NT110 User Manual

Preface

Thank you first for purchasing NT110 step servo drive!

NT110 step servo drive product is a high-voltage step servo drive developed by Reuter technology.The RS485 bus based on Modbus RTU protocol is integrated.Built-in multi-application mode, multi-zero return mode, integrated torque control mode and so on.

This manual is a comprehensive user's manual for NT110 step servo drives, providing product safety information, mechanical and electrical installation instructions, commissioning application and maintenance guidance.For first-time users, read this manual carefully. If you have any doubts about the functionality and performance, please consult our technical support staff for help.

Due to the continuous improvement of the servo drive, the information provided by the Company is subject to change without prior notice.

Manual version change record

Date	Post-change version	Change in content
2019.11	V1.0	Release of the first edition

Catalogue

一   Safety Alert

1.1 **Safety precautions**

◆ After cutting off the power supply for more than 5 minutes, the driver is removed. otherwise will cause electric shock due to residual voltage.

◆ Please absolutely not touch the servo drive inside, otherwise it may cause electric shock.

◆ Please do the insulation treatment in the connection part of the power terminal, otherwise it may cause electric shock.

◆ The grounding terminal of the servo driver must be grounded, otherwise it may cause electric shock.

◆ Do not damage or pull the cable hard, do not make the cable bear too much force, under the weight or clip up. Otherwise it may cause electric shock, causing the product to stop action or burn out.

◆ Do not set up, disassemble, or repair unless the person is designated, which may cause electric shock or injury.

◆ Do not remove the hood, cable, connector, and fittings in the energized state, otherwise it may cause electric shock and damage the driver.

◆ please do the trial run according to the steps required in this manual.

◆ In the state of servo motor and mechanical connection, if the operation error occurs, it will not only cause mechanical damage, but also sometimes lead to personal accidents.

◆ Do not change the maximum speed except for special purpose. Failure to change may damage machinery or cause injury.

◆ During the period of time after the power supply is cut off, the heat sink of the servo driver, the external brake resistance, the servo motor and so on may appear high temperature, do not touch, otherwise it may cause scald.To prevent inadvertent contact between the hand or parts (such as cables), take safety measures such as mounting enclosures.

◆ When the servo motor is running, please never touch its rotating part, otherwise it may be hurt.

◆ When installing on the supporting machinery to start operation, please put the servo motor in the state that can be stopped at any time in advance, otherwise it may be injured.

◆ Please set the stop device on the mechanical side to ensure the safety.

◆ The brake of the servo motor with the latch is not used to ensure a safe stop. If no stopping device is set, it may cause injury.

◆ If the power is restored after an instant blackout during operation, the machine may suddenly restart, so do not approach the machine.

◆ Please take measures to ensure that the restart will not endanger the personal safety, otherwise it may lead to injury.

◆ Please absolutely not modify this product, otherwise it may cause injury or mechanical damage.

◆ Please install the servo driver, servo motor, external brake resistor on the non-combustible, otherwise it may cause fire.

◆ Be sure to connect the electromagnetic contactor and no fuse breaker between the main circuit power supply (single phase R, S, three phase (110V) for R, S, T) of the power supply and servo driver. Otherwise, when the servo drive fails, the large current can not be cut off to cause a fire.

◆ In the servo driver as well as the servo motor inside, do not mix oil, grease and other combustible foreign bodies and screws, metal sheets and other conductive foreign bodies, otherwise may cause fire and other accidents.

1.2 To confirm the matters needing attention when the product arrives

Confirmation of items	Note
Does the incoming product match the type of product you ordered?	The packing box contains your ordered machine, NT110 Step Servo Drive Easy User Hand. please confirm by the nameplate type of servo motor, servo driver.
Is there any damage to the product?	Please check the positive surface, whether the product is damaged during transportation.If you find something missing or damaged, please contact our company or your supplier as soon as possible.
Is the servo motor rotating smoothly?	To be able to rotate gently with your hands is positive. Servo motor with latch except.

二　　Product Information and Installation

2.1　Drive Introduction

2.1.1 Nameplate and Model Description

<div align="center">NT 110</div>

标识	系列号
NT	Rtelligent RS485 Communication driver

标识	型号
110	Driver model
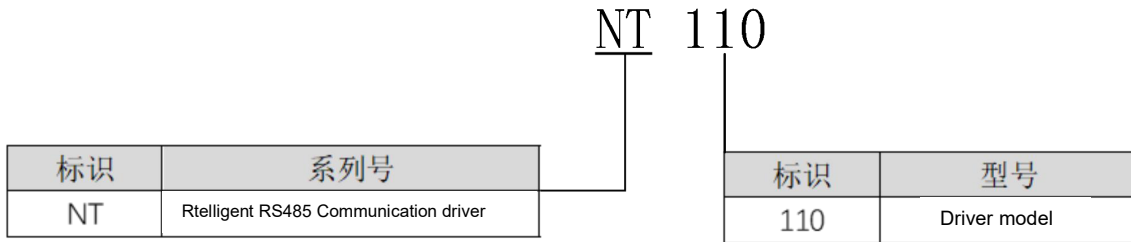
2.2　Driver installation instructions

2.2.1 Installation dimensions
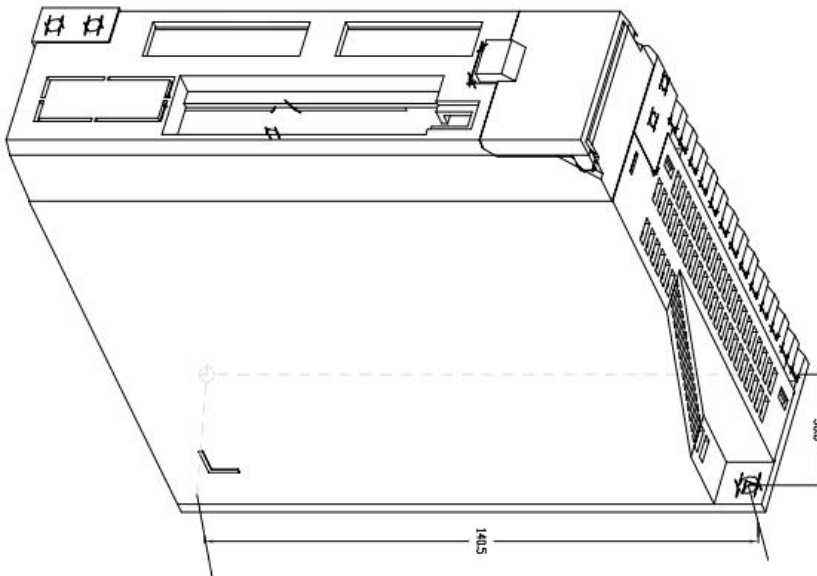
2.2.2 Installation site

● Please install in the installation cabinet without sun and rain;

● Do not use this product near corrosive and flammable gases such as hydrogen sulfide, chlorine gas, ammonia gas, sulfur, chlorinated gas, acid, alkali, salt, etc.

● Please do not install in high temperature, humidity, dust, metal dust environment;

● No vibration site;

- Installation site pollution grade: PD2.

2.2.3 **Installation environment conditions**

The environment in which the servo drive is installed has a direct impact on the normal functioning of the drive and its service life. Therefore, the environment in which the drive is installed must meet the following conditions:

Projects	Description
Use ambient temperature	0~55°C (ambient temperature above 45°C, average load rate above 80%)(not frozen)
Use of environmental humidity	Below 90% RH (no exposure)
Storage temperature	-20~85°C (not frozen)
Storage humidity	Below 90% RH (no exposure)
Vibration	4.9m/s^{2}The following
Impact	19.6m/s^{2}The following
Level of protection	IP10
Altitude	Below 1000m

2.2.4 **Precautions for Installation**

- Please ensure the installation direction is perpendicular to the wall, please use natural wind convection or fan to cool the servo drive.the servo drive is firmly fixed on the mounting surface through the mounting holes at 2~4(depending on the number of mounting holes). When installing, face the drive to the operator and make it perpendicular to the wall. Please take care to avoid drilling debris and other foreign objects falling into the drive during installation, otherwise it may cause drive failure.
- when multiple drives are installed in the control cabinet, please note that the placement position needs to keep enough space to achieve a good enough heat dissipation effect.
- Be sure to ground the grounding terminal, otherwise there may be a risk of electrical shock or interference resulting in misoperation.
- When there is a vibration source near the drive installation (punch), if it is not inevitable, use a vibration absorber or add an anti-vibration rubber gasket.
- When there are large magnetic switch, welding machine and other noise interference sources near the driver, it is easy to make the driver suffer from external interference and cause misoperation. At this time, it is necessary to add noise filter, but the noise filter will increase the leakage current, so it is necessary to install insulation transformer at the input end of the driver.

三　　Servo drive and motor wiring

3.1 Servo drive main circuit connection

3.1.1 Main Circuit Terminal

Terminal mark	Terminal name	Terminal function
L1, L2	Main circuit power input terminal	Main circuit single-phase power input, AC220V power supply.
L1C, L2C	Control circuit power input terminal	Control circuit power input, need to refer to the rated voltage level of the nameplate
P 、D	External Brake Resistance Connector Terminal	External braking resistance
U、V, W	Servo motor connection terminal	The servo motor connection terminal must be connected with the motor U, V and W terminals
PE	System grounding protection terminals	Two grounding terminals connected to the power grounding terminal and the motor grounding terminal

3.1.2 Main circuit wiring matters needing attention

● can not connect the input power cord to the output u, v, w, otherwise cause servo drive damage.

● Do not cross or bind the power cord and signal line from the same pipe, to avoid interference, the two should be above 30cm.

● Do not frequent ON/OFF power supply, in need of repeated continuous ON/OFF power supply, please control at 1 min 1 time to. Since the power part of the servo driver has a capacitor, it will flow through the larger charge current (charge time 0.2 s) when ON power is on. Frequent ON/OFF power will cause the performance of the main circuit components inside the servo drive to decline.

● Please reliably connect the servo drive to Earth.

● Even if the input power is turned off, the internal capacitance of the servo driver may remain high voltage, do not touch the unit terminal for 5 minutes.

● Do not use the servo driver when the terminal screw is loose or the cable is loose, otherwise it is easy to cause fire.

3.2 Servo driver encoder signal terminal CN3 connection

(1) Servo encoder extension line driver side terminal connection

Face up servo encoder extension line driver side terminal welding pin marked with pin serial number, its terminal definition serial number as shown in the following diagram:

Servo encoder extension motor side terminal diagram			

Name of signal	Pin number	Function
+5V	1	Power Output Positive :+5V
GND	2	Power Output Negative :0V
A+	3	Coder A Trust
A -	4	
B +	5	Coder B Trust
B -	6	
Z +	7	Encoder Z-phase signal
Z-	8	
FG	9	Shielded ground
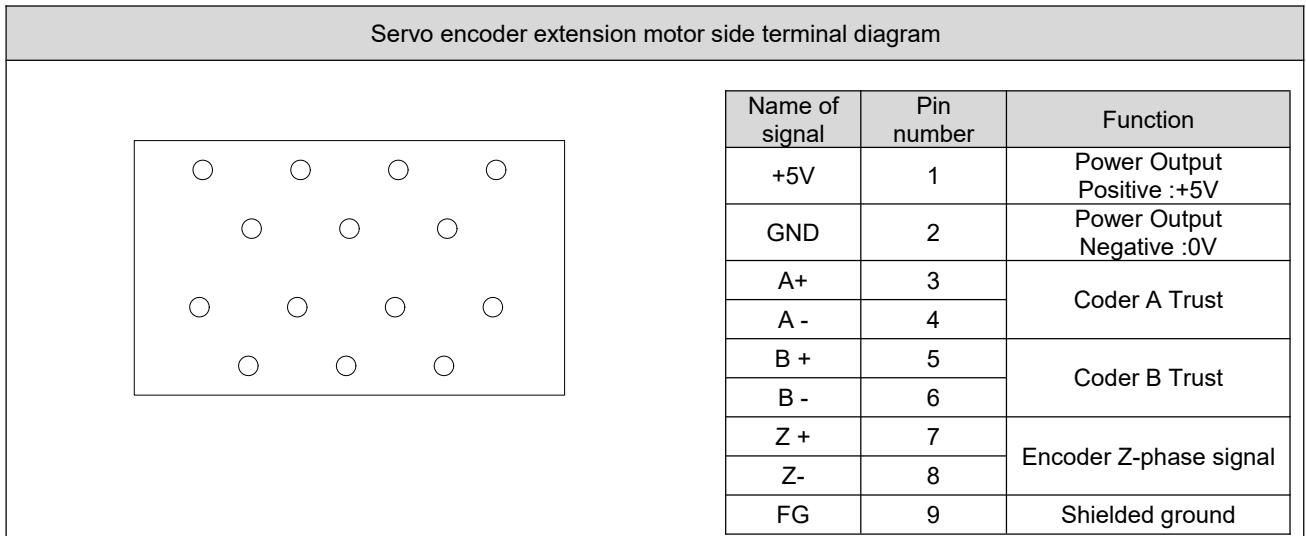
3.3 Servo driver control signal terminal CN2 connection
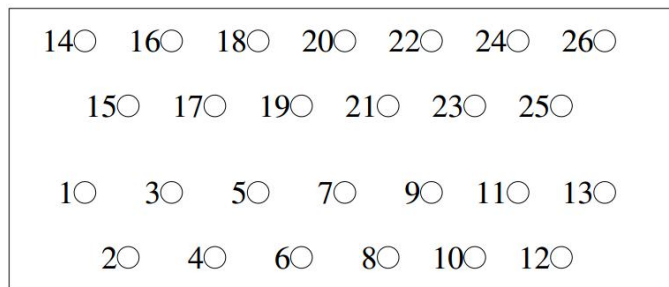
Figure 3-3 Codinger Cable Servo Drive Side Connector and Terminal Pin Diagram

3.3.1 Position instruction input signal

Name of signal		Pin number	Function
Location Directive	PULSE+	1	External instruction pulse input terminal in the form of: pulse + direction, A/B phase orthogonal pulse, CW/CCW pulse
	PULSE-	2	
	SIGN+	3	
	SIGN-	4	

Example of electrical wiring diagram for location instructions:

（1） Differential mode input:

伺服驱动器

（2） Single-ended input:

Single-ended common anode wiring example:	Single-ended common cathode wiring example:
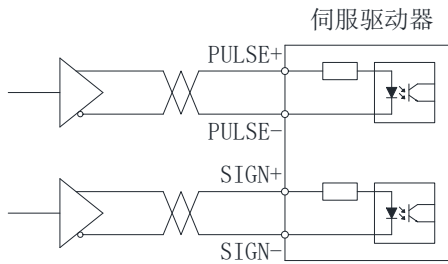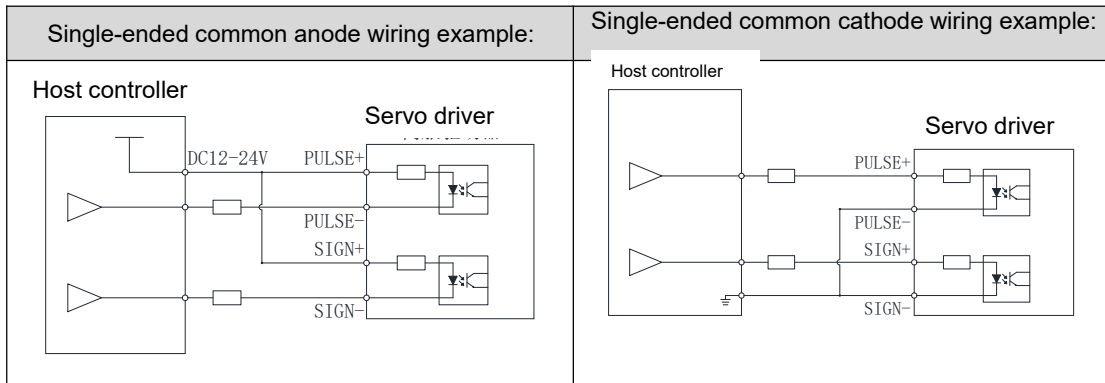
3.3.2 Encoder output signal

Name of signal		Pin number	Function	
Encoder output signal	AO+	5	A-phase output signal	The quadrature pulse output signal of A、B
	AO-	6		
	BO+	7	B-phase output signal	
	BO-	8		
	ZO+	9	Z-phase output signal	Origin pulse output signal
	ZO-	10		
	CZ+	11	Z-phase output signal	Open Circuit Output Signal of Origin Pulsed Optical Coupling Collector
	CZ-	12		origin pulse optical coupling collector open circuit output signal ground

Coder differential output signal wiring example:	Encoder collector output signal wiring example:
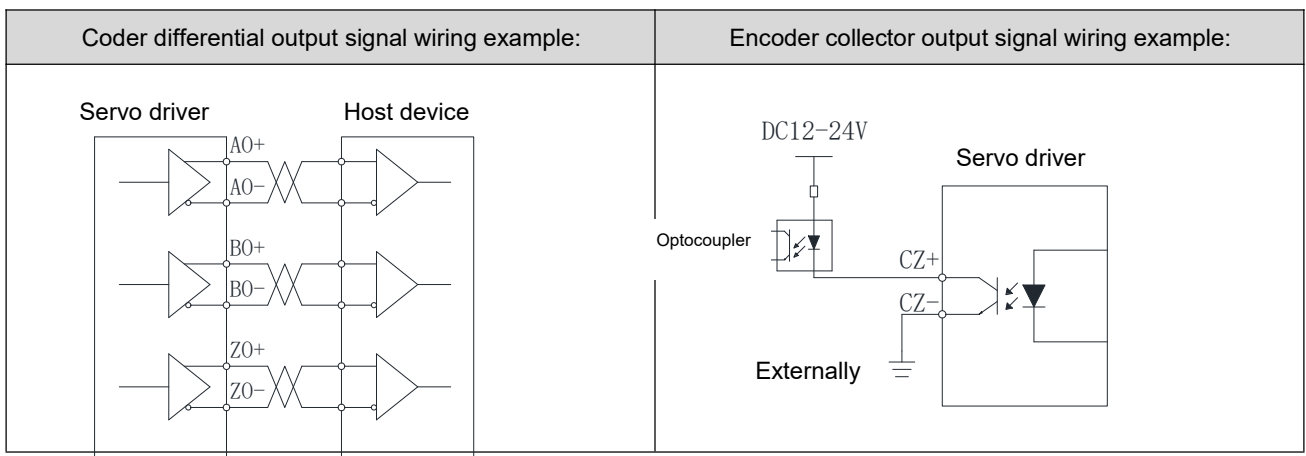
3.3.3 **Digital Input Signal**

Name of signal		Default feature	Pin number	Function
Universal input and output	COM+		14	Power positive for input terminals
	IN1	S_ON	16	Servo Enable
	IN2	P_OT	17	Positive limit
	IN 3	N_OT	18	Negative limit
	IN 4	JOG_P	19	Point Forward
	IN 5	JOG_N	20	Point reversal
	IN 6	GO_HOME	21	Start Back to Zero
	IN 7	HOME	22	Origin signal

IN1~IN7 interface circuit is the same, take IN1 as an example.

a) When the upper computer device is a relay output:
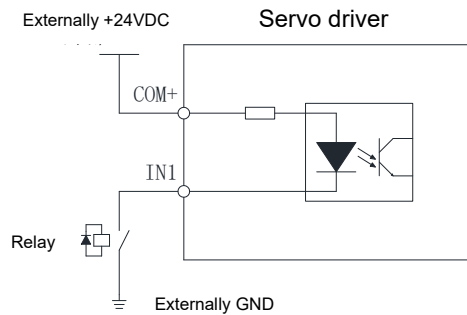
b) When the upper computer device opens the collector:
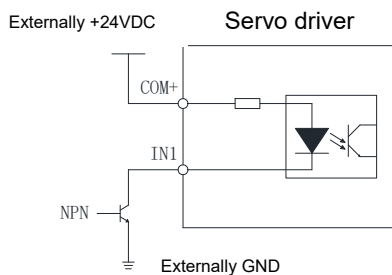
● **Note: PNP input is not supported.**

● Digital input signal port indication in LED:

The servo drive provides the validity of the LED display digital input and output signal, which can be used to check for failure of the digital input and output. The LED indication is as follows:

1、 Please operate on the servo drive so that the display Pn002 parameter "panel display operation method ", the monitoring value of the decimal number, need to be converted to 16 bits of binary number for viewing;

2、The binary number corresponding bit is "0" indicating that the driver did not receive the input signal, and "1" indicates that the driver received the input signal. The binary position corresponding to each IN pin is as follows:

15							8
Reservations							

7	6	5	4				0
Reservations	IN7	IN6	IN5	IN4	IN3	IN2	IN1

3.3.4 Digital Output Signal

Name of signal		Default feature	Pin number	Function
Universal input and output	OUT1	ALM	23	Servo alarm
	OUT2	COIN	24	Positioning completed
	OUT3	BK	25	Lock lock
	DG		26	Common end of the output terminal

OUT1~OUT3 interface circuit is the same, take OUT1 as an example.

a）When the PC device enters a relay:
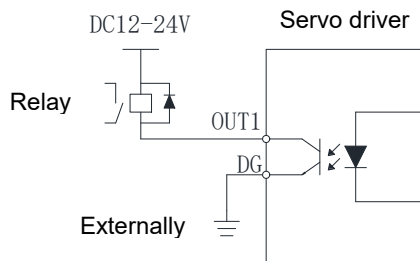
● Note: Please be sure to access the secondary diode when the upper computer device is a relay input, otherwise the digital output may be damaged.
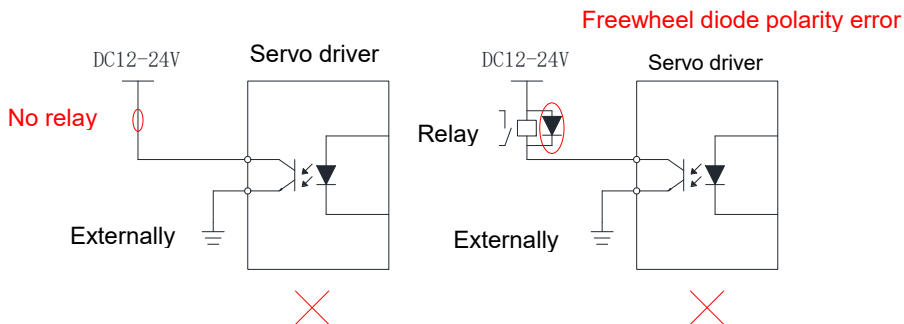
b）When the PC device is optocoupler input:
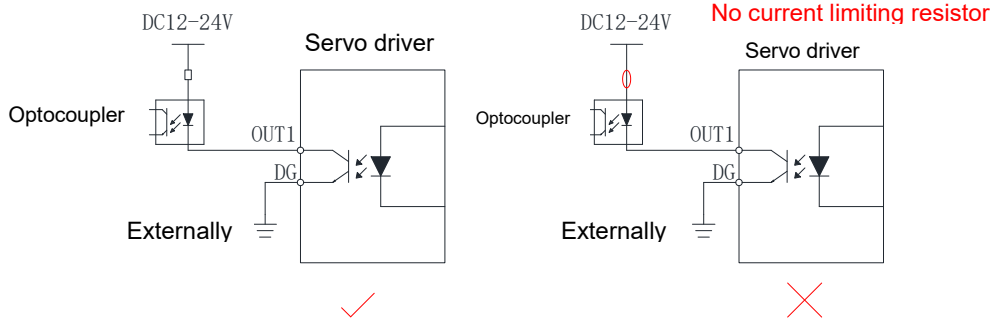
The maximum allowable voltage and current capacity of the internal optocoupler output circuit of the servo driver are as follows:

- Voltage: DC30V (maximum)
- Current: DC100mA (Max)
- Digital output signal port indication in LED:

The servo drive provides the validity of the LED display digital input and output signal, which can be used to check for failure of the digital input and output. The LED indication is as follows:

1、 Please operate on the servo drive so that the display Pn003 parameter "panel display operation method ", the monitoring value of the decimal number, need to be converted to 16-digit binary number for viewing;

2、 The 2-digit corresponding bit is "0" to indicate that the driver has no output signal, and "1" to indicate that the driver receives the output signal. The binary position corresponding to each OUT pin is as follows:

15							8
Reservations							

7	6	5	4				0
Reservations				OUT3	OUT2		OUT1

3.4 Servo driver communication signal terminals CN4, CN5
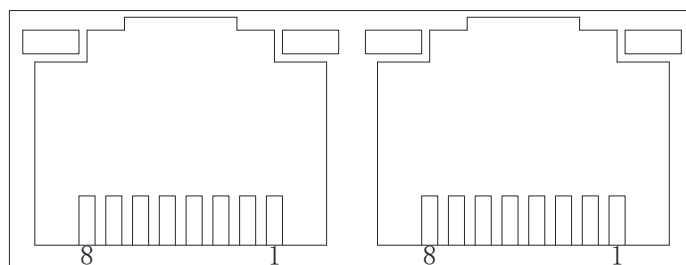
Fig .3-4 Servo Drive Communication Terminal (RJ45) pin diagram

Name of signal		Pin number	Function
Communication	RS485+	1	RS485 communication port

signal	RS485-	2	
	GND	3	
Reservations		4	No connection
		5	
		6	
		7	
		8	

3.5 **Location Control Mode Wiring Example**

(1) Line-saving incremental encoder position control mode wiring
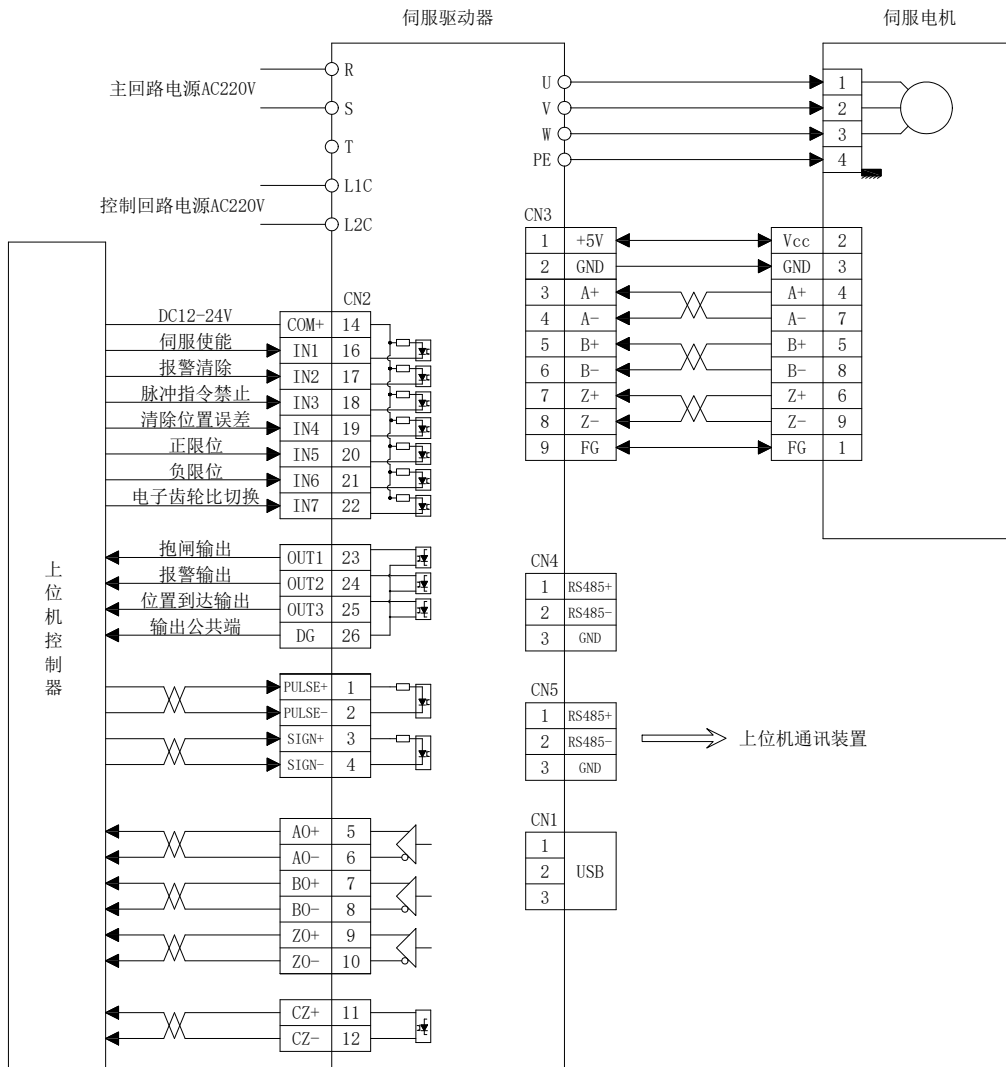
3.6 **Anti-interference countermeasures for electrical wiring**

To suppress interference, please take the following measures:

◆ instruction input cable length please below 3m, encoder cable below 20m.

◆ ground wiring as thick as possible. (2.0 mm^{2}above)

◆ please use noise filter to place rf dry. Please install the noise filter on the input side of the power cord when using in the environment where the power supply interference is strong in the civil environment.

◆ The following methods can be used for misoperation caused by electromagnetic interference:

① Install the upper computer device and the noise filter near the servo drive as much as possible.

② Install surge suppressor on coil of relay, screw tube, electromagnetic contactor.

③ when wiring, please separate the strong and weak lines and keep the spacing above 30cm.Do not put into the same pipe or bundle together.

④ Do not share electricity with electric welding machine, discharge processing equipment, etc. When there is a high frequency generator nearby, install a noise filter on the input side of the power cord.

四　　Panel Display and Operation

4.1 Panel Composition

The servo drive display panel is composed of 4 keys and 5 bit LED digital tube display, which is used to realize the display of various state information, test machine operation, parameter management and so on. The four keys are:

▲ UP key: Serial number, numeric value increase, or option forward

▼ DOWN KEY: Serial number, numeric value decrease, or option back off

Ⓜ Mode key: mode switching, operation cancellation, or shift

Ⓢ SET key: Go to the next submenu, or confirm input

4.2 Panel Display

when the servo drive is running, the led display can be used for the monitoring display of the servo, parameter setting: the drive has only one interface pnxxx (xxx is a three-digit decimal number value, corresponding to the parameter number on the manual). if a value shown by a pnxxx is not flashed, it indicates that the parameter can be set, otherwise the parameter is used to monitor the drive state use.

4.2.1 Panel Display Operations

Figure 4-1 Schematic illustration of the servo driver panel operation

● power on, wait for the servo drive initialization to be completed after the panel display immediately enters the parameter numerical display mode. The default driver parameter number can be set by parameter Pn209.

● once a failure occurs, the servo drive automatically displays the fault monitoring code.

4.2.2 Data show

Description of different data lengths and negative numbers:

a)4-digit or 5-digit or below unsigned:

Using a single-page digital tube (5 bits) display, for signed numbers, the highest bit of data "-" indicates a negative sign.

For example :-6666:

For example :65535 as follows:

b) Symbols above 4 bits or unsigned numbers above 5 bits

The number of digits is shown from low to high paging, one page for every 4 bits, display method:

current page + current page value, by long press M key, toggle the current page.

Note: The driver can display a maximum of 12 bits. Three pages are required to indicate the "high 4 bits", "medium 4 bits", and "low 4 bits" of the 12 bits values.

Numeric property representing the current page:

"Up, middle, and down" means "high 4 bits", "medium 4 bits", and "low 4 bits"

"On": The value on the next page is not 0
"Off": The value on the next page is 0

Indicates blinking

"On": The current value is negative
"Off": The current value is positive

For example :1073741824 as follows:

First page: low 4 bits   Second page: Middle 4 bits   Third page: high 4 bits

Long press the M key

Long press the M key

Long press the M key

The first flashing "-" from the left indicates the value attribute of the current page

"On": The value of the next page is not 0;
"Off": The value of the next page is 0

For example :-1073741824 as follows:

First page: low 4 bits   Second page: Middle 4 bits   Third page: high 4 bits

Long press the M key

The first flashing "-" from the left indicates the value attribute of the current page
"On": The value of the next page is not 0;
"Off": The value of the next page is 0

Represents negative sign "-"

4.3 **Parameter setting**

The panel using the servo drive can be set for parameters. Please read "Chapter 5 Parameter Instructions" for parameter details. Take the LED Display Panel Display Parameters menu as an example, modify the servo driver PN024(subdivision) from the default value of 4000 to 3200 as an example.

Note: The driver can display a maximum of 12 bits. Three pages are required to indicate the "high 4 bits", "medium 4 bits", and "low 4 bits" of the 12 bits values.
Numeric property representing the current page:
"Up, middle, and down" means "high 4 bits", "medium 4 bits", and "low 4 bits"

"On": The value on the next page is not 0
"Off": The value on the next page is 0

Indicates blinking

"On": The current value is negative
"Off": The current value is positive

UP / DOWN modification

Short press M key to shift
UP / DOWN modification

Short press S key to display parameters

Long press S key to confirm the modification

Long press M key to cancel modification

Short press M key to shift
UP / DOWN modification

● **Note: The modified parameter is only sent to the RAM area of the drive, and the number before the change will be restored after the drive is powered down and restarted. After determining the correctness of the parameter, to save the parameter value permanently, you need to "save the parameter" in the auxiliary function operation interface.**

4.4 **Parameter Save**

The user writes the drive's parameter value by means of the LED panel or by means of communication, saves only the RAM area of the drive, and if no parameter saving operation is performed, the drive will return to its original parameter value after power down.

write the pn090 parameter in the drive led key display panel to 1 for parameter saving, or the upper computer device writes 1 for parameter saving to the drive's 90(decimal) number parameter by means of communication.after the parameter is saved successfully, the drive sets the pn090 parameter to 0.

4.5 **Restoration of factory**

the factory setting is restored by writing 1 to the pn091 parameter in the drive led key display panel, or the upper computer device writes 1 to the 91(decimal) parameter of the drive by means of communication.after recovering the ex-factory settings successfully, the drive set the pn091 parameter to 0.

五　Run

The driver can work in external pulse mode or in internal pulse mode. At the same time, if the driver operates in internal pulse mode, there is a rich application mode to choose from.

5.1 External pulse mode

when the pn017 parameter is set to 1, the drive operates in external pulse mode.In this mode, the user needs to set the type of external pulse and the appropriate drive breakdown.

★　Description of association parameters

Parameters	Name	Set the scope	Function	Factory setting
Pn017	Driven Pulse Instruction Source	0: Internal Pulse Instruction 1: External Pulse Instruction	Set the source of the drive pulse instruction	1
Pn019	External pulse instruction type	0: Pulse + Direction (Uplink) 1: Pulse + Direction (Lower Edge) 2: CW+CC (dual pulse) 3: Orthogonal Pulse Mode	Set the type of external pulse instruction Note: You need to save the parameters and restart them to take effect	0
Pn024	Breakdown	200～65535	Set the run fraction of the drive	4000

5.2 Internal pulse mode

when pn017 is set to 0, the drive operates in internal pulse mode.In this mode, the user needs to set the internal pulse application mode (Pn020) as well as the appropriate drive breakdown.

★　Description of association parameters

Parameters	Name	Set the scope	Function	Factory setting
Pn017	Driven Pulse Instruction Source	0: Internal Pulse Instruction 1: External Pulse Instruction	Set the source of the drive pulse instruction	1
Pn020	Internal Pulse Application Mode	0: Communication control 1: Keep, do not set 2: IO Control Mode 1: Start + Stop + Direction	Set the internal pulse application mode of the drive	0

		3: IO Control Mode 2: Forward + Reverse 4: IO Control Mode 3: Internal multi-segment speed 5: IO Control Mode 4: Internal multi-segment location 6: IO Control Mode 5: Fixed Length Forward and Reverse 7: Multi-functional Application Mode 8: Moment Control Mode		
Pn024	Breakdown	200～65535	Set the run fraction of the drive	4000

5.2.1 **Communication control**

When the Pn020 parameter is set to 0, the motor operates in Communication Control mode with the following functions:

● Communication control motor fixed length positive and negative rotation

● Communication control motor start and stop

★ Description of association parameters

Parameters	Name	Set the scope	Units	Function	Factory setting
Pn070	Point running acceleration	1～2000	r/s ^2	Set the acceleration of the motor at a constant length	200
Pn071	Point operation speed reduction	1～2000	r/s ^2	Set the constant speed of the motor	200
Pn072	Point running speed	0～6000	rpm	Set the maximum running speed of the motor	600
Pn073 Pn074	Point running itinerary	-1073741824～1073741824	Pulse command	Set the stroke of the motor running at a fixed length	2000
Pn075	Point run acceleration	1～2000	r/s ^2	Set Motor Point Operation Acceleration	100
Pn076	Point-run speed reduction	1～2000	r/s ^2	Set up motor point operation speed reduction	100
Pn 077	Point Speed	0～6000	rpm	Set the maximum speed of motor point operation	600
Pn078	Sharp Stop Speed	1～2000	r/s^2	Set the speed of the motor	500
Pn084	Internal Pulse Instruction Operation Mode	0～1	-	Set Motor Position Instruction Mode (Effective in Fixed Length Mode) 0: Incremental Position Mode 1: Absolute Position Mode	0

Starting operation is as follows:

1. writes the specified parameter to the Pn018 parameter through the upper computer to start the motor's fixed length forward and backward, stop, etc.

★   Description of association parameters

Parameters	Parameter values	Function
Pn018	0	Read: The drive is in a waiting state (the driver sets Pn018 to 0 after responding to the instruction) Write: Invalid / meaningless
	1	Read: Drive Waiting for Response Command Write: the motor fixed length forward rotation (the track is set by Pn0700Pn074/Pn084), the driver responds to the instruction to set Pn018 to 0
	2	Read: Drive Waiting for Response Command Write: Motor fixed-length reversal (trajectory set by Pn0700Pn074/Pn084), driver set Pn018 to 0 after response instruction
	3	Read: Drive Waiting for Response Command Write: Motor point forward (trajectory is set by Pn075~Pn077), driver responds to instruction to set Pn018 to 0
	4	Read: Drive Waiting for Response Command Write: Motor point reversal (trajectory set by Pn075~Pn077), driver set Pn018 to 0 after response instruction
	5	Read: Drive Waiting for Response Command Write: Motor according to Pn078 set the deceleration stop, the driver responds to the instructions to set Pn018 to 0
	6	Read: Drive Waiting for Response Command write: when the constant length is running, the motor slows down according to the deceleration speed set by pn071; when the point is running, the motor slows down according to the deceleration speed set by pn076.Set Pn018 to 0 after driver responds to instruction

5.2.2 IO Control Mode 1: Start and Stop + Direction

When the Pn020 parameter is set to 2, the function of the motor is as follows:

● Control the starting and stopping of the motor through one IN input port and the operation direction of the motor through another IN input port

★   Description of association parameters

Parameters	Name	Set the scope	Units	Function	Factory setting
Pn075	Point run acceleration	1~2000	r/s ^2	Set Motor Point Operation Acceleration	100
Pn076	Point-run speed reduction	1~2000	r/s ^2	Set up motor point operation speed reduction	100
Pn 077	Point Speed	0~6000	rpm	Set the maximum speed of motor point	600

				operation	
Pn078	Sharp Stop Speed	1～2000	r/s^2	Set the speed of the motor	500

Starting operation is as follows:

1、 Set the two input port functions of the drive to be :" Funin.7: point forward/start/stop "and" Funin.8: point forward inversion/direction. Assuming that the user's actual wiring is: IN3 control motor start and stop, IN4 control motor running direction, you can set the following parameters:

Parameters	Note
Pn062	Set Value :39(Open)/7(Closed)
Pn063	Set Value :40(Open)/8(Closed)

2、 The motor will rotate when the COM+ pin of the driver is connected to +24V, and when IN3 is connected to 0V (normally open)/24V (normally closed), the direction of the motor will be controlled by controlling the input signal of IN4.

3、 Motor operating status and IN3, IN4 input:

IN3 status	IN4 status	Motor status
OFF	OFF	Stop
OFF	ON	Stop
ON	OFF	Turn positive
ON	ON	Reverse

Note: OFF indicates invalid input and ON indicates valid input

5.2.3 IO Control Mode 2: Forward + Reverse

When the Pn020 parameter is set to 3, the following functions are provided in the "IO Control Mode 2: Forward + Reverse" mode:

● Control the positive start and stop of the motor by one IN input port and the reverse start and stop of the motor by another IN input port

★ Description of association parameters

Parameters	Name	Set the scope	Units	Function	Factory setting
Pn075	Point run acceleration	1～2000	r/s ^2	Set Motor Point Operation Acceleration	100
Pn076	Point-run speed reduction	1～2000	r/s ^2	Set up motor point operation speed reduction	100
Pn 077	Point Speed	0～6000	rpm	Set the maximum speed of motor point operation	600
Pn078	Sharp Stop Speed	1～2000	r/s^2	Set the speed of the motor	500

Starting operation is as follows:

1、 Set the two input port functions of the drive to be :" Funin.7: point forward/start/stop "and" Funin.8: point forward inversion/direction. Assuming that the user's actual wiring is: IN3 control motor start and stop, IN4 control motor running direction, you can set the following parameters:

Parameters	Note
Pn062	Set Value :39(Open)/7(Closed)
Pn063	Set Value :40(Open)/8(Closed)

2、 The drive's COM+ pin access +24V, and the motor will turn positive when IN3 accesses 0V (normally open)/24V (normally closed); similarly, the motor will reverse when IN4 accesses.

3、 Motor operating status and IN3, IN4 input:

IN3 status	IN4 status	Motor status
OFF	OFF	Stop
OFF	ON	Reverse
ON	OFF	Turn positive
ON	ON	Stop

Note: OFF indicates invalid input and ON indicates valid input

5.2.4 IO Control Mode 3: Internal Multi-segment Speed

When the Pn020 parameter is set at 4, the motor operates in "IO control mode 3: internal multi-segment speed" mode with the following functions:

● A 16-segment speed instruction is stored inside the drive to select one of the four IN input ports

★ Description of association parameters

Parameters	Name	Set the scope	Units	Function	Factory setting
Pn075	Point run acceleration	1～2000	r/s ^2	Set Motor Speed Meter Running Acceleration	100
Pn076	Point-run speed reduction	1～2000	r/s ^2	Set up motor speed meter to run speed reduction	100
Pn078	Sharp Stop Speed	1～2000	r/s^2	Set the speed of the motor	500
Pn100	Speed Meter / Location Table IO Switch Delay Effective Time	0～65535	62.5us	Set the speed meter mode, how long after the IN terminal switch the drive starts to respond to/switch the speed segment	200
Pn107	Multi-stage Speed Control 0	-6000～6000	rpm	Set Speed Meter Mode Section 0 Speed	0
Pn108	Multi-stage Speed Control 1	-6000～6000	rpm	Set Speed Meter Mode Section 1 Speed	100
Pn109	Multi-stage Speed Control 2	-6000～6000	rpm	Set Speed Meter Mode Section 2 Speed	200
......					

Pn118	Multi-segment speed control 13	-6000~6000	rpm	Set Speed Meter Mode Section 13 Speed	1300
Pn119	Multi-stage Speed Control 14	-6000~6000	rpm	Set Speed Meter Mode Section 14 Speed	1400
Pn120	Multi-stage speed control 15	-6000~6000	rpm	Set Speed Meter Mode Section 15 Speed	1500

Starting operation is as follows:

4、 Set the four IN input port functions of the drive as "Funin.14: multi-segment speed control 0"," Funin.15: multi-segment speed control 1"," Funin.16: multi-segment speed control 2"," Funin.17: multi-segment speed control 3. Suppose the user connection is

1、 Set the four IN input port functions of the drive and the port correspondence:

IN3 is set to: FunIN.14: Multi-segment Speed Control 0

IN4 is set to: FunIN.15: Multi-segment Speed Control 1

IN5 is set to: FunIN.16: multi-stage speed control 2

IN6 Set to: FunIN.17: Multi-segment Speed Control 3

Parameters	Note
Pn062	Set Value :46(Open)/14(Closed)
Pn063	Set :47(open)/15(closed)
Pn064	Set :48(Open)/16(Closed)
Pn065	Set Value :49(Open)/17(Closed)

2、 **Motor running state and IN3, IN4, IN5, IN6 input relation :(off means input invalid, ON means input has)**

IN6 Status	IN5 status	IN4 status	IN3 status	Combination values	Motor status
OFF	OFF	OFF	OFF	0	Run section 0 speed
OFF	OFF	OFF	ON	1	Running at 1st speed
OFF	OFF	ON	Off	2	Running at 2nd speed
OFF	OFF	ON	ON	3	Running 3rd speed
				……	
ON	ON	ON	Off	14	Run section 14 speed
ON	ON	ON	ON	15	Run section 15 speed

In 3. speed meter mode, no separate start and stop signal is required, when the speed section selected by IN terminal is set to 0, the motor stops. Therefore, the speed of section 0 is generally set to 0, so that the motor can remain stationary instead of running when the input is completely invalid.

5.2.5 IO Control Mode 4: Internal Multi-segment Position

When the Pn020 parameter is set to 5, the motor operates in "IO control mode 4: internal multi-segment position" mode with the following functions:

● A 16-segment location/trip is stored inside the drive and one of the locations/trips can be selected through the 4 IN input ports

★ Description of association parameters

Parameters	Name	Set the scope	Units	Function	Factory setting
Pn070	Point running acceleration	1～2000	r/s ^2	Set Motor Position Meter Operation Acceleration	200
Pn071	Point operation speed reduction	1～2000	r/s ^2	Set up motor position meter to run speed reduction	200
Pn078	Sharp Stop Speed	1～2000	r/s^2	Set the speed of the motor	500
Pn084	Internal Pulse Instruction Operation Mode	0～1	-	Set Motor Position Instruction Mode (Effective in Fixed Length Mode) 0: Incremental Position Mode 1: Absolute Position Mode	0
Pn100	Speed Meter / Location Table IO Switch Delay Effective Time	0～65535	62.5us	How long after the IN terminal is switched the drive starts responding to / running the set trip	200
Pn127 Pn128	Multi-segment position control 0	-1073741824～ 1073741824	Pulse command	Set Position Table Mode Section 0 Speed	0
Pn129 Pn130	Multi-segment position control 1	-1073741824～ 1073741824	Pulse command	Set Position Table Mode Section 1 Speed	0
Pn131 Pn132	Multi-segment position control 2	-1073741824～ 1073741824	Pulse command	Set Position Table Mode Section 2 Speed	0
			……		
Pn151 Pn152	Multi-segment position control 13	-1073741824～ 1073741824	Pulse command	Set Position Table Mode Section 13 Speed	0
Pn153 Pn154	Multi-segment position control 14	-1073741824～ 1073741824	Pulse command	Set Position Table Mode Section 14 Speed	0
Pn155 Pn156	Multi-segment position control 15	-1073741824～ 1073741824	Pulse command	Set Position Table Mode Section 15 Speed	0

Starting operation is as follows:

1、 Set the four IN input port functions of the drive and the port correspondence:

IN3 is set to: FunIN.18: multi-segment position control 0

IN4 Set to: FunIN.19: Multi-segment Position Control 1

IN5 is set to: FunIN.20: Multi-segment Position Control 2

IN6 Set to: FunIN.21: Multi-segment Position Control 3

Parameters	Note
Pn062	Set value :50(open)/18(closed)
Pn063	Set value :51(open)/19(closed)
Pn064	Set Value :52(Open)/20(Closed)
Pn065	Set Value :53(Open)/21(Closed)

2、 **Motor running state and IN3, IN4, IN5, IN6 input relation :(off means input invalid, ON means input has)**

IN6 Status	IN5 status	IN4 status	IN3 status	Combination values	Motor status
OFF	OFF	OFF	OFF	0	Run section 0 position
OFF	OFF	OFF	ON	1	Run paragraph 1 position
OFF	OFF	ON	Off	2	Run paragraph 2 position
OFF	OFF	ON	ON	3	Run paragraph 3 position
				......	
ON	ON	ON	Off	14	Run paragraph 14 position
ON	ON	ON	ON	15	Run paragraph 15 position

3、 In the position table mode, no separate start and stop signal is required, when the IN terminal has edge change, the motor starts to respond to the position/line selected by the 4 IN terminals. It should be noted that if there is a change in the IN terminal when the motor is not stopped, it will cause the abnormal position of the motor.

4、 In incremental mode, it is recommended to set the 0 position to. In absolute position mode, it is recommended to use the power up automatic return zero function and set the 0th segment position to zero offset consistent.

5.2.6 IO Control Mode 5: Fixed Length Forward and Reverse

When the Pn020 parameter is set to 6, the following functions are provided in the "IO Control Mode 5: Fixed Length Forward and Reverse" mode:

● Control the length forward rotation of the motor through one IN input port and the length reversal of the motor by another IN input port

★ Description of association parameters

Parameters	Name	Set the scope	Units	Function	Factory setting
Pn070	Point running acceleration	1～2000	r/s ^2	Set the acceleration of the motor at a constant length	200
Pn071	Point operation speed reduction	1～2000	r/s ^2	Set the constant speed of the motor	200
Pn072	Point running speed	0～6000	rpm	Set the maximum running speed of the motor	600

Pn073 Pn074	Point running itinerary	-1073741824~ 1073741824	Pulse command	Set the stroke of the motor running at a fixed length	2000
Pn078	Sharp Stop Speed	1~2000	r/s^2	Set the speed of the motor	500
Pn084	Internal Pulse Instruction Operation Mode	0~1	-	Set Motor Position Instruction Mode (Effective in Fixed Length Mode) 0: Incremental Position Mode 1: Absolute Position Mode	0

Starting operation is as follows:

5、 Set the two input port functions of the drive to be :" Funin.7: point forward/start/stop "and" Funin.8: point forward inversion/direction. Assuming that the user's actual wiring is: the following parameters can be set by controlling the fixed length positive rotation of the motor through IN3 and the fixed length reverse of the motor by IN4:

Parameters	Note
Pn062	Set Value :39(Open)/7(Closed)
Pn063	Set Value :40(Open)/8(Closed)

6、 The drive's COM+ pin access +24V, IN3 access 0V (normally open)/24V (normally closed), the motor will be fixed length forward turn Pn073/Pn074 set pulse stroke; similarly, when IN4 access, the motor will be fixed length reversal Pn073/Pn074 set pulse stroke.

7、 Motor operating status and IN3, IN4 input:

IN3 status	IN4 status	Motor status
OFF	OFF	Stop
OFF	ON	Motor fixed-length reverse Pn073/Pn074 set pulse stroke after shutdown
ON	OFF	Motor fixed length positive turn Pn073/Pn074 set pulse stroke after shutdown
ON	ON	State error, abnormal motor operation

Note: OFF indicates invalid input and ON indicates valid input

8、 If the motor is in operation, the driver will ignore the input trigger signal at the moment, only if the motor is still, will respond to the input signal, such as: when the motor is in positive rotation, if the motor fixed length reverse signal input is valid, the motor will not respond to the signal, the motor will be forwarding the set pulse stroke after shutdown.

5.3 **Position Instruction Filtering**

The position instruction (encoder unit) after the electronic gear frequency division or frequency doubling is filtered. The method is mean filter.

Consideration should be given to adding position instruction filters in the following applications:

● The position instruction of the upper computer output is not processed by adding or subtracting speed

● Low frequency of pulse command

● When the electronic gear ratio is more than 10 times

★ Description of association parameters

Parameters	Name	Set the scope	Units	Function	Mode of setting	Effective time	Factory setting
Pn028	Instruction filtering time constant	1～2048	62.5us	Sets the time constant for filtering the average value of the position instruction (encoder unit)	Stop setting	Effective immediately	512

● the function has no effect on the displacement (total number of position instructions).

● If the set value is too large, the delay of the response will increase, and the filter time constant should be set according to the actual situation.

5.4 Positioning completion function

the positioning completion function refers to when the driver detects that the position instruction stop time exceeds the user setting time (pn044: pulse stop detection time), and the position deviation meets the conditions set by the user (pn042: positioning completion accuracy) and maintains a certain time (pn043: in place signal establishment time) when the in place completion signal is output.

★ Description of association parameters

Parameters	Name	Set the scope	Units	Function	Mode of setting	Effective time	Factory setting
Pn042	Positioning completion accuracy	1～65535	Encoder Unit	Positioning accuracy of motor in place signal output	Run Settings	Effective immediately	10
Pn043	In place signal establishment time	0～65535	62.5us	Set up the time when the motor is in place when the signal is output	Run Settings	Effective immediately	200
Pn044	Pulse stop detection time	0～65535	62.5us	Set the pulse stop detection time when the motor is in place signal output	Run Settings	Effective immediately	200

5.5 Origin Reversion

（1） **Function Introduction**

origin: i.e. mechanical origin, can be expressed as origin switch signal or limit switch signal, set by pn288(origin revert mode) parameter.

zero point: i.e. locate the target point, which can be expressed as the origin + offset (pn293/pn294: mechanical origin offset. when the offset is set to 0, the zero and origin coincide.

The function of origin reversion is that after triggering the function of origin reversion, the motor will actively find the zero point and complete the function of positioning.

During the origin reversion operation, the other position instructions (including the origin reversion enable signal triggered again) are shielded; after the origin reversion operation is completed, the drive can respond to other position instructions.

The origin return function includes two modes: origin return zero and electrical return zero.

origin return to zero: the driver actively locates the relative position of the motor shaft to the mechanical origin according to the pre-set mechanical origin after receiving the origin return trigger signal. First find the origin, and then move the offset on the origin base to the zero point. The origin returns to zero and is usually applied in the first search for zero.

Electrical return zero: after the zero point position is determined by the operation of the original point return zero, take the current position as the starting point, move a section of relative displacement.

after the origin reversion is completed (including origin return zero and electrical return zero), the motor current position (pn008/pn009: driver current position) is all consistent with the mechanical origin offset (pn293/pn294: mechanical origin offset).

After the origin return is completed, the driver outputs the origin back to zero to complete the signal, and the upper computer can confirm that the origin return is completed after receiving the signal.

（2） **Origin back to zero**

The following is an example of how the origin returns to zero:

- **Forward return to origin: point of deceleration, origin as the origin switch (Pn288=0)**
- **Forward return to origin: point of deceleration, origin is forward limit switch (Pn288=2)**
- **Forward return to origin: point of deceleration, point of origin is mechanical limit position (Pn288=4)**

(a) Forward return to origin: point of deceleration, origin as the origin switch (Pn288=0)
1 the motor returns to the origin before the origin switch (deceleration point) signal is invalid (0-invalid ,1- valid), the whole process did not trigger the forward limit switch

The motor first sets the value with the Pn289(speed of the high-speed search origin switch signal) and is forward searching the deceleration point signal until it meets the deceleration point rise. following the reduction speed set by pn291(search for the add or subtract speed of the origin switch signal) after deceleration to 0, reverse acceleration to -pn290(speed of low speed search origin switch signal) setting value, low speed search for the deceleration point signal to drop. Meets the deceleration point signal drops along the time deceleration stop, then with the Pn290 setting value to continue the low speed forward search deceleration point rise. In forward acceleration or forward uniform speed operation, stop immediately when the origin signal rises along the signal.
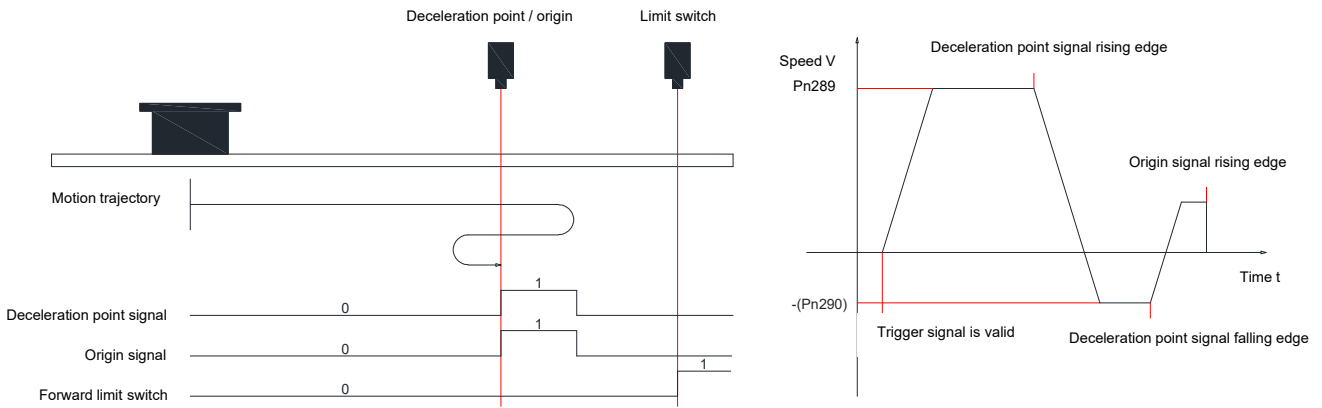
The switch (deceleration point) signal is valid (0- invalid ,1- valid) before the motor returns to the origin, and the forward limit switch is not triggered throughout the process

the motor directly with -pn290(low speed search origin switch signal speed) set value low speed reverse search deceleration point signal drop edge, encountered deceleration point signal drop along the time deceleration stop, then with pn290 set value forward continue to search the deceleration point signal rise edge, positive acceleration or uniform speed operation, encountered origin signal rise edge immediately stop.
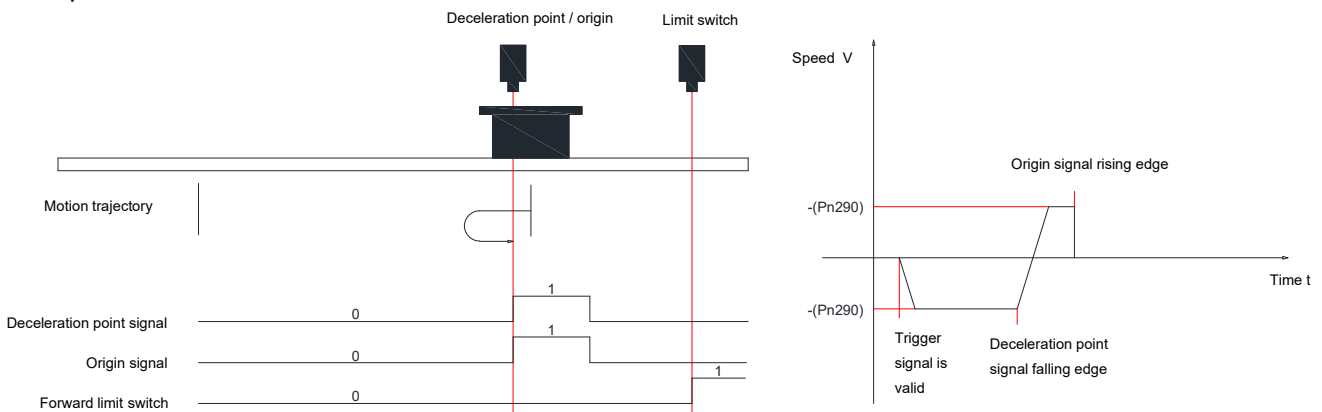
3 The motor returns to the origin before the origin switch (deceleration point) signal is invalid (0- invalid ,1- valid), the return point process triggers the forward limit switch

the motor first uses the pn289(speed of high-speed search origin switch signal) set value forward search deceleration point signal, after encountering the forward limit switch, slow down to stop after 0 according to the deceleration speed set by pn078(sharp stop reduction speed). and immediately reverse the return to the origin (pn295=2/3) according to the pn295(mechanical origin offset and the way the limit is handled), or stop waiting for the upper device to give the return to the origin trigger signal again (pn295=0/1. after satisfying the condition, the motor reverse search the deceleration point signal drop with the -pn289 setting value. meet the deceleration point signal drop along the back, according to the pn291(search origin switch signal add and subtract speed) set the deceleration speed to 0, then forward

acceleration to pn290(low speed search origin switch signal speed) set value, forward acceleration or forward uniform speed operation, encounter origin signal rise along the signal immediately stop.
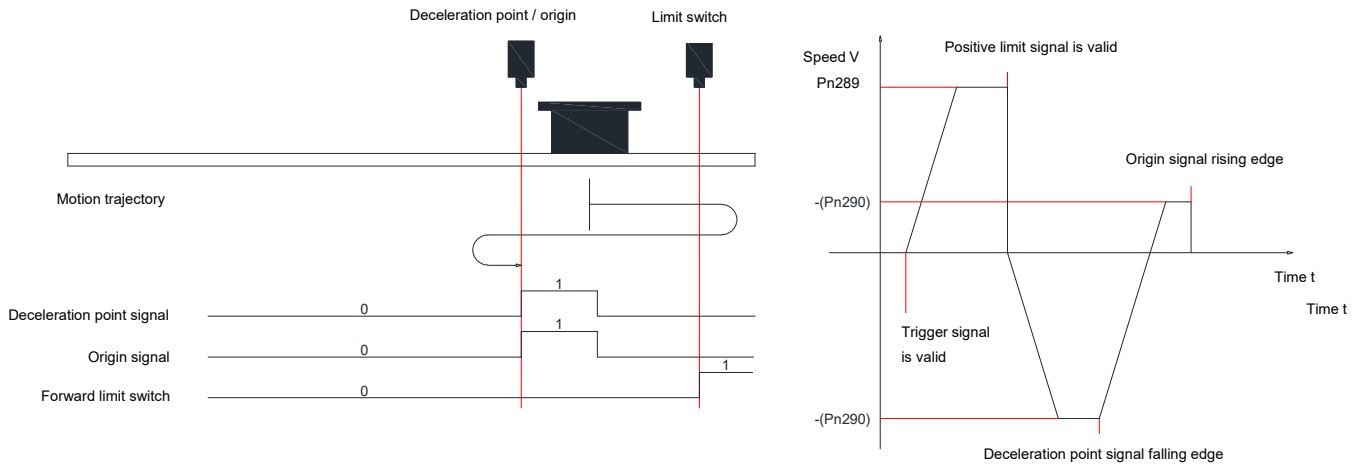
(b) Forward return to origin: point of deceleration, origin is forward limit switch (Pn288=2)

Forward limit switch (deceleration point) signal is invalid (0- invalid ,1- valid)

the motor first searches the deceleration point signal forward with the pn289(speed of the high-speed search origin switch signal) setting value until it meets the deceleration point up the edge.following the reduction speed set by pn291(search origin switch signal for add or subtract speed) after deceleration to 0, reverse acceleration to -pn290(speed of low speed search origin switch signal) setting value, low speed search deceleration point signal drop. Meets the deceleration point signal drop along the time deceleration downtime, then with the Pn290 setting value to continue the low speed forward search deceleration point rise. In forward acceleration or forward uniform speed operation, stop immediately when the forward limit switch signal rises along the signal.
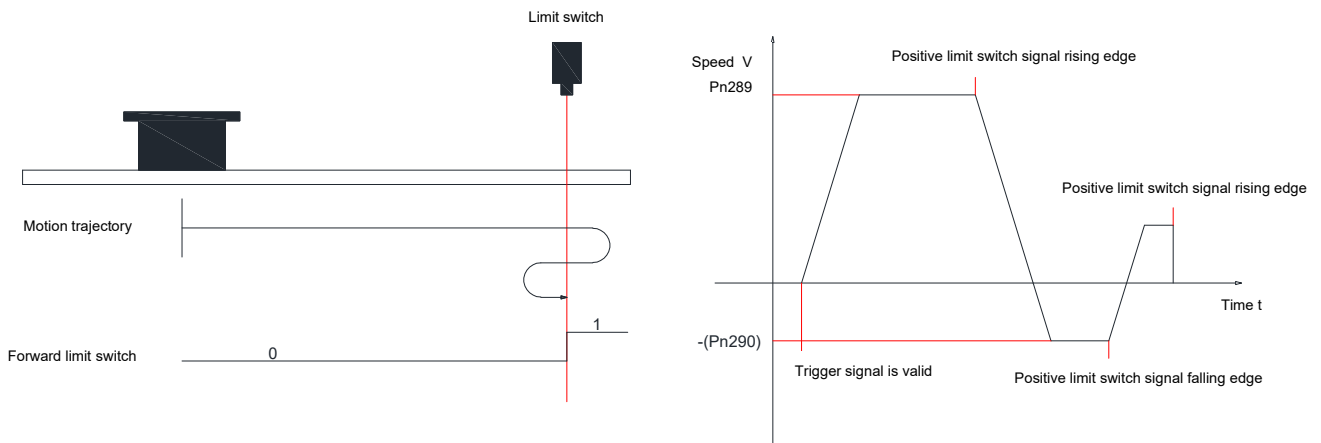
Forward limit switch (deceleration point) signal is valid (0- invalid ,1- valid)

the motor directly with -pn290(low speed search origin switch signal speed) set value low speed reverse search deceleration point signal drop edge, encountered deceleration point signal drop along the immediate deceleration stop, then with pn290 set value forward continue to search the deceleration point signal rise edge, positive acceleration or uniform speed operation, encountered forward limit switch signal rise edge immediately stop.
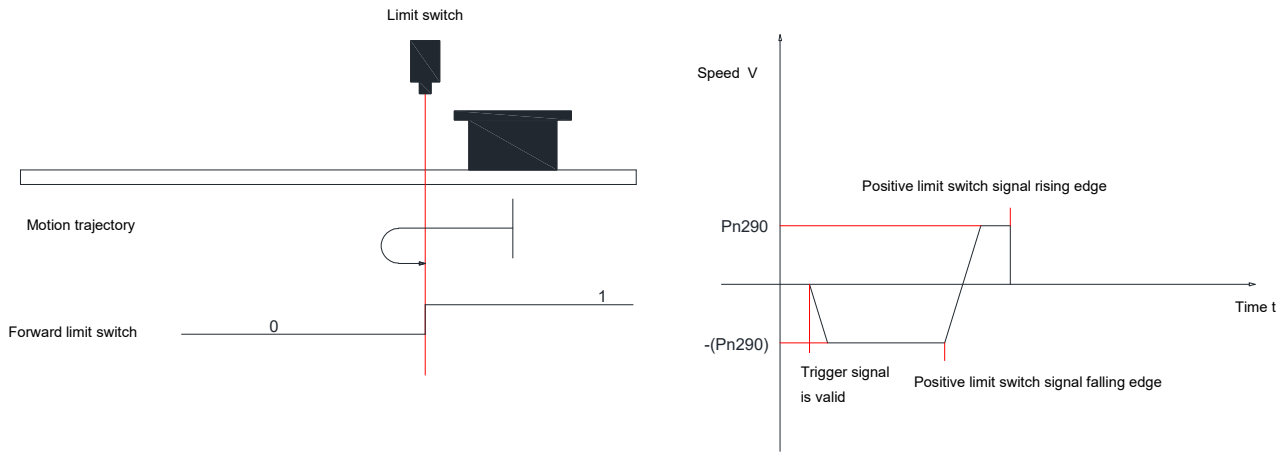
(c) Forward return to origin: point of deceleration, point of origin is mechanical limit position (Pn288=4)

The motor first operates with the Pn290(low speed searching the speed of the origin switch signal) setting value at low speed forward, after colliding to the mechanical limit position, if the motor torque reaches Pn298(torque return origin torque size), and the actual speed of the motor is lower than Pn297(torque return origin torque reaches the detection speed), and this state maintains a certain time Pn296(torque return origin torque arrival detection speed), determines the motor to the mechanical limit position and stops immediately.
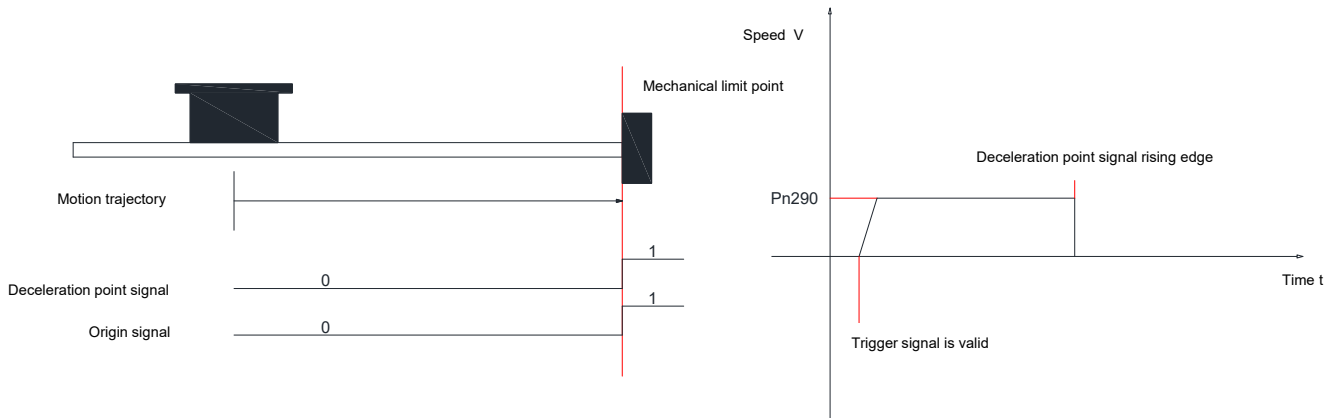
（3） **Electrical Return Zero**

After a mechanical return of the motor zero operation, the mechanical zero position of the system has been. after setting pn293/pn294 at this time, the motor can be moved from the current position (pn008/pn009) to the specified position (pn293/pn294). in electrical return zero mode, the motor runs at high speed with the set value of pn289(speed of high-speed search origin switch signal). the total displacement of the motor is determined by the difference between pn293/pn294 and pn008/pn009. the direction of operation is determined by the positive and negative of the total displacement of the motor. the displacement instruction is finished and the motor stops.

Motion trajectory

Pn008/Pn009   Pn293/Pn294

Speed V
Pn289

Motor displacement: (P03.46-P13.07) X electronic gear ratio

Time t

Trigger signal is valid
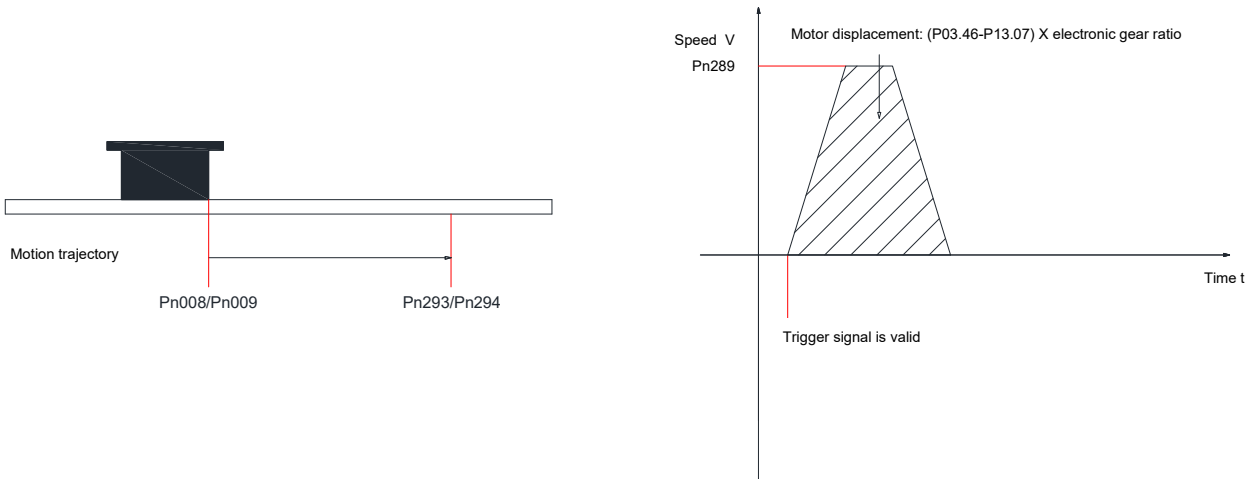
（4） **Mechanical Origin and Mechanical Zero**

Take Pn288=0 as an example to illustrate the difference between the mechanical origin and the mechanical zero:

Mechanical origin does not coincide with mechanical zero	Mechanical origin coincides with mechanical zero
if the origin offset (pn293/pn294) is set and the mechanical origin does not coincide with the mechanical zero point (pn295=0/2), during forward acceleration or forward uniform speed operation, the origin signal rises and stops immediately afterwards. and the motor current position pn008/pn009 after shutdown is mandatory as the pn293/pn294 setting value.	if the origin offset (pn293/pn294) is set and the mechanical origin coincides with the mechanical zero point (pn29 5=1/3), the origin signal rising edge immediately stops during forward acceleration or forward uniform speed operation. then the motor runs the pn293/pn294 set value of the stroke after stopping. at this time the motor current position pn008/pn009 and pn293/pn294 are set to the same value.
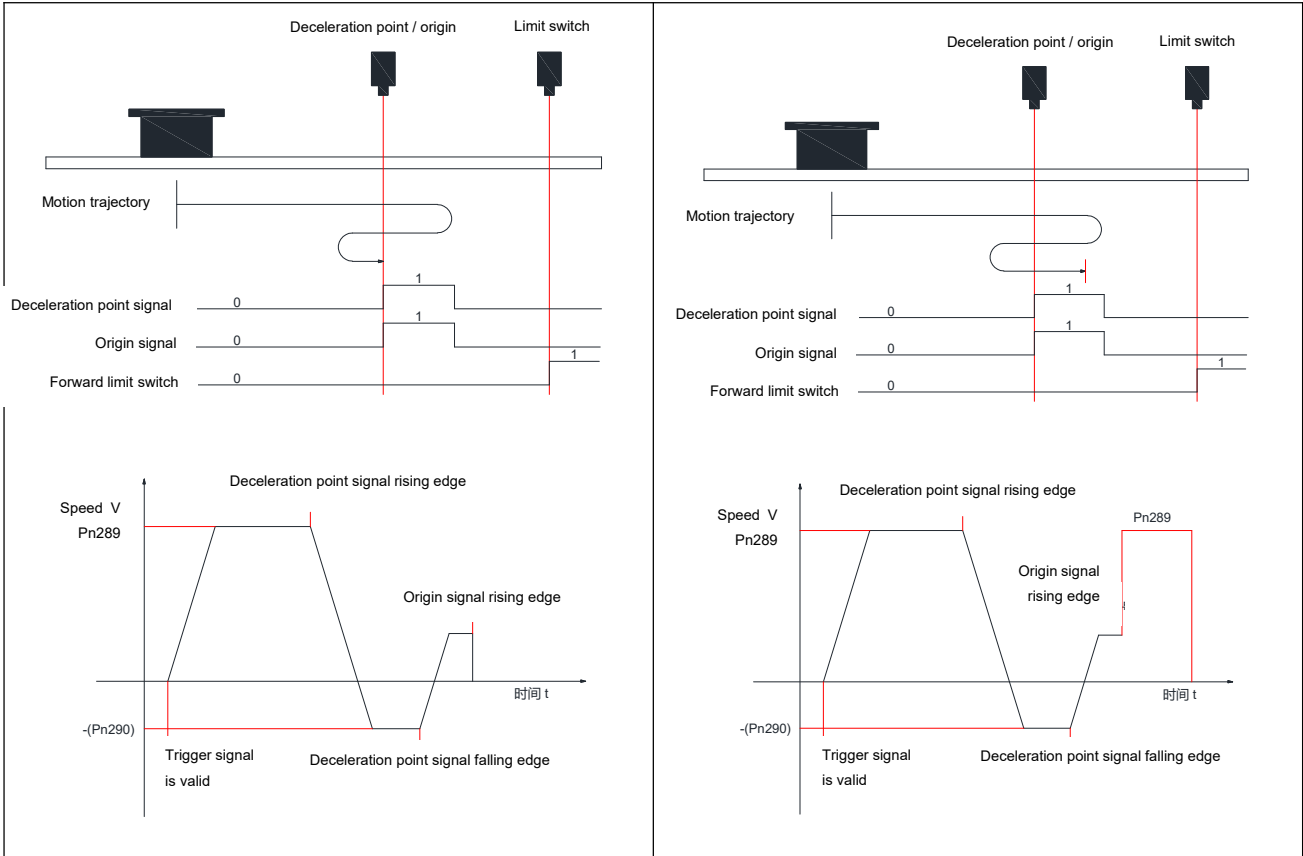
六 Description of parameters

Remarks:

1、 **For a parameter consisting of two registers (parameter number), the parameter number of the low position is a low 16 bit value, and the parameter number of the high position is a high 16 bit value, together, a signed 32 is a parameter.**

2、 **the parameter number written on the manual is pnxxx, where xxx is a three-digit decimal number that represents the address of the register (parameter), i.e. the register address in the modbus RTU communication.**

6.1 Display parameter 1[Pn000~Pn016]

Pn 000	Name	Fault code					
	Set the scope	-		Units	-	Factory setting	Display

15					11	10	9	8
Reservations						Bit 10	Bit9	Bit8
7	6	5	4	3	2	1	0	
Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0	

each bitx represents a fault state of the drive, and bitx =0 indicates that the drive does not have that fault; bitx =1 indicates that the drive has that fault.

Name	Description
Bit0	Internal voltage failure
Bit1	Overcurrent failure
Bit2	Over voltage failure
Bit3	Undervoltage failure
Bit4	Over temperature protection failure
Bit5	Parameter check failure
Bit6	Motor phase-out protection failure
Bit7	Track error failure
Bit8	encoder phase failure
Bit9	Pulse instruction failure
Bit 10	Energy brake failure
Reservations	reserved, meaningless

When the driver fails, the driver alarm status can be reset by "troubleshooting" or "motor offline" input after the fault is determined.

Pn001	Name	Drive status					
	Set the scope	-		Units	-	Factory setting	Display

15				12	11	10	9	8
Reservations					Bit 11	Bit 10	Bit9	Bit8

7	6	5	4	3	2	1	0
Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0

each bitx represents a state of the drive, when bitx =0, indicating that the drive is not in that state; and bitx =1, indicating that the drive is in that state.

Name	Description
Bit0	Drive enabling
Bit1	Drive alarm
Bit2	Completion in place (in closed-loop mode, location is completed)
Bit3	Motor in operation (effective in internal pulse application mode)
Bit4	Return to Zero
Bit5	Drive ready
Bit6	Speed arrival (internal pulse application mode indicating that the internal speed instruction reaches the set value)
Bit7	Lock output indication
Bit8	Drive in positive limit
Bit9	Drive in negative limit
Bit 10	Drive power indication
Bit 11	Drive torque arrival indication
Reservations	reserved, meaningless

Pn002	Name	Input Port Value					
	Set the scope	-		Units	-	Factory setting	Display

15				12	11	10	9	8
Reservations								

7	6	5	4	3	2	1	0
Reservations	IN 7	IN 6	IN 5	IN 4	IN 3	IN2	IN1

each inx represents a digital input port in the drive that has no input signal; when inx =1, indicates that the input port has an input signal., x =0

This register flag can be used to check if the input port of the driver has hardware failure, such as: given the IN1 port to apply the 0V signal (the driver digital input port is optocoupler co-anode connection method, COM+ port access 24V), at this time the optical coupling of the IN1 port should be on, the IN1 bit of this register should be 1, otherwise the driver

port hardware is damaged.

Pn003	Name	Output Port Value					
	Set the scope	-		Units	-	Factory setting	Display

15				12	11	10	9	8
Reservations								
7	6	5	4	3	2	1	0
Reservations					OUT3	OUT2	OUT1

, =0Each OUTx represents one of the drive's digital output ports OUTx this input port has no output signal; OUTx =1 indicates that this input port has an output letter. the register flag can be used to check the output port of the drive for hardware failure,.

Pn004	Name	Input port on trigger state					
	Set the scope	-		Units	-	Factory setting	Display

15				12	11	10	9	8
Reservations								
7	6	5	4	3	2	1	0
Reservations	IN 7	IN 6	IN 5	IN 4	IN 3	IN2	IN1

each inx indicates a digital input port in the drive that the input port did not have an over-on state; when inx =1, indicates that the input port had an over-on state. , x =0The status flag can be cleared by writing the corresponding numeric value to Pn006. can be used to determine whether the last zero clearing to the current moment, the drive INX input port has existed at least once the on trigger.

Pn005	Name	Input port off trigger state					
	Set the scope	-		Units	-	Factory setting	Display

15			12	11	10	9	8
			Reservations				
7	6	5	4	3	2	1	0
Reservations	IN 7	IN 6	IN 5	IN 4	IN 3	IN2	IN1

, x =0 Each INX represents a digital input port for the drive IN that the input port has not been turned off; when INX =1, that input port has a clearance break. The status mark can be cleared by writing the corresponding value through Pn007. Can be used to determine whether the last zero to the current moment, the drive INX input port has been at least one turn-off trigger.

Pn006	Name		Clear input port on trigger state				
	Set the scope	0～65535		Units	-	Factory setting	0

15			12	11	10	9	8
			Reservations				
7	6	5	4	3	2	1	0
Reservations	IN 7	IN 6	IN 5	IN 4	IN 3	IN2	IN1

Each INX indicates that one of the drive's digital input port IN writes invalid; when INX writes 1, clears that input port on trigger state (Pn004).**, x0900 hours,**after the write-in value is responded by the drive, the drive sets pn006 to 0.

Pn007	Name		Clear input port off trigger state				
	Set the scope	0～65535		Units	-	Factory setting	0

15			12	11	10	9	8
			Reservations				
7	6	5	4	3	2	1	0
Reservations	IN 7	IN 6	IN 5	IN 4	IN 3	IN2	IN1

each inx indicates that one of the drive's digital input port in write is invalid; when inx writes 1, clear this input port off trigger state (pn005).**, x0900 hours,**after the write-in value is responded by the drive, the drive sets pn007 to.

Pn008 Pn009	Name		Current position of the drive				
	Set the scope	-		Units	Pulse command	Factory setting	Display

shows the current position of the drive, after the drive is powered on, the current position is 0.can be written to 1 via pn084 to clear the current position of the drive.

Pn010	Name	Drive Current Speed Instruction

	Set the scope	-	Units	rpm	Factory setting	Display

Pn011	Name	Drive supply voltage				
	Set the scope	-	Units	0.01 V	Factory setting	Display

Pn012 Pn013	Name	Tracking error				
	Set the scope	-	Units	Encoder Unit	Factory setting	Display

Pn014 Pn015	Name	External given pulse counter				
	Set the scope	-	Units	Pulse command	Factory setting	Display

Pn016	Name	Zero-clearing external given pulse counter				
	Set the scope	0～1	Units	-	Factory setting	0
write pn016 to 1 will clear the external given pulse counter (pn014/pn015).after drive response, set pn016 to 0.						

6.2 Control parameter 1[PN 017- PN059]

Pn017	Name	Driven Pulse Instruction Source				
	Set the scope	0～1	Units	-	Factory setting	1
0: Internal Pulse Instruction						
1: External Pulse Instruction						

Pn018	Name	Communication control instructions				
	Set the scope	0～9	Units	-	Factory setting	0

When the Pn017 is set to 0(internal pulse instruction) and the Pn020 is set to 0 or other custom values (internal pulse application mode), the point movement forward and backward rotation of the motor is controlled by means of communication:

Pn018	Description
0	Read: The drive is in a waiting state (the driver sets Pn018 to 0 after responding to the instruction) Write: Invalid / meaningless
1	Read: Drive Waiting for Response Command Write: the motor fixed length forward rotation (running track is set by Pn0700Pn074/Pn084), the driver responds to the instruction to set Pn018 to 0 **Note: The drive can stop after running the set stroke. For intermediate downtime, write 5/6 via Pn018**
2	Read: Drive Waiting for Response Command Write: Motor fixed-length inversion (running track is set by Pn0700Pn074/Pn084), driver sets Pn018 to 0 after responding to instruction **Note: The drive can stop after running the set stroke. For intermediate downtime, write 5/6 via Pn018**
3	Read: Drive Waiting for Response Command Write: Motor electric positive rotation (running track is set by Pn075~Pn077), the driver responds to the instruction to set Pn018 to 0 **Note: After Pn018 writes 3, the motor starts to turn positive until the upper computer writes 5/6 through Pn018**
4	Read: Drive Waiting for Response Command Write: Motor electric reverse (running track set by Pn075~Pn077), driver set Pn018 to 0 after response instruction **Note: After Pn018 writes 3, the motor starts to reverse until the upper computer writes 5/6 through Pn018**
5	Read: Drive Waiting for Response Command Write: Motor according to Pn078 set the deceleration stop, the driver responds to the instructions to set Pn018 to 0
6	Read: Drive Waiting for Response Command Write: When running at constant length, the motor slows down according to the speed reduction set by Pn071; when running at point, the motor slows down according to the speed reduction set by Pn076, and the driver sets Pn018 to 0 after responding to the instruction
Other	Reservations

Pn019	Name	External pulse instruction type				
	Set the scope	0～3	Units	-	Factory setting	0

Set the type of external pulse instruction when the motor operates in external pulse mode (Pn01 7=1):

Set values	Description
0	Pulse + Direction (Uplink)
1	Pulse + Direction (Lower Edge)
2	CW + CCW (dual pulse mode)
3	Orthogonal Pulse Mode

Pn020	Name	Internal Pulse Application Mode			
	Set the scope	0～99	Units	-	Factory setting	0

Set the internal pulse application mode when the motor operates in the internal pulse mode (Pn017=0):

Set values	Description
0	Communication control, the motor operation is controlled by Pn018 parameter
1	Keep, do not set
2	IO Control Mode 1: Start and Stop + Direction
3	IO Control Mode 2: Forward + Reverse
4	IO Control Mode 3: Internal Multi-segment Speed
5	IO Control Mode 4: Internal Multi-segment Position
6	IO Control Mode 5: Fixed Length Forward and Reverse
7～99	Keep, do not set

Pn021	Name	Type of motor			
	Set the scope	0～1	Units	-	Factory setting	1

0: Two-phase stepping motor

1: three-phase stepping motor

Pn022	Name	Motor operation mode			
	Set the scope	0～5	Units	-	Factory setting	1

Set the working mode of the drive, after changing the Pn022 parameter value, save to the flash sector of the drive by writing Pn090 to 1, and restart the drive to take effect

Set values	Description
0	Open Run
1	Servo mode 1
2	Servo Mode 2
3～4	Keep, do not set
5	Servo Mode 3

Pn023	Name	Motor direction

	Set the scope	0～1	Units	-	Factory setting	1
0: Forward						
1: Negative						

	Name	Breakdown				
Pn024	Set the scope	200～65535	Units	P/r	Factory setting	4000
Set the breakdown of the drive						
note: when pn024 is set to 65535, the drive breakdown is set by pn096/pn097. Otherwise the subdivision is set by Pn024						

	Name	Open-loop running current				
Pn025	Set the scope	1～7500	Units	Ma	Factory setting	3000

	Name	Open-loop standby current percentage				
Pn026	Set the scope	1～100	Units	%	Factory setting	50

	Name	Open-loop standby time				
Pn027	Set the scope	1～65535	Units	Ms	Factory setting	500
Sets the open-loop running time of the motor driver, after the pulse stop Pn025 sets the time, the driver enters the standby state, and the current of the motor during standby operation is determined by Pn025 and Pn026						

	Name	Instruction filtering time constant				
Pn028	Set the scope	1～2048	Units	62.5us	Factory setting	512

	Name	Current position of encoder				
Pn029	Set the scope	-	Units	Encoder Unit	Factory setting	Display

	Name	Self-identification PI enabling				
Pn030	Set the scope	0～1	Units	-	Factory setting	1
0: Disable parameter self-identification						
1: Enable self-identification of parameters						

Pn031	Name	Self-identification resistor				
	Set the scope	-	Units	mΩ	Factory setting	Display

Pn032	Name	Self-identifying Inductor				
	Set the scope	-	Units	mH	Factory setting	Display

Pn033	Name	Set resistor				
	Set the scope	1～65535	Units	mΩ	Factory setting	1000

Pn034	Name	Set inductance				
	Set the scope	1～65535	Units	mH	Factory setting	5

Pn035	Name	Moment factor				
	Set the scope	0～65535	Units	-	Factory setting	205

Pn036	Name	Current Ring KP				
	Set the scope	0～65535	Units	-	Factory setting	800

Pn037	Name	Current Ring KI				
	Set the scope	0～65535	Units	-	Factory setting	500

Pn038	Name	Current Ring KC				
	Set the scope	0～65535	Units	-	Factory setting	256

Pn039	Name	Current loop test sign				
	Set the scope	0～1	Units	-	Factory setting	0

Pn040	Name	Encoder resolution				
	Set the scope	1～65535	Units	P/r	Factory setting	4000

Pn041	Name	Overrange alarm threshold				
	Set the scope	1～65535	Units	Encoder Unit	Factory setting	4000

note: when pn041 is set to 65535, the drive breakdown is set by pn086/pn087. otherwise the breakdown is set by pn041

Pn042	Name	Positioning completion accuracy				
	Set the scope	1～65535	Units	Encoder Unit	Factory setting	10

Pn043	Name	In place signal establishment time				
	Set the scope	0～65535	Units	62.5us	Factory setting	200

Pn044	Name	Pulse stop detection time				
	Set the scope	0～65535	Units	62.5us	Factory setting	200

In closed-loop operation mode, it is used to control the driver in place to complete the signal transmission. after the given pulse stop pn044 set time, the drive starts to detect whether the drive is in place, after the position error is less than the pn042 set value, and continues to exceed the pn043 set time, the drive will output the signal in place to complete.

Pn045	Name	Closed-loop maximum current				
	Set the scope	0～7500	Units	Ma	Factory setting	4000

Pn046	Name	Closed-loop base current				
	Set the scope	1～100	Units	%	Factory setting	50

Pn047	Name	Speed low pass filter to frequency 1				
	Set the scope	1～5000	Units	Hz	Factory setting	200

Pn048	Name	Speed low pass filter to frequency 2				
	Set the scope	1～5000	Units	Hz	Factory setting	600

Pn049	Name	Servo Mode 1 Low Speed Vibration Resistance Factor				
	Set the	0～65535	Units	-	Factory	0

	scope				setting	

	Name	Servo mode 2KP				
Pn050	Set the scope	0～65535	Units	-	Factory setting	3000

	Name	Servo mode 2KI				
Pn051	Set the scope	0～65535	Units	-	Factory setting	1000

	Name	Servo mode 2KV1				
Pn052	Set the scope	0～65535	Units	-	10	10

	Name	Servo mode 2KV2				
Pn053	Set the scope	0～65535	Units	-	Factory setting	800

	Name	Servo mode 2KVFF				
Pn054	Set the scope	0～65535	Units	-	Factory setting	600

	Name	Servo mode 2 gravity compensation factor				
Pn055	Set the scope	0～65535	Units	-	Factory setting	512

	Name	Servo mode 2KA				
Pn056	Set the scope	0～65535	Units	-	Factory setting	0

	Name	Servo mode 2KAFF				
Pn057	Set the scope	0～65535	Units	-	Factory setting	0

	Name	Servo mode 2 position low pass filter frequency				
Pn058	Set the scope	0～65535	Units	Hz	Factory setting	5000

	Name	Servo mode 2 acceleration feedforward low pass filter frequency				
Pn059	Set the	0～65535	Units	Hz	Factory	3000

	scope				setting	

6.3 **Input / output parameters [Pn060~Pn069/Pn079/Pn102~Pn104]**

	Name	Input Port 1 function, polarity setting				
Pn060	Set the scope	0～63	Units	-	Factory setting	36

Set drive digital input port 1 function, polarity:

15			12	11	10	9	8
Reservations							

7	6	5	4				0
Reservations		Polarity	Function bits				
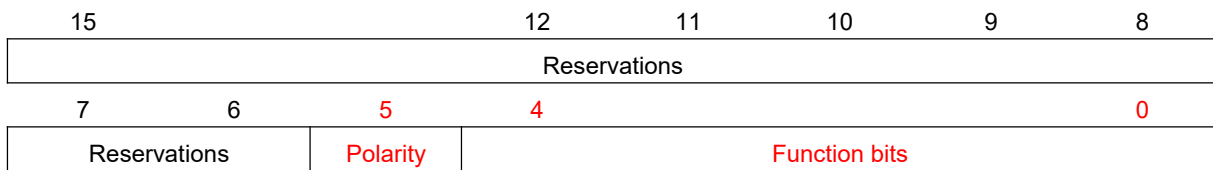
Function bit setting	IN Port function	Function bit setting	IN Port function
0	F unIN.0: Reservation	15	Funin.15: Multi-stage Speed Control 1
1	Funin.1: Reservation	16	Funin.16: Multi-stage Speed Control 2
2	Funin.2: Reservation	17	Funin.17: Multi-stage Speed Control 3
3	Funin.3: Reservation	18	Funin.18: Multi-segment Position Control 0
4	Funin.4: Motor Offline	19	Funin.19: Multi-segment Position Control 1
5	FunIn.5: Troubleshooting	20	Funin.20: Multi-segment Position Control 2
6	FunIn.6: Stop	21	Funin.21: Multi-segment Position Control 3
7	FunIn.7: Point positive/start/stop	22	FunIN.22：USER1
8	FunIn.8: Point reversal/direction	23	FunIN.23：USER2
9	FunIN.9: Forward limit input	24	Funin.24: USER3
10	Funin.10: Reverse limit input	25	Funin.25: USER 4
11	Funin.11: zero point signal input	26	Funin.26: Electronic gear switching
12	Funin.12: Start Back to Zero	27	Funin.27: Pulse ban
13	Funin.13: reverse direction of motor	28	Funin.28: USER 5
14	Funin.14: Multi-stage Speed Control 0	29	Funin.29: USER 6

Polar bit setting	Description
0	Normally closed polarity (normal input port optical coupling of the driver)
1	Normal polarity (normally the input port of the driver is uncoupled)

Remark: The function of an input port is determined by its function bit and polar bit. The set value of the input port register (e.g. the P060 of the IN1 port) can be determined by this arithmetic. If you need to set the IN1 port as "FunIN.11: zero signal input ", the function bit setting value of 11 can be determined by the above table, and if you set

its polarity as constant, the value of the input port 1 function, polarity setting (P060) register :11+32=43.

Pn061	Name	Input Port 2 function, polarity setting				
	Set the scope	0～63	Units	-	Factory setting	41

Pn062	Name	Input port 3 function, polarity setting				
	Set the scope	0～63	Units	-	Factory setting	42

Pn063	Name	Input port 4 function, polarity setting				
	Set the scope	0～63	Units	-	Factory setting	39

Pn064	Name	Input port 5 function, polarity setting				
	Set the scope	0～63	Units	-	Factory setting	40

Pn065	Name	Input Port 6 function, polarity setting				
	Set the scope	0～63	Units	-	Factory setting	44

Pn079	Name	Input Port 7 function, polarity setting				
	Set the scope	0～63	Units	-	Factory setting	43

Pn066	Name	Output Port 1 function, polarity setting				
	Set the scope	0～31	Units	-	Factory setting	17

Set drive digital input port 1 function, polarity:

15			12	11	10	9	8
Reservations							

7	6	5	4	3			0
Reservations			Polarity	Function bits			

Function bit setting	OUT port function	Function bit setting	OUT port function
0	FunOUT.0: Normal output	8	FunOUT.1: Positive limit output
1	FunOUT.1: Fault alarm	9	FunIN.9: Reverse limit output
2	FunOUT.2: Lock output	10	Funin.10: Reservation
3	FunOUT.3: Positioning completed	11	Funin.11: Moment of arrival

4	FunOUT.4: Speed Reaches	12	Funin.12: Reservation
5	FunOUT.5: Return to Zero Finish	13	FunIN.13：USER1
6	FunOUT.6: Drive ready	14	FunIN.14：USER2
7	FunOUT.0: Motor stop	15	FunOUT.7: USER3

Polar bit setting	Description
0	Normally closed polarity (normal drive output port on)
1	Normal polarity (normally the output port of the drive is disconnected)

Remark: The function of an output port is determined by its function bit and polar bit. The set value of the output port register can be determined by this arithmetic (e.g. P066 for port OUT1). If you need to set port OUT1 to "FunOUT.1: Fault Alarm ", the function bit setting value of 1 can be determined by the above table, and if you set its polarity to be open frequently, you need to set the value of the" output port 1 function, polarity setting "register (P066) to :11+32=43; if you need to set its polarity to be normally closed, it is set to 11+0=11.

Pn067	Name	Output port 2 function, polarity setting				
	Set the scope	0～31	Units	-	Factory setting	19

Pn103	Name	Output port 4 function, polarity setting				
	Set the scope	0～31	Units	-	Factory setting	19

Pn102	Name	Output port 3 function, polarity setting				
	Set the scope	0～31	Units	-	Factory setting	18

Pn068	Name	General output function				
	Set the scope	0～65535	Units	-	Factory setting	17

15			12	11	10	9	8
Reservations							

7	6	5	4				0
Reservations				OUT4	OUT3	OUT2	OUT1
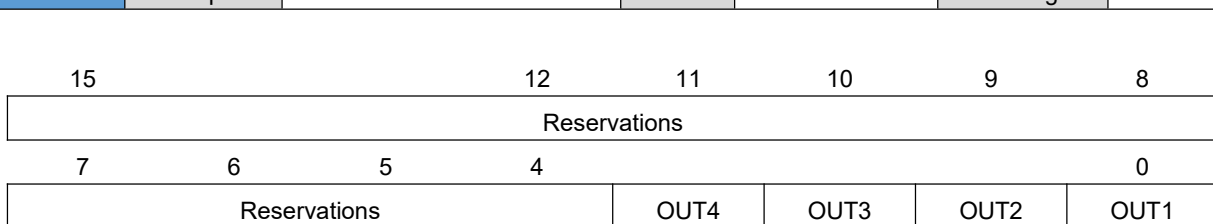
When the function bit of the output port is set to "FunOUT.0: Normal output ", the upper computer can control the output

port of the driver by operating the P068 parameter. The OUT1, OUT2, OUT3, OUT4 resolution in the above table represents the output port 1, output port 2, output port 3, output port 4.the state of the drive output port is determined by the "polarity bit" in the "output port x (1/2/3/4) function, polarity setting" register and the p068 parameter, such as :" polarity bit "in the" output port 1 function, polarity setting "register p066 is set to" open frequently ", then the output port of the drive is disconnected when the "out1" bit set value bit 0 in the p068 parameter; if the" out bit 1" in the p068 parameter is set value 1 bit "in the drive. Similarly, the driver output port status is as follows:

Output port x (1/2/3/4) polar bit setting	P068: OUTX (1/2/3/4) Set values	Drive output port status
0	0	Drive output port on
	1	Drive output port disconnected
1	0	Drive output port disconnected
	1	Drive output port on

Pn 069	Name	Input function flag register					
	Set the scope	0～31		Units	-	Factory setting	17

15			12	11	10	9	8
Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit9	Bit8

7	6	5	4	3	2	1	0
Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0

Each Bitx means an input function, Bitx means "1" means that the input function is valid, and Bitx means "0" means that the input function is invalid;

Bitx	Description	Bitx	
0	Reservations	8	Point reversal/direction
1	Reservations	9	Forward limit input
2	Reservations	10	Reverse limit input
3	Reservations	11	Zero signal input
4	Motor offline	12	Start Back to Zero
5	Troubleshooting	13	Reverse direction of motor operation
6	Emergency stop	14	Multi-stage Speed Control 0
7	turn / start	15	Multi-stage Speed Control 0

Pn 104	Name	Output function flag register					
	Set the scope	0～31		Units	-	Factory setting	17

15			12	11	10	9	8
Bit 15	Bit 14	Bit 13	Bit 12	Bit 11	Bit 10	Bit9	Bit8
7	6	5	4	3	2	1	0
Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0

Each Bitx means an output function, Bitx means "1" means the output function is valid, and Bitx means "0" means the output function is invalid;

Bitx	Description	Bitx	
0	Reservations	8	Positive limit output
1	Fault alarm	9	Reverse limit output
2	Lock output	10	Reservations
3	Positioning completed	11	Torque arrival
4	Speed arrival	12	Reservations
5	Return to Zero	13	USER1
6	Drive ready	14	USER2
7	Motor stop	15	USER 3

6.4 Point / Point Parameters [Pn0700/Pn078/Pn084]

Pn070	Name	Point running acceleration				
	Set the scope	1～2000	Units	r/s ^2	Factory setting	200

Pn071	Name	Point operation speed reduction				
	Set the scope	1～2000	Units	r/s ^2	Factory setting	200

Pn072	Name	Point running speed				
	Set the scope	0～6000	Units	rpm	Factory setting	600

Pn073 Pn074	Name	Point running itinerary				
	Set the scope	-1073741824～1073741824	Units	Pulse command	Factory setting	2000

Pn075	Name	Point run acceleration				
	Set the scope	1～2000	Units	r/s ^2	Factory setting	100

Pn076	Name	Point-run speed reduction				
	Set the scope	1～2000	Units	r/s ^2	Factory setting	100

Pn 077	Name	Point Speed				
	Set the scope	0～6000	Units	rpm	Factory setting	600

Pn078	Name	Sharp Stop Speed				
	Set the scope	1～2000	Units	r/s ^2	Factory setting	500

Pn084	Name	Internal Pulse Instruction Operation Mode				
	Set the scope	0～1	Units	-	Factory setting	0

Instruction mode for setting the internal pulse of the drive when the internal pulse instruction (PN 017=0) is set:

0: Incremental Position Mode

1: Absolute Position Mode

6.5 Control parameter 2[Pn0800-Pn089]

Pn 080	Name	Motor rated torque				
	Set the scope	0～65535	Units	0.01 Nm	Factory setting	300

Pn081	Name	Servo mode 1KP				
	Set the scope	0～65535	Units	-	Factory setting	2500

Pn082	Name	Servo mode 1KV				
	Set the scope	0～65535	Units	-	Factory setting	200

Pn083	Name	Servo mode 1KVF				
	Set the scope	0～65535	Units	-	Factory setting	30

Pn085	Name	Clear current position				
	Set the	0～1	Units	-	Factory	0

	scope				setting	

the drive current position counter (pn008/pn009) can be cleared by writing 1 through pn085. after performing the zero zero action, the drive sets pn085 to 0.

Pn086 Pn087	Name	Overrange alarm threshold				
	Set the scope	1～1048576	Units	-	Factory setting	8000

effective only when pn041=65535.

Pn088	Name	Overrangement alarm ban				
	Set the scope	1～1048576	Units	-	Factory setting	0

0: Enable driver overdrive alarm failure

1: No overdrive alarm failure

Pn089	Name	Servo mode 1KI				
	Set the scope	0～65535	Units	-	Factory setting	0

6.6 Parameter Save / Restore Factory Value [Pn090-Pn092]

Pn090	Name	Save parameters				
	Set the scope	0～1	Units	-	Factory setting	0

the parameters stored in the drive ram area can be permanently saved to the eeprom sector by writing 1 by pn090.after the drive is saved successfully, set pn090 to 0.

Note: The parameters modified by the upper computer or the drive button panel are only stored in the RAM area of the drive, which will be lost after power down. if you have determined the input parameter (or need to power up without loss), you need to write 1 to the pn090 parameter.

Pn091	Name	Recovery of ex-factory parameters				
	Set the scope	0～1	Units	-	Factory setting	0

the drive parameter can be restored to the factory default value by writing 1 through pn091.after successful drive operation, set pn091 to 0.

Pn092	Name	Do not operate the register				
	Set the scope	-	Units	-	Factory setting	-

6.7 **Display Parameter 2[Pn093-Pn099]**

Pn093	Name	Drive ID				
	Set the scope	-	Units	-	Factory setting	Display

Pn094	Name	Drive version number				
	Set the scope	-	Units	-	Factory setting	Display

Pn095	Name	Non-labelled				
	Set the scope	-	Units	-	Factory setting	Display

Pn096 Pn097	Name	Breakdown				
	Set the scope	200～1048576	Units	-	Factory setting	4000
Effective only at Pn024=65535						

Pn098 Pn099	Name	Current position of encoder				
	Set the scope	-	Units	-	Factory setting	Display

6.8 **Speedometer parameters [Pn100-Pn120]**

Pn100	Name	Speed Meter / Location Table IO Switch Delay Effective Time				
	Set the scope	0～65535	Units	62.5us	Factory setting	200
the driver is in the internal pulse control (pn01 7=0) and takes effect when the internal pulse application mode (pn020=4/5(speedometer/positionometer)).In speed meter/position table mode, the drive's run triggers are all dependent IO edges, this parameter is used to control the drive to receive the edge and delay the set time value before it starts running.						

Pn101	Name	Current loop test current value				
	Set the scope	0～5000	Units	Ma	Factory setting	1000

] Pn 105	Name	Multi-stage Speed Control 0				
	Set the	-6000～6000	Units	rpm	Factory	0

	scope				setting	

when the internal pulse application mode (pn01 7=0) and the internal pulse application mode is a speed meter (pn020=4), the speed of the multi-segment speed control is set. when the speed meter runs, its addition and subtraction speed is set by pn075, pn076. For a detailed description of the speed meter operation mode, refer to the "Run" section.

	Name	Multi-stage Speed Control 1				
Pn106	Set the scope	-6000～6000	Units	rpm	Factory setting	100

	Name	Multi-stage Speed Control 2				
Pn107	Set the scope	-6000～6000	Units	rpm	Factory setting	200

	Name	Multi-stage Speed Control 3				
Pn108	Set the scope	-6000～6000	Units	rpm	Factory setting	300

	Name	Multi-stage Speed Control 4				
Pn109	Set the scope	-6000～6000	Units	rpm	Factory setting	400

	Name	Multi-stage Speed Control 5				
Pn110	Set the scope	-6000～6000	Units	rpm	Factory setting	500

	Name	Multi-stage Speed Control 6				
Pn 111	Set the scope	-6000～6000	Units	rpm	Factory setting	600

	Name	Multi-stage Speed Control 7				
Pn112	Set the scope	-6000～6000	Units	rpm	Factory setting	700

	Name	Multi-stage Speed Control 8				
Pn 113	Set the scope	-6000～6000	Units	rpm	Factory setting	800

	Name	Multi-stage Speed Control 9				
Pn114	Set the	-6000～6000	Units	rpm	Factory	900

	scope				setting	

	Name		Multi-stage Speed Control 10			
Pn115	Set the scope	-6000～6000	Units	rpm	Factory setting	1000

	Name		Multi-stage speed control			
Pn 116	Set the scope	-6000～6000	Units	rpm	Factory setting	1100

	Name		Multi-stage speed control			
Pn117	Set the scope	-6000～6000	Units	rpm	Factory setting	1200

	Name		Multi-segment speed control 13			
Pn118	Set the scope	-6000～6000	Units	rpm	Factory setting	1300

	Name		Multi-stage Speed Control 14			
Pn 119	Set the scope	-6000～6000	Units	rpm	Factory setting	1400

	Name		Multi-stage speed control 15			
Pn120	Set the scope	-6000～6000	Units	rpm	Factory setting	1500

6.9 Position table parameters [Pn121-Pn156]

	Name		Multi-segment location of current trigger run			
Pn121	Set the scope	-	Units	-	Factory setting	Display

When the internal pulse application mode (Pn01 7=0) and the internal pulse application mode is a position table (Pn020=5), it is used to display the multi-segment position x selected by the current input IO

	Name		Default parameter ID settings			
Pn 122	Set the scope	1～65535	Units	-	Factory setting	100

used to set the default parameter id of the drive, by setting the default parameter and performing the recovery factory parameter operation (pn091 write 1), you can set some application default parameters that the manufacturer has

solidified, and specifically consult the manufacturer.

Pn123 Pn124	Name	Encoder Current Position (Multiple Circles)				
	Set the scope	-	Units	-	Factory setting	Display
this parameter shows the feedback bit of the driver encoder since power-up. You can zero or set the counter value by returning zero.						

Pn125 Pn126	Name	Multi-segment position control 0				
	Set the scope	-1073741824～1073741824	Units	Pulse command	Factory setting	0
when the internal pulse application mode (pn01,7=0) and the internal pulse application mode is a position table (pn020=5), the stroke of multi-segment position control is set.when the position table runs, its addition and subtraction speed, speed is set by pn070, pn071, pn072, and its position mode (incremental position / absolute position) is set by pn084.for a detailed description of the operation mode of the position table, refer to the "run" section.						

Pn 127 Pn128	Name	Multi-segment position control 1				
	Set the scope	-1073741824～1073741824	Units	Pulse command	Factory setting	0

Pn 129 Pn130	Name	Multi-segment position control 2				
	Set the scope	-1073741824～1073741824	Units	Pulse command	Factory setting	0

Pn131 Pn132	Name	Multi-segment position control 3				
	Set the scope	-1073741824～1073741824	Units	Pulse command	Factory setting	0

Pn 133 Pn134	Name	Multi-segment position control 4				
	Set the scope	-1073741824～1073741824	Units	Pulse command	Factory setting	0

Pn135 Pn136	Name	Multi-segment position control 5				
	Set the scope	-1073741824～1073741824	Units	Pulse command	Factory setting	0

Pn137 Pn138	Name	Multi-segment position control 6				
	Set the scope	-1073741824～1073741824	Units	Pulse command	Factory setting	0

Pn139 Pn140	Name	Multi-segment position control 7				
	Set the scope	-1073741824～1073741824	Units	Pulse command	Factory setting	0

Pn 141 Pn142	Name	Multi-segment position control 8				
	Set the scope	-1073741824～1073741824	Units	Pulse command	Factory setting	0

Pn143 Pn144	Name	Multi-segment position control 9				
	Set the scope	-1073741824～1073741824	Units	Pulse command	Factory setting	0

Pn145 Pn146	Name	Multi-segment position control 10				
	Set the scope	-1073741824～1073741824	Units	Pulse command	Factory setting	0

Pn147 Pn148	Name	Multi-segment position control 11				
	Set the scope	-1073741824～1073741824	Units	Pulse command	Factory setting	0

Pn 149 Pn150	Name	Multi-segment position control				
	Set the scope	-1073741824～1073741824	Units	Pulse command	Factory setting	0

Pn151 Pn152	Name	Multi-segment position control 13				
	Set the scope	-1073741824～1073741824	Units	Pulse command	Factory setting	0

Pn153 Pn154	Name	Multi-segment position control 14				
	Set the scope	-1073741824～1073741824	Units	Pulse command	Factory setting	0

Pn155 Pn156	Name	Multi-segment position control 15				
	Set the scope	-1073741824～1073741824	Units	Pulse command	Factory setting	0

6.10 **Multi-segment location parameters [Pn157-Pn208]**

Pn157	Name	Multi-segment displacement instruction type

	Set the scope	0～1	Units	-	Factory setting	0

the position instruction form of the multi-segment position control mode is set when the internal pulse application mode (pn0107=0) and the internal pulse application mode is multi-function application mode (pn020=7).For a detailed description of the internal multi-function application mode, refer to the "Run" section.

0: Incremental Position Mode

1: Absolute Position Mode

Pn158	Name	Multi-segment operation mode				
	Set the scope	0～2	Units	-	Factory setting	0

0: Single run downtime

1: Cycle operation

2: IO Switch Control

Pn159	Name	Number of endpoints for multi-segment displacement instructions				
	Set the scope	1～16	Units	-	Factory setting	16

effective when the pn0158 setting value is 0/1, which is used to control the command end position segment of the motor operation in multi-segment position control mode.

Pn160	Name	Unit of time				
	Set the scope	0～1	Units	-	Factory setting	0

effective when the pn0158 setting value is 0/1, is used to set the unit of the waiting time between each stroke in multi-segment position control mode.

0: Ms

1: s

Pn161	Name	Maximum speed of displacement in section 0				
	Set the scope	0～6000	Units	rpm	Factory setting	100

Pn 162	Name	Section 0 displacement plus or minus velocity				
	Set the scope	1～2000	Units	r/s ^2	Factory setting	100

Pn163	Name	Waiting time after completion of section 0 displacement				
	Set the scope	0～65535	Units	ms(s)	Factory setting	100

Pn 164	Name	Maximum speed of displacement in section 1				
	Set the scope	0～6000	Units	rpm	Factory setting	100

Pn165	Name	Paragraph 1 Displacement plus or minus velocity				
	Set the scope	1～2000	Units	r/s^2	Factory setting	100

Pn166	Name	Waiting time after the completion of the first displacement				
	Set the scope	0～65535	Units	ms(s)	Factory setting	100

Pn 167	Name	Maximum speed of displacement in section 2				
	Set the scope	0～6000	Units	rpm	Factory setting	100

Pn168	Name	Paragraph 2 Displacement plus or minus velocity				
	Set the scope	1～2000	Units	r/s^2	Factory setting	100

Pn169	Name	Waiting time after completion of the second displacement				
	Set the scope	0～65535	Units	ms(s)	Factory setting	100

Pn170	Name	Maximum speed of displacement in section 3				
	Set the scope	0～6000	Units	rpm	Factory setting	100

Pn171	Name	Paragraph 3 Displacement plus or minus velocity				
	Set the scope	1～2000	Units	r/s^2	Factory setting	100

Pn172	Name	Waiting time after the completion of the third displacement				
	Set the scope	0～65535	Units	ms(s)	Factory setting	100

Pn 173	Name	Maximum speed of displacement in section 4				
	Set the scope	0～6000	Units	rpm	Factory setting	100

Pn 174	Name	Paragraph 4 Displacement plus or minus velocity				
	Set the scope	1～2000	Units	r/s^2	Factory setting	100

Pn175	Name	Waiting time after 4th displacement				
	Set the scope	0～65535	Units	ms(s)	Factory setting	100

Pn176	Name	Maximum speed of displacement in section 5				
	Set the scope	0～6000	Units	rpm	Factory setting	100

Pn177	Name	Section 5 Displacement plus or minus velocity				
	Set the scope	1～2000	Units	r/s^2	Factory setting	100

Pn178	Name	Stage 5 Waiting time after completion of displacement				
	Set the scope	0～65535	Units	ms(s)	Factory setting	100

Pn179	Name	Maximum speed of displacement in section 6				
	Set the scope	0～6000	Units	rpm	Factory setting	100

Pn180	Name	Paragraph 6 Displacement plus or minus velocity				
	Set the scope	1～2000	Units	r/s^2	Factory setting	100

Pn181	Name	Waiting time after completion of the 6th displacement				
	Set the scope	0～65535	Units	ms(s)	Factory setting	100

Pn182	Name	Maximum speed of displacement in section 7				
	Set the scope	0～6000	Units	rpm	Factory setting	100

Pn183	Name	Paragraph 7 Displacement plus or minus velocity				
	Set the scope	1～2000	Units	r/s^2	Factory setting	100

Pn184	Name	Stage 7 Waiting time after completion of displacement				
	Set the scope	0～65535	Units	ms(s)	Factory setting	100

Pn185	Name	Maximum speed of displacement in section 8				
	Set the scope	0～6000	Units	rpm	Factory setting	100

Pn186	Name	Paragraph 8 Displacement plus or minus velocity				
	Set the scope	1～2000	Units	r/s^2	Factory setting	100

Pn 187	Name	Stage 8 Waiting time after completion of displacement				
	Set the scope	0～65535	Units	ms(s)	Factory setting	100

Pn188	Name	Maximum speed of displacement in section 9				
	Set the scope	0～6000	Units	rpm	Factory setting	100

Pn189	Name	Section 9 Displacement plus or minus velocity				
	Set the scope	1～2000	Units	r/s^2	Factory setting	100

Pn190	Name	Stage 9 Waiting time after completion of displacement				
	Set the scope	0～65535	Units	ms(s)	Factory setting	100

Pn 191	Name	Maximum speed of displacement in section 10				
	Set the scope	0～6000	Units	rpm	Factory setting	100

Pn 192	Name	Section 10 Displacement plus or minus velocity				
	Set the scope	1～2000	Units	r/s^2	Factory setting	100

Pn 193	Name	Waiting time after completion of section 10 displacement				
	Set the scope	0～65535	Units	ms(s)	Factory setting	100

Pn194	Name	Maximum speed of displacement in section 11				
	Set the scope	0～6000	Units	rpm	Factory setting	100

Pn195	Name	Paragraph 11 Displacement plus or minus velocity				
	Set the scope	1～2000	Units	r/s^2	Factory setting	100

Pn196	Name	Stage 11 Waiting time after completion of displacement				
	Set the scope	0～65535	Units	ms(s)	Factory setting	100

Pn 197	Name	Maximum speed of displacement in section 12				
	Set the scope	0～6000	Units	rpm	Factory setting	100

Pn198	Name	Paragraph 12 Displacement plus or minus velocity				
	Set the scope	1～2000	Units	r/s^2	Factory setting	100

Pn199	Name	Waiting time after completion of section 12 displacement				
	Set the scope	0～65535	Units	ms(s)	Factory setting	100

Pn200	Name	Maximum speed of displacement in section 13				
	Set the scope	0～6000	Units	rpm	Factory setting	100

Pn201	Name	Paragraph 13 Displacement plus or minus velocity				
	Set the scope	1～2000	Units	r/s^2	Factory setting	100

Pn202	Name	Stage 13 Waiting time after displacement completion				
	Set the scope	0～65535	Units	ms(s)	Factory setting	100

Pn203	Name	Maximum speed of displacement in section 14				
	Set the scope	0～6000	Units	rpm	Factory setting	100

Pn 204	Name	Paragraph 14 Displacement plus or minus velocity				
	Set the scope	1～2000	Units	r/s^2	Factory setting	100

Pn205	Name	Stage 14 Waiting time after displacement completion				
	Set the scope	0～65535	Units	ms(s)	Factory setting	100

Pn206	Name	Maximum speed of displacement in section 15				
	Set the scope	0～6000	Units	rpm	Factory setting	100

Pn207	Name	Paragraph 1 Displacement plus or minus velocity				
	Set the scope	1～2000	Units	r/s^2	Factory setting	100

Pn208	Name	Waiting time after the completion of the 15th displacement				
	Set the scope	0～65535	Units	ms(s)	Factory setting	100

6.11 Control parameter 3[Pn209-Pn219]

Pn209	Name	LED panel on the default display parameter number				
	Set the scope	0～499	Units	-	Factory setting	305

Set the default display parameter number after the LED panel is powered on, such as: after the need for the LED panel to display the actual speed of the motor (Pn305), then set the Pn209 parameter to 305, and save the parameters can be.

Pn210 Pn211	Name	Electronic gear specific molecule 1				
	Set the scope	1～1048576	Units	-	Factory setting	128

at pn024 is set to 0, the driver uses the electronic gear ratio 1/2 as the equivalent conversion of the position instruction.when using the electronic gear ratio, the user can switch the electronic gear ratio 1/2 by setting an input port as the electronic gear ratio.When the input is invalid, use the electronic gear ratio 1; when the input is valid, select the electronic gear ratio 2.

note: in closed-loop mode, the encoder resolution is set by pn040; in open-loop mode, the encoder resolution is fixed to 51200.

Pn212 Pn 213	Name	Electronic gear ratio denominator 1				
	Set the scope	1～1048576	Units	-	Factory setting	10

Pn214 Pn215	Name	Electronic gear specific molecule 2				
	Set the scope	1～1048576	Units	-	Factory setting	128

Pn216 Pn217	Name	Electronic gear ratio denominator 2				
	Set the scope	1～1048576	Units	-	Factory setting	10

Pn218 Pn219	Name	Keep, do not operate				
	Set the scope	-	Units	-	Factory setting	-

6.12 Communication control parameters [Pn220-Pn225]

Pn220	Name	USB Port Communication Baud Rate				
	Set the scope	0～5	Units	-	Factory setting	5

Set the baud rate of the USB port for the driver CN1 terminal

Set values	Baud rate settings
0	4800bps
1	9600bps
2	19200bps
3	38400 bps
4	57600bps
5	115200bps

note: effective only at pn225=1(except **specially noted drive), at which time the usb serial communication station number is fixed to 1 and the communication data format is set by pn221. At Pn225=0, the communication baud rate, communication station number and communication data format of USB port are determined by RS485 communication parameters (Pn22/2/Pn223/Pn224)**

Pn 221	Name	USB Serial Communication Data Format				
	Set the scope	0～5	Units	-	Factory setting	0

Set the baud rate of the USB port for the driver CN1 terminal

Set values	Data format
0	8 bit data, no check ,1 end bit

1	8 bit data, no check ,2 end bits
2	8-bit data, parity check ,1 end bit
3	8-bit data, parity check ,2 end bits
4	8 bit data, odd check ,1 end bit
5	8 bit data, odd check ,2 end bits

Pn222	Name	RS485 Communication Station No.			
	Set the scope	0～247	Units	-	Factory setting	1
Set slave station number for RS485 communication					

Pn223	Name	RS485 Communication Baud Rate			
	Set the scope	0～5	Units	-	Factory setting	5
Refer to Pn220					

Pn224	Name	RS485 Communication Data Format			
	Set the scope	0～5	Units	-	Factory setting	0
Refer to Pn221					

Pn225	Name	RS485 and USB Serial Independent Communication Enable			
	Set the scope	0～1	Units	-	Factory setting	0
please keep default value 0, if need usb serial port and rs485 independent communication, please consult manufacturer technical support whether support.					

6.13 Torque mode parameters [Pn226-Pn239]

Pn226	Name	Moment running KP			
	Set the scope	0～65535	Units	-	Factory setting	1000

Pn227	Name	Torque operation KI			
	Set the scope	0～65535	Units	-	Factory setting	3000

Pn228	Name	Torque operation KC			
	Set the scope	0～65535	Units	-	Factory setting	256

Pn 229	Name	Given Moment				
	Set the scope	0～65535	Units	0.001 Nm	Factory setting	300

Pn230	Name	Moment operation acceleration				
	Set the scope	1～2000	Units	r/s ^2	Factory setting	200

Pn231	Name	Torque operation deceleration				
	Set the scope	1～2000	Units	r/s ^2	Factory setting	200

Pn232	Name	Moment operation forward speed limit				
	Set the scope	0～6000	Units	rpm	Factory setting	300

Pn233	Name	Torque operation negative speed limit				
	Set the scope	0～6000	Units	rpm	Factory setting	300

Pn234	Name	Torque reaches reference value				
	Set the scope	0～65535	Units	0.001 Nm	Factory setting	0

Pn235	Name	Torque reaches effective value				
	Set the scope	0～65535	Units	0.001 Nm	Factory setting	0

Pn 236	Name	Moment reaches invalid value				
	Set the scope	0～65535	Units	0.001 Nm	Factory setting	0

Pn237	Name	Moment arrival detection time				
	Set the scope	0～65535	Units	Ms	Factory setting	10

Pn 238	Name	Moment holding time				
	Set the scope	0～65535	Units	Ms	Factory setting	50

Pn239	Name	Torque stop mode				
	Set the scope	0～1	Units	-	Factory setting	0

6.14 **Auxiliary Function Parameters [Pn240~Pn261]**

Pn 240 Pn241	Name	Soft Limit Upper Limit				
	Set the scope	-1073741824～1073741824	Units	Pulse command	Factory setting	0
set the motor soft limit, the soft limit does not take effect when the upper limit value of the soft limit (pn240/pn241) is less than or equal to the lower limit value of the soft limit (pn242/pn243).						

Pn242 Pn 243	Name	Soft Limits				
	Set the scope	-1073741824～1073741824	Units	Pulse command	Factory setting	0

Pn244 Pn245	Name	Travel between limits				
	Set the scope	-	Units	Pulse command	Factory setting	Display

Pn246	Name	Motor locking point angle pulse				
	Set the scope	0～65535	Units	-	Factory setting	0

Pn246	Name	Motor locking point angle pulse				
	Set the scope	0～65535	Units	-	Factory setting	0

Pn247	Name	Motor lock shaft start and stop instructions				
	Set the scope	0～1	Units	-	Factory setting	0

Pn248	Name	Data sampling start flag				
	Set the scope	0～1	Units	-	Factory setting	0

Pn249	Name	Data sampling speed				
	Set the	1～65535	Units	-	Factory	1

	scope				setting	

	Name	Data sampling channel 1				
Pn250	Set the scope	0～20	Units	-	Factory setting	0

	Name	Data sampling channel 2				
Pn251	Set the scope	0～20	Units	-	Factory setting	1

	Name	Motion demonstration delay				
Pn 252	Set the scope	0～65535	Units	Ms	Factory setting	100

sets the waiting time between segments when the motor is in motion demonstration mode.

	Name	Motion demonstration mode				
Pn253	Set the scope	0～1	Units	-	Factory setting	0

Set the motor motion demonstration operation mode:

0: Reciprocating

1: One-way operation

	Name	Motion demonstration starting direction				
Pn 254	Set the scope	0～1	Units	-	Factory setting	0

0: Positive direction

1: Negative direction

	Name	Number of sports demonstrations				
Pn255	Set the scope	0～65535	Units	-	Factory setting	0

When set to 0, the motor will run until the upper computer triggers the shutdown.

	Name	Motion demonstration start and stop instructions				
Pn256	Set the scope	0～2	Units	-	Factory setting	0

Start and stop operation for motion demonstration mode when the driver is in internal pulse mode (Pn017=0) and the internal pulse application mode is set to multifunctional (Pn018=7)

Pn256 write values	Description
0	Read: The motor is in a waiting trigger state Write: Stop drive run demo mode
1	Read: Drive Waiting for Response Instructions Write: Start Drive Run Demo Mode
2	Read: Motor in Operation Demo Mode Writing: No Meaning

Pn257	Name	External pulse bandwidth limits				
	Set the scope	1～255	Units	50ns	Factory setting	10

Pn 258	Name	Servo Forced Enable				
	Set the scope	0～1	-	50ns	Factory setting	0

Pn 259	Name	Servo enable turn-off delay				
	Set the scope	0～65535	-	Ms	Factory setting	0

Pn260	Name	Panel display speed smoothing filter				
	Set the scope	1～100	-	-	Factory setting	80

Pn 261	Name	Current feedback low pass filter cutoff frequency				
	Set the scope	100～5000	-	Hz	Factory setting	5000

6.15 Energy brake parameters [Pn262-268]

Pn262	Name	Brake Resistance Selection				
	Set the scope	0～1	-	-	Factory setting	1

0: Internal braking resistance
1: External braking resistance

Pn263	Name	Minimum braking resistance allowed by the driver

	Set the scope	-	-	Ω	Factory setting	30

	Name	External braking resistance resistance				
Pn264	Set the scope	1～1000	-	Ω	Factory setting	50

	Name	External braking resistance power				
Pn265	Set the scope	1～10000	-	W	Factory setting	200

	Name	Internal braking resistance resistance				
Pn 266	Set the scope	1～1000	-	Ω	Factory setting	50

	Name	Internal braking resistance power				
Pn267	Set the scope	1～10000	-	W	Factory setting	200

	Name	coefficient of heat dissipation of brake resistance				
Pn 268	Set the scope	1～100	-	-	Factory setting	80

6.16 Control parameter 4[Pn269-Pn286]

	Name	Coder breakage detection prohibited				
Pn 269	Set the scope	0～1	-	-	Factory setting	0

0: Enable encoder breakage detection

1: No encoder breakage detection

	Name	Servo mode 5 speed KP				
Pn270	Set the scope	0～65535	-	-	Factory setting	1200

	Name	Servo Mode 5 Speed KI				
Pn 271	Set the scope	0～65535	-	-	Factory setting	300

Pn 272	Name	Servo mode 5 speed KC				
	Set the scope	0～65535	-	-	Factory setting	256

Pn 273	Name	Servo mode 5 position KP				
	Set the scope	0～65535	-	-	Factory setting	200

Pn274~ Pn286	Name	Keep, do not operate				
	Set the scope	-	-	-	Factory setting	-

6.17 Return zero parameter [Pn287-Pn299]

Pn 287	Name	Origin Regeneration Enable Control				
	Set the scope	0～6	-	-	Factory setting	1

Set the Origin Reset Enable Control

Set values	Control mode
0	Prohibition of origin reversion
1	Use the IN terminal with the IN input function "start back zero" to trigger the mechanical return function
2	Use the IN terminal with the IN input function "start back zero" to trigger the electrical return function the electrical return origin is generally used after the mechanical return to the origin and does not require a sensor input letter. Back to the position instruction set by P293/294 in absolute position mode, the current position of the motor (PN008/Pn009) is equal to the mechanical origin offset (PN293/Pn294) after the electrical return is completed
3	Automatic Mechanical Back to Origin Set to this value, and by writing 1 to the Pn90 parameter to save the parameter permanently, the next power-on will automatically return to the origin. Triggers a return to the point of origin only after re-powering and motor enabling
4	Communication trigger mechanical return function In the case of motor enabling, writing the value will immediately trigger the mechanical return to the origin work. After returning to the origin, the register is cleared
5	Communication trigger electrical return function In the case of motor enabling, writing the value will immediately trigger the electrical return to the origin work. After returning to the origin, the register is cleared
6	Communication trigger with current position as origin motor enabling case, write the value and the drive will be in the current position as the original. After returning to the origin, the register is cleared

Pn 288	Name	Selection of Origin Return Mode				
	Set the scope	0～5	-	-	Factory setting	0

Set Origin Reversion Mode

Set values	Control mode
0	Forward Back to Origin Slowdown Point: Origin Switch Origin: Origin Switch
1	Negative return to origin Slowdown Point: Origin Switch Origin: Origin Switch
2	Forward Back to Origin Slowdown point: Forward limit switch Origin: Forward limit switch
3	Negative return to origin Slowdown point: negative limit switch Origin: Negative limit switch
4	Forward Back to Origin Reduction point: mechanical limit position Origin: Mechanical limit position
5	Forward Back to Origin Reduction point: mechanical limit position Origin: Mechanical limit position

Pn 289	Name	Speed of high-speed search for origin switch signals				
	Set the scope	0～3000	-	-	Factory setting	50

Pn 290	Name	Speed of low-speed search for origin switch signals				
	Set the scope	0～1000	-	-	Factory setting	10

Pn291	Name	Search Origin Switch Signal Add-Off Speed				
	Set the scope	1～2000	-	-	Factory setting	200

Pn 292	Name	Reservations				
	Set the scope	-	-	-	Factory setting	-

Pn 293 Pn294	Name	Mechanical origin offset				
	Set the scope	-1073741824～1073741824	-	Pulse command	Factory setting	0

Pn295	Name	Mechanical Origin Offset and Limit Handling				
	Set the scope	0～3	-	-	Factory setting	0

Set the mechanical origin offset and return to the origin of the process encountered limit processing:

Set values	Mechanical Origin Offset and Approach to Position-limiting
0	Pn293/Pn294 is the point of origin, Reverse search for origin after re-triggering the origin Remarks: Mechanical origin: the mechanical origin does not coincide with the mechanical zero point. After finding the origin switch signal, the current position (PN008/PN009) is forced to set the mechanical origin offset (PN293/PN294) Limit processing mode: give the origin return trigger signal again, the motor direction executes the origin return
1	Pn293/Pn294 is the relative offset after the origin reverts, Reverse search for origin after re-triggering the origin Remarks: Mechanical origin: the mechanical origin coincides with the mechanical zero point, after finding the origin switch signal, the motor runs the mechanical origin offset (Pn293/Pn394) set command stroke after shutdown, the current position (Pn008/Pn009) is equal to the mechanical origin offset (Pn293/Pn394) set value Limit processing mode: give the origin return trigger signal again, the motor direction executes the origin return
2	Pn293/Pn294 is the point of origin, Automatic reverse finding of origin Remarks: Mechanical origin: the mechanical origin does not coincide with the mechanical zero point. After finding the origin switch signal, the current position (PN008/PN009) is forced to set the mechanical origin offset (PN293/PN294) Limit processing: auto reverse continue to execute back to origin
3	Pn293/Pn294 is the relative offset after the origin reverts, Automatic reverse finding of origin Remarks: Mechanical origin: the mechanical origin coincides with the mechanical zero point, after finding the origin switch signal, the motor runs the mechanical origin offset (Pn293/Pn394) set command stroke after shutdown, the current position (Pn008/Pn009) is equal to the mechanical origin offset (Pn293/Pn394) set value

		Limit processing: auto reverse continue to execute back to origin				

Pn296	Name	Torque Back Point Moment Reaches Detection Time				
	Set the scope	1～65535	-	62.5us	Factory setting	5000

When Pn288 is set to 4/5, enable the collision to return to the original. when the running speed of the motor is lower than the parameter setting value of pn297, and the actual current of the motor is greater than or equal to the parameter setting value of pn298, it is considered that the mechanical limit position has been reached. at this time, the internal collision returns to the origin counter to start counting, and when the counter time is greater than the setting value of pn296, the motor returns to the origin to complete.

Pn297	Name	Torque Back Point Torque Reaches Detection Speed				
	Set the scope	0～1000	-	rpm	Factory setting	5

Pn298	Name	Torque Back Point Torque				
	Set the scope	0～7500	-	Ma	Factory setting	1000

Pn299	Name	Electric Angle Compensation Time for Closed-loop Operation				
	Set the scope	0～200	-	us	Factory setting	25

6.18 **Display Parameter 3[Pn300-Pn499]**

Pn300	Name	Modbus RTU communication bus error counter				
	Set the scope	-	-	-	Factory setting	Display

Pn301	Name	Modbus RTU Communication CRC Error Counter				
	Set the scope	-	-	-	Factory setting	Display

Pn302	Name	Modbus RTU communication data byte error counter				
	Set the scope	-	-	-	Factory setting	Display

Pn 303	Name	Current IQ given				
	Set the scope	-	-	0.01A	Factory setting	Display

Pn 304	Name	Current IQ Feedback				
	Set the scope	-	-	0.01A	Factory setting	Display

Pn305	Name	Actual speed of motor				
	Set the scope	-	-	rpm	Factory setting	Display

Pn 306	Name	Open-loop IA given				
	Set the scope	-	-	0.01A	Factory setting	Display

Pn307	Name	Open IB given				
	Set the scope	-	-	0.01A	Factory setting	Display

Pn308	Name	A-phase current bias				
	Set the scope	-	-	-	Factory setting	Display

Pn309	Name	B phase current bias				
	Set the scope	-	-	-	Factory setting	Display

Pn310	Name	System running state				
	Set the scope	-	-	-	Factory setting	Display

Pn311	Name	Input pulse frequency				
	Set the scope	-	-	1 KHz	Factory setting	Display

Pn312	Name	Encoder Breaks				
	Set the scope	-	-	-	Factory setting	Display

| Pn313~ Pn 499	Name	Keep, do not operate				
	Set the scope	-	-	-	Factory setting	-

七　　Communications

Servo driver has Modbus RTU (RS-232, RS-485) communication function, with the upper computer communication software, can achieve parameter modification, parameter query and servo drive status monitoring and other functions.

7.1 MODBUS communications

RS-485 communication protocol has a single host multi-slave communication mode, which can support multiple servo drive network operation. The RS-232 communication protocol does not support multiple servo drive networks.

7.1.1 Hardware wiring
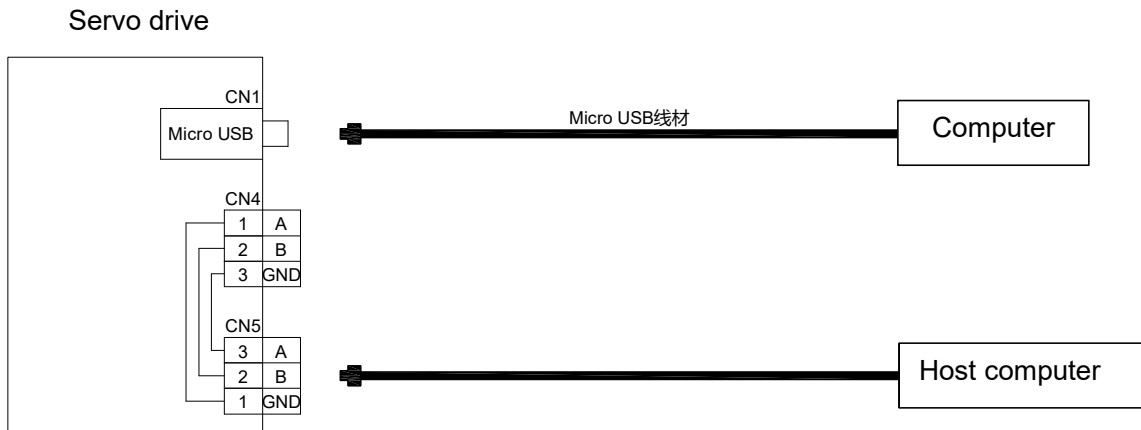
Servo drive

7.1.2 Communication parameter setting

● Servo drive default communication settings:

Communication mode	Axis address	Baud rate	Data format
RS485 Newsletter	1	115200bps	1 bit start bit +8 bit data bit +1 bit stop bit
RS232 Newsletter	1	115200bps	1 bit start bit +8 bit data bit +1 bit stop bit

1、RS485 Communication Settings:

（1）Set servo drive shaft address (PN222)

When multiple servo drives are networked, each drive can only have a unique address, otherwise the communication exception will not work. Of which:

0: Broadcast address

1/127: Flight address

The upper computer can write all slave drives through the broadcast address, receive the broadcast address frame data from the machine driver and do the corresponding operation, but do not do the operation of reply data.

(2) Set the communication rate between the servo drive and the upper computer (PN223)

The regret rate of the servo drive must be set to the same rate as the communication rate of the upper computer, otherwise it will not work. When several servo-drives are networked, if the baud rate of one servo-drive is inconsistent with the host, it will cause the servo-drive communication error and may affect the normal communication of other servo-drives.

Pn223 setting value	Communication baud rate
0	4800bps
1	9600bps
2	19200bps
3	38400 bps
4	57600bps
5	115200bps

(3) Data frame format for communication between servo drives and upper computer (Pn224)

Servo drive provides 6 communication data formats

Pn224 set values	Communication data frame format
0	1 bit start bit +8 bit data bit +1 bit stop bit
1	1 bit start bit +8 bit data bit +2 bit stop bit
2	1 bit start bit +8 bit data bit +1 bit even check bit +1 bit stop bit
3	1 bit start bit +8 bit data bit +1 bit even check bit +2 bit stop bit
4	1-bit stop bit +8-bit data bit +1-bit odd check bit +1-bit stop bit
5	1-bit stop bit +8-bit data bit +1-bit odd check bit +2-bit stop bit

● Note: The upper computer data frame format must conform to the above format, otherwise it can not communicate with the drive.

2、RS232 Communication Settings :(RS232 Communication Station No .1)

★ Description of association parameters

Parameters	Name	Set the scope	Function	Effective time	Factory setting
Pn220	RS232 Communication Baud rate	0～5	Set the baud rate for RS232 communications	Save, restart after	5
Pn221	RS232 Communication	0～5	Data format for RS232 communications	Save, restart after	0

	Data Format				

● Note: The above parameters need to be set for RS232 communication only on the V1.0 hardware version of the servo drive. in the v2.0 hardware version of the servo drive, if not specially marked, do not modify the pn225 parameter (default pn225=0) to ensure that the rs232 communication settings and rs485 are consistent.

7.2 **Modbus communications protocol**

the modbus protocol, designed by moddicon corporation, is a bus protocol that allows the master station and one or more slave stations to share data. the data consists of 16-bit registers.The master can read or write a single register or multiple registers.the standard modbus port on the modicon controller is defined using an rs-232 compatible serial interface with connectors, wiring cables, signal rating, transmission baud rate, and parity calibration. Controller communication uses master-slave technology, that is, the host starts data transmission, called check. whereas other devices (slave) return response data to the query, or process the movement required by the query. Host devices include processors, programmers, and PL. slave machines have programmable controllers, servo drives and step drives. Its master-slave query-feedback mechanism is as follows:
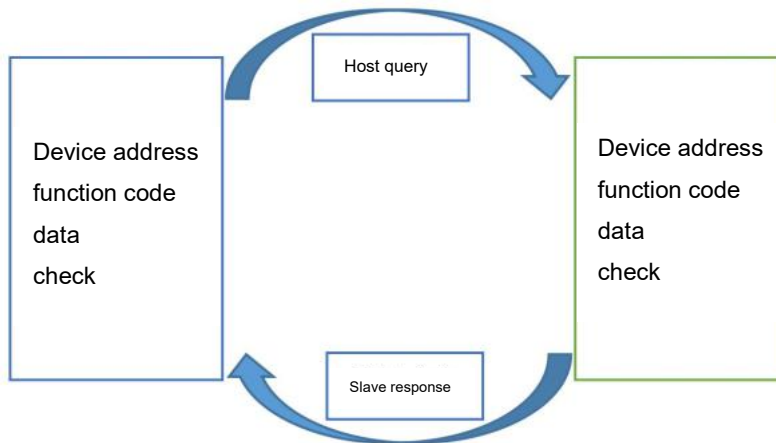
Note: This servo drive communication data frame structure adopts RTU mode.

The Modbus communication function code for the servo drive is described below:

Function code	Definition
0x03	Read Register Data
0x06	Write single register data
0x10	Write multiple register data

● **note: the relation between the parameter number in the manual and the register address in modbus communication: if the parameter number is pn223, then the modbus communication register address is 223(decimal).**

7.2.1 **Read register data :0x03**

Request Frame Format:

START	Free time greater than or equal to 3.5 characters, indicating the start of a frame
ADDR	Servo shaft address
CMD	Function code :0x03
REGISTER_ADDRH	Register start address high bytes
REGISTER_ADDRL	Register start address low bytes
DATA_NUMBERH	Number of registers to be read N (H) bytes
DATA_NUMBERL	Number of registers to be read N (L) low bytes
CRCL	CRC check code low bytes
CRCH	CRC check code high bytes
END	Free time greater than or equal to 3.5 characters, one frame ending

Note: Register start addresses range from 0x0000 to 0x FFFF and register numbers range from 0x1 to 0x7D

Response Frame Format:

START	Free time greater than or equal to 3.5 characters, indicating the start of a frame
ADDR	Servo shaft address
CMD	Function code :0x03
DATA_LENGTH	Returns the number of bytes of data equal to the number of registers N*2
Data [0]	High start data value bytes
DATA[1]	Low start data value bytes
DATA […]	……
DATA[N*2-1]	Last data value low bytes
CRCL	CRC check code low bytes
CRCH	CRC check code high bytes
END	Free time greater than or equal to 3.5 characters, one frame ending

Example:

Host sends request frame:

0x01	0x03	0x00	0x64	0x00	0x02	CRCL	CRCH

this request frame represents: reading 2(0x0002) word-length data from a servo drive with an axis address of 0x01, starting register address of 100(0x0064).

slave response frame:

| 0x01 | 0x03 | 0x04 | 0x01 | 0x20 | 0x00 | 0x59 | CRCL |

this response frame indicates: return data of 4 bytes (2 word lengths) from the machine with data contents 0x0120,0x0059.

7.2.2 Write a single register :0x06

Request Frame Format:

START	Free time greater than or equal to 3.5 characters, indicating the start of a frame
ADDR	Servo shaft address
CMD	Function code :0x06
REGISTER_ADDRH	High byte by write register address
REGISTER_ADDRL	Write register address low byte
DATA[0]	Write high bytes of data
DATA[1]	Write data low bytes
CRCL	CRC check code low bytes
CRCH	CRC check code high bytes
END	Free time greater than or equal to 3.5 characters, one frame ending

Response Frame Format:

START	Free time greater than or equal to 3.5 characters, indicating the start of a frame
ADDR	Servo shaft address
CMD	Function code :0x06
REGISTER_ADDRH	High byte by write register address
REGISTER_ADDRL	Write register address low byte
DATA[0]	Write high bytes of data
DATA[1]	Write data low bytes
CRCL	CRC check code low bytes
CRCH	CRC check code high bytes
END	Free time greater than or equal to 3.5 characters, one frame ending

Example:

Host sends request frame:

| 0x01 | 0 x 06 | 0x00 | 0x64 | 0x00 | 0x02 | CRCL | CRCH |

this request frame indicates: servo drive to axis address 0x01, register address 100(0x0064) write data value 0x0002.

slave response frame:

0x01	0 x 06	0x00	0x64	0x00	0x02	CRCL	CRCH

This response frame indicates that the host successfully writes data to the servodrive register.

7.2.3 **Write multiple registers :0x10**

Request Frame Format:

START	Free time greater than or equal to 3.5 characters, indicating the start of a frame
ADDR	Servo shaft address
CMD	Function code :0x10
REGISTER_ADDRH	Write register start address high byte
REGISTER_ADDRL	Write register start address low byte
DATA_NUMBERH	Number of N (H) bytes written to registers
DATA_NUMBERL	Number of N (L) bytes to be written
DATA_LENGTH	Number of bytes N*2 required to write to register number N
DATA[0]	Write start register data high bytes
DATA [1]	Write start register data low bytes
DATA […]	……
DATA[N*2-1]	Write last register data low bytes
CRCL	CRC check code low bytes
CRCH	CRC check code high bytes
END	Free time greater than or equal to 3.5 characters, one frame ending

Response Frame Format:

START	Free time greater than or equal to 3.5 characters, indicating the start of a frame
ADDR	Servo shaft address
CMD	Function code :0x10
REGISTER_ADDRH	Write register start address high byte
REGISTER_ADDRL	Write register start address low byte
DATA_NUMBERH	Number of N (H) bytes written to registers
DATA_NUMBERL	Number of N (L) bytes to be written
CRCL	CRC check code low bytes
CRCH	CRC check code high bytes
END	Free time greater than or equal to 3.5 characters, one frame ending

Note: The maximum number of registers written at a time is 120.

Example:

Host sends request frame:

0x01	0 x 10	0x00	0x64	0x00	0x02	0x04	0x12	0x00	0x00	0x52	CRCL	CRCH

this request frame indicates: servo drive to axis address 0x01, starting register address 100(0x0064) write 2(0x0002) word length data (4 bytes), write data 0x1200,0x0052.

slave response frame:

0x01	0 x 10	0x00	0x64	0x00	0x02	CRCL	CRCH

This response frame indicates that the host successfully writes data to the servodrive register.

7.2.4 Error response frame format

START	Free time greater than or equal to 3.5 characters, indicating the start of a frame
ADDR	Servo shaft address
CMD	0x80+ Function Code
ERROR_CODE	Error coding
CRCL	CRC check code low bytes
CRCH	CRC check code high bytes
END	Free time greater than or equal to 3.5 characters, one frame ending

Error coding

Error coding	Coding note
0x01	Illegal functional code
0x02	Illegal data addresses
0x03	Illegal data
0x04	Failure of equipment from station

Example:

Host sends request frame:

0x01	0x03	0x00	0x64	0x00	0x02	CRCL	CRCH

this request frame represents: reading 2(0x0002) word-length data from a servo drive with an axis address of 0x01, starting register address of 100(0x0064).

slave response frame:

0x01	0x03	0x04	0x01	0x20	0x00	0x59	CRCL

this response frame indicates: return data of 4 bytes (2 word lengths) from the machine with data contents 0x0120,0x0059.

If the slave responds to

0x01	0 x 83	0x02	CRCL	CRCH

this response frame indicates :0x83 indicates an error occurred in communication, the error encoding is 0x02.

7.2.5 **CRC calibration**

The upper computer and the servo communication, must adopt the consistent CRC check algorithm, otherwise produces the CRC check error, causes can not communicate, and the servo driver will not carry on the error to the CRC check error.Servo drives use 16-bit CRC with low bytes in front and high bytes in rear. The CRC function is as follows:

```
unsigned short CalcCRCbyAlgorithm (unsigned char*pDataBuffer, unsigned longusDataLen)
{
const unsigned short POLYNOMIAL =0xA001;
 unsignedshortwCrc;
int iBite, iBit;
 WCrc =0x FFFF;
For (iBite =0; iBite < usDataLen; iBite ++)
{
wCrc^=*(pDataBuffer+iByte);
 for (iBit=0; iBit <=7; iBit ++)
{
 If (wCrc &0x0001)
{
 wCrc >=1;
 wCrc^= POL YNOMIAL;
}
else
{
 wCrc >=1;
}
}
}
 Return wCrc;
}
```

7.3 **Software description for driver debugging**

Please refer to the manual for the use of driver debugging software.

八 Appendix

8.1 Appendix A List of Servo Parameters

Note: For a parameter consisting of two registers (parameter number), the parameter number for a low position is a low 16 bit value, and the parameter number for a high position is a high 16 bit value, together with a signed 32.

Parameter number	Name	Set the scope	Units	Factory Setting
Pn 000	Fault code	-	-	Display
Pn001	Drive status	-	-	Display
Pn002	Input Port Value	-	-	Display
Pn003	Output Port Value	-	-	Display
Pn004	Input port on trigger state	-	-	Display
Pn005	Input port off trigger state	-	-	Display
Pn006	Clear input port on trigger state	0～65535	-	0
Pn007	Clear input port off trigger state	0～65535	-	0
Pn008 Pn009	Current position of the drive	-	Pulse command	Display
Pn010	Drive Current Speed Instruction	-	rpm	Display
Pn011	Drive supply voltage	-	0.01 V	Display
Pn012 Pn013	Tracking error	-	Encoder Unit	Display
Pn014 Pn015	External given pulse counter	-	Pulse command	Display
Pn016	Zero-clearing external given pulse counter	0～1	-	0
Pn017	Driven Pulse Instruction Source	0～1	-	1
Pn018	Communication control instructions	0～9	-	0
Pn019	External pulse instruction type	0～3	-	0
Pn020	Internal Pulse Application Mode	0～99	-	0
Pn021	Type of motor	0～1	-	1
Pn022	Motor operation mode	0～5	-	1
Pn023	Motor direction	0～1	-	0
Pn024	Breakdown	200～65535	P/r	4000
Pn025	Open-loop running current	1～7500	Ma	3000
Pn026	Open-loop standby current percentage	1～100	%	50
Pn027	Open-loop standby time	1～65535	Ms	500
Pn028	Instruction filtering time constant	1～2048	62.5us	512
Pn029	Current position of encoder	-	Encoder Unit	-
Pn030	Self-identification PI enabling	0～1	-	1
Pn031	Self-identification resistor	-	-	-

Pn032	Self-identifying Inductor	-	-	-
Pn033	Set resistor	1～65535	mΩ	1000
Pn034	Set inductance	1～65535	mH	5
Pn035	Moment factor	0～65535	-	205
Pn036	Current Ring KP	0～65535	-	800
Pn037	Current Ring KI	0～65535	-	500
Pn038	Current Ring KC	0～65535	-	256
Pn039	Current loop test sign	0～1	-	0
Pn040	Encoder resolution	1～65535	P/r	4000
Pn041	Overrange alarm threshold	1～65535	Encoder Unit	4000
Pn042	Positioning completion accuracy	1～65535	Encoder Unit	10
Pn043	In place signal establishment time	0～65535	62.5us	200
Pn044	Pulse stop detection time	0～65535	62.5us	200
Pn045	Closed-loop maximum current	0～7500	Ma	4000
Pn046	Closed-loop base current	1～100	%	50
Pn047	Speed low pass filter to frequency 1	1～5000	Hz	200
Pn048	Speed low pass filter to frequency 2	1～5000	Hz	600
Pn049	Servo Mode 1 Low Speed Vibration Resistance Factor	0～65535	-	0
Pn050	Servo mode 2KP	0～65535	-	3000
Pn051	Servo mode 2KI	0～65535	-	1000
Pn052	Servo mode 2KV 1	0～65535	-	10
Pn053	Servo mode 2KV2	0～65535	-	800
Pn054	Servo mode 2KVFF	0～65535	-	600
Pn055	Servo mode 2 gravity compensation factor	0～65535	-	512
Pn056	Servo mode 2KA	0～65535	-	0
Pn057	Servo mode 2 KAF	0～65535	-	0
Pn058	Servo mode 2 position low pass filter frequency	1～5000	Hz	5000
Pn059	Servo mode 2 acceleration feedforward low pass filter frequency	1～5000	Hz	2000
Pn060	Input Port 1 function, polarity setting	0～63	-	36
Pn061	Input Port 2 function, polarity setting	0～63	-	41
Pn062	Input port 3 function, polarity setting	0～63	-	42
Pn063	Input port 4 function, polarity setting	0～63	-	39
Pn064	Input port 5 function, polarity setting	0～63	-	40
Pn065	Input Port 6 function, polarity setting	0～63	-	44
Pn066	Output Port 1 function, polarity setting	0～31	-	17
Pn067	Output port 2 function, polarity setting	0～31	-	19
Pn068	General output function	0～65535	-	0
Pn 069	Input function flag register	-	-	Display
Pn070	Point running acceleration	1～2000	r/s ^2	200

Pn071	Point operation speed reduction	1～2000	r/s ^2	200
Pn072	Point running speed	0～6000	rpm	600
Pn073 Pn074	Point running itinerary	-1073741824～1073741824	Pulse command	2000
Pn075	Point run acceleration	1～2000	r/s ^2	100
Pn076	Point-run speed reduction	1～2000	r/s ^2	100
Pn 077	Point Speed	0～6000	rpm	600
Pn078	Sharp Stop Speed	1～2000	r/s ^2	500
Pn079	Input Port 7 function, polarity setting	0～63	-	43
Pn 080	Motor rated torque	0～65535	0.01 Nm	300
Pn081	Servo mode 1KP	0～65535	-	2500
Pn082	Servo mode 1KV	0～65535	-	200
Pn083	Servo mode 1KVFF	0～65535	-	30
Pn084	Internal Pulse Instruction Operation Mode	0～1	-	0
Pn085	Clear current position	0～1	-	0
Pn086 Pn087	Excess alarm threshold (effective at Pn041=65535 only)	1～1048576	-	8000
Pn088	Overrangement alarm ban	0～1	-	0
Pn089	Servo mode 1KI	0～65535	-	0
Pn090	Save parameters	0～1	-	0
Pn091	Recovery of ex-factory parameters	0～1	-	0
Pn092	Do not operate the register	-	-	-
Pn093	Drive ID	-	-	Display
Pn094	Drive version number	-	-	Display
Pn095	Non-labelled	-	-	Display
Pn096 Pn097	Breakdown (effective at Pn024=65535 only)	200～1048576	-	4000
Pn098 Pn099	Current position of encoder	-	-	Display
Pn100	Speed Meter / Location Table IO Switch Delay Effective Time	0～65535	62.5us	200
Pn101	Current loop test current value	0～5000	Ma	1000
Pn102	Output port 3 function, polarity setting	0～31	-	18
Pn103	Output port 4 function, polarity setting	0～31	-	19
Pn 104	Output function flag register	-	-	Display
Pn 105	Multi-stage Speed Control 0	-6000～6000	rpm	0
Pn106	Multi-stage Speed Control 1	-6000～6000	rpm	100
Pn107	Multi-stage Speed Control 2	-6000～6000	rpm	200
Pn108	Multi-stage Speed Control 3	-6000～6000	rpm	300
Pn109	Multi-stage Speed Control 4	-6000～6000	rpm	400
Pn110	Multi-stage Speed Control 5	-6000～6000	rpm	500
Pn 111	Multi-stage Speed Control 6	-6000～6000	rpm	600
Pn112	Multi-stage Speed Control 7	-6000～6000	rpm	700

Pn 113	Multi-stage Speed Control 8	-6000～6000	rpm	800
Pn114	Multi-stage Speed Control 9	-6000～6000	rpm	900
Pn115	Multi-stage Speed Control 10	-6000～6000	rpm	1000
Pn 116	Multi-stage speed control	-6000～6000	rpm	1100
Pn117	Multi-stage speed control	-6000～6000	rpm	1200
Pn118	Multi-segment speed control 13	-6000～6000	rpm	1300
Pn 119	Multi-stage Speed Control 14	-6000～6000	rpm	1400
Pn120	Multi-stage speed control 15	-6000～6000	rpm	1500
Pn121	Multi-segment location of current trigger run	-	-	Display
Pn 122	Default parameter ID settings	1～65535	-	100
Pn123 Pn124	Encoder Current Position (Multiple Circles)	-	Encoder Unit	Display
Pn125 Pn126	Multi-segment position control 0	-1073741824～1073741824	Pulse command	0
Pn 127 Pn128	Multi-segment position control 1	-1073741824～1073741824	Pulse command	0
Pn 129 Pn130	Multi-segment position control 2	-1073741824～1073741824	Pulse command	0
Pn131 Pn132	Multi-segment position control 3	-1073741824～1073741824	Pulse command	0
Pn 133 Pn134	Multi-segment position control 4	-1073741824～1073741824	Pulse command	0
Pn135 Pn136	Multi-segment position control 5	-1073741824～1073741824	Pulse command	0
Pn137 Pn138	Multi-segment position control 6	-1073741824～1073741824	Pulse command	0
Pn139 Pn140	Multi-segment position control 7	-1073741824～1073741824	Pulse command	0
Pn 141 Pn142	Multi-segment position control 8	-1073741824～1073741824	Pulse command	0
Pn143 Pn144	Multi-segment position control 9	-1073741824～1073741824	Pulse command	0
Pn145 Pn146	Multi-segment position control 10	-1073741824～1073741824	Pulse command	0
Pn147 Pn148	Multi-segment position control 11	-1073741824～1073741824	Pulse command	0
Pn 149 Pn150	Multi-segment position control	-1073741824～1073741824	Pulse command	0
Pn151 Pn152	Multi-segment position control 13	-1073741824～1073741824	Pulse command	0
Pn153 Pn154	Multi-segment position control 14	-1073741824～1073741824	Pulse command	0
Pn155 Pn156	Multi-segment position control 15	-1073741824～1073741824	Pulse command	0
Pn157	Multi-segment displacement instruction type	0～1	-	0
Pn158	Multi-segment operation mode	0～2	-	0
Pn159	Number of endpoints for multi-segment displacement instructions	1～16	-	16
Pn160	Unit of time	0～1	-	0
Pn161	Maximum speed of displacement in section 0	0～6000	rpm	100
Pn 162	Section 0 displacement plus or minus velocity	1～2000	r/s^2	100
Pn163	Waiting time after completion of section 0 displacement	0～65535	ms(s)	100

Pn 164	Maximum speed of displacement in section 1	0～6000	rpm	100
Pn165	Paragraph 1 Displacement plus or minus velocity	1～2000	r/s^2	100
Pn 166	Waiting time after the completion of the first displacement	0～65535	ms(s)	100
Pn 167	Maximum speed of displacement in section 2	0～6000	rpm	100
Pn168	Paragraph 2 Displacement plus or minus velocity	1～2000	r/s^2	100
Pn169	Waiting time after completion of the second displacement	0～65535	ms(s)	100
Pn170	Maximum speed of displacement in section 3	0～6000	rpm	100
Pn171	Paragraph 3 Displacement plus or minus velocity	1～2000	r/s^2	100
Pn172	Waiting time after the completion of the third displacement	0～65535	ms(s)	100
Pn 173	Maximum speed of displacement in section 4	0～6000	rpm	100
Pn 174	Paragraph 4 Displacement plus or minus velocity	1～2000	r/s^2	100
Pn175	Waiting time after 4th displacement	0～65535	ms(s)	100
Pn176	Maximum speed of displacement in section 5	0～6000	rpm	100
Pn177	Section 5 Displacement plus or minus velocity	1～2000	r/s^2	100
Pn178	Stage 5 Waiting time after completion of displacement	0～65535	ms(s)	100
Pn179	Maximum speed of displacement in section 6	0～6000	rpm	100
Pn180	Paragraph 6 Displacement plus or minus velocity	1～2000	r/s^2	100
Pn181	Waiting time after completion of the 6th displacement	0～65535	ms(s)	100
Pn182	Maximum speed of displacement in section 7	0～6000	rpm	100
Pn183	Paragraph 7 Displacement plus or minus velocity	1～2000	r/s^2	100
Pn184	Stage 7 Waiting time after completion of displacement	0～65535	ms(s)	100
Pn185	Maximum speed of displacement in section 8	0～6000	rpm	100
Pn186	Paragraph 8 Displacement plus or minus velocity	1～2000	r/s^2	100
Pn 187	Stage 8 Waiting time after completion of displacement	0～65535	ms(s)	100
Pn188	Maximum speed of displacement in section 9	0～6000	rpm	100
Pn189	Section 9 Displacement plus or minus velocity	1～2000	r/s^2	100
Pn190	Stage 9 Waiting time after completion of displacement	0～65535	ms(s)	100
Pn 191	Maximum speed of displacement in section 10	0～6000	rpm	100
Pn 192	Section 10 Displacement plus or minus velocity	1～2000	r/s^2	100
Pn 193	Waiting time after completion of section 10 displacement	0～65535	ms(s)	100
Pn194	Maximum speed of displacement in section 11	0～6000	rpm	100
Pn195	Paragraph 11 Displacement plus or minus velocity	1～2000	r/s^2	100
Pn196	Stage 11 Waiting time after completion of displacement	0～65535	ms(s)	100

Pn 197	Maximum speed of displacement in section 12	0～6000	rpm	100
Pn198	Paragraph 12 Displacement plus or minus velocity	1～2000	r/s^2	100
Pn199	Waiting time after completion of section 12 displacement	0～65535	ms(s)	100
Pn200	Maximum speed of displacement in section 13	0～6000	rpm	100
Pn201	Paragraph 13 Displacement plus or minus velocity	1～2000	r/s^2	100
Pn202	Stage 13 Waiting time after displacement completion	0～65535	ms(s)	100
Pn203	Maximum speed of displacement in section 14	0～6000	rpm	100
Pn 204	Paragraph 14 Displacement plus or minus velocity	1～2000	r/s^2	100
Pn205	Stage 14 Waiting time after displacement completion	0～65535	ms(s)	100
Pn206	Maximum speed of displacement in section 15	0～6000	rpm	100
Pn207	Section 15 Displacement plus or minus velocity	1～2000	r/s^2	100
Pn208	Waiting time after the completion of the 15th displacement	0～65535	ms(s)	100
Pn209	default display parameter number on LED panel	0～499	-	305
Pn210 Pn211	Electronic gear specific molecule 1	1～1048576	-	128
Pn212 Pn213	Electronic gear ratio denominator 1	1～1048576	-	10
Pn214 Pn215	Electronic gear specific molecule 2	1～1048576	-	128
Pn216 Pn217	Electronic gear ratio denominator 2	1～1048576	-	10
Pn218	Keep, do not operate	-	-	-
Pn219	Keep, do not operate	-	-	-
Pn220	USB Port Communication Baud Rate	0～5	-	5
Pn221	USB Serial Data Format	0～5	-	0
Pn222	RS485 Communication Station No.	0～247	-	1
Pn223	RS485 Communication Baud Rate	0～5	-	5
Pn224	RS485 Communication Data Format	0～5	-	0
Pn225	RS485 and USB Serial Independent Communication Enable (please set to 0, if you need to set to 1, please consult the manufacturer technical support)	0～1	-	0
Pn226	Moment running KP	0～65535	-	1000
Pn227	Torque operation KI	0～65535	-	3000
Pn228	Moment running KC	0～65535	-	256
Pn229	Given Moment	0～65535	0.001 Nm	300
Pn230	Moment operation acceleration	1～2000	r/s^2	200
Pn231	Torque operation deceleration	1～2000	r/s^2	200
Pn232	Moment operation forward speed limit	0～6000	rpm	300
Pn233	Torque operation negative speed limit	0～6000	rpm	300
Pn234	Torque reaches reference value	0～65535	0.001 Nm	0

Pn235	Torque reaches effective value	0～65535	0.001 Nm	0
Pn236	Moment reaches invalid value	0～65535	0.001 Nm	0
Pn237	Moment arrival detection time	0～65535	Ms	10
Pn238	Moment holding time	0～65535	Ms	50
Pn239	Torque shutdown mode	0～1	-	0
Pn240 Pn241	Soft Limit Upper Limit	-1073741824～1073741824	Pulse command	0
Pn242 Pn242	Soft Limits	-1073741824～1073741824	Pulse command	0
Pn244 Pn245	Travel between limits	-	Pulse command	Display
Pn246	Motor shaft-locking angle pulse	0～65535	-	0
Pn247	Motor lock shaft start and stop instructions	0～1	-	0
Pn248	Data sampling start flag	0～1	-	0
Pn249	Data sampling speed	1～65535	-	1
Pn250	Data sampling channel 1	0～20	-	0
Pn251	Data sampling channel 2	0～20	-	1
Pn252	Motion demonstration delay	0～65535	Ms	100
Pn253	Motion demonstration mode	0～1	-	0
Pn254	Motion demonstration starting direction	0～1	-	0
Pn255	Number of sports demonstrations	0～65535	-	0
Pn256	Motion demonstration start and stop instructions	0～2	-	0
Pn257	External pulse bandwidth limits	1～255	-	10
Pn258	Servo Forced Enable	0～1	-	0
Pn259	Servo enable turn-off delay	0～65535	-	0
Pn260	Panel display speed smoothing filter	1～100	-	80
Pn261	Current feedback low pass filter cutoff frequency	100～5000	Hz	5000
Pn262	Brake Resistance Selection	0～1	-	1
Pn263	Minimum braking resistance allowed by the driver	-	Ω	30
Pn264	External braking resistance resistance	1～1000	Ω	50
Pn265	External braking resistance power	1～10000	W	200
Pn266	Internal braking resistance resistance	1～1000	Ω	50
Pn267	Internal braking resistance power	1～10000	W	200
Pn268	coefficient of heat dissipation of brake resistance	1～100	-	80
Pn269	Coder breakage detection prohibited	0～1	-	0
Pn270	Servo mode 5 speed KP	0～65535	-	1200
Pn271	Servo mode 5 speed KI	0～65535	-	300
Pn272	Servo mode 5 speed KC	0～65535	-	256
Pn273	Servo mode 5 position KP	0～65535	-	200
Pn274~ Pn286	Keep, do not operate	-	-	-

Pn287	Origin Regeneration Enable Control	0～6	-	1
Pn288	Origin Reversion Mode	0～10	-	0
Pn289	Speed of high-speed search for origin switch signals	0～3000	rpm	50
Pn290	Speed of low-speed search for origin switch signals	0～1000	rpm	10
Pn291	Search Origin Switch Signal Add-Off Speed	1～2000	r/s^2	200
Pn292	Reservations	-	-	-
Pn293 Pn294	Mechanical origin offset	-1073741824～1073741824	Command Unit	0
Pn295	Mechanical Origin Offset and Limit Handling	0～3	-	0
Pn296	Torque Back Point Moment Reaches Detection Time	1～65535	62.5us	5000
Pn297	Torque Back Point Torque Reaches Detection Speed	0～1000	rpm	5
Pn298	Torque Back Point Torque	0～7500	Ma	1000
Pn299	Electric Angle Compensation Time for Closed-loop Operation	0～200	us	25
Pn300	Modbus RTU Communication Bus Error Counter	-	-	Display
Pn301	Modbus RTU Communication CRC Error Counter	-	-	Display
Pn302	Modbus RTU Communication Data Byte Error Counter	-	-	Display
Pn303	Current IQ given	-	0.01A	Display
Pn304	Current IQ Feedback	-	0.01A	Display
Pn305	Actual speed of motor	-	rpm	Display
Pn306	Open-loop IA given	-	0.01A	Display
Pn307	Open IB given	-	0.01A	Display
Pn308	A-phase current bias	-	-	Display
Pn309	B phase current bias	-	-	Display
Pn310	System running state	-	-	Display
Pn311	Input pulse frequency	-	1 KHz	Display
Pn312	Encoder Breaks	-	-	Display
Pn313~ Pn499	Keep, do not operate	-	-	-