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EC57-K01

Bus type open and closed loop stepper driver

User ManualV1.0.0

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1. Product Introduction

1.1Product Overview

EC57-K01Bus type open and closed loop integrated stepper driver adoptsEtherCATBus communication interface,EtherCATSlave technology, vector

The control technology, built-in micro-segmentation technology, adaptive filtering technology, and closed-loop control technology are integrated to achieve real-time control and real-time operation of the stepping system.

Real-time data transmission optimizes the performance of the stepper motor: low and medium speeds have excellent stability and ultra-low noise; high-speed torque is greatly improved, expanding

It expands the speed application range of stepper motors; smooth and precise pure sinusoidal current vector control technology effectively reduces motor heating.

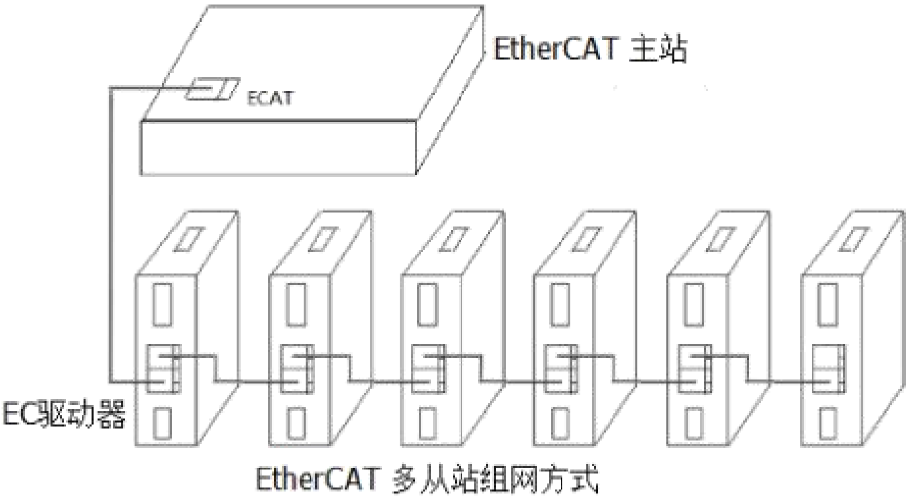
EC57-K01The bus-type open-closed loop integrated stepper driver has perfectly supported many master stations such as Beckhoff, Omron, Positive Motion, Inovance, and Xinjie.

control system, and has been widely used in textiles, robots, lithium battery equipment,3CElectronics and other industries.

1.2Product Features

- New Generation32BitARMTechnology, high cost performance, good stability, excellent noise and vibration performance
- useEtherCATSlave technology, supportCIA301as well asCIA402Sub-protocol, supportCSP,PV,PP,HMmodel
- Users canethercatSet the current, subdivision and lock current by bus or serial communication
- Built-in single-axis controller function: users can set synchronous position mode, speed mode, position mode, and homing mode through the bus
- 54 opto-isolated programmable input interfaces to receive external control signals and realize driver limit, origin, emergency stop and other functions
- Built-in micro-segmentation
- Built-in motor parameter setting
- Any current reduction ratio can be set when stationary
- Convenient current setting
- With overvoltage, undervoltage and other protection functions
- Good stability, excellent noise and vibration performance
- Support position control, speed control and other modes
- Pure sinusoidal current vector control effectively reduces motor heating
- 3Opto-isolated programmable output interface, output driver status and control signals
- With arbitrary subdivision adjustment, you can change the subdivision at will
- Closed loop can set out-of-tolerance alarm value
- Excellent stability at low frequencies and small subdivisions
- Voltage Range:DC 20-50V

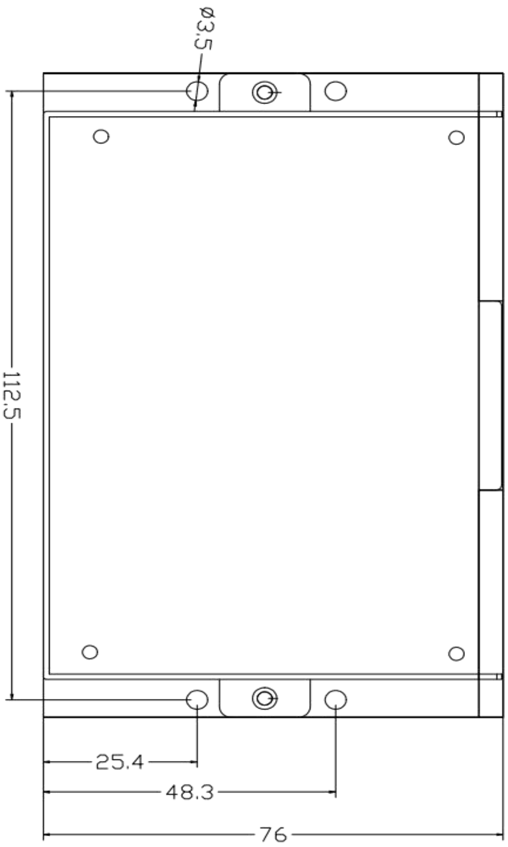
1.3Networking Solution


EtherCAT 主站
ECAT
EC驱动器
EtherCAT 多从站组网方式

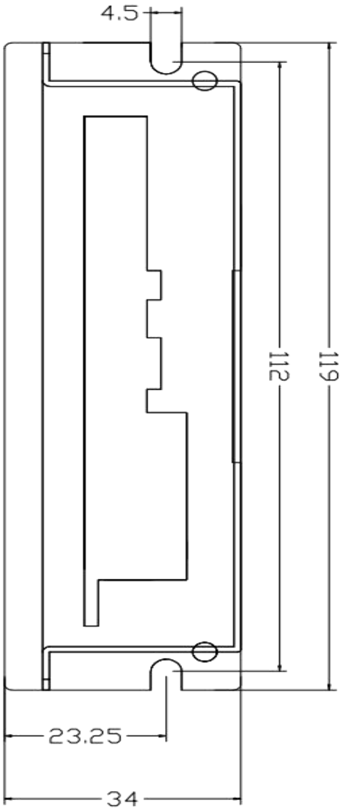
picture1Bus type stepping networking solution

2. Installation dimensions and interface definition

2.1Mechanical installation drawing


ø3.5
112.5
25.4
48.3
76

Front installation diagram


4.5
112
119
23.25
34

Side installation diagram

picture2.1 Installation Dimensions (Unit:mm)

2.2Installation Notes

1) When installing the driver, please use side installation for better heat dissipation. When designing the installation dimensions, consider the terminal size and wiring.

2) In order to ensure good heat dissipation conditions, a larger installation interval must be reserved as much as possible during actual installation. If necessary, install the

Install a fan to form strong air convection on the bottom of the driver to assist in heat dissipation and ensure that the driver operates within a reliable operating temperature range.

2.3Electrical Specifications

illustrate	EC57-K01Bus type open and closed loop stepper driver			
	Minimum	Typical Value	Maximum	unit
Output Current	0	-	6000	mA
Input power voltage	20	36	50	VDC
Control signal input current	7	10	16	mA
Insulation resistance	50	-	-	MΩ

2.4Use environment and parameters

Cooling method		Natural cooling, fan cooling
Usage Environment	occasion	Do not place it near other heating equipment. Avoid dust, oil mist, corrosive gas, high humidity and strong vibration. Do not place it near flammable gas and conductive dust.
	temperature	- 25℃~55℃
	humidity	40~90%RH
	vibration	10~55Hz/0.15mm
Storage temperature		- 25℃~65℃

3. Driver interface and wiring description

3.1Driver Interface Introduction

surface3.1Driver interface

name		Function	illustrate
Dip switchSW1-4		Set the open and closed loop mode, current, Motor rotation direction	SW1: Driver open/closed loop selection SW2-3: Current selection SW4: Direction switch
ALM		Alarm indicator light	Overcurrent, overvoltage, phase loss, EEPROMFlashing when programming error occurs
PWR		Power indicator	The light is on when the power is normal
ECAT IN/OUT		EtherCATCommunication port	ECAT IN:Enter ECAT OUT:out
IN/OUT	Xcom	Single-ended input common Correct connection is effective	Connect to anode
	Ycom	Single-ended output common port Compatible with common cathode and common anode	Compatible with both common cathode and common anode connection
	X0	Single-ended input	Low-speed digital signal input interface
	X1		
	X2		
	X3		
	X4		
	Y0	Single-ended output	Low-speed digital signal output interface
	Y1		
	Y2		
UART	3.3V	Serial communication	Serial port downloadCOEparameter
	GND		
	RxD		
	TXD		
ENCODER	ENZ+	Encoder interface	ZSignal level detection
	ENZ-		
	ENB+		Connect encoderA,BSignal, Note Line Sequence
	ENB-		
	ENA+		
	ENA-		
	VCC	Encoder power interface	Encoder5VPower supply positive terminal
	GND		Encoder5VNegative terminal of power supply
MOTOR	A+	Motor interface	Two-phase stepper motor wiring port, if For closed-loop motors, please pay attention to the line sequence
	A-		
	B+		
	B-		

VDC	VDC	Power interface	Switching Power SupplyDC20-50V
	GND		

3.2Dip switch

surface3.2DIP switch function description

name	Function	illustrate
Dip switchSW1-SW4	Set the open-loop and closed-loop modes. Flow, motor rotation direction	SW1: Driver open/closed loop selection
		SW2-SW3: Current selection
		SW4: Direction switch

3.2.1Open and closed loop mode settings

Open and closed loop modes can be switched by dialingSW1Select as shown in the following table.

surface3.3Open and closed loop mode settings

SW1	Working Mode
off	Open Loop
on	closed loop

3.2.2Current setting

In open and closed loop mode, you can dialSW2-SW3Set the current size, total4Current can be selected, compatible42-86Electric

If the user needs to adjust the current, the upper computer software orECATMaster station settings, but need toSW2-SW3Dial tooffstate

Can be adjusted.

surface3.4Current setting

SW2	SW3	Open Loop		closed loop	
		Peak	RMS	Imin	Imax
off	off	1.0	0.7	0.2	0.7
on	off	2.1	1.5	0.3	1.2
off	on	4.2	3.0	0.5	2.5
on	on	5.6	4.0	1.0	4.8

3.2.3Direction switch settings

Users can dialSW4Select the initial motor rotation direction as shown in the following table.

surface3.5Direction switch settings

SW4	Initial rotation direction
off	Positive direction
on	Reverse direction

3.3Indicator Lights

EC57-K01The indicator light of the bus-type open-closed loop integrated stepper driver is a retractable patchled, there is a small cutout on the drive to observe

The basic definition of indicator light status is as follows:3.6shown.

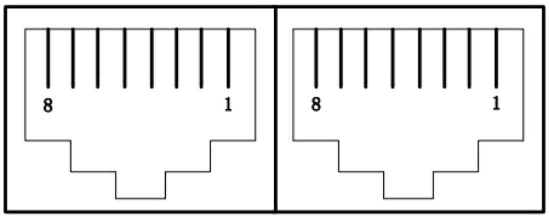
surface3.6Indicator lamp definition

name	describe	Function	illustrate
ALM	redled	Power supply, save parameter function indication, restore factory settings Setting function indication, dial status switching indication, Alarm indicator light	When the power is on normally, the green light is always on and the red light is off. Save parameters, restore factory settings, and switch to the DIP state When an abnormality occurs in the equipment, the red light flashes to warn. See Chapter 7 for the rules of shimmering;
PWR	greenled		

3.4 EC57-K01Communication interface

EC57-K01The communication interface of the bus-type open-closed loop integrated stepper driver adopts the standard one-pieceRJ45Socket, as shown below3.1shown.

The left port is the input port, which is connected to the output port of the previous driver; the right port is the output port, which is connected to the input port of the next driver.



picture3.1One-pieceRJ45Interface Diagram

3.5Input signal interface

3.5.1Input signal description and wiring diagram

EC57-K01The bus-type open-closed loop integrated stepper driver provides a programmable interface with photoelectric isolation input.

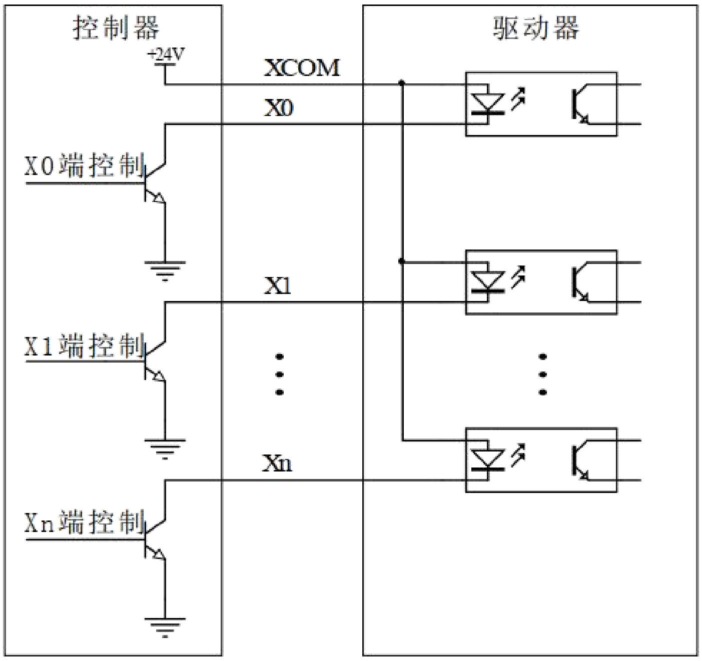
The input interface adopts common anode connection and only supportsNPNWiring mode, external +24VTo ensure reliable conduction of the optocoupler inside the driver, it is required

The driving current of the controller is at least10mA, the input level pulse width needs to be greater than10msOtherwise, the drive may not respond normally.

The line diagram is shown in the figure3.2,3.3shown.

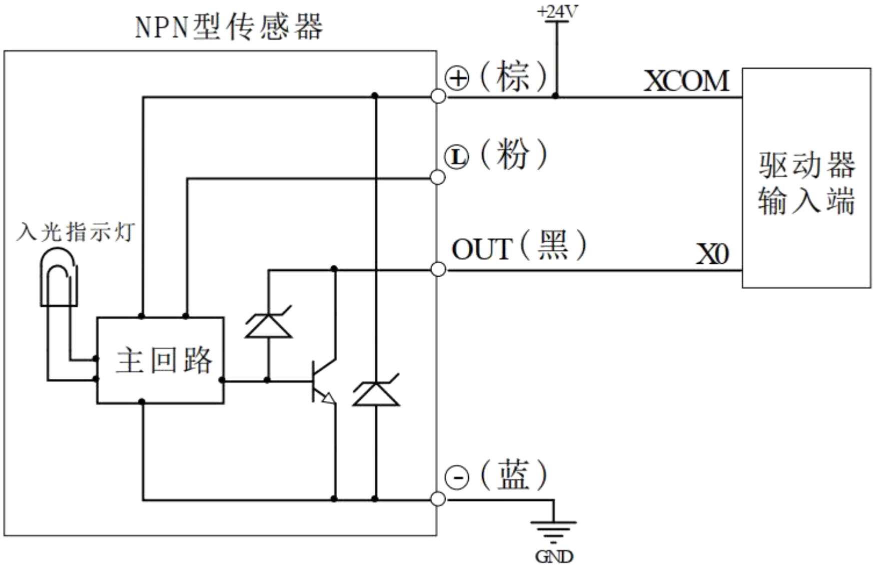
After the driver is powered on normally, the effective level of the input interface is initially set to rising edge or high level by default. The user can also configure the input interface through the master station.

The initial default effective level of the port is the falling edge or low level. For specific configuration, please refer to4.2Definition and description of registers within the subsection.


控制器
+24V
XCOM
X0
X0端控制
X1
X1端控制
Xn
Xn端控制
驱动器

picture3.2Input signal wiring diagram

byNPNFor example, the sensor is connected to the driverX0The wiring diagram of the terminal is as follows:


NPN型传感器
+24V
⊕（棕）
Ⓛ（粉）
OUT（黑）
⊖（蓝）
XCOM
X0
驱动器输入端
入光指示灯
主回路
GND

picture3.3 NPNType sensor wiring diagram

Notice:EC57-K01Bus type open and closed loop integrated stepper driver default input interface support24VSignal, if the user needs5VSignal Control

If it is not set, you need to communicate with our business or technical personnel to make changes.

3.5.2Input signal interface function

EC57-K01The bus-type open-closed loop integrated stepper driver has a variety of configurable functions at its input port. Users can set the corresponding

The inputIOport function, each inputIOThe ports can be set up to5Functions, see the table below3.7For specific usage, please refer to chapter4.2

Internal description.

surface3.7Input interface function definition

name		illustrate	Functional Description
IN	X0	Low speed digital signal Input Interface	1: Origin signal 2: Positive limit 4: Negative limit 8: Quick stop 16: Custom
	X1		
	X2		
	X3		
	X4		
	XCOM	Single-ended input common Correct connection is effective	Connect +24VSignal

3.5.3Input signal interface function description

The input signal interface function description is as follows3.8As shown:

surface3.8Input interface function description

Function	describe
1: Origin signal	Connect the origin sensor;
2: Positive limit signal	Connect the positive limit sensor;
4: Negative limit signal	Connect to negative limit sensor;
8: Quick stop signal	Stop the motor;
16: Custom	Users can customize the function of a certain port;

3.6Output signal interface

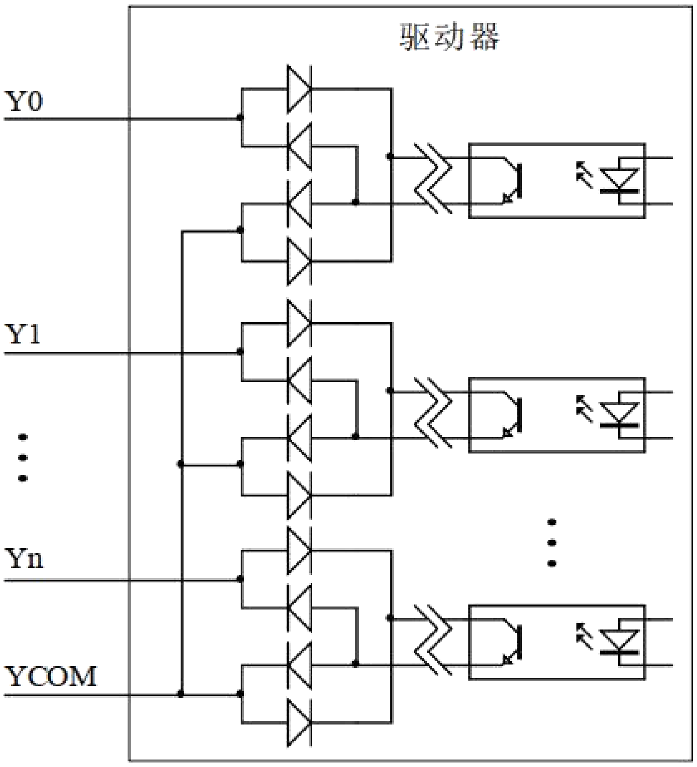
3.6.1Output signal description and wiring diagram

EC57-K01The bus-type open-closed loop integrated stepper driver provides a programmable interface with optically isolated output.

The output interface is compatible with common cathode and common anode connection, supportingNPNWiring andPNPThere are two wiring methods, which can support high level and low level effective Master station controller.

After the driver is powered on normally, the effective state of the output interface is initially set to normally open output by default. The user can also configure the effective state of the output interface through the master station. The default initial state is normally closed output. For specific configuration, please refer to chapter4.2Definition and description of internal registers.

The following figure is a wiring diagram of the output signal interface:



picture3.4Output signal wiring diagram

3.6.2Output signal interface function

EC57-K01The bus-type open-closed loop integrated stepper driver has a variety of configurable functions at its output port. Users can set the corresponding

The output should beIOport function, each outputIOThe ports can be set up to4Functions, see the table below3.9For specific usage, please refer to chapter4.2

Internal description.

surface3.9Output interface function definition

name		illustrate	Functional Description
OUT	Y0	Low speed digital signal Output Interface	1: Alarm output 2: Output in place 4:ZSignal output 8: Master control output (default)
	Y1		
	Y2		
	YCOM	Single-ended output common port Compatible with common cathode and common anode	Compatible with both common cathode and common anode connection

3.6.3Output signal interface function description

The output signal interface function description is as follows3.10As shown:

surface3.10Output interface function description

Function	describe
1: Alarm output signal	When the driver is in alarm state, the signal output is valid;
2: Output signal when in position	When the planned trajectory is completed in position mode, the signal output is valid;
4:ZSignal output	Output encoderZSignal status;
8: Master control output (default)	The master station can control the output of a certain port;

3.7Serial communication signal interface

name		illustrate	Function
UART	RxD	Serial communication interface	Connect to the serial communication interface and need to communicate with the external serial signal line Fork connection
	TXD		
	3.3V	Serial communication power interface	3.3VPower supply positive terminal
	GND		3.3VNegative terminal of power supply

3.8Encoder input signal interface

name		illustrate	Function
Encoder	ENZ+	Encoder interface	Connect encoderA,B,ZSignal, pay attention to the line sequence
	ENZ-		
	ENB+		
	ENB-		
	ENA+		
	ENA-		
	VCC	Encoder power interface	Encoder5VPower supply positive terminal
	GND		Encoder5VNegative terminal of power supply

3.9Motor control output interface

name		illustrate	Function
Motor	A+	Motor interface	Two-phase stepper motor connection port If it is a closed-loop motor, pay attention to the line sequence
	A-		
	B+		
	B-		

3.10Power input interface

name		illustrate	Function
VDC	VDC	Power interface	Power Input DC20V~50V
	GND		

4. Parameter Description and Settings

4.1All parameters

4.1.1Communication parameters

index	Sub-index	name	illustrate	type	property	default value	scope
1000	0	Device Type	andCIAConsistent rules	UINT32_t	RO	0x04020192	0~0xFFFFFFFF
1001	0	Error register		UINT8_t	RO	0	0~255
1008	0	Device Name	Mainly product silk screen printing	str	RO	EC57-K01	0~32767
1009	0	Hardware version	PCBBoard version	str	RO	-	0~32767
100A	0	Software Version	Version of the burning program	str	RO	-	0~32767
1010	00	Number of sub-indexes	. .	UINT16_t	RO	4	0~32767
	01	Save all parameters	Save command:0x65766173	UINT32_t	R W	0	0~0xFFFFFFFF
	02	Save communication parameters	Same as above	UINT32_t	R W	0	0~0xFFFFFFFF
	03	Save factory parameters	Same as above	UINT32_t	R W	0	0~0xFFFFFFFF
	04	Save motion parameters	Same as above	UINT32_t	R W	0	0~0xFFFFFFFF
1011	0	Number of sub-indexes	. .	UINT16_t	RO	4	0~32767
	01	Restore all parameters to factory default value	Read command:0x64616f6c	UINT32_t	R W	0	0~0xFFFFFFFF
	02	Restore communication parameters to factory default value	Same as above	UINT32_t	R W	0	0~0xFFFFFFFF
	03	Restore motion parameters to factory default value	Same as above	UINT32_t	R W	0	0~0xFFFFFFFF
	04	Restore user parameters to factory default value	Same as above	UINT32_t	R W	0	0~0xFFFFFFFF
1018	00	Number of sub-indexes	. .	UINT16_t	RO	4	0~32767
	01	ManufacturerID	supplierIDNumber	UINT32_t	RO	-	0~0xFFFFFFFF
	02	Product Code		UINT32_t	RO	0x69673537	0~0xFFFFFFFF
	03	Modify the code		UINT32_t	RO	-	0~0xFFFFFFFF
	04	Serial Number		UINT32_t	RO	-	0~0xFFFFFFFF

1600	00	Number of sub-indexes	PDOThe default number of mapping objects	UINT16_t	R W	3	0~32767
	01-08	RXPDOMapping Objects Group1	defaultRXPDOMapping object	UINT32_t	R W	. .	0~0xFFFFFFFF
1601	00	Number of sub-indexes	PDOThe default number of mapping objects	UINT16_t	R W	6	0~32767
	01-08	RXPDOMapping Objects Group2	defaultRXPDOMapping object	UINT32_t	R W	. .	0~0xFFFFFFFF
1602	00	Number of sub-indexes	PDOThe default number of mapping objects	UINT16_t	R W	5	0~32767
	01-08	RXPDOMapping Objects Group3	defaultRXPDOMapping object	UINT32_t	R W	. .	0~0xFFFFFFFF
1603	0	Number of sub-indexes	PDOThe default number of mapping objects	UINT16_t	R W	7	0~32767
	01-08	RXPDOMapping Objects Group4	defaultRXPDOMapping object	UINT32_t	R W	. .	0~0xFFFFFFFF
1A00	0	Number of sub-indexes	PDOThe default number of mapping objects	UINT16_t	R W	6	0~32767
	01-08	TXPDOMapping Objects Group1	defaultTXPDOMapping object	UINT32_t	R W	. .	0~0xFFFFFFFF
1A01	0	Number of sub-indexes	PDOThe default number of mapping objects	UINT16_t	R W	5	0~32767
	01-08	TXPDOMapping Objects Group2	defaultTXPDOMapping object	UINT32_t	R W	. .	0~0xFFFFFFFF
1C00	00	Number of sub-indexes		UINT16_t	RO	4	0~32767
	01	Mailbox output type		UINT8_t	RO	1	0~255
	02	Email Input Type		UINT8_t	RO	2	0~255
	03	Process data output type		UINT8_t	RO	3	0~255
	04	Process data input type		UINT8_t	RO	4	0~255
1C12	0-04	PXPDOdistribute		UINT16_t	R W	1600	0~32767
1C13	0-02	TXPDOdistribute		UINT16_t	R W	1A00	0~32767
1C32	0-0A	RXPDOManagement parameters		UINT16_t	RO	. .	0~32767
1C33	0-0A	TXPDOManagement parameters		UINT16_t	RO	. .	0~32767

4.1.2Manufacturer customized parameters

index	Sub-index	name	illustrate	type	property	default value	scope
2000	0	Slave Address	Set the slave address by yourself through the serial port ； Note2001HSettings;	UINT16_t	R/W/S	1	0~65535
2001	0	Slave address source	0: Derived from the address assigned by the master station 1: Derived from2000HSetting the address	UINT16_t	R/W/S	0	0~1
2002	0	Open and closed loop motor operation Towards	whenSW4forOFFWhen the motor is in the initial running direction, the master station can be used to set the motor； 0： The motor running direction remains unchanged 1： Motor direction is reversed	UINT16_t	R/W/S	0	0~1
2003	1	Open loop lock machine current reduction time	After stopping operation, the flow reduction time unit:ms	UINT16_t	R/W/S	500	10~3000
	2	Open loop lock machine current reduction percentage Compare	After stopping operation, the lock current percentage unit:%	UINT16_t	R/W/S	50	0~100
2004	0	Open loop peak current setting	whenSW2-SW3All forOFFThe open loop peak current can be set by the master station ； unit:mA	UINT16_t	R/W/S	1400	100~7000
2005	0	Open and closed loop subdivision settings	The number of pulses required for one revolution; unit:Pul/rev	UINT16_t	R/W/S	10000	6400~51200
2006	0	Open and closed loop lock machine enable set up	0: Do not lock the device 1： Lock the machine	UINT16_t	R/W/S	0	0~1
2007	0	Current loop self-regulation enabled	Current loopPIPower-on self-tuning function: 0: Enable 1: Disable	UINT16_t	R/W/S	0	0~1
2008	0	Open and closed loop current loopKP	When auto-tuning is enabled, this item is read-only; When disabled, users can rewrite	UINT16_t	R/W/S	6000	50~32767
2009	0	Open and closed loop current loopKI	When auto-tuning is enabled, this item is read-only; When disabled, users can rewrite	UINT16_t	R/W/S	twenty four	10~2000
200A	0	Open and closed loop current loopK	Automatically acquired, no modification by customers allowed	UINT16_t	R/S	-	0~32767
200B	0	Open loop electric lock shaft continues time	unit:ms	UINT16_t	R/W/S	50	10~3000
200C	0	Open loop electric lock shaft continues Time Selection	0: Default axis lock duration 1:200BHSetting duration	UINT16_t	R/W/S	0	0~1
200D	0	Bus voltage	unit:mV	UINT16_t	R	-	0~65535
200E	0	Out-of-tolerance alarm enable	0: Disable out-of-tolerance alarm 1: Enable out-of-tolerance alarm	UINT16_t	R/W/S	1	0~1
200F	0	Out-of-tolerance alarm value	Set the out-of-tolerance alarm angle value 1represent0.09°,1000represent90°	UINT16_t	R/W/S	1000	0~4000

2010	0	Total external locationsH	The accumulated value of the received position command high16Position (reserved)	UINT16_t	R	0	0~65535
2011	0	Total external locationsL	The accumulated value of the received position command Low16Position (reserved) Note: Write1Clear counter	UINT16_t	R/W	0	0~65535
2012	0	Speed limit	Used to determine the received command speed is No speeding; Unit: rpm	UINT16_t	R/W	3000	0~3000
2013	0	Automatic movement after power on	0: Normal standby after power on 1: The motor rotates forward after power-on30°, and then reverse15°Enter standby mode	UINT16_t	R/W/S	0	0~1
2014	0	enterIOstate	bit0Corresponding input portX0state, bit1Corresponding input portX1Status, and so on	UINT16_t	R	-	0~65535
2015	0	FIRFilter Enable	0: No filtering,1: Filtering (Temporarily reserved)	UINT16_t	R/W/S	0	0~1
2016	0	FIRFilter time constant	unit:ms (Temporarily reserved)	UINT16_t	R/W/S	0	50~25600
2017	0	True speed reference	Corresponding object dictionary0x606C	UINT16_t	R	0	0~32767
2018	0	Position error value	Deviation between encoder and command	INT16_t	R	0	- 32767~32767
2019	0	Open-loop and closed-loop mode switching	whenSW1forOFFWhen the open-loop and closed-loop modes are switched, the master station can be used to switch between them; 0: Open loop control 1: Closed loop control	UINT16_t	R/W/S	0	0~32767
201A	1	Driver software version		UINT16_t	R	-	0~32767
	2	Hardware version		UINT16_t	R	-	0~32767
	3	Bus level software version		UINT16_t	R	-	0~32767
201B	0	Fault detection enable configuration	Software fault detection enable configuration; bit0: Overcurrent bit1: Overvoltage bit2:EEPROM bit3: Command overspeed bit11: Op amp failure 0：Shield this fault detection 1: Enable corresponding fault detection	UINT16_t	R/W/S	15	0~65535
201C	1	Fault list1	The latest alarm record, others are Historical alarm records	UINT16_t	R	-	0~65535
	2	Fault list2	Fault list1A previous alarm	UINT16_t	R	-	0~65535
	3	Fault list3	Fault list2A previous alarm	UINT16_t	R	-	0~65535

	4	Fault list4	Fault list3A previous alarm	UINT16_t	R	-	0~65535
	5	Fault list5	Fault list4A previous alarm	UINT16_t	R	-	0~65535
	6	Fault list6	Fault list5A previous alarm	UINT16_t	R	-	0~65535
	7	Fault list7	Fault list6A previous alarm	UINT16_t	R	-	0~65535
	8	Fault list8	Fault list7A previous alarm	UINT16_t	R	-	0~65535
	9	Fault list9	Fault list8A previous alarm	UINT16_t	R	-	0~65535
201D	0	Clear fault record enable Bit Selection	0: Do not clear historical fault records 1: Clear historical fault records	UINT16_t	R/W	0	0~1
201E	0	Clear current fault enable Bit Selection	0: Do not clear the current fault 1: Clear the current fault	UINT16_t	R/W	0	0~1
201F	0	Motor does not work Query	0x2: Command overspeed	UINT16_t	R	-	0~32767
2020	0	model1In-place query	0：Planning is completed and in place 10：The arrival signal comes from the driver	UINT16_t	R	-	0~32767
2021	0	Enter a numberIOPort Level Polarity Configuration	bit0: Input portX0polarity bit1: Input portX1Polarity and so on; bit5-bit15:reserve And so on 0:constant 1: Negate	UINT16_t	R/W/S	0	0~65535
2022	1	Enter a numberIOmouthX0 Feature Selection	Each sub-indexbitOne bit corresponds to Function selection, such as setting input port X0For positive limit function, set 2022:1The value of0x0002; bit0: Origin signal bit1: Positive limit bit2: Negative limit bit3: Quick stop bit4: Custom bit5-bit15:reserve See chapter '3.2.1Input signal' Description of	UINT16_t	R/W/S	4	0~255
	2	Enter a numberIOmouthX1 Feature Selection		UINT16_t	R/W/S	2	0~255
	3	Enter a numberIOmouthX2 Feature Selection		UINT16_t	R/W/S	1	0~255
	4	Enter a numberIOmouthX3 Feature Selection		UINT16_t	R/W/S	8	0~255
	5	Enter a numberIOmouthX4 Feature Selection		UINT16_t	R/W/S	0	0~255
2023	1	Enter a numberIOmouthX0 Filter time	Set the input portX0-X4Filter time; unit:us	UINT16_t	R/W/S	1000	50~60000
	2	Enter a numberIOmouthX1 Filter time		UINT16_t	R/W/S	1000	50~60000
	3	Enter a numberIOmouthX2 Filter time		UINT16_t	R/W/S	1000	50~60000

	4	Enter a numberIOmouthX3 Filter time		UINT16_t	R/W/S	1000	50~60000
	5	Enter a numberIOmouthX4 Filter time		UINT16_t	R/W/S	1000	50~60000
2024	0	Output port polarity configuration	bit0: Output portY0polarity bit1: Output portY1polarity bit2: Output portY2polarity bit3-bit15:reserve 0：Low level 1: High level See chapter '3.2.2Output signal' Description of	UINT16_t	R/W/S	0	0~65535
2025	1	OutputY0Function settings	Each sub-indexbitOne bit corresponds to Function selection, such as setting output ports Y0For in-position output function, set 2025:1The value of0x0001; bit0: Alarm output bit1: Output in place bit2:ZSignal output bit4: Master control output (default) bit3,bit5-bit15:reserve See chapter '3.2.2Output signal' Description of	UINT16_t	R/W/S	16	0~255
	2	OutputY1Function settings		UINT16_t	R/W/S	16	0~255
	3	OutputY2Function settings		UINT16_t	R/W/S	16	0~255
2030	0	Save/Restore Manufacturer parameters	bit0: Save factory parameters bit1:Restore factory parameters to factory settings Note: Only used for serial port download parameters，COEThere is no such parameter in	UINT16_t	W/S	0	0~255

4.1.3 Cia402Parameter Group

index	Sub-index	name	illustrate	type	property	default value	scope
603F	0	Fault Codes	For details, please refer to chapter 'Five. Fault code description' Description within;	UINT16_t	RO	-	0~65535
6040	0	Control Word	See chapter '6.3.1 6040Control word' within the description;	UINT16_t	R W	0	0~65535
6041	0	Status word	See chapter '6.3.2 6041Description in 'status word';	UINT16_t	RO	-	0~65535
605A	0	Quick Stop Code	0:invalid 1: Emergency stop allowed	UINT16_t	R W	1	0~65535
6060	0	Operation mode settings	1:PP(Position Mode) 3:PV(Speed Mode) 6:HM(Home mode) 8:CSP(Cyclic Synchronous Position Mode)	USINT	R W	8	0~255
6061	0	Run mode status	Query6060HStatus; 1:PP(Position Mode) 3:PV(Speed Mode) 6:HM(Back to Far Point Mode) 8:CSP(Cyclic Synchronous Position Mode)	USINT	RO	-	0~255
6064	0	Physical location	Actual motor position, unit:Pul	DINT	RO	-	- 2147483647~ 2147483647
606C	0	Actual speed	Current motor speed, unit:Pul/s	DINT	RO	-	- 2147483647~ 2147483647
607A	0	Target location	set upPP(Position mode) Number of pulses; unit:pul	DINT	R W	0	- 2147483647~ 2147483647
607C	0	Origin offset	set upHM(Origin of homing mode Offset; unit:Pul	DINT	R W	0	- 2147483647~ 2147483647
60FF	0	Target speed	set upPV(Speed mode) Spend; unit:Pul/s	DINT	R W	0	- 2147483647~ 2147483647
6081	0	Trapezoidal speed	set upPP(Position mode) Spend; unit:Pul/s	DINT	R W	50000	- 2147483647~ 2147483647
6082	0	Start and stop speed	set upPP(Position mode) start and Stop speed; unit:Pul/s	DINT	R W	0	- 2147483647~ 2147483647
6083	0	Acceleration	set upPP(Position Mode),PV(Speed mode) acceleration;	DINT	R W	500000	- 2147483647~ 2147483647

			unit:Pul/ŝ 2				
6084	0	Deceleration	set upPP(Position Mode),PV(Speed mode) deceleration; unit:Pul/ŝ 2	DINT	R W	500000	- 2147483647~ 2147483647
6085	0	Emergency stop deceleration	set upPP(Position Mode),PV(Speed Mode),HM(Back to origin mode) Stop and deceleration speed; unit:Pul/ŝ 2	DINT	R W	5000000	- 2147483647~ 2147483647
6098	0	Return to origin method	Currently, you can set the value of the return to origin method for:(-1)~(-6),1~14,17~30 33,34, ,35,37; See chapter '5.5 Return to origin mode Description within the law;	SUINT	R W	0	0~255
6099	01	Origin search speed1	HM(Return to origin mode) Find origin speed 1: Find the origin at high speed; unit:Pul/s	DINT	R W	50000	- 2147483647~ 2147483647
	02	Origin search speed2	HM(Return to origin mode) Find origin speed 2: Find the origin at low speed; unit:Pul/s	DINT	R W	25000	- 2147483647~ 2147483647
609A	0	Acceleration and deceleration when returning to origin	HM(Return to origin mode) Deceleration; unit:Pul/ŝ 2	DINT	R W	25000	- 2147483647~ 2147483647
60FD	0	enterIOstate	bit0Corresponding input portX0state, bit1Corresponding input portX1 status, and so on; See chapter '3.2.1Input signal' Description of **Notice:**New additionsbit31expressZThe input status of the signal;	UDINT	RO	-	0~4294967296
60FE	1	Physical output on	The output port function is turned on; bit0:portY0Output on bit1:portY1Output on bit2:portY2Output on bit3-bit15:reserve 0: Invalid output 1: Output valid	UDINT	R W	0	0~4294967296
	2	Physical output enable	Output port function enable; bit0:portY0Output Enable bit1:portY1Output Enable bit2:portY2Output Enable bit3-bit15:reserve 0: Output disabled 1: Output enable	UDINT	R W	7	0~4294967296

4.2 IOFunction Configuration

4.2.1Input signal

The functions of the input port include positive limit signal, negative limit signal, origin signal, quick stop signal, user-defined, and each input

The functions of the port are available through the object dictionary0x2022Select one of the following table to describeX0-X4Default input functions and settings.

Input Port	Default functionality	Feature Selection Object Dictionary	Function selection object dictionary Default settings	IOStatus query Object dictionary used1	IOStatus query Object dictionary used2
X0	Negative limit	2022:01	4	60FD-bit0	2014-bit0
X1	Positive limit	2022:02	2	60FD-bit1	2014-bit1
X2	Origin signal	2022:03	1	60FD-bit2	2014-bit2
X3	Quick stop signal	2022:04	8	60FD-bit3	2014-bit3
X4	Custom	2022:05	0	60FD-bit4	2014-bit4

Brief description:

（1）2022:01Represents an object dictionary0x2022, sub-index01Register; others are similar;

(2) through the object dictionary0x60FDYou can query the status of the input port, such asX0When the input is valid, 0x60FDofbit0The bit becomes1X1-X4

The states of the input ports correspond to0x60FDofbit1-bit4Bit.

Notice:

（1）0x60FDofbit31RepresentativesZThe input status of the signal.0x2014The meaning of each, exceptbit31The rest follow0x60FD

same.

The object dictionary related to the input port function configuration is listed in the following table. For specific meanings, please refer to the chapter '3.1All parameters' description.

Input Port	Polarity Configuration	Feature Selection	Filter time setting	IOStatus query Object dictionary used1	IOStatus query Object dictionary used2
X0	2021-bit0	2022:01	2023:01	60FD-bit0	2014-bit0
X1	2021-bit1	2022:02	2023:02	60FD-bit1	2014-bit1
X2	2021-bit2	2022:03	2023:03	60FD-bit2	2014-bit2
X3	2021-bit3	2022:04	2023:04	60FD-bit3	2014-bit3
X4	2021-bit4	2022:05	2023:05	60FD-bit4	2014-bit4

4.2.2Output signal

The functions of the output port include alarm output, arrival output,ZSignal output, master control output (user-defined), each output port

The functions are available through the object dictionary0x2025Select one of the following table to describeY0-Y2Default output functions and settings.

Output Port	Default functionality	Feature Selection Object Dictionary	Function selection object dictionary Default settings	IOStatus query Object dictionary used1	IOStatus query Object dictionary used2
Y0	Master control output	2025:01	16	60FD-bit0	2014-bit0
Y1	Master control output	2025:02	16	60FD-bit1	2014-bit1
Y2	Master control output	2025:03	16	60FD-bit2	2014-bit2

The following tableY0Taking the port as an example, explain which setting each output function corresponds to.

Y0Port function selection	Function selection bit
Alarm output	2025:01-bit0
Output in place	2025:01-bit1
ZSignal output	2025:01-bit2
Master control output	2025:01-bit4

The object dictionary related to the output port function configuration is listed in the following table. For specific meanings, please refer to the chapter '3.1All parameters' description.

Output Port	Polarity Configuration	Function selection control	Physical output on	Physical output enable 60fe+02
Y0	2024-bit0	2025:01	60FE:01-bit0	60FE:02-bit0
Y1	2024-bit1	2025:02	60FE:01-bit1	60FE:02-bit1
Y2	2024-bit2	2025:03	60FE:01-bit2	60FE:02-bit2

For example: SettingY2If it is set as custom output function, the setting steps are as follows:

（1) First set0x2025Sub-index03The value of16(User-defined output function);

（2)set up60FE:01,60FE:02All for4,at this timeY2Output signal;

5. Common functions

5.1Parameter saving and factory reset

Towards0x1010Corresponding sub-index write command0x65766173, the corresponding category parameters can be saved toEEPROMin0x1011

Corresponding sub-index write command0x64616f6c, you can restore the factory settings of the corresponding category parameters. After writing the save command, do not close it immediately.

Power supply, especially when saving all parameters, you need to wait until the 'red indicator light' goes out before turning off the power to ensure that all parameters are saved successfully.

Function	Object Dictionary	Order	Result Status	Remark
saveCia402Series parameters	1010:04	0x65766173	return1	
Save factory-defined parameters	1010:03	0x65766173	return1	
Save communication parameters	1010:02	0x65766173	return1	
Save all parameters	1010:01	0x65766173	return1	Serial port is the button for saving parameters
recoverCia402Series parameters	1011:04	0x64616f6c	return1	
Restore factory customized parameters	1011:03	0x64616f6c	return1	
Restore communication parameters	1011:02	0x64616f6c	return1	
Restore all series parameters	1011:01	0x64616f6c	return1	The serial port is the restore parameter button

5.2Control word and status word bit definition

5.2.1 6040Control Word

Bit	0	1	2	3	4-6	7	8	9-15
Function	start up	powered by	Emergency Stop	Enable operation	Operation mode related	Reset Error	pause	-

Additional notes for other positions:

Bit2: The quick stop trigger logic is0Valid, please distinguish it from other triggered logic.

Bit7: Error reset trigger logic is rising edge effective

Bit5：Immediate trigger trigger logic is rising edge effective

5.2.2 6041Status word

Bit	0	1	2	3	4	5	6	9	11	7,8, 10..
Function	Ready to start move	start up	Allow to operate do	mistake	Power on	Quick stop end	Not started	remote	Limit effect	Mode Phase close

Additional notes for other positions:

When the drive is powered on4Will be set.

Bit5: Rapid stop activated, is in the logic0The logic of this bit is opposite to that of other bits.

Bit9: Remote, display the communication state machine status,ProOPThe following time is0, at this time the control word (6040h)The command will not be executed.

Bit11: Limit, set only when the hardware limit is valid.

Bit8: Abnormal stop, generally valid in hardware limit, deceleration stop and quick stop triggering states.

Bit12：Follow the main station,CSPIf the drive is not enabled or no longer follows the master's instructions, the position0.

Bit10: With position15Set at the same time, indicating that the origin has been found

5.3Control mode and associated object dictionary

Control Mode	Index + Sub-index	name	Data Types	Read and write permissions	unit
Synchronous Position Mode (CSP)	6040	Control Word	UINT16_t	R W	-
	607A	Target location	DINT	R W	Pul
	6041	Status word	UINT16_t	RO	-
	6064	Physical location	DINT	R W	Pul
	606C	Actual speed	DINT	R W	Pul/s
Position Mode(PP)	607A	Target location	DINT	R W	Pul
	6081	Maximum speed	DINT	R W	Pul/s
Speed Mode(PV)	60FF	Target speed	DINT	R W	Pul/s
Speed Mode Position Mode public	6040	Control Word	UINT16_t	R W	-
	6083	Acceleration	DINT	R W	Pul/ŝ 2
	6084	Deceleration	DINT	R W	Pul/ŝ 2
Return to origin mode (HM)	6040	Control Word	UINT16_t	R W	-
	6098	Zero return method	SUINT	R W	-
	6099:01	Origin search speed1	DINT	R W	Pul/s
	6099:02	Origin search speed2	DINT	R W	Pul/s
	609A	Origin acceleration	DINT	R W	Pul/ŝ 2
	607C	Origin offset	DINT	R W	Pul
PV,PP,HMmodel Total	6041	Status word	UINT16_t	RO	-
	6064	Physical location	DINT	R W	Pul
	606C	Actual speed	DINT	R W	Pul/s
Other associated parameters	60FD	Digital Input	UINT16_t	RO	-
	603F	Latest error code	UINT16_t	RO	-
	6060	Operation mode settings	SUINT	R W	-
	6082	Take-off speed	DINT	R W	Pul/s
	6085	Emergency stop deceleration	DINT	R W	Pul/ŝ 2
	6061	Run mode status	SUINT	RO	-

No matter which control mode is used to control the slave station, it is inseparable from6040H(control word) and6041H(Status word) two object dictionaries

The master and slave stations use these two object dictionaries as the transmission medium to implement command issuance and status monitoring. The following sections focus on these two

The definition and meaning of each bit of the elephant dictionary.

5.4State transition of each mode control operation

	step	0	1	2	3	4	5	6	7	8
model	action	Preparation	initial	Get electricity	start up	Enable	Start running	Conjugation	stop	Fault
CSPmold Mode	6040	Establishing communication	00h	06h	07h	0F	1FMain Station Sending instructions	Master station control	Master stop Position instructions	-
	6041	OPstate, excitement liveNCaxis	250h	231h	233h	1237h	1237h	1237h	1237h	238h
PPmold Mode	6040	Establishing communication	00h	06h	07h	0F	-	2Fh~3Fh	10Fh	-
	6041	OPStatus, set Set motion parameters	250h	231h	233h	8237h	1237h	1237h	1637~ 1237h	1238h
PVmold Mode	6040	Establishing communication	00h	06h	07h	0F	After enabling run	Speed of change You can	10Fh	-
	6041	OPStatus, set Set motion parameters	250h	231h	233h	1637h	1637h	1637h	1737h	1638h
HMmold Mode	6040	Establishing communication	00h	06h	07h	0F	1F	invalid	10Fh	-
	6041	OPStatus, set Set motion parameters	250h	231h	233h	8337h	237h	237h	737h	238h

Additional notes for other positions:

PPWhen the mode changes position, the control word needs to bebit5The rising edge can start the new position movement;

5.5Return to origin mode

EC57-K01The zero return methods currently supported by the series drive products are:1-14,17-30,33,34,35,37、(-1)-(-6), these models

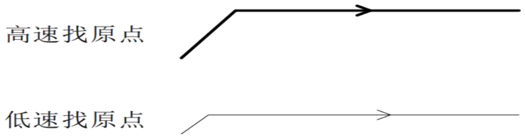
The method requires the use of positive and negative limits, origin orZSignal.

Among them, the method1-2For limit +ZSignal return to zero mode, mode3-6is the origin+ZSignal return to zero mode, mode7-10Origin + positive limit + ZSignal return to zero mode, mode11-14Origin + negative limit +ZSignal return to zero mode, mode17-18It is the positive and negative limit return to zero mode.19-22 It is the origin return method.23-26It is the origin + positive limit return to zero mode.27-30It is the origin + negative limit return to zero mode.33and34 forZSignal return to zero mode, (-1)-(-6) is the stall return to zero mode in closed loop mode. Users need to select the appropriate return to origin mode according to actual application.

The following only introduces the zero return method.17-30,33,34、(-3)-(-6)The specific process of returning to the origin is shown in the following diagram.

The method is the same as the above return to zero method, only addingZSignal origin, for details, please see5.5.21Described in section.

Icon explanation:



Note: In the following schematic diagrams defining all return-to-zero methods, movement to the right is positive movement, and movement to the left is negative movement.

5.5.1Way17(Negative limit return to zero)

The origin stop position of 'Negative limit return to zero' is at the negative limit signal.

The whole action of 'negative limit return to zero' is divided into two cases, as follows:

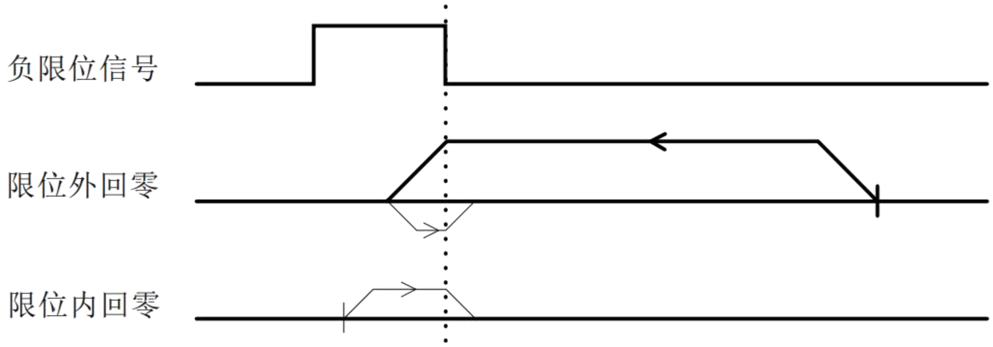
ConditionA：After the drive receives the 'home enable signal' command, it will start at the 'home speedV1', 'Return to origin acceleration and deceleration time' several parameters open

Starts to move, and when encounters the rising edge of the limit signal, it decelerates and stops. Then it returns to the origin speedV2'Run in the opposite direction until the limit signal is met.

At the falling edge, deceleration stops and the entire return to zero action is completed.

ConditionB：After receiving the 'Home Enable Signal' command, the drive is within the limit and willV2','Return to the original

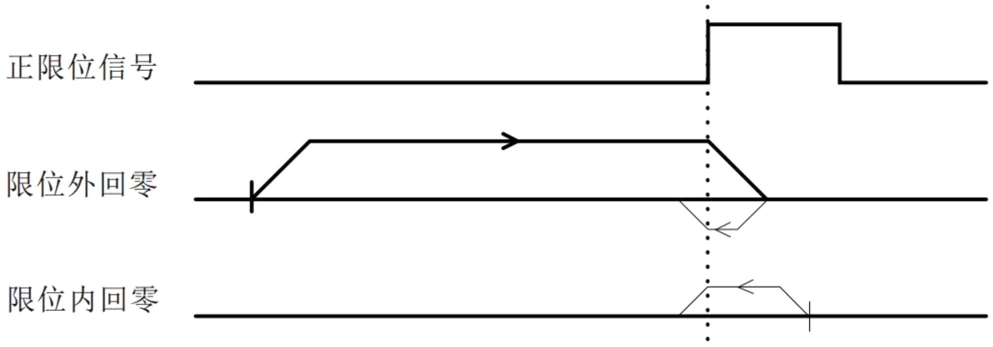
Click the 'acceleration/deceleration time' parameter to start the movement. When the falling edge of the limit signal is encountered, the movement will be decelerated and stopped, and the whole return to zero action is completed.



5.5.2Way18(Positive limit return to zero)

The origin stop position of 'Positive limit return to zero' is at the positive limit signal.

'Positive limit return to zero' is similar to 'Negative limit return to zero', except that the running direction is opposite, so it will not be explained in detail here.



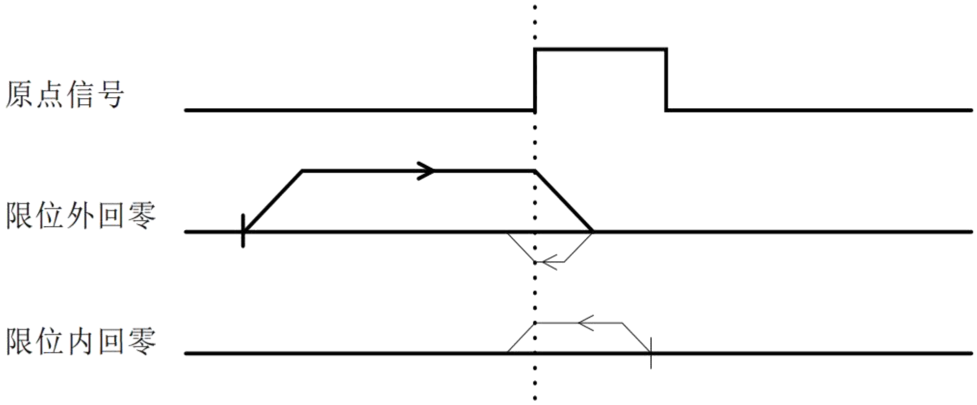
5.5.3Way19(Return to zero1)

'Return to zero1'The origin stop position is on the left side of the rising edge of the origin signal in the positive direction.

'Return to zero1'The whole action is divided into two cases, as follows:

ConditionA：After the drive receives the 'home enable signal' command, it will start at the 'home speedV1', 'Return to origin acceleration and deceleration time' and other parameters Move in the positive direction, and when it encounters the rising edge of the origin signal, it decelerates and stops. Then it returns to the origin speedV2'Run in the opposite direction until it encounters the origin signal When the signal falls, the deceleration stops and the whole return to zero action is completed.

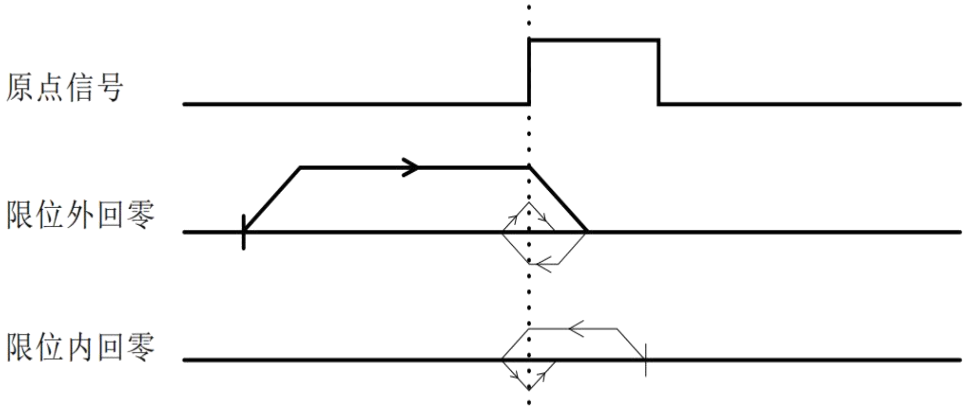
ConditionB：After receiving the 'home enable signal' command, the drive is in the home signal, and willV2','Back The origin acceleration/deceleration time and several parameters move in the opposite direction. When the origin signal falls, the deceleration stops and the whole return to zero action is completed.



5.5.4Way20(Return to zero2)

'Return to zero2'The origin stop position is on the right side of the rising edge of the origin signal in the positive direction.

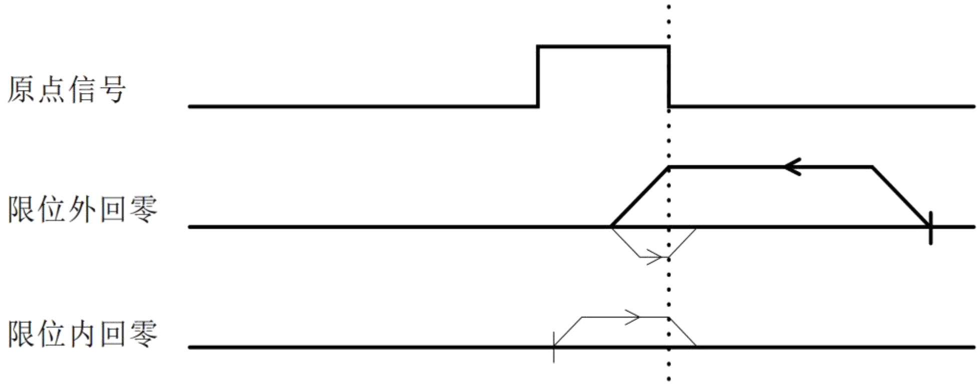
'Return to zero2'The whole action is shown in the figure below. No detailed description is given here.



5.5.5Waytwenty one(Return to zero3)

'Return to zero3'The origin stop position is on the right side of the rising edge of the origin signal in the reverse direction.

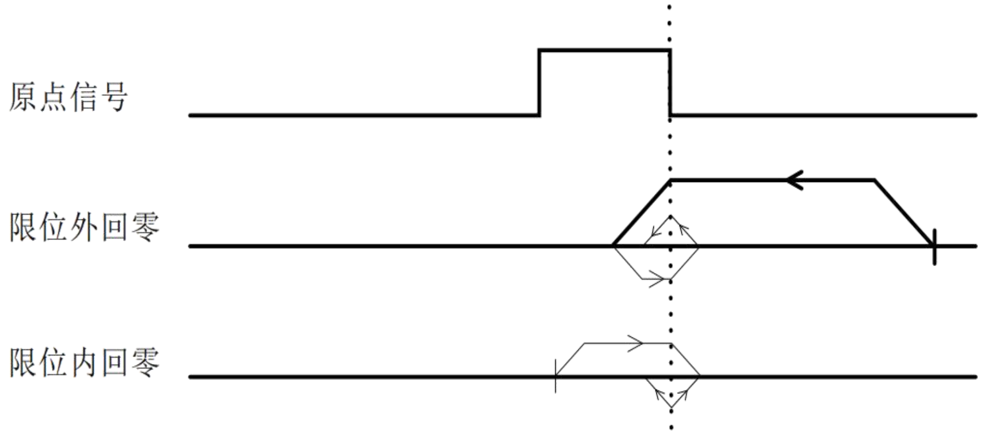
'Return to zero3'The whole action is similar to 'return to zero1'The difference is that the initial running direction is opposite. No detailed description will be given here.



5.5.6Waytwenty two(Return to zero4)

'Return to zero4'The origin stop position is on the left side of the rising edge of the origin signal in the reverse direction.

'Return to zero4'The whole action is similar to 'return to zero2'The difference is that the initial running direction is opposite. No detailed description will be given here.



5.5.7Waytwenty three(Origin + positive limit return to zero1)

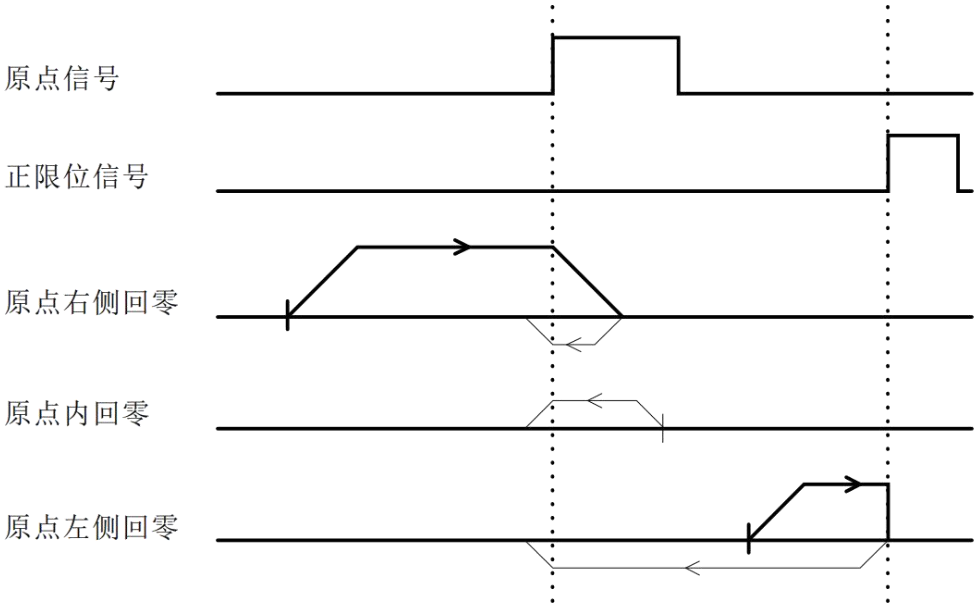
'Origin + positive limit return to zero1'The origin stop position is on the left side of the rising edge of the origin signal in the positive direction.

'Origin + positive limit return to zero1'The whole action is divided into three cases, as follows:

ConditionA：After the drive receives the 'home enable signal' command, it will start at the 'home speedV1', 'Return to origin acceleration and deceleration time' and other parameters Move in the positive direction, and when it encounters the rising edge of the origin signal, it decelerates and stops. Then it returns to the origin speedV2'Run in the opposite direction until it encounters the origin signal When the signal falls, the deceleration stops and the whole return to zero action is completed.

ConditionB：After the drive receives the 'home enable signal' command, it will start at the 'home speedV1', 'Return to origin acceleration and deceleration time' and other parameters Move in the positive direction, and stop immediately when encountering the rising edge of the positive limit signal. Then return to the origin at the speedV2'Run in the opposite direction until you reach the origin When the signal falls, the deceleration stops and the entire return to zero action is completed.

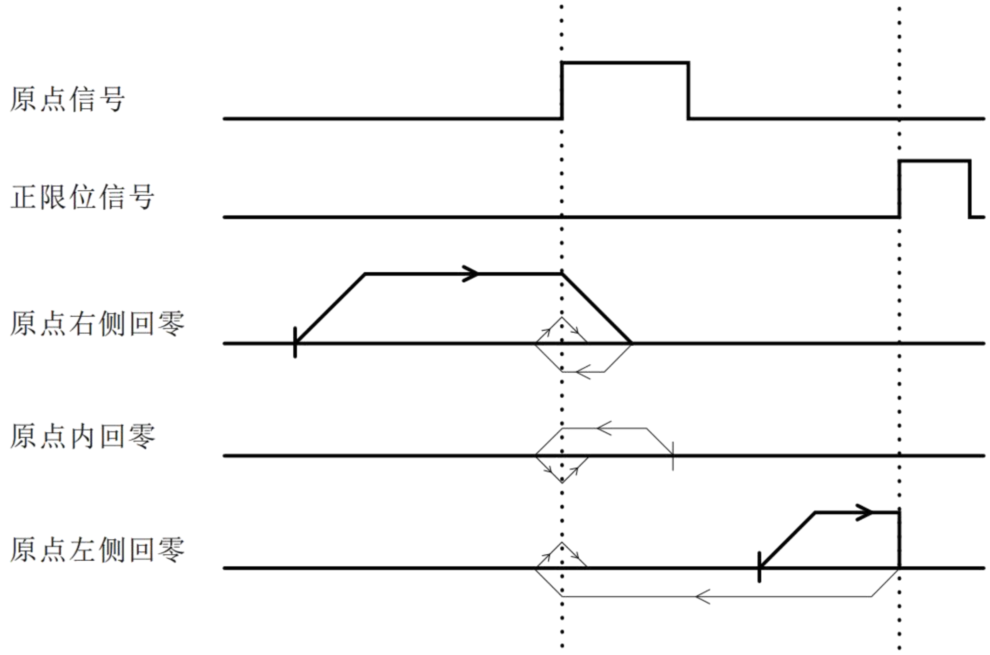
ConditionC：After receiving the 'home enable signal' command, the drive is in the home signal, and willV2','Back The origin acceleration/deceleration time and several parameters move in the opposite direction. When the origin signal falls, the deceleration stops and the whole return to zero action is completed.



5.5.8Waytwenty four(Origin + positive limit return to zero2)

'Origin + positive limit return to zero2'The origin stop position is on the right side of the rising edge of the origin signal in the positive direction.

'Origin + positive limit return to zero2'The whole action is shown in the figure below. No detailed description is given here.



5.5.9Way25(Origin + positive limit return to zero3)

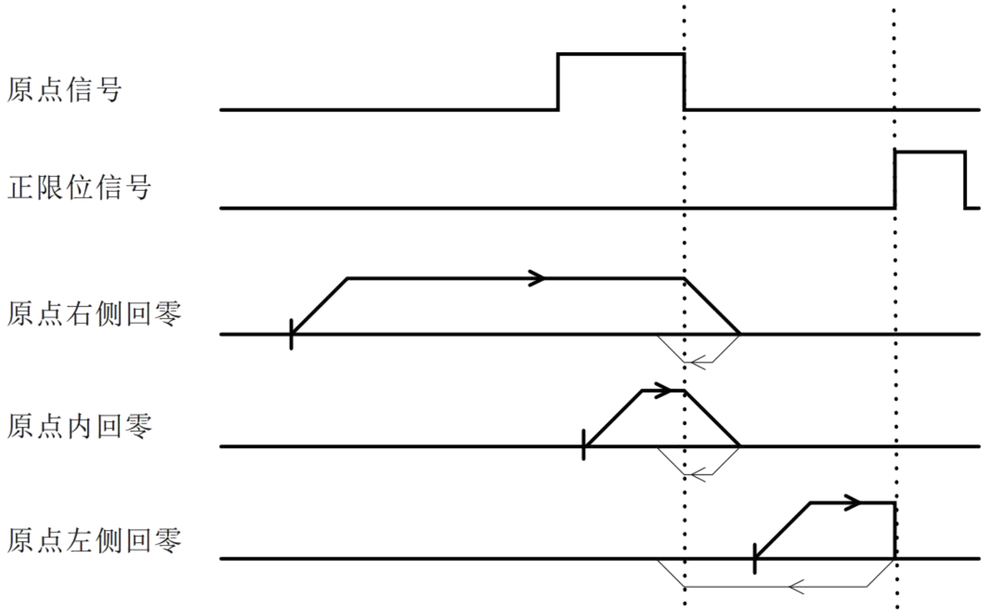
'Origin + positive limit return to zero3'The origin stop position is on the left side of the falling edge of the origin signal in the positive direction.

'Origin + positive limit return to zero1'The whole action is divided into three cases, as follows:

ConditionA：After the drive receives the 'home enable signal' command, it will start at the 'home speedV1', 'Return to origin acceleration and deceleration time' and other parameters Move in the positive direction. When the origin signal rises, the machine continues to run. When the origin signal falls, the machine slows down and stops. Then the machine returns to the original position. Origin speedV2'It runs in the opposite direction until it encounters the rising edge of the origin signal, then decelerates and stops, and the entire return to zero action is completed.

ConditionB：After the drive receives the 'home enable signal' command, it will start at the 'home speedV1', 'Return to origin acceleration and deceleration time' and other parameters Move in the positive direction, and stop immediately when encountering the rising edge of the positive limit signal. Then return to the origin at the speedV2'Run in the opposite direction until you reach the origin When the signal rises, the deceleration stops and the entire return to zero action is completed.

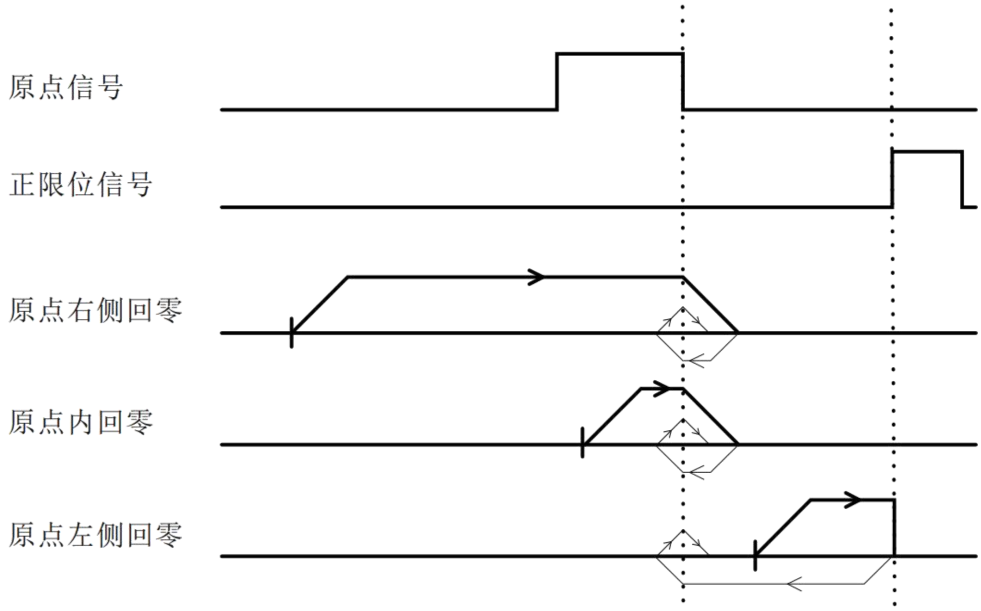
ConditionC：After receiving the 'home enable signal' command, the drive is in the home signal, and willV1','Back The origin acceleration and deceleration time's several parameters move in the positive direction, and when they encounter the falling edge of the origin signal, they decelerate and stop. Then they return to the origin speedV2' It runs in the opposite direction until it encounters the rising edge of the origin signal, then decelerates and stops, and the entire return to zero action is completed.


原点信号
正限位信号
原点右侧回零
原点内回零
原点左侧回零

5.5.10Way26(Origin + positive limit return to zero4)

'Origin + positive limit return to zero4'The origin stop position is on the right side of the falling edge of the origin signal in the positive direction.

'Origin + positive limit return to zero4'The whole action is shown in the figure below. No detailed description is given here.

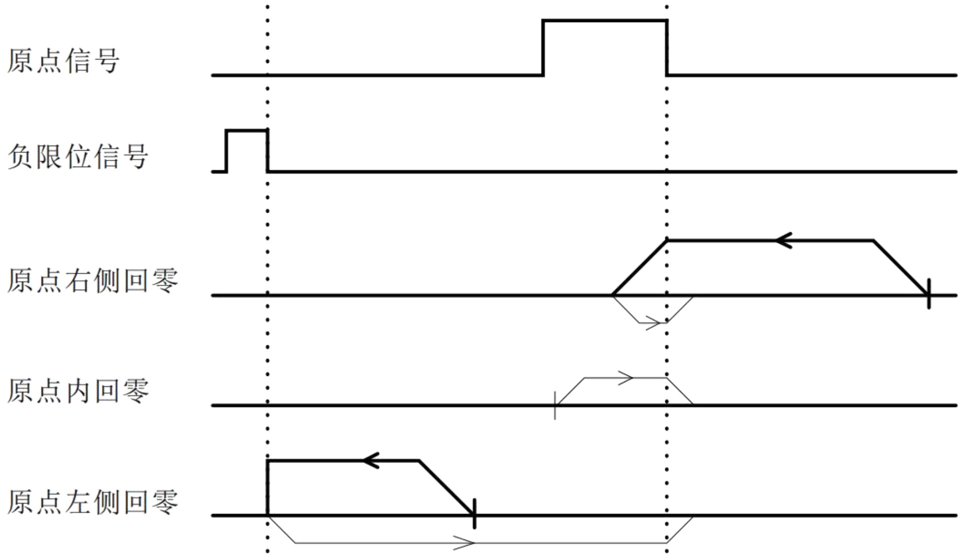

原点信号
正限位信号
原点右侧回零
原点内回零
原点左侧回零

5.5.11Way27(Origin + negative limit return to zero1)

'Origin + negative limit return to zero1'The origin stop position is on the right side of the rising edge of the origin signal in the reverse direction.

'Origin + negative limit return to zero1'The whole action is the same as 'origin + positive limit return to zero1'The difference is that the initial running direction is opposite.

Please explain in more detail.

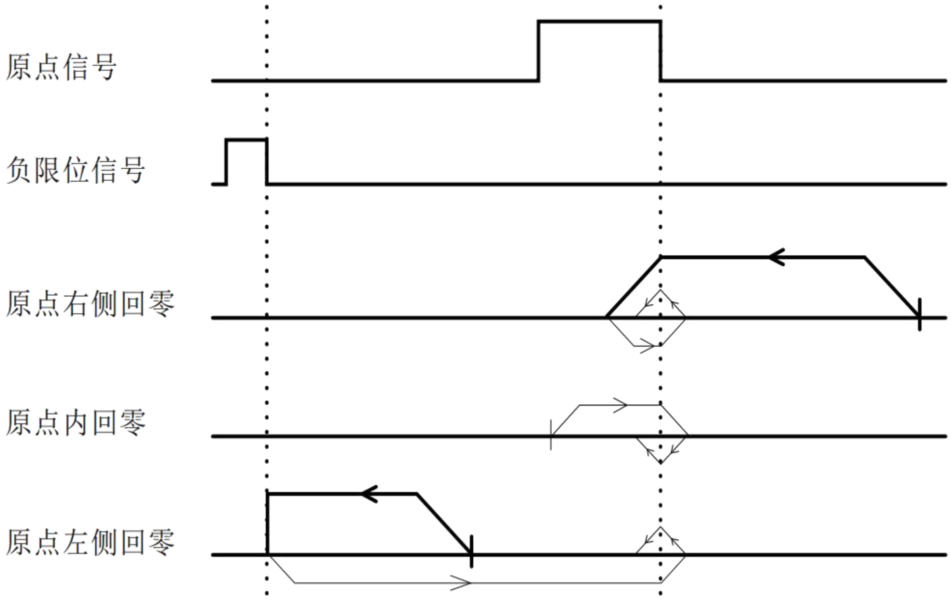


5.5.12Way28(Origin + negative limit return to zero2)

'Origin + negative limit return to zero2'The origin stop position is on the left side of the rising edge of the origin signal in the reverse direction.

'Origin + negative limit return to zero2'The whole action is the same as 'origin + positive limit return to zero2'The difference is that the initial running direction is opposite.

Please explain in more detail.

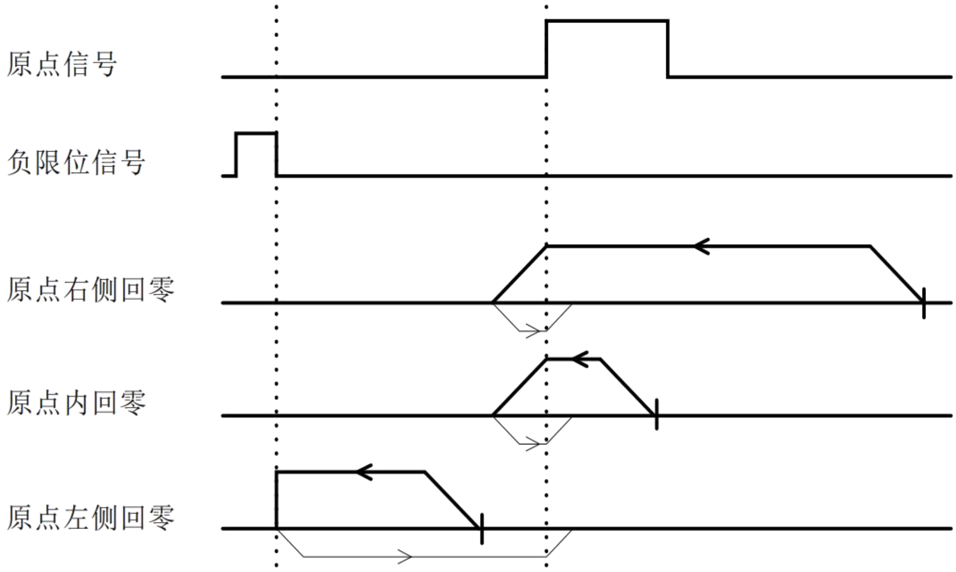


5.5.13Way29(Origin + negative limit return to zero3)

'Origin + negative limit return to zero3'The origin stop position is on the right side of the falling edge of the origin signal in the reverse direction.

'Origin + negative limit return to zero3'The whole action is the same as 'origin + positive limit return to zero3'The difference is that the initial running direction is opposite.

Please explain in more detail.

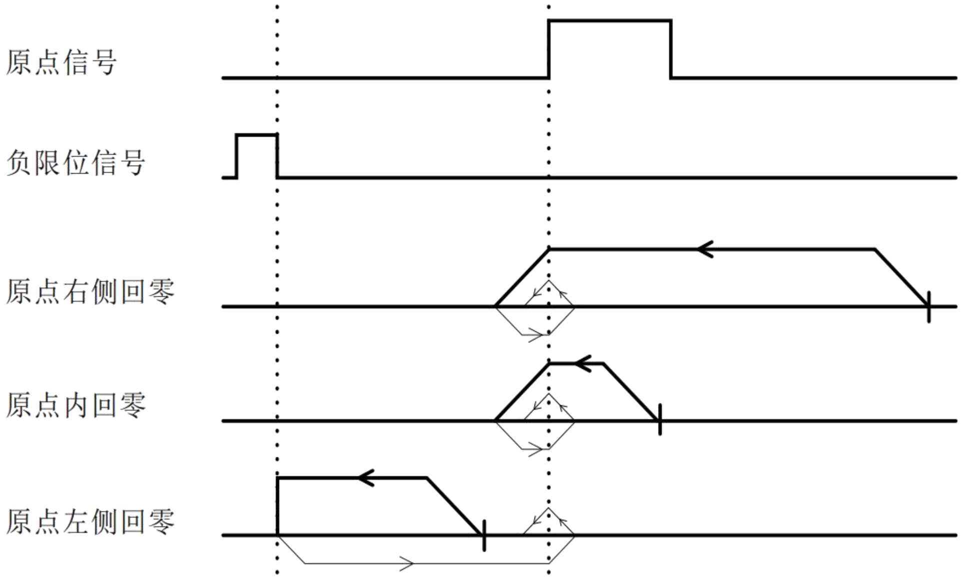


5.5.14Way30(Origin + negative limit return to zero4)

'Origin + negative limit return to zero4'The origin stop position is on the left side of the falling edge of the origin signal in the reverse direction.

'Origin + negative limit return to zero4'The whole action is the same as 'origin + positive limit return to zero4'The difference is that the initial running direction is opposite.

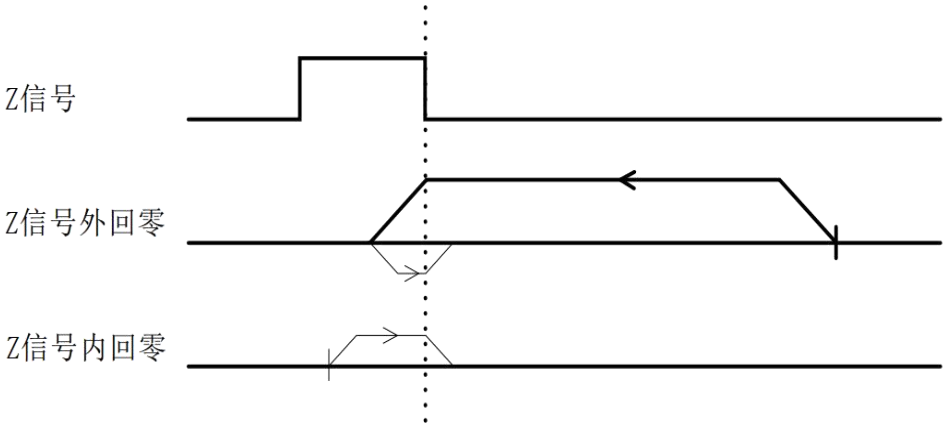
Please explain in more detail.



5.5.15Way33(ZSignal return to zero1)

This zero return method isZThe signal is used as the zero return detection signal, which is consistent with the direction of 'negative limit return to zero'. The origin stop position isZSignal right.

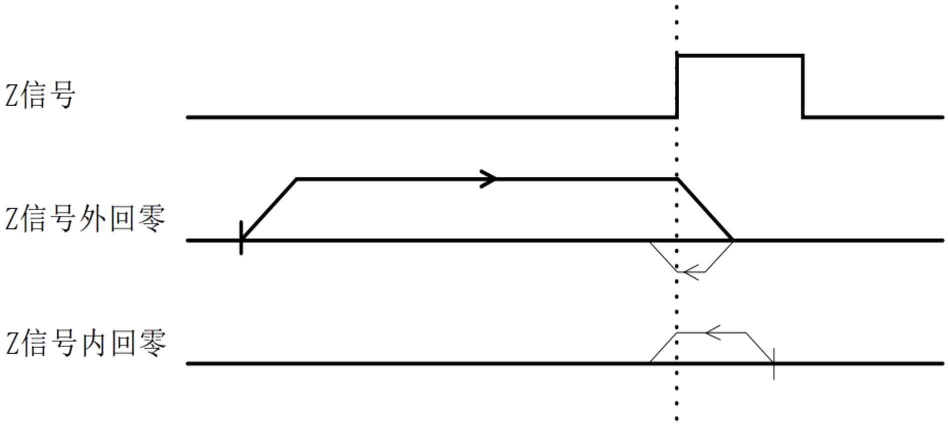
'ZSignal return to zero1'The whole action is shown in the figure below. No detailed description is given here.



5.5.16Way34(ZSignal return to zero2)

This zero return method isZThe signal is used as the zero return detection signal, which is consistent with the direction of 'positive limit return to zero'. The origin stop position isZLeft side of signal.

'ZSignal return to zero2'The whole action is shown in the figure below. No detailed description is given here.

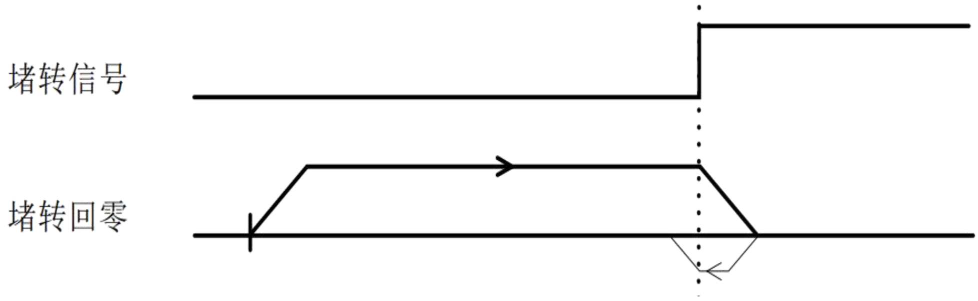


5.5.17Way -3(Stall return to zero1)

The motor initially returns to the origin speedV1'Running in the forward direction, after a stall occurs, the motor decelerates to stop and moves in the reverse direction. After the motor dynamic torque disappears,

Decelerate to a stop and use this position as the origin.

The entire action of this zero return method is shown in the figure below. No detailed description is given here.

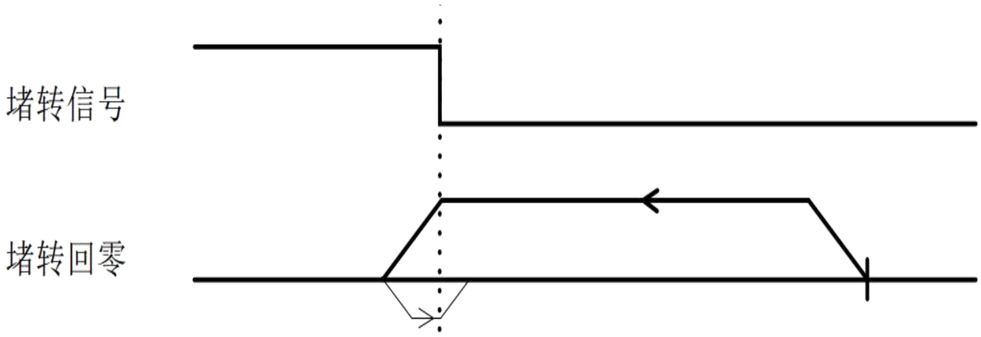


5.5.18Way -4(Stall return to zero2)

The motor initially returns to the origin speedV1'Running in the opposite direction, after a stall occurs, it decelerates to stop and moves in the opposite direction. After the dynamic torque of the motor disappears,

Decelerate to a stop and use this position as the origin.

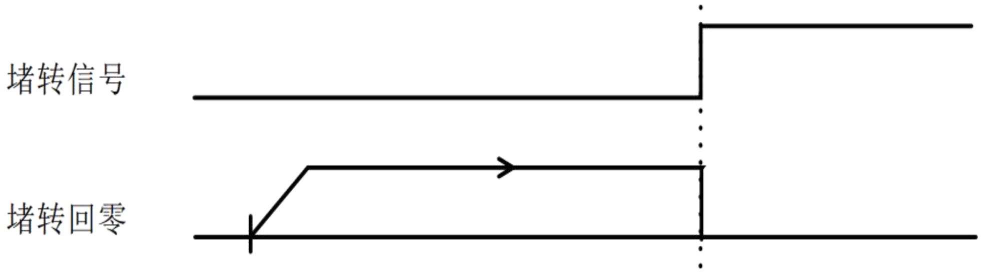
The entire action of this zero return method is shown in the figure below. No detailed description is given here.



5.5.19Way -5(Stall return to zero3)

The motor initially returns to the origin speedV1'When running in the positive direction and a stall occurs, the machine stops immediately and takes that position as the origin.

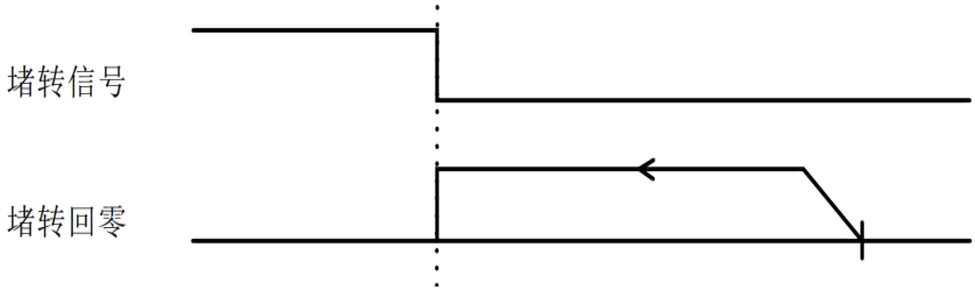
The entire action of this zero return method is shown in the figure below. No detailed description is given here.



5.5.20Way -6(Stall return to zero4)

The motor initially returns to the origin speedV1'If the machine runs in the reverse direction and a stall occurs, it stops immediately and takes that position as the origin.

The entire action of this zero return method is shown in the figure below. No detailed description is given here.



5.5.21Other return to zero methods

The above section introduces the return to zero method17-30,33,34、(-3)-(-6)The other zero return methods are similar to the above zero return methods.

As shown in the following table:

Zero return method	Similar return to zero method	describe
1	17	After finding the positive and negative limits or the origin limit, continue running to detect the first indivualZThe signal is used as the zero position;
2	18	
3	19	
4	20	
5	twenty one	
6	twenty two	
7	twenty three	
8	twenty four	
9	25	
10	26	
11	27	
12	28	
13	29	
14	30	
- 1	3	
- 2	4	
35,37	none	Take the current position as the zero position;

6. Serial port download parameter description

For details, please refer to the documentEC57-K01Serial Port Download Communication Protocol Manual".

VII. Fault codes and indicator lights

7.1Drive failure

603FCode	1001Code	meaning	201CCode	Removability	201BCorresponding position	ledFlash
0x2211	0x02	Overcurrent fault	0x0E0	no	Bit0	1Second-rate
0x4211	0x04	Busbar overvoltage	0x0C0	no	Bit1	2Second-rate
0x5110	0x80	MotorAPhase missing	0x210	no	Bit1	3Second-rate
0x5120	0x80	MotorBPhase missing	0x210	no	Bit1	3Second-rate
0x8402	0x20	Command overspeed	0x1A0	yes	Bit2	4Second-rate
0x5530	0x80	Failure to save parameters	0x240	yes	Bit3	3Second-rate
0x8403	0x20	PWMInstructions within cycle Pulse increment is too large	0x1A1	yes	-	4Second-rate
0x8401	0x20	Location out of tolerance	0x1A2	no	-	4Second-rate
-	-	Hardware interrupt protection	-	-	-	

Towards201EWrite1The current alarm can be cleared;

Towards201DWrite1You can clear the fault record, that is, clear201BFault list;

7.2 EtherCATCommunication alarm

according toEtherCATALMStatus code definition, some error codes are listed below

603FCode	1001Code	meaning	201C	Removability	ledFlash
0x8213	0x10	Not supportedBOOT		1	4Second-rate
0x8215	0x10	BOOTInvalid mode configuration		1	4Second-rate
0x8216	0x10	Invalid mailbox configuration		1	4Second-rate
0x8217	0x10	InvalidSMConfiguration		1	4Second-rate
0x821B	0x10	SMWatchdog timeout	0x101B	1	4Second-rate
0x821C	0x10	InvalidSMtype	0x101C	1	4Second-rate
0x821D	0x10	Invalid output configuration		1	4Second-rate
0x821E	0x10	Invalid input configuration		1	4Second-rate
0x821F	0x10	Invalid watchdog configuration		1	4Second-rate
0x821A	0x10	Synchronous mode error	0x101A	1	4Second-rate
0x8230	0x10	InvalidDCConfiguration		1	4Second-rate
0x8232	0x10	DC PLLmistake	0x1032	1	4Second-rate
0x8233	0x10	DCsynchronousIOmistake	0x1033	1	4Second-rate
0x8234	0x10	DCSynchronization timeout	0x1034	1	4Second-rate
0x8211	0x10	Invalid state change request	0x1011	1	4Second-rate
0x8212	0x10	Unknown state change request	0x1012	1	4Second-rate
0x8221	0x10	Slave station needsInitstate	0x1021	1	4Second-rate
0x8222	0x10	Slave station needsPre-Opstate	0x1022	1	4Second-rate
0x8223	0x10	Slave station needsSafe-OPstate	0x1023	1	4Second-rate

8. Warranty and after-sales service

8.1Warranty

8.1.1Free warranty situation

Our company solemnly promises that if any of our products are damaged during use due to the product itself, we will provide

One year free maintenance service. The shipping cost of the product shall be borne by both parties.

8.1.2Warranty void

（1）The driver is damaged due to the customer's own wiring error;

（2）Exceeding the rated working voltage causes damage to the driver;

（3）The DC power supply driver is connected to the AC power supply, causing the driver to be damaged;

（4) Due to the extremely bad environment on the customer's site, such as humidity, extreme cold, extreme heat, etc., the customer did not inform our company in advance, resulting in

The drive is damaged;

（5）The customer dismantles the drive casing without permission or the serial label number is torn off;

（6) After the customer confirms receipt15Days later, the casing was obviously damaged or hit, causing damage to the drive;

（7) Force majeure natural disasters, such as fire, earthquake, tsunami, typhoon, etc.;

In the above cases, our company will charge a certain amount of repair cost after evaluating the interests of all parties. In other cases, repairs will be provided free of charge forever.

8.2Exchange

8.2.1Product defect replacement

For faults in new products, our company provides three months of free replacement service.

After our technical support staff confirms that the problem is with the product itself, they will send the product back to our company to avoid wasting time and postage on the round-trip.

The customer needs to send the defective product back by express or logistics first. After receiving it, our company will send another new product back to the customer as soon as possible.

Notice: All our products are strictly tested and aged before leaving the warehouse, so it is extremely rare for new products to fail.

Please be sure to read the instructions carefully or consult our technical support staff when operating, or our technical support staff will assist customers in operating remotely.

- **Please note the following points when exchanging goods:**

（1) Please ensure that the packaging is complete when sending back to avoid damage during transportation;

（2) Please ensure that the attached accessories are complete when exchanging goods;

（3) Each driver should be packed in its original box to avoid secondary damage to the product during transportation;

（4) If the driver is returned and it is confirmed that the fault is not due to product failure, but due to the customer's negligence in operation, then

The company does not bear the freight (the customer's own negligence includes: connecting the wrong line and causing the driver to be damaged, poor wiring and mistaking the driver for damage,

Operation errors causing the drive to fail to function properly, etc.).

8.2.2Exchange for non-product fault

If the customer is not satisfied with the appearance or function of the product received and wants to replace it with a better driver, he or she can contact us within one week after receiving the product.

The company applies for a replacement service. After verification, the company will return the product. The company will confirm that the returned product has no damage, complete accessories, and

If the product is in good condition, we will replace it with another product. If there is a price difference between the replaced products, the customer shall make up the difference.

Note: The replaced product will no longer be eligible for the non-product failure replacement service. The round-trip shipping and other fees incurred by the non-product failure replacement service

All costs are borne by the customer!

8.3return the goods

Our company provides7Days return service, if you receive this product7Days (subject to the actual date of receipt by the customer)

If there are any quality problems with the product itself, please communicate with our salesperson or technical support personnel in time.

After the quality problem of the product itself is found, the customer will send the original complete product and its inner and outer packaging, accessories and shipping order back to our company by express or logistics.

If the customer still insists on returning the goods after our company has checked and confirmed that they are correct, the round-trip shipping costs and all other costs incurred will be borne by the customer.

At your own expense.

- **Please note the following points when returning goods:**

（1) Please contact the relevant department of our company before making a refund;

（2) The product must be in new condition and complete packaging. Please send it back to our company by express or logistics;

（3) Problems caused by customers such as damaged product appearance, incomplete accessories, etc. will not be accepted;

8.4After-sales service

If customers encounter technical problems when using this product, please contact our company immediately. Please call our national toll-free

Service Hotline:0755-23206995.

Service time: Monday to Saturday8:30-17:30(Except national holidays).

IX. Version Revision History

Version Number	illustrate	Modify deadline	Preparer/Reviewer
V1.0.0	EC57-K01Initial instruction manual version of the series;	2023.9.27	TCJ/XH