IEC.Series

EtherCAT 总线一体集成式防水型驱动电机

EtherCAT integrated waterproof stepper motor

Shenzhen Adam Technology Co Ltd

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前言/Foreword

感谢您使用本公司开环步进驱动器。

Thank you for using our open 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

IEC57 是我公司新推出的 Ether CAT 一体总线型闭环步进驱动器，采用最新浮点 32 位 MCU 数字处理技术，驱动器控制算法采用先进的变电流技术和先进的变频技术，使驱动器发热小，电机振动小，运行平稳，高速性能好。用户可以设置 1-255 内的任意 ID 地址，能够满足大多数场合的应用需要。低中高速运行都很平稳，噪音超小。

IEC57 is a newly introduced one-bus type close-loop stepping driver of Ether CAT, which adopts the latest floating-point 32-bit MCU digital processing technology, and adopts the advanced variable current technology and the advanced frequency conversion technology to control the driver, motor vibration small, smooth operation, high-speed performance. The user can set any ID address within 1-255, which can meet the needs of most applications. medium and high-speed operation is very smooth, ultra-low noise.

1.2 特性/Characteristics

●全新浮点 32 位 MCU 技术
New floating-point 32-bit MCU technology8
●整机防尘防水设计，IP65 等级
Dust-proof and water-proof design, IP65 grade
●1 路光耦隔离 OC 输出
1-way optocoupler isolated OC output
●带串口设置和调试功能
With serial port setting and debugging function
●变电流控制使电机发热大为降低
variable current control greatly reduces motor heating
●编码器线数 4000 线（标准）
ENCODER line number 4000 lines (standard)
●57 类闭环步进电机，1N.M，2.8N.M
Class 57 closed-loop Stepper Motor, 1N.M, 2.8N.M
●3 路光隔离信号输入，其中 2 路为高速光耦隔离
Three optical isolation signal inputs, two of which are high-speed optocoupler isolation
●通讯频率 100MHz
Communication Frequency 100 MHZ
●电流可在 0.5-8A 之间随负载变化而变换
The current may vary from 0.5 to 8A depending on the load
●1.2 倍过载能力
1.2times overload capacity
●出厂默认细分为 50000（可通过软件修改）
Factory default subdivided into 50000(can be modified through software)

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：雕刻机、打标机、切割机、医疗设备、激光照排、绘图仪、数控机床、自动装配设备等。在用户期望低噪声、低振动，低发热和高速度的设备中应用效果特佳。

Suitable for a variety of small and medium-sized automatic equipment and instruments, such as: Engraving Machine, marking machine, cutting machine, medical equipment, laser phototypesetting, plotter, CNC machine tools, automatic assembly equipment. Ideal for applications where the user expects low noise, low vibration, low heat and high speed.

2 性能指标/Performance Index

2.1 电气特性/Electrical characteristics

说明 Explanation	IEC57			
	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	-	8.0	A
电源电压（直流） Power Supply Voltage (DC)	15	24/36	50	Vdc
控制信号输入电流 Control signal input current	6	10	16	mA
逻辑输入电压 Logic input voltage	5	5	24	Vdc
OC 输出上拉电压 OC output pull-up voltage	5	-	24	Vdc
Ether-CAT 通讯频率 Ether-CAT frequency	-	100	-	MHz
绝缘电阻 Insulation Resistance	100	-	-	MΩ

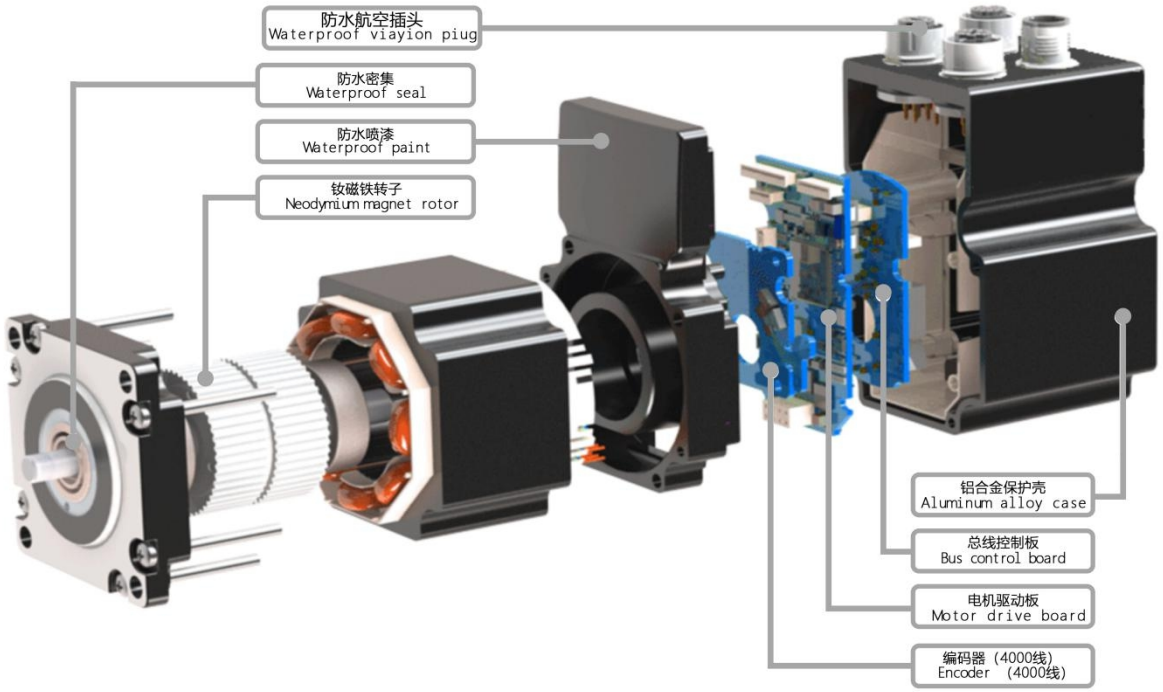
2.2 适配标准电机/Suitable for standard motor

该一体化驱动器能适配的 57 闭环混合式步进电机一般推荐如下两种标准规格型号，其它规格型号的闭环步进电机可以根据客户需求定制。

The 57 closed-loop Hybrid stepper motor that the integrated drive can adapt to is generally recommended as follows two standard specifications, other specifications of the closed-loop stepper motor can be customized according to customer needs.

型号（Model No.）	保持转矩 Holding Torque	驱动器+编码器+电机机身长度 Length	重量 Weight
	N.M	mm	kg
IEC57-10	1.2	107±1	1.9
IEC57-28	2.8	133±1	2.2

2.3 驱动电机产品构造说明图/Structure Illustration of drive motor



2.4 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℃ ～ +50℃
	湿度 Humidity	40 ～ 90%RH
	振动 Vibration	5.9m/s2MAX
保存温度 Storage temperature		-20℃～60℃
使用海拔 Use Elevation		1000 米以下 Below 1000 meters
重量 Weight		0.4KG

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。

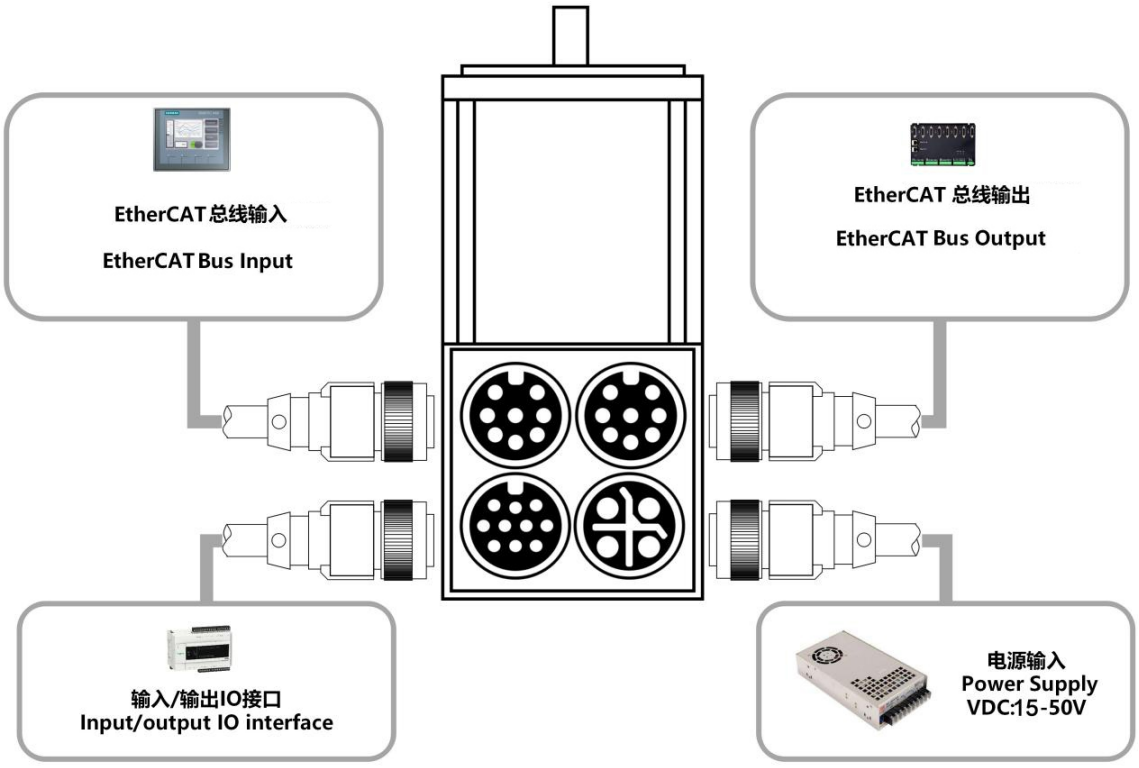
Install the drive with vertical side mounting so that the heat dissipating teeth form a strong air convection。

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。

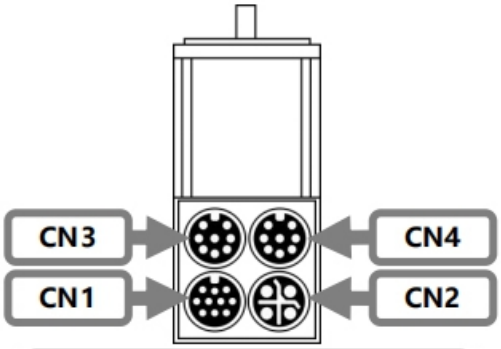
4 驱动器端口与接线/Driver ports and wiring

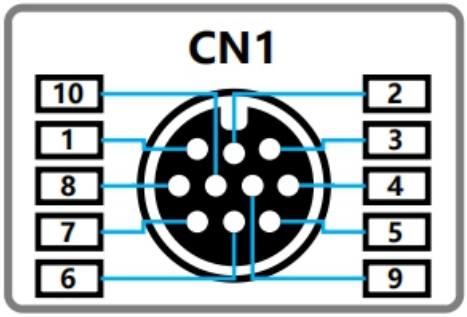
4.1 接线示意图/Schematic diagram of wiring

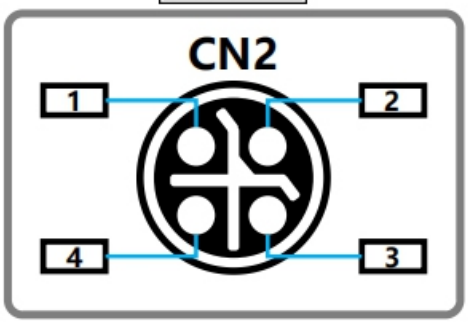


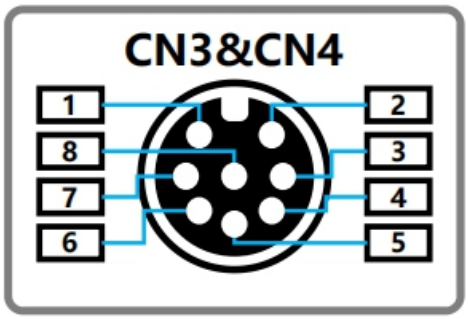
4.2 端口定义/Port Definition

产品接口定义/Product interface definition









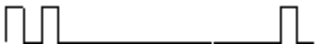
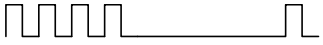
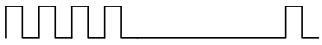
IEC系列EtherCAT总线控制
IEC Series EtherCAT Control

CN1		CN2		CN3		CN4	
PIN 1	GND	PIN 1	VDC+	PIN 1	TX+	PIN 1	TX+
PIN 2	AIN	PIN 2	VDC+	PIN 2	TX-	PIN 2	TX-
PIN 3	OUT-	PIN 3	GND	PIN 3	RX+	PIN 3	RX+
PIN 4	OUT+	PIN 4	GND	PIN 4	RX-	PIN 4	RX-
PIN 5	IN3-			PIN 5	NC	PIN 5	NC
PIN 6	IN3+			PIN 6	NC	PIN 6	NC
PIN 7	IN2-			PIN 7	NC	PIN 7	NC
PIN 8	IN2+			PIN 8	NC	PIN 8	NC
PIN 9	IN1-						
PIN 10	IN1+						

4.2.1 LED 灯状态指示/Lamp status indication

绿色 LED 为电源指示灯，当驱动器接通电源时，该 LED 常亮；当驱动器切断电源时，该 LED 熄灭。红色 LED 为故障指示灯，当出现故障时，该指示灯以 3 秒钟为周期循环闪烁；当故障被用户清除时，红色 LED 常灭。红色 LED 在 3 秒钟内闪烁次数代表不同的故障信息，具体关系如下表所示：

The green LED is the power indicator, which is always on when the driver is connected to the power; when the driver cuts off the power, the LED goes out. Red Led is the failure indicator, when there is a failure, the indicator lamp for 3 seconds cycle flashing; when the failure is cleared by the user, red LED often out. Red Led flashes in 3 seconds represent different failure information, as shown in the table below:

序号 Serial number	闪烁次数 SCINTILLATION number	红色指示灯闪烁波形 Red Indicator light flashing waveform	故障说明 Failure description
1	1		过流或相间短路故障 Overcurrent or interphase short circuit fault
2	2		过压故障 Overvoltage fault
3	3		欠压故障 Under voltage fault
4	7		超差报警 Over-tolerance alarm
5	9		相位故障或电流采集故障 Phase failure or current acquisition failure

4.2.2 逻辑控制信号接口，CN2，12PIN 接口/Logic control signal interface, CN2,12PIN interface

名称 Name	功能 Function
IN1+	高速信号：脉冲上升沿有效；in1 高电平时 4.5～28Vdc，低电平时 0～0.5V。为了可靠响应脉冲信号，脉冲宽度应大于 1.5μs。 High speed signal: Pulse rising edge is effective, IN1 high level 4.5 ~ 28 VDC, Low Level 0 ~ 0.5 v. In order to respond reliably to the pulse signal, the pulse width should be greater than 1.5 s.
IN1-	
IN2+	高速信号：脉冲上升沿有效；in2 高电平时 4.5～28Vdc，低电平时 0～0.5V。为了可靠响应脉冲信号，脉冲宽度应大于 1.5μs。 High speed signal: Pulse rising edge is effective, IN2 high level 4.5 ~ 28 VDC, low level 0 ~ 0.5 v. In order to respond reliably to the pulse signal, the pulse width should be greater than 1.5 s.
IN2-	
IN3+	低速信号：脉冲上升沿有效；in3 高电平时 4.5～28Vdc，低电平时 0～0.5V。为了可靠响应脉冲信号，脉冲宽度应大于 5μs。

IN3-	Low speed signal: Pulse rising edge is effective, IN3 high level is 4.5 ~ 28 VDC, low level is 0 ~ 0.5 v. In order to respond to the pulse signal reliably, the pulse width should be greater than 5 S.
OUT+	输出信号，一般做报警输出用，OC 射极开路输出，需要上拉电平，最大上拉电压为 24V。 Output Signal, generally do alarm output, OC open-circuit output, need to pull up level, the maximum pull up voltage of 24V.
OUT-	
15V	15V 电压输出，输出电流最大 10mA，预留 15V voltage output, output current maximum 10mA, reserve
AIN	一路 0-5V 模拟量输入，预留 All the way 0-5V analog input, reserved
GND	EGND，5V 电压参考负极，预留 EGND, 5V voltage reference negative, reserved
RS232-TX	串口 RS232 发送端，TTL-3.3V 电平，设置或配置参数用，预留 Serial port RS232 transmitter, ttl-3.3 v level, setting or configuration parameters used, reserved
RS232-RX	串口 RS232 接收端，TTL-3.3V 电平，设置或配置参数用，预留 Serial port RS232 receiver, ttl-3.3 v Level, setting or configuration parameters used, reserved
5V	提供电压 5V，电流 50mA，预留 Supply Voltage 5V, current 50mA, reserve

4.2.3 电源输入接口，CN1，4PIN 接口/Power input interface, CN1,4PIN interface

信号名称 Signal name	功能说明 Function description
GND	直流电源地 DC power source
+VDC	直流电源正极，供电电压范围：直流 15-50Vdc，推荐 24Vdc 或 36Vdc 工作。 DC Power Supply Positive Pole, supply voltage range: DC 15 - 50VDC, recommended 24VDC or 36VDC work.

4.2.4 Ether CAT 总线通讯输入接口，CN3，8PIN 接口/Ether CAT bus communication input interface, CN3,8PIN interface

引脚号 Pin Number	信号 Signal	功能说明 Function description	
1	TX+	Ether CAT 数据发送正端 Ether CAT data send right	
2	TX-	Ether CAT 数据发送负端 Ether CAT negative end of data	

		transmission	Ether CAT IN
3	RX+	Ether CAT 数据接收正端 Ether CAT positive data reception	
4	RX-	Ether CAT 数据接收负端 Ether CAT negative data receiver	
5	NC	不连接，预留 UNCONNECTED, reserved	
6	NC	不连接，预留 UNCONNECTED, reserved	
7	NC	不连接，预留 UNCONNECTED, reserved	
8	NC	不连接，预留 UNCONNECTED, reserved	

4.2.5 Ether CAT 总线通讯输出接口，CN4，8PIN 接口/Ether CAT bus communication output interface, CN4,8PIN interface

引脚号 Pin Number	信号 Signal	功能说明 Function description	
1	TX+	Ether CAT 数据发送正端 Ether CAT data send right	Ether CAT IN
2	TX-	Ether CAT 数据发送负端 Ether CAT negative end of data transmission	
3	RX+	Ether CAT 数据接收正端 Ether CAT positive data reception	
4	RX-	Ether CAT 数据接收负端 Ether CAT negative data receiver	
5	NC	不连接，预留 UNCONNECTED, reserved	
6	NC	不连接，预留 UNCONNECTED, reserved	
7	NC	不连接，预留 UNCONNECTED, reserved	
8	NC	不连接，预留 UNCONNECTED, reserved	

电源电压在规定范围之间都可以正常工作，驱动器最好采用非稳压型直流电源供电，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直流电压供电，避免电网波动超过驱动器电压工作范围。

The power supply voltage can work normally between the specified ranges. The driver is preferably powered by an unregulated DC power supply, or a transformer buck + bridge rectifier + capacitor filter. Note, however, that the peak voltage ripple after rectification should not exceed its specified maximum voltage. It is recommended that the user supply power with

a DC voltage lower than the maximum voltage to prevent the grid from fluctuating beyond the operating range of the driver voltage.

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 switching power supply, be aware that the output current range of the switching power supply must be set to maximum.

请注意：

Please note:

接线时要注意电源正负极切勿反接；

When wiring, pay attention to the positive and negative poles of the power supply, do not reverse connection;

最好用非稳压型电源；

It is better to use an unstable power supply;

采用非稳压电源时，电源电流输出能力应大于驱动器设定电流的 60%即可；

The output capacity of the power supply current should be greater than 60% of the set current of the driver when an unstable power supply is used;

采用稳压开关电源时，电源的输出电流应大于或等于驱动器的工作电流；

When a regulated switching power supply is adopted, the output current of the power supply shall be greater than or equal to the working current of the driver;

为降低成本， 两三个驱动器可共用一个电源，但应保证电源功率足够大。

To reduce costs, two or three drives can share a power supply, but the power supply should be large enough.

5 通讯协议说明/Protocol specification

5.1 工作模式/Mode of operation

指令输入方式Command	控制变量 Control Variable	对应工作模式 Control Mode
总线指令输入 Bus Command Input	通讯地址 6060H=1	位置模式（PP Mode）
	通讯地址 6060H=3	速度模式（PV Mode）
	通讯地址 6060H=6	回原点模式（HM Mode）
	通讯地址 6060H=8	循环同步位置模式（CSP Mode）

注：EtherCAT Control Mode/各子模式英文缩写对应的含义：

（1）PP Mode：profile position mode

（2）PV Mode：Profile velocity mode

（3）HM Mode：Homing mode

（4）CSP Mode：Cyclic synchronous position mode

5.1.1 位置模式/Positional pattern

PP 模式：

可能需要写入的对象字典：

PP Mode: profile position mode

S/N	Address	对象字典含义Description	设定值 Value	单位 Unit
1	6060H	操作模式Control mode	1	无 None
2	6040H	控制字 Control word	Set as need	无 None
3	607AH	目标位置Target Position	Set as need	Unit
4	6081H	位置模式下的协议速度 Protocol Speed	Set as need	Unit/S
5	6082H	位置模式下的起跳速度和 停止速度Jump speed and stop speed	Set as need	Unit/S
6	6083H	协议加速度 Protocol acceleration	Set as need	Unit/(S*S)
7	6084H	协议减速度 Protocol deceleration	Set as need	Unit/(S*S)
8	6085H	急停减速度，是否使用取 决于 605A 的值 Emergency stop Deceleration, Whether to use depends on the value of 605A	Set as need	Unit/(S*S)
9	605AH	急停减速度是否采用（5：采用；其他值：不采用） Emergency stop Deceleration(5: Yes; other : No)	5 or other	None
10	2000H	电机一圈脉冲数?pulses/r	Set as need	P

CSP 模式：

可能需要写入的对象字典：

CSP Mode：Cyclic synchronous position mode

S/N	Address	对象字典含义Description	设定值 Value	单位 Unit
1	6060H	操作模式Control mode	8	无 None
2	6040H	控制字 Control word	Set as need	无 None
3	607AH	目标位置Target Position	Set as need	Unit
4	2000H	电机一圈脉冲数?pulses/r	Set as need	P

HM 模式：

可能需要写入的对象字典：

HM Mode：Homing mode

S/N	Address	对象字典含义Description	设定值 Value	单位 Unit
1	6060H	操作模式Control mode	6	无 None
2	6040H	控制字 Control word	Set as need	无 None
3	6098H	原点方式 Origin Mode	Set as need	Unit
4	6099-01H	寻找限位开关的速度 To Limit's Speed	Set as need	Unit/S
5	6099-02H	寻找原点的速度 To origin's speed	Set as need	Unit/S
6	609A-00H	回零加/减速度 To Origin's acceleration/deceleration	Set as need	Unit/(S*S)
7	607C-00H	原点偏移量 Origin offset	Set as need	p

5.1.2 速度模式/Speed Pattern

PV 模式：Profile velocity mode

可能需要写入的对象字典：

S/N	Address	对象字典含义Description	设定值 Value	单位 Unit
1	6060H	操作模式Control mode	3	无 None
2	6040H	控制字 Control word	Set as need	无 None
3	60FFH	速度模式下的协议速度 Protocol Speed	Set as need	Unit/S
4	6083+00H	协议加速度 Protocol acceleration	Set as need	Unit/(S*S)
5	6084+00H	协议减速度 Protocol deceleration	Set as need	Unit/(S*S)

5.2 操作说明/Operating instructions

5.2.1 输入输出口设置/I&O settings

驱动器丝印上 IN1~IN3 为单端输入口，对应输入口 1~3，驱动器上 pl+,pl-,dr+,dr-为差分高速输入口，对应输入口 4~5。

IN1~IN3 are single ended input ports, corresponding to Input ports 1-3,
The PL+, PL-, DR+,DR- on the driver are differential high-speed input ports, corresponding to Input ports 4-5.

与 IO 输入信号相关的参数列表：IO Input Singal parameters:

Add	Name	Attribute	Default	Range	Description
2152h+01	IN1, Input Signal Port Function	R/W/S	1	0—32768	1：Origin Singal 2：Left Limit Signal 4：Right Limt Signal
2152h+02	IN2, Input Signal Port Function	R/W/S	2	0—32768	1：Origin Singal 2：Left Limit Signal 4：Right Limt Signal
2152h+03	IN3, Input Signal Port Function	R/W/S	4	0—32768	1：Origin Singal 2：Left Limit Signal 4：Right Limt Signal
2152h+04	IN4, Input Signal Port Function	R/W/S	8	0—32768	1：Origin Singal 2：Left Limit Signal 4：Right Limt Signal
2152h+05	IN5, Input Signal Port Function	R/W/S	0	0—32768	1：Origin Singal 2：Left Limit Signal 4：Right Limt Signal
2153h+01	IN1, Input Port Filtering time	R/W/S	20	1—60000	Unit：50us
2153h+02	IN2, Input Port Filtering time	R/W/S	20	1—60000	Unit：50us
2153h+03	IN3, Input Port Filtering time	R/W/S	20	1—60000	Unit：50us
2153h+04	IN4, Input Port Filtering time	R/W/S	20	1—60000	Unit：50us
2153h+05	IN5, Input Port Filtering time	R/W/S	20	1—60000	Unit：50us

Add	Name	Attribute	Default	Range	Description
2154h+00	输入数字 IO 电平极性配置 Input Level Polarity setting	R/W/S	0	0/1	0: Positive logic 1: Anti logic bit0: IN1 Polarity setting bit1: IN2 Polarity setting bit2: IN3 Polarity setting bit3: IN4 Polarity setting bit4: IN5 Polarity setting
2155h+00	输入数字 IO 口 1 电平, IN1, Input Level	R	0	0—32768	Bit0 : external input 1, and so on
60FDh+00	输入IO状态, IO Input Status	R	-	-	Bit0: negative limit, bit1: positive limit, bit2: origin signal

1.2.1.2 Output

(1) If the polarity of the power supply is reversed, it may cause damage to the Driver.

(2) The output is in the form of an open collector, with Max. current 50mA and Max. external power supply voltage 25V. The load of the switch output signal CAN'T exceeded range. And the Output CAN'T directly connected to the power supply, or cause Damage to the driver.

(3) If the load is an inductive load such as a relay, it is necessary to anti-parallel the freewheeling diode at both ends of the load.if freewheeling diode connected in reverse will cause damage to the steper motor driver:

Add	Name	Attribute	Default	Range	Description
2005h+01	OUT1, Functional configuration settings	R/W/S	1	0—4	Bit0: Alarm output Bit1: ready output Bit2: In place output
2005h+02	OUT2, Functional configuration settings	R/W/S	1	0—4	Bit0: Alarm output Bit1: ready output Bit2: In place output
2008h+00	OUT1, Configuration settings	R/W/S	0	0/1	0: Coupling conduction when there is an alarm, ready or in place 1: When there is an alarm, ready or in place, the definition of the coupling cut-off position is: bit0: out1, and so on

5.2.2 驱动器节点地址/Driver ID address

The main station can automatically scan ID address or manually set ID address.

(1) Dial switch settings

When the 2151h object is 0, use the dial switch to set the slave address.

(Note: This address setting is only valid when the driver is re-powered on.

(2) Read fixed ID aliases

The main station can configure ID alias to EEPROM0x0004 word address. When the object data in 2051h is 0 and the spin code address on the front panel of the driver is 0, the 0x0004 word address data will be set as the ID alias after the driver is powered back on

(3) Set ID aliases

When 2151h set to 1, the driver will use data of the 2150h object as ID aliases(re-power on).

Add	Name	Attribute	Default	Range	Description
2150h+00	slave address	R/W/S	1	0-65535	slave address
2151h+00	Source of Slave Address	R/W/S	0	0-2	0: sourced from the dial code, when the dial code is 0, sourced from EEPROM 1: sourced from 2150h

5.2.3 电机旋转方向设定/Motor rotation direction setting

The main station sends position commands, and setting this function

Add	Name	Attribute	Default	Range	Description
2051h+00	Motor rotation direction	R/W/S	0	0/1	0: Motor running direction remains unchanged 1: Reverse direction of motor operation

5.2.4脉冲每转/细分/电子齿轮/Pulse per revolution/sub-fraction/electronic gear

The stepper motor does not have separate electronic gear parameters, just set pulses/r

Add	Name	Attribute	Default	Range	Description
2001h+00	Pulses per revolution	R/W/S	50000	200-512000	___pulses/revolution

5.2.5 保存参数/Save parameter

（1）Save parameters:
The main station saves user parameters to EEPROM by operating 0x1010-04, If the driver detects that the data sent by the master control for 0x1010-04 is 0x65766173, the driver will save the current parameters to EEPROM. (Note: During the EEPROM write operation, please do not turn off the power, otherwise it may cause incorrect data to be written. If this happens, please reset all parameters and save the parameters).
(2) Restore factory: The main station restore the factory value by operating 0x1011-04, if the driver detects that the data sent by the master control for 0x1011-04 is 0x64616f6c, the driver will restore the factory default value.

5.2.6 参数表/Parameter list

1.厂家参数 Default pareameters as below：

Add	Name	Attribute	Default	Range	Description
2000h+00	Peak Current	R/W/S	3200	1-Max.Current	unit: mA,
2001h+00	Pulses per revolution	R/W/S	50000	200-512000	unit: pulses/revolution
2002h+00	Standby time	R/W/S	500	100—10000	unit: ms
2005h+01	OUT1, Functional configuration settings	R/W/S	1	1—4	Bit0: Alarm output Bit1: ready output Bit2: In place output
2005h+02	OUT2, Functional configuration settings	R/W/S	1	1—4	Bit0: Alarm output Bit1: ready output Bit2: In place output
2008h+00	OUT1, Configuration settings	R/W/S	0	0/1	0: Coupling conduction when there is an alarm, ready or in place 1: When there is an alarm, ready or in place, the definition of the coupling cut-off position is: bit0: out1, and so on
2009h+00	Pulse filtering	R/W/S	0	0/1	0: Disable Pulse filtering 1: Enable Pulse filtering
2010h+02	Filtering time	R/W/S	1000	50—25600	50—25600us
2013h+00	Current loop self adjustment	R/W/S	1	0/1	0: Disable 1: Enable
2015h+00	Current Loop Kp	R/W/S	1000	200—32767	when Enable Current loop self adjustment: read only When Disable Current loop self adjustment: overite
2016h+00	Current Loop Ki	R/W/S	200	0—32767	
2017h+00	Current Loop Kc	R/W/S	100	80—300	Automatically obtained
2020h+00	Motor resistance	R/W/S	1000	1—20000	unit: mOhms
2021h+00	Motor inductance	R/W/S	1	1—6000	unit: uH
2024h+00	Closed/pen loop control selection	R/W/S	2	0~2	1: Open loop 2: Closed Loop
2025h+00	Control Mode	R/W/S	5	0—10	0：Dial Switch, 1:Lead 2:PM 3:FOC 4: Self-detect 5:CL
2026h+00	Lock shaft current	R/W/S	50	0—100	Unit: %, Open Loop
2029h+00	Number of Enocer lines	R/W/S	1000	200—60000	1000 lines: 4000p/r
2030h+00	Encoder position tolerance alarm value	R/W/S	1000	1—60000	pules
2039h+00	Higher 16 bit displacement	R	0	0~65535	Position Command receved pulses. higher 16 bits of the data: puleses
2040h+00	Lower16 bit displacement	R/W	0	0~65535	Position Command receved pulses. higher 16 bits of the data: puleses, and write 1 to clear datas.
2041h+00	higher 16bit Encoder feedback	R	0	0~65535	Pulses from Encoder read: higher 16 bits of the data: puleses
2042h+00	lower 16bit Encoder feedback	R/W	0	0~65535	Pulses from Encoder read: higher 16 bits of the data: puleses, and write 1 to clear datas.

Add	Name	Attribute	Default	Range	Description
2051h+00	Motor rotation direction	R/W/S	0	0/1	0: Motor running direction remains unchanged 1: Reverse direction of motor operation
2053h+00	In place signal output resistance state	R/W/S	0	0~1	0: Low resistance 1: High resistance
2056h+00	Fault detection selection	R/W/S	0xc3	0—0xffff	Review relevant documents before making modifications
2057h+00	Enable signal clearing fault	R/W/S	0	0/1	0: Not allow 1: Allow
2058h+00	Current soft start time	R/W/S	1	0—10000	unit:50us
2083h+00	swing left and right when powered on	R/W/S	0	0/1	0: No action; 1: Swing left and right
2137h+00	Position Loop KP	R/W/S	120	0~150	None
2138h+00	Position Loop KI	R/W/S	50	0~150	None
2139h+00	Position Loop KVFF	R/W/S	70	0~150	None
2140h+00	Speed Loop KP	R/W/S	60	0~150	None
2150h+00	slave address	R/W/S	1	1—65535	slave address
2151h+00	Source of Slave Address	R/W/S	0	0~2	0: sourced from the dial code, when the dial code is 0, sourced from EEPROM 1: sourced from 2150h
2152h+01	IN1, Input Signal Port Function	R/W/S	1	0—32768	1：Origin Singal 2：Left Limit Signal 4：Right Limt Signal
2152h+02	IN2, Input Signal Port Function	R/W/S	2	0—32768	1：Origin Singal 2：Left Limit Signal 4：Right Limt Signal
2152h+03	IN3, Input Signal Port Function	R/W/S	4	0—32768	1：Origin Singal 2：Left Limit Signal 4：Right Limt Signal
2152h+04	IN4, Input Signal Port Function	R/W/S	8	0—32768	1：Origin Singal 2：Left Limit Signal 4：Right Limt Signal
2152h+05	IN5, Input Signal Port Function	R/W/S	0	0—32768	1：Origin Singal 2：Left Limit Signal 4：Right Limt Signal
2153h+01	IN1, Input Port Filtering time	R/W/S	20	1—60000	Unit: 50us
2153h+02	IN2, Input Port Filtering time	R/W/S	20	1—60000	Unit: 50us
2153h+03	IN3, Input Port Filtering time	R/W/S	20	1—60000	Unit: 50us
2153h+04	IN4, Input Port Filtering time	R/W/S	20	1—60000	Unit: 50us
2153h+05	IN5, Input Port Filtering time	R/W/S	20	1—60000	Unit: 50us
2154h+00	Input Level Polarity	R/W/S	0	0/1	0: Positive logic 1: Anti logic bit0: IN1 Polarity setting bit1: IN2 Polarity setting bit2: IN3 Polarity setting bit3: IN4 Polarity setting bit4: IN5 Polarity setting
2155h+00	IN1, Input Level	R	0	0-32768	Bit0 : external input 1, and so on
60FDh+00	Input Status	R	-	-	Bit0: negative limit, bit1: positive limit, bit2: origin signal
2093h+00	Fault clearing record	R/W			

2.模式及控制参数 Control Command Parameters

Add	Name	Attribute	Description
6040h+00	Control Word	R/W	Control Word
6041h+00	Status Word	R	Status Word
6060h+00	Control Mode	RW	1-PP Mode：profile position mode 3-PV Mode：Profile velocity mode 6-HM Mode：Homing mode 8-CSP Mode：Cyclic synchronous position mode
6061h+00	Pattern Query	R	Display Control Mode
6062h+00	Position Command	R	Display motor command poistion
6064h+00	Actual position	R	Display motor actual poistion
606Bh+00	Speed Command	R	Display motor speed
606Ch+00	Actual Speed	R/W	Display actual speed，unit:RPM
607Ah+00	Target position	R/W	PP mode target position, If the control word is set to start motion, it transitions to a valid command position
607Ch+00	Origin Offset	R/W	Origin Offset
6081h+00	Trapezoidal velocity	R/W	PP mode: Maximum speed of trapezoidal curve
6082h+00	Start/Stop Speed	R/W	PP Mode,Jump speed and stop speed
6083h+00	Trapezoidal acceleration	R/W	Acceleration of trapezoidal curve
6084h+00	Trapezoidal deceleration	R/W	Deceleratio of trapezoidal curve
6085h+00	Quick stop deceleration	R/W	quick stop deceleration,Whether to use depends on the value of 605A
6098h+00	Back to home	R/W	Back to Home mode
6099h+01	To Limit Speed	R/W	the speed of the limit switch
6099h+02	Homing Speed	R/W	the speed of homing
609Ah+00	Homing acceleration	R/W	the acceleration of homing
60F4h+00	Position Error	R	Position Error
60FDh+00	Input IO status	R	Bit0: negative limit, bit1: positive limit, bit2: origin signal
60FFh+00	Target Speed	R/W	PV mode, Max. Speed

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

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

（+86）156 5677 5078

Email：Simon@stepping-motor.cn

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