Features	说明 Explanation
3--PUL+	脉冲正输入端 Pulse Positive Input	兼容 4.5V~28V 电平信号 Compatible 4.5V ~ 28V level signal
4--PUL-	脉冲负输入端 Pulse negative input	
5--DIR+	方向正输入端 Directional Positive Input	
6--DIR-	方向负输入端 Directional negative input	
11--ENA+	使能正输入端 Enable Positive Input	
12--ENA-	使能负输入端 Enable negative input	
7--ALM+	报警信号正输出端 Positive output of alarm signal	集电极开路 OC 输出, 最大上拉电平 24V, 最大输出电流 100mA OC open collector output, a pull-level maximum 24V, 100mA maximum output current
8--ALM-	报警信号负输出端 Negative output of alarm signal	
9--PEND+	到位信号正输出端 position signal Positive output terminal	集电极开路 OC 输出, 最大上拉电平 24V, 最大输出电流 100mA OC open collector output, a pull-level maximum 24V, 100mA maximum output current
10--PEND-	到位信号负输出端 Position signal negative output terminal	

控制信号接口电路

A control signal interface circuit

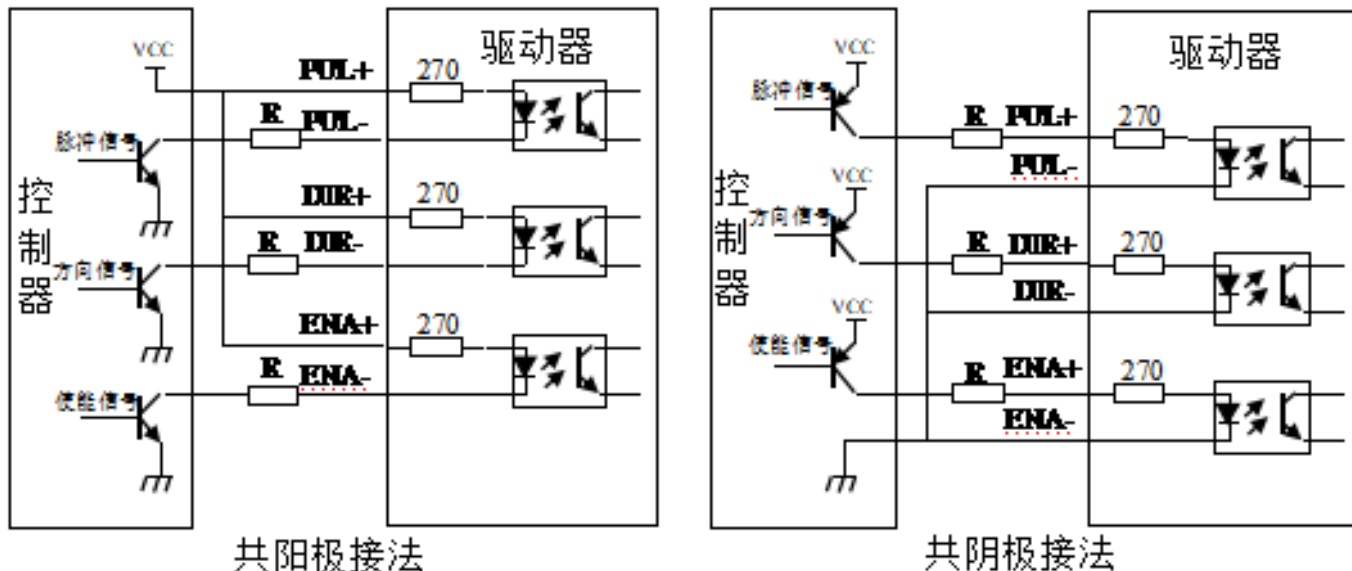


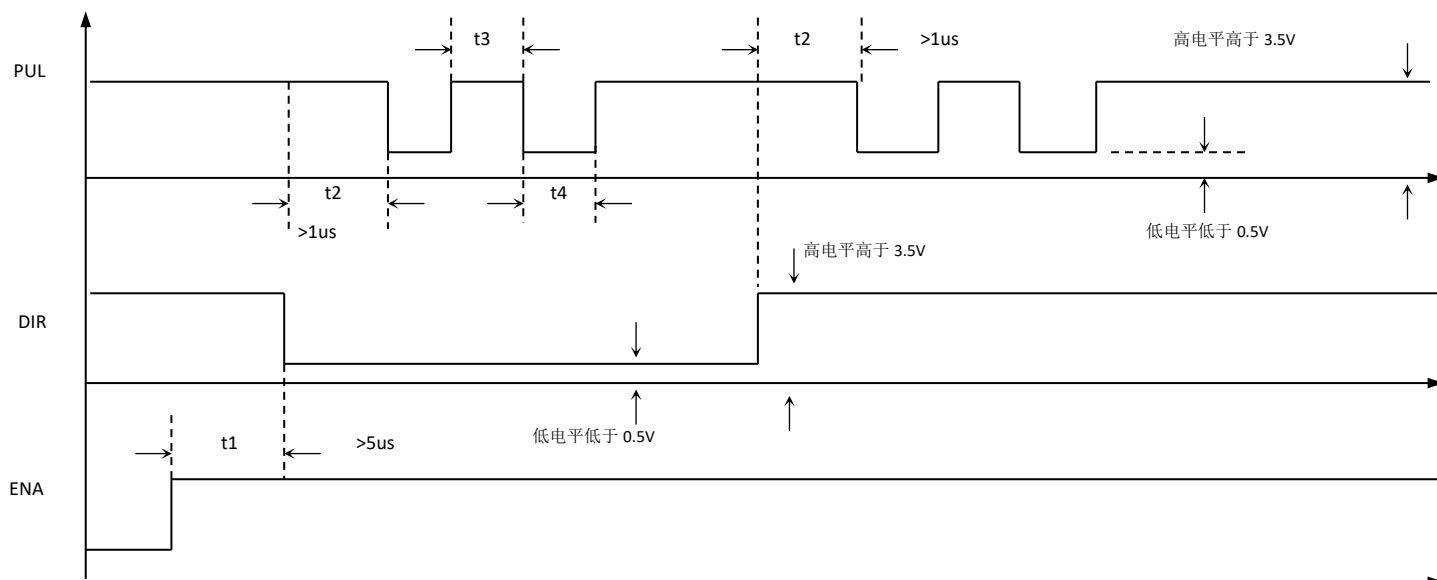
图3 输入接口电路

## 控制信号时序图

A control signal timing in FIG.

为了避免一些误动作和偏差，PUL-、DIR-和 ENA-应满足一定要求，如下图所示：

In order to avoid malfunctions and deviations, PUL-, DIR- ENA- should meet certain requirements, and, as shown below:



## 注释/Comment:

- 1) t1: ENA (使能信号) 应提前 DIR 至少  $5 \mu s$ ，确定为高。一般情况下建议悬空即可；  
t1: ENA (enable signal) DIR should advance at least  $5 \mu s$ , determined to be high. In general recommendations can be suspended;
- 2) t2: DIR 至少提前 PUL 下降沿  $1 \mu s$  确定其状态高或低；  
t2: DIR PUL falling  $1 \mu s$  determined in advance of at least a high or low state;
- 3) t3: 脉冲宽度至少不小于  $1.5 \mu s$ ；  
t3: at least a pulse width of not less than  $1.5 \mu s$ ;
- 4) t4: 低电平宽度不小于  $1.5 \mu s$ 。  
t4: low level width not less than  $1.5 \mu s$ .

### 4.2.3 编码器输入端口/CODEC INPUT PORT

低压伺服电机/直流无刷伺服电机/空心杯伺服和外转子伺服电机/编码器接口

Low voltage servo motor/Brushless dc servo motor/Hollow glass servo motor/Outer rotor servo moto/Encoder Interface

接口名称 Interface name	功能 Features
1—EA+	编码器 A 信号差分输入接口。 Encoder A signal differential input interface.
11—EA-	
2—EB+	编码器 B 信号差分输入接口。 Encoder B signal differential input interface.
12—EB-	
13—VCC	给电机的编码器和霍尔元件提供直流电压 5V，电流 100mA。 Provide a DC voltage of 5V and a current of 100mA to the encoder and Hall element of the motor.
3—EGND	5V 参考端负极 5V reference terminal negative electrode

### 4.2.4 电源及电机输出端口/Output ports of power supply and motor

供电与电机动力接口

Power supply and motor power interface

接口名称 Interface name	功能 Features
1—AC	供电电压范围：交流 20V-75V Positive AC power supply voltage range: AC 20V-75VAc
2—AC	
1—A+	步进电机 A+相绕组接口 Stepping motor A + phase winding interface
2—A-	步进电机 A-相绕组接口 Stepping motor A-phase winding interface
3—B+	步进电机 B+相绕组接口 Stepping motor B + phase winding interface
4—B-	步进电机 B-相绕组接口 Stepping motor B-phase winding interface

电源电压在规定范围之间都可以正常工作，驱动器最好采用隔离型交流电源供电，也可以采用变压器降压+桥式整流+电容滤波。但注意应使整流后电压纹波峰值不超过其规定的最大电压。建议用户使用低于最大电压的交流电压供电，避免电网波动超过驱动器电压工作范围。

Can operate in a power supply voltage between a predetermined normal range, the driver is preferably isolated using the AC power supply, the step-down transformer + + bridge rectifier capacitor filter may also be employed. But it should be noted that the maximum peak ripple voltage rectified voltage does not exceed its predetermined. We recommend that you use the AC power supply voltage lower than the maximum voltage fluctuations in the grid to avoid exceeding the drive voltage operating range. 如果使用稳压型开关电源供电，应注意开关电源的输出电流范围需设成最大。

If using a regulated swiDShing power supply, be aware that the output current range of the swiDShing power supply must be set to maximum.

## 4.2.5 USB 串口 RS232-TTL (3.3V) 电平通讯接口/USB serial RS232-TTL (3.3V) level communication interface

可以通过 USB 串口转接装置（串口转接装置另配）和专用 USB 串口电缆线连接 PC 机（禁止带电插拔）。通过 PC 机软件可以对驱动器进行功能和参数设置, 如客户可以通过本公司上位机软件设置所需要的任意细分值, 任意电流值、脉冲有效沿、单双脉冲控制、脉冲信号带宽, 开闭环电机切换, 滤波响应时间等等, 还可以进行共振点和振动的消弱调节。

Can be connected to a PC (hot plug is prohibited) by the USB serial swiDShing means (swiDShing means reprovision serial) port and a dedicated USB cable. Function parameters can be the drive and the PC software, as required by the customers PC software company set to any value segment, any current value, the effective pulse edge, single and double pulse control, the pulse signal bandwidth, open loop motor swiDShing, the response time of the filter, eDS., can also weaken the resonance point adjustment and vibration.

接口名称 Interface name	功能 Features	说明 Explanation
+5V	5V 电源正端 5V power supply	靠近拨码测引脚 Close sense pin DIP
TXD	RS232-TTL (3.3V) 发送端 RS232-TTL (3.3V) transmitting side	
RXD	RS232-TTL (3.3V) 接收端 RS232-TTL (3.3V) receiving side	
GND	5V 电源地 5V power supply ground	0V

**注意：**串口电缆线必须为专用电缆，视用户情况附送，使用前请确认，以免发生损坏。

Note: Serial cable must be dedicated cable, depending on the user situation comes, confirm before use to prevent damage.

### 4.2.6 参数设置/Parameter settings

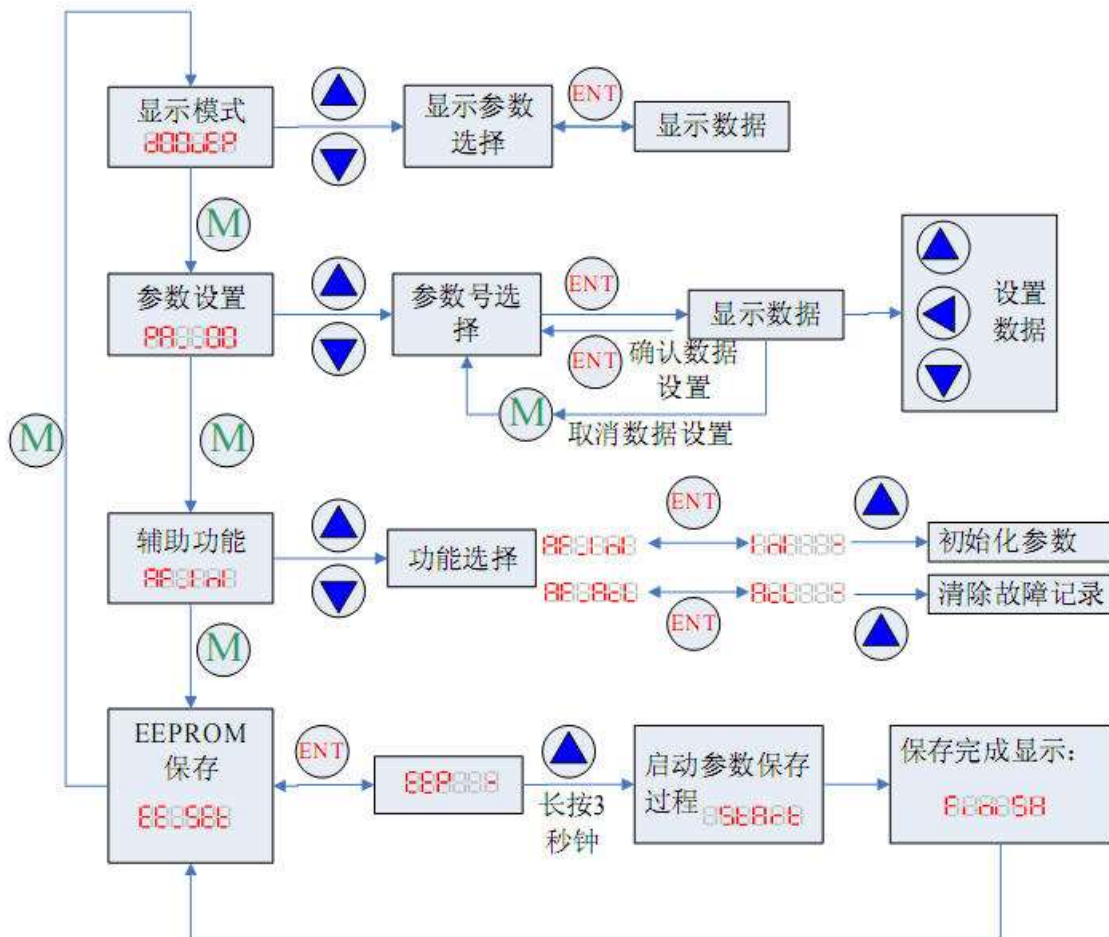
DS-758 驱动器的参数设置有两种方法：一种是通过 PC 机的 RS232 串行通讯口，采用专用调试软件完成参数设置，另外一种是通过驱动器的安检面板设置参数，驱动器内部存有一套对应电机最佳的默认出厂配置参数，用户只须按照具体使用情况调整驱动器内部细分数即可，详细使用情况请参看调试软件的使用说明。具体可调整参数及功能见下表：

DS-758 drive parameters there are two methods: one is through the RS232 serial communication port of a PC, using a dedicated debugging software parameter setting is completed, another panel is set security parameters direct drive, there is an internal drive motor corresponding to the optimal default factory configuration parameters, the user need only adjust the drive to the internal breakdown of the number in accordance with the specific use, see the detailed use of the software debugging using Pro Tuner explained. DETAILED adjustable parameters and functions as follows:

参数符号 Parameter Symbol	参数名称 parameter name	参数范围 Parameters	备注 Remark
KcP	电流环比例系数 Current Ring Proportion Coefficient	0~65535	仅用于出厂设置，禁止修改 Only for factory setting, modification
KcI	电流环积分系数 Current Ring Integral Coefficient	0~65535	仅用于出厂设置，禁止修改 Only for factory setting, modification
KpP	位置环比例系数 Position Ring Proportional Coefficient	0~65535	仅用于出厂设置，禁止修改 Only for factory setting, modification
KpI	位置环积分系数 Position Ring Integral Coefficient	0~65535	仅用于出厂设置，禁止修改 Only for factory setting, modification
Kd	速度环阻尼系数 Velocity Ring Friction Coefficient	0~100	仅用于出厂设置，禁止修改 Only for factory setting, modification
Kvff	速度环前馈系数 Feed forward coefficient of velocity loop	0~100	仅用于出厂设置，禁止修改 Only for factory setting, modification
	保持电流百分比 Holding current percentage	0~100%	出厂默认设置 40 Factory default setting 40
	闭环电流百分比 Closed loop current percentage	0~100%	出厂默认设置 100 Factory default setting 100
	编码器线数 Number of encoder lines	4000	4000
	跟踪误差限 Tracking Error Limit	0~65535	出厂默认设置 1000 Factory default setting 1000
	细分数 Fine Fraction	200~65535	出厂默认设置 4000 Factory default setting 4000

DS-758 按键操作方法如下。

DS-758 key operation is as follows.



参数模式数码管显示为:

Digital display mode parameters as:



其中的“00”表示参数序号，具体含义如下表

Wherein “00” represents a parameter number, the specific meaning of the following table

参数序号 Parameter Number	定义 definition	默认值 Default Value	范围 Range	说明 Explanation
00	电流环 Kp Current loop Kp	1000	0~65535	
01	电流环 Ki Current loop Ki	200	0~65535	
02	电流环 Kc Current loop Kc	256	0~1024	
03	位置环 Kp Position loop Kp	2500	0~65535	
04	位置环 Ki Position loop Ki	500	0~65535	
05	位置环 Kd Position loop Kd	200	0~1000	



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06	位置环 Kvff Position loop Kvff	30	0~100	
07	每转脉冲 PULSE PER ROTATION	4000	200~65535	
08	编码器分辨率 Encoder resolution	4000	200~65535	
09	跟踪误差报警阈值 Tracking Error Warning Threshold	1000	1~65535	
10	保持电流百分比 Holding current percentage	40	0~100	
11	闭环电流百分比 Closed loop current percentage	100	1~100	
12	保持时间 Retention Time	1000	1~65535	
13	脉冲滤波使能 Pulse filtering enable	0	0/1	
14	滤波时间 Filtering Time	25600	0~25600	
15	使能电平 Enable Level	1	0/1	
16	故障输出电平 Fault output level	1	0/1	
17	单双脉冲选择 Single and double pulse selection	0	0/1	
18	脉冲有效沿 Effective edge of pulse	0	0/1	
19	电机旋转方向 Rotating Direction of Motor	1	0/1	
20	可接受脉冲频率范围旋转 Acceptable Pulse Frequency Range Rotation	0	0/1	
21	加速度 Acceleration	200	1~2000	这些参数是通过按键 面板控制电机旋转时 用到 These parameters are used by the key panel to control the motor rotation.
22	速度 speed	60	1~3000	
23	行程 Travel	100	1~65535	
24	运行次数 Number of runs	1	1~65535	
25	启动方向 Starting Direction	1	0/1	
26	运行间隔时间 Running Interval Time	100	1~65535	
27	是否往复运行 Whether to run back and forth	1	0/1	
28	启动/停止测试 Start/Stop Test	1	0/1	
29	预留 Reserve			

**用户手册/User's Manual**

注意：驱动器出厂默认的电流环、位置环和速度环参数为配套电机的最佳参数，客户一般无需修改，只需要根据系统控制的需要选择好电机细分数及开闭环电流的百分比即可。

Note: The factory default drive current loop, velocity loop and position loop parameters for the optimal parameters of the motor being, customers generally do not need to modify the system only need to control the need to choose a good percentage of the number of subdivisions and open and closed loop motor current in accordance with.

**5 适配电机/Adaptive Motor**

**5.1 电机规格/Motor Specification**

型号 Model	电机基座 NEMA	机身长度 length	扭矩 Torque	额定电流 Current	轴长 Shaft length	轴径 Shaft Diameter	匹配驱动 MaDSh the Drives
DS57-10	57mm NEMA23	73mm	1.0Nm	5 A	21mm	8mm	EC88D/XC88D/ESC57/RSC872/CSC808 TS506D/TS808C/TS608-B/TS508-D
DS57-28	57mm NEMA23	100mm	2.8Nm	5 A	21mm	8mm	EC88D/XC88D/ESC57/RSC872/CSC808 TS506D/TS808C/TS608-B/TS508-D
DS57-28BK	57mm NEMA23	131mm	2.8Nm	5 A	21mm	8mm	EC88D/XC88D/ESC57/RSC872/CSC808 TS506D/TS808C/TS608-B/TS508-D
DS60-40	60mm NEMA24	109mm	4.0Nm	5 A	21mm	8mm	EC88D/XC88D/ESC57/RSC872/CSC808 TS506D/TS808C/TS608-B/TS508-D
DS60-40BK	60mm NEMA24	143mm	4.0Nm	5 A	21mm	8mm	EC88D/XC88D/ESC57/RSC872/CSC808 TS506D/TS808C/TS608-B/TS508-D
DS86-45	86mm NEMA34	97mm	4.5Nm	6 A	40mm	14mm	EC88D/XC88D/ESC57/RSC872/CSC808 DS-758TS608-B/TS508-D
DS86-85	86mm NEMA34	133mm	8.5Nm	6 A	40mm	14mm	EC88D/XC88D/ESC57/RSC872/CSC808 DS-758TS608-B/TS508-D
DS86-120	86mm NEMA34	172mm	12Nm	6 A	40mm	14mm	EC88D/XC88D/ESC57/RSC872/CSC808 DS-758TS608-B/TS508-D
DS86-45BK	86mm NEMA34	138mm	4.5Nm	6 A	40mm	14mm	EC88D/XC88D/ESC57/RSC872/CSC808 DS-758TS608-B/TS508-D
DS86-85BK	86mm NEMA34	174mm	8.5Nm	6 A	40mm	14mm	EC88D/XC88D/ESC57/RSC872/CSC808 DS-758TS608-B/TS508-D
DS86-120BK	86mm NEMA34	213mm	12Nm	6 A	40mm	14mm	EC88D/XC88D/ESC57/RSC872/CSC808 DS-758TS608-B/TS508-D

备注：闭环步进驱动器对闭环步进电机的相关参数匹配比较敏感，建议客户使用我司的闭环步进驱动器时，同时要求使用我司的闭环步进电机，如此才能保证电机的中高速性能，运行的平稳性，低振动和低发热。

Remark: The Closed loop step drive is sensitive to the maDShing of the relevant parameters of the Closed loop step motor. It is recommended that customers use our Closed loop step drive and also use our Closed loop step motor to ensure the high-speed performance and smooth running of the motor. Low vibration and low heat.

## 5.2 电机尺寸/Motor dimensions

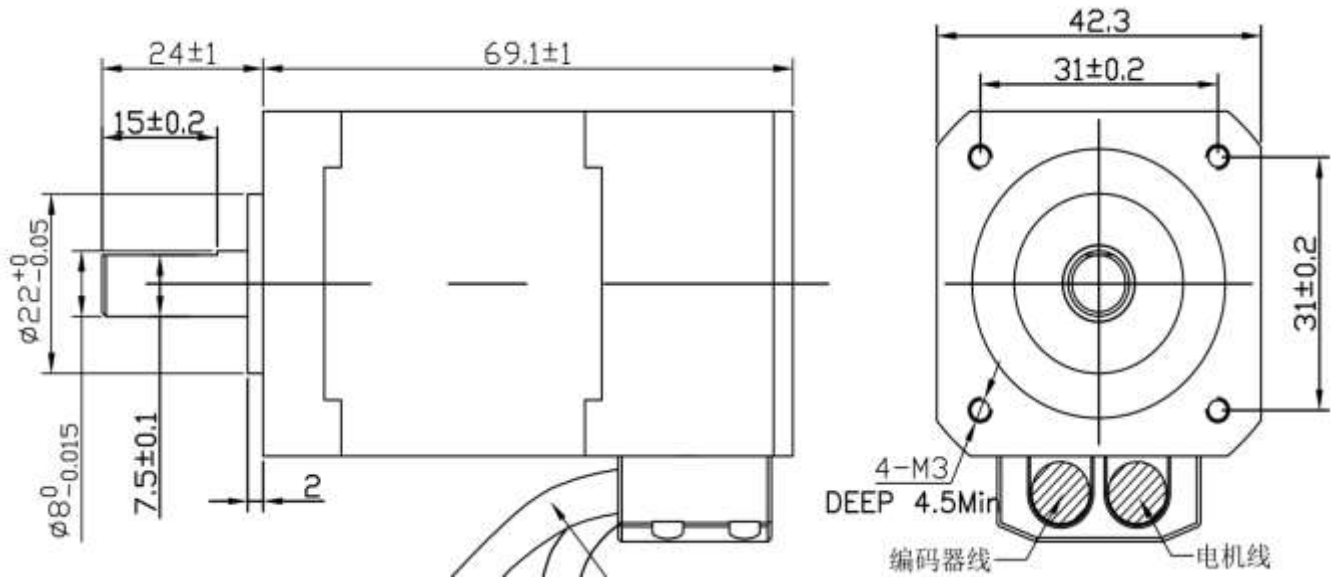
### 42 闭环电机

NEMA17 Closed-loop step motor

电机轴长/轴径/双输出轴等规格均可根据客户需求定制

Motor shaft length/diameter/double output shaft and other specifications

Can be customized according to customer's requirements



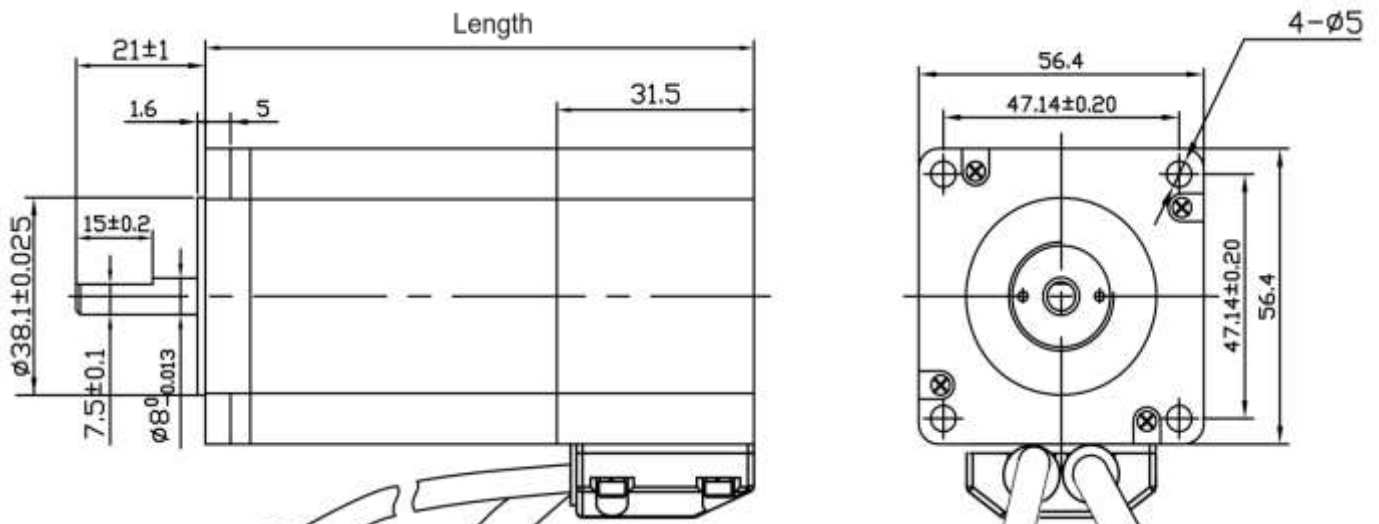
### 57 闭环电机

NEMA23 Closed-loop step motor

电机轴长/轴径/双输出轴等规格均可根据客户需求定制

Motor shaft length/diameter/double output shaft and other specifications

Can be customized according to customer's requirements



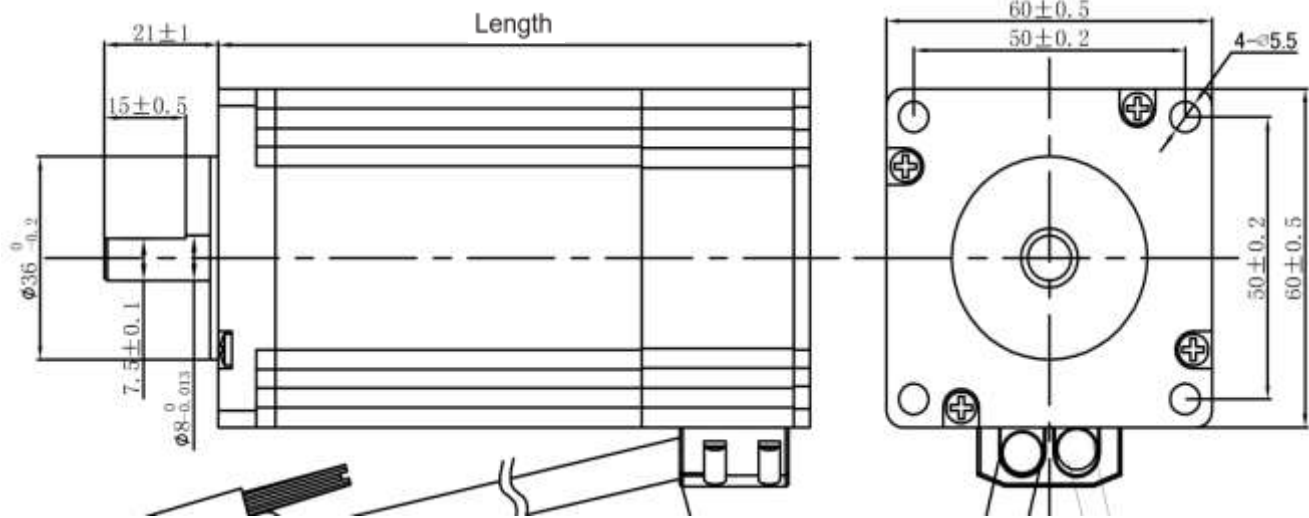
**60 闭环电机**

NEMA24 Closed-loop step motor

电机轴长/轴径/双输出轴等规格均可根据客户需求定制

Motor shaft length/diameter/double output shaft and other specifications

Can be customized according to customer's requirements



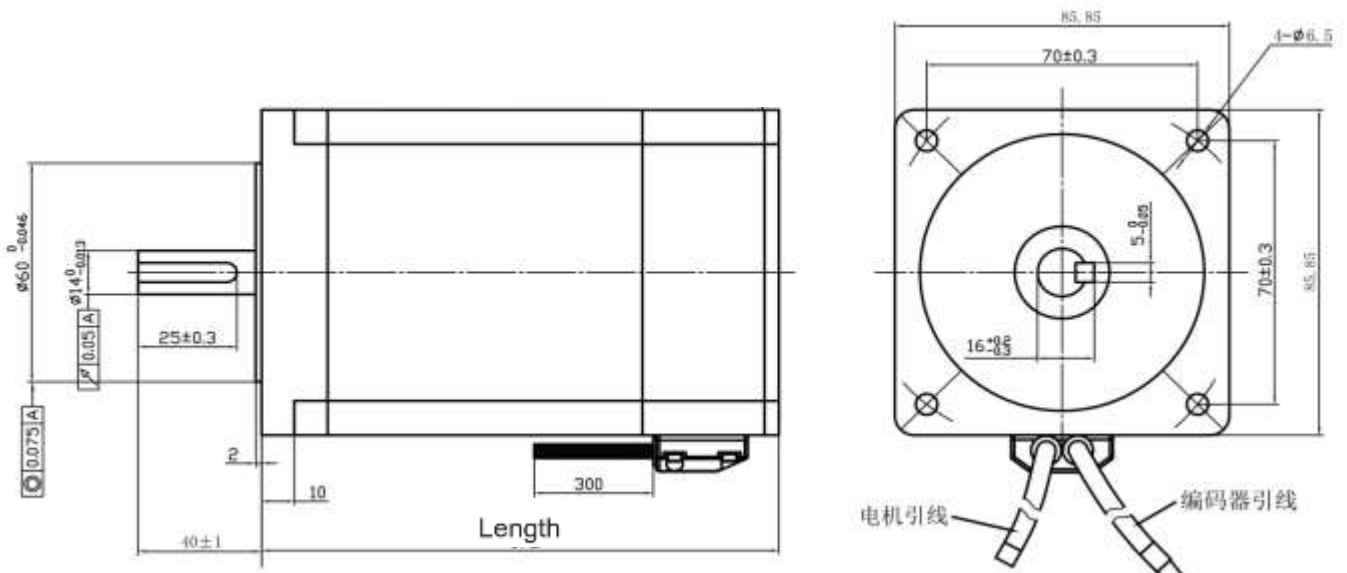
**86 闭环电机**

NEMA34 Closed-loop step motor

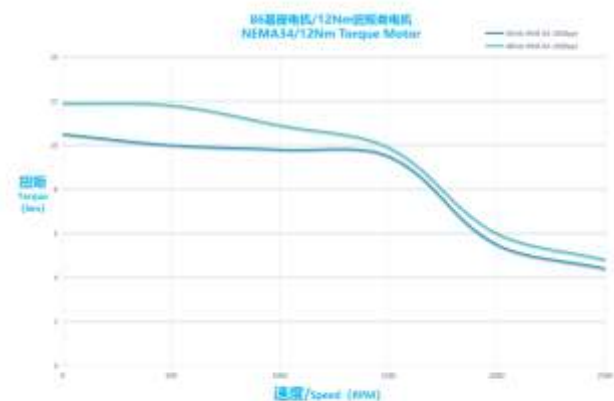
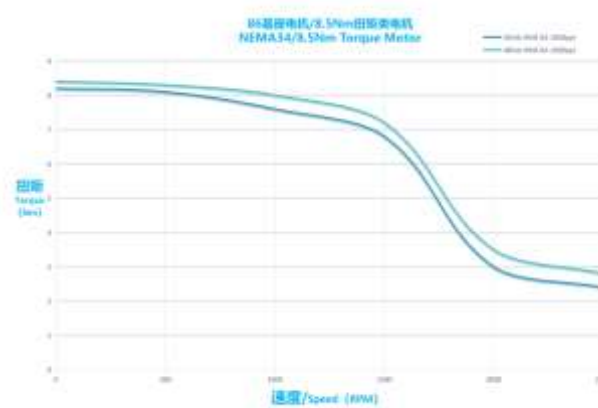
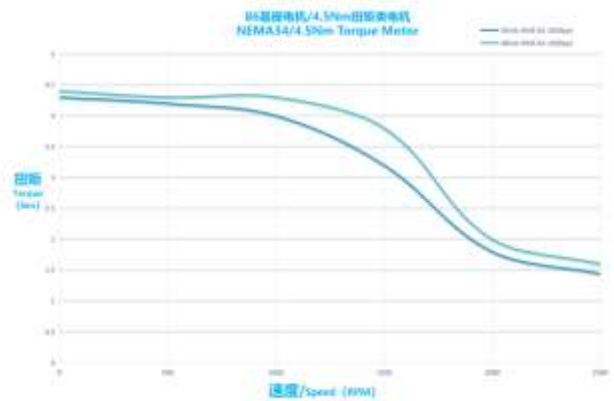
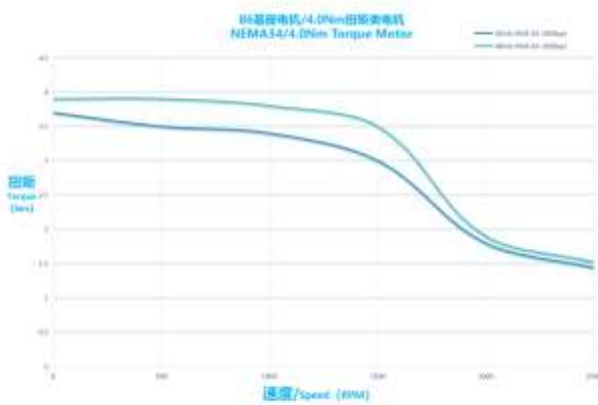
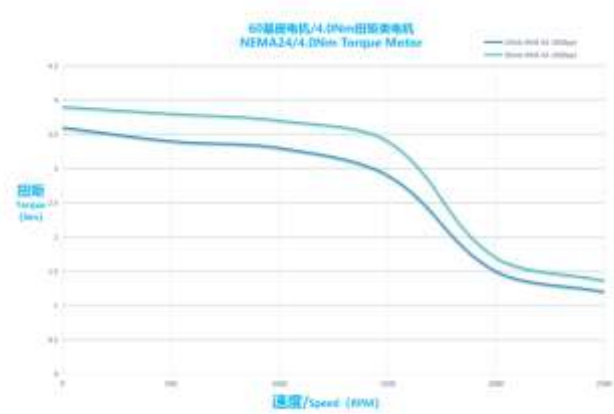
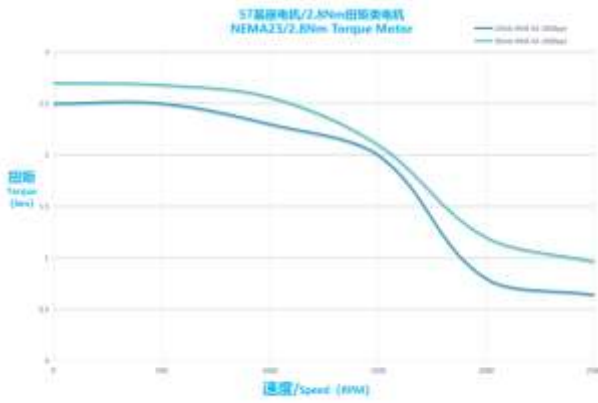
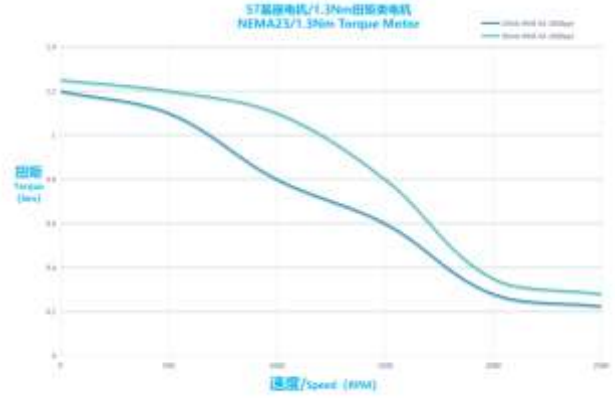
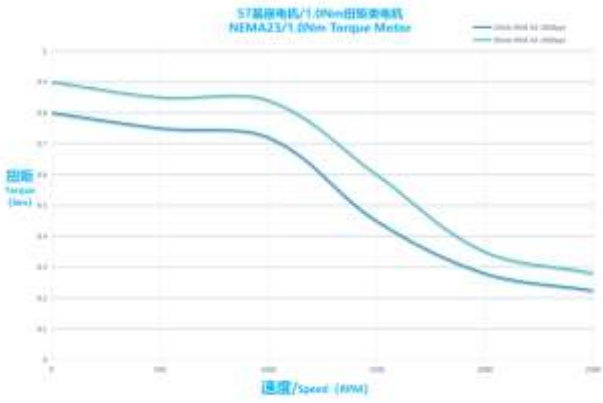
电机轴长/轴径/双输出轴等规格均可根据客户需求定制

Motor shaft length/diameter/double output shaft and other specifications

Can be customized according to customer's requirements

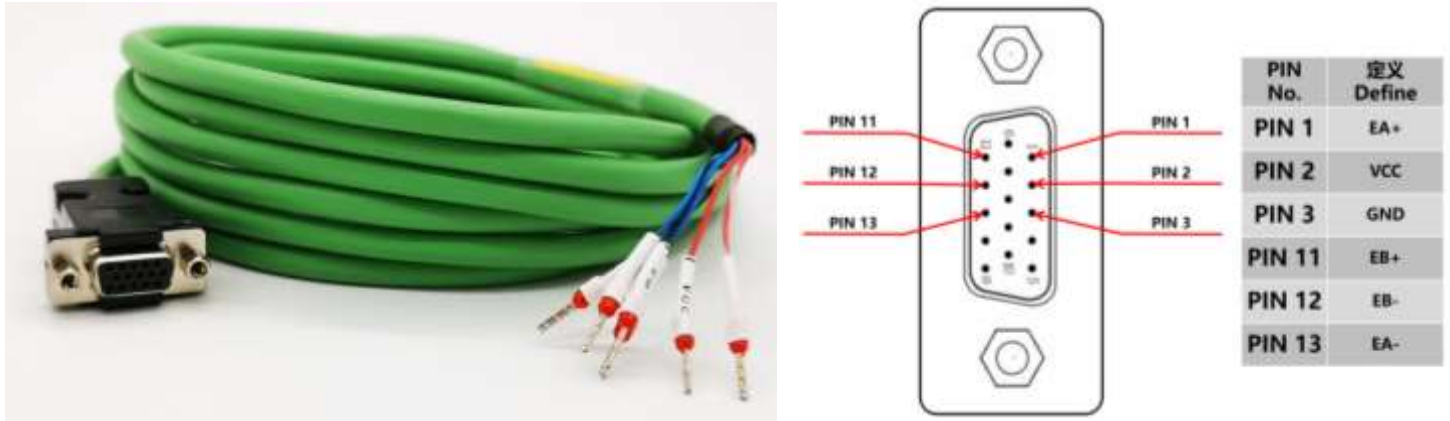


**5.3 技术参数/Technical parameters**

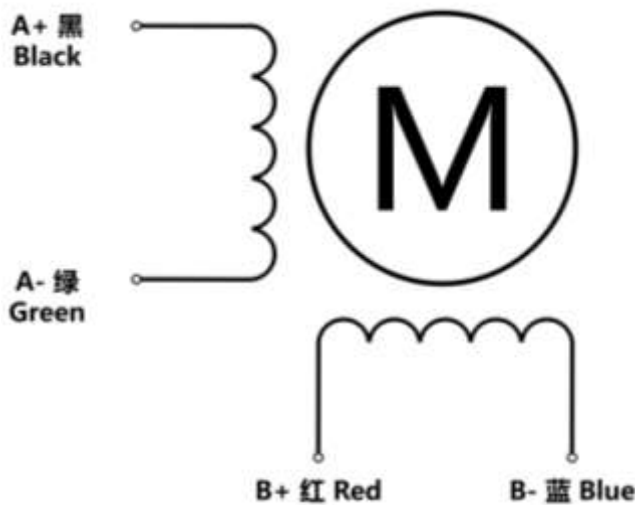


## 5.4 编码器线规格（仅适用闭环电机）/Encoder line specification (closed loop motor only)

编码器线用于连接电机编码器和驱动器，下图为编码器线尺寸图，标配编码器线长度为 0.3m，另有 1m、2m、3m、5m、8m、10m、12m 等规格可选。我公司出品编码器延长线自带定义标签，无需分辨颜色。如需定制请联系我公司  
 The encoder cable is used to connect the motor encoder and driver. The figure below shows the encoder wire size drawing. The standard encoder wire length is 0.3m, and other specifications such as 1m, 2m, 3m, 5m, 8m, 10m, 12m are optional. . Our company's encoder extension cable comes with a defined label, no need to distinguish colors. If you need to customize, please contact our company.



## 5.5 电机接线图/Motor wiring diagram



## **6 保修及售后服务 /Warranty and after-sales service**

### **6.1 保修 /Guarantees**

请保留好包装箱以便运输、储存或需要退回本公司维修时使用。一年保修期：

Please keep the packing box for transportation, storage or need to return to the company for maintenance. One year warranty period:

来自本驱动器使用一年内因为产品自身的原因造成的损坏，负责保修。

From the use of this drive within one year because of the product itself caused by the damage, responsible for the warranty.

不在保修之列：/Not covered by warranty:

不恰当的接线、电源电压和用户外围配置造成的损坏。/Damage caused by improper wiring, power supply voltage and user peripheral configuration.

无本公司书面授权条件下，用户擅自对产品进行更改。/Without the written authorization of the company, users make changes to the products without authorization.

超出电气和环境的要求使用。/Use beyond electrical and environmental requirements.

驱动器序列编号被撕下或无法辨认。/The drive serial number has been torn off or is unreadable.

外壳被明显破坏。/The outer shell was visibly damaged.

不可抗拒的灾害。/An irresistible disaster.

### **6.2 售后服务 /Aftersales Service**

添加微信或者拨打电话

您拨打电话之前，请先记录以下信息：

Before you call, please record the following information:

故障现象/Fault phenomenon

产品型号和序列号/Product model and serial number

安装日期或者生产日期/Installation date or production date