Catalog

Chapter 1 Product Overview

1.1 Safety Precautions

Please use this product only after the safety precautions described in this manual are fully understood to protect both persons and the products.

Signs and Meanings

The following signs are used in this manual to highlight the key safety points. Failure to observe these points may result in damages to this product and the associated system, or even personal injuries.

⚠危险	DANGER: Incorrect operation may result in death or major safety incidents.
⚠注意	CAUTION: Incorrect operation may result in minor injuries.

Please carefully read and abide by the requirements in this manual. It can help you use and set up this all-in-one product correctly to meet the application requirements you need. Please be aware of each of the following precautions and follow the requirements, otherwise application failure, product damage or even dangerous situations may occur:

- When unpacking, check the appearance of the product, spare parts, etc., and do not install it if it is found defective or missing.

- Please store/install the all-in-one machine in a well-ventilated, dry and dust-free place without grinding fluid, oil mist, iron powder, chips, etc., and the surrounding area must be non-flammable to avoid foreign objects entering the all-in-one machine, causing bad failures or other potential safety hazards caused by electrical failures.

- Please use original packaging for storage and transportation, which provides sufficient protection to avoid routine problems.

- When unpacking/installing the all-in-one machine, do not apply external force to the fuselage (drop/tap, etc.)

- Do not use gasoline, thinner, acidic and alkaline detergents to avoid discoloration of the case or corrosion of the cable.

- Please confirm whether the external power supply voltage level is consistent with the rated voltage of the all-in-one machine, whether the wiring position is correct, and pay attention to check whether there is a short circuit in the peripheral circuit and whether the connected circuit is tight, otherwise the driver may be damaged.

- Please confirm that the input power supply is cut before wiring.

- Do not unplug the communication cable connector while power is on! May cause product damage.

- Do not unplug the communication cable connector while power is on! May cause product damage.

- When the all-in-one machine is running, do not touch any rotating parts, otherwise it may cause

injuries.

- During operation, the surface temperature of the all-in-one machine may exceed 80 °C, so beware of burns!

- Please do not repair and maintain the equipment with electricity, otherwise there is a danger of electric shock.

1.2 Operation

Note
During the trial operation, in order to prevent accidents, please test the servo integrated machine without load (not connected to the transmission shaft), otherwise injuries may be caused.
When the servo all-in-one machine is running, please never touch its rotating part, otherwise it will cause injury.
When it is installed on the supporting machine and started running, please set the user parameters consistent with the machine in advance. If operation is started without parameter setting, it may cause mechanical loss of control or failure.
When the origin reversion is performed, the signals of the positive limit (P-OT) and the negative limit (N-OT) are invalid.
When powered on or when the power is just cut off, please do not touch the body of the servo all-in-one machine, otherwise it will cause burns.
When an alarm occurs, please reset it after eliminating the cause and ensuring safety, and restart the operation, otherwise injury may be caused.
Do not use the brake of the brake motor for usual braking, otherwise it may cause failure

1.3 Maintenance attention

Caution
- The power on and off operation should be carried out by professional operators.   - When testing the insulation resistance of the driver, please cut off all circuits connected to the driver first, otherwise the driver will fail.   - Do not use gasoline, thinner, alcohol, acidic and alkaline detergents to avoid discoloration or damage of the shell.   - Do not change the wiring while powered on, otherwise it may cause electric shock.   - Do not disassemble the servo all-in-one, otherwise it may cause electric shock or injury.

Chapter 2 Product Description

2.1 Model description
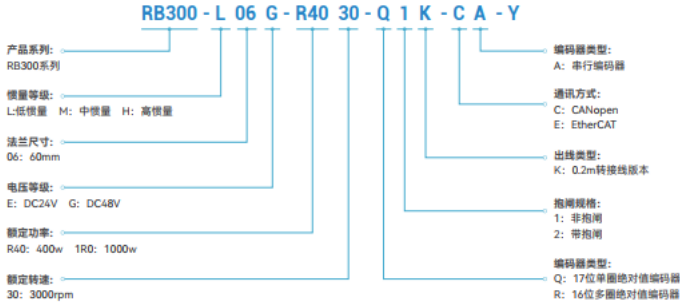
2.2 Dimensions
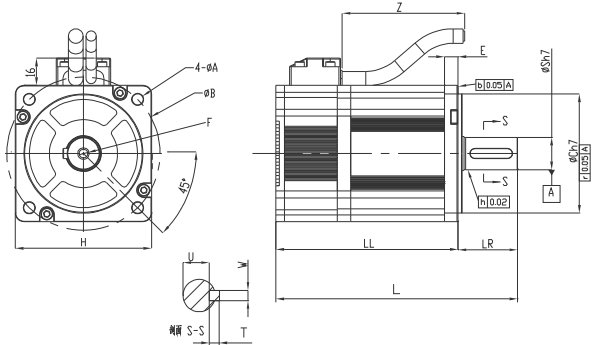
Motor model	A	B	C	S	E	F	H	L	LL	LR	T	W	U	Z
RB300-L06G- R2030-Q1K-CA-YK								107.5	67.5					
RB300-L06G- R2030-Q2K-CA-YK	5.5	70	50	14	5	M5-6H Deep 10	60	130	100	30	5	5	11	200
RB300-L06G- R4030-Q1K-CA-YK								122.5	92.5					
RB300-L06G-								155	125					

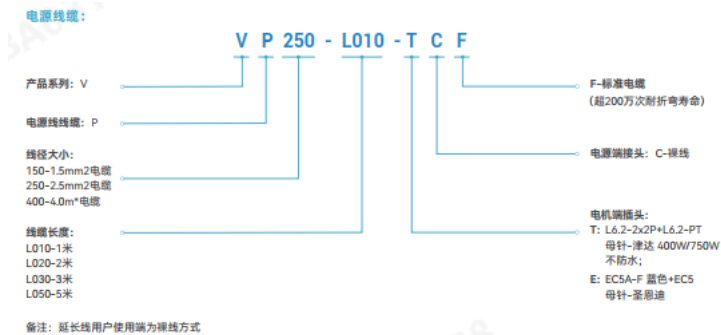| Model													
R4030-Q2K-CA-YK													
RB300-L08G-R7530-Q1K-CA-YK	6.5	90	70	19	8	M6-6H Deep 12	80	142	107	35	6	6	15.5
RB300-L08G-R7530-Q2K-CA-YK								176	141				
RB300-L08G-1R030-Q1K-CA-YK								169	134				
RB300-L08G-1R030-Q2K-CA-YK								203	168				
RB300-M13G-1R530-Q2K-CA	9	145	110	22	12	M5 Deep 12	131	151	151.2	55	7	8	17

2.3 Product Specification

Model	Installation Flange	Rated voltage	Rated power	Rated current	Peak current	Rated torque	Peak torque	Rated speed	Peak speed	Rotor Inertia
	mm	V	W	A	A	N.m.	N.m.	rpm	rpm	Kg.m 2 × 10 ^- 4)
RB300-L06G-R2030-Q1K-CA-YK	60	48	200	5.98	11.96	0.637	1.247	3000	4000	0.091
RB300-L06G-R2030-Q2K-CA-YK	60	48	200	5.98	11.96	0.637	1.247	3000	4000	0.1027
RB300-L06G-R4030-Q1K-CA-YK	60	48	400	11.95	23.9	1.27	2.54	3000	4000	0.242
RB300-L06G-R4030-Q2K-CA-YK	60	48	400	11.95	23.9	1.27	2.54	3000	4000	0.2537
RB300-L08G-R7530-Q1K-CA-YK	80	48	750	22.44	44.88	2.387	4.774	3000	4000	0.641
RB300-L08G-R7530-Q2K-CA-YK	80	48	750	22.44	44.88	2.387	4.774	3000	4000	0.734

RB300-L08G-1R030-Q1K-CA-YK	80	48	1000	29.2	59.84	3.183	6.336	3000	4000	0.854
RB300-L08G-1R030-Q2K-CA-YK	80	48	1000	29.2	59.84	3.183	6.336	3000	4000	0.947
RB300-M13G-1R530-Q2K-CA	130	48	1500	31	93	4.78	14.33	3000	3000	12.65

2.3 Wire specifications

2.3. 1 Power cable naming

2.3. 2 Signal cable naming
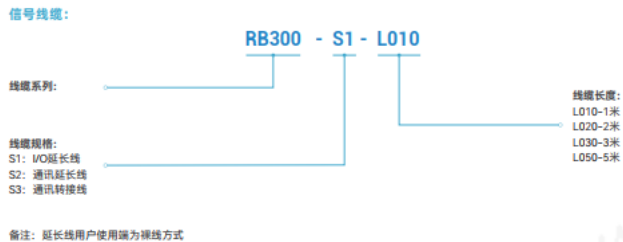
2.3. 3 Cable configuration table

Specification	Signal line		
	Model	Graphical representation	
I/O extension cable	RB300-S2-L * * *		
Communication extension cable	RB300-S3-L * * *		
Communication patch cable	RB300-S3-L * * *		

Specification	Power cord		
	Model	Graphical representation	
400w/750w all-in-one machine	VP250-L * * *-TCF		
1000w/1500w all-in-one	VP400-L * * *-ECF		

2.4 Technical Specifications

No.	Item	Description
1	Rated voltage	DC48V
2	Encoder resolution	17bit absolute value encoder
3	Communication	RS485, CANopen, EtherCAT
4	DI	3-way (CAN, RS485 specification), 2-way (EtherCAT specification)
5	DO	1 path
6	Cooling	Natural heat dissipation
7	IP	IP54 (standard), others can be customized
8	Standards	IEC61800-2/-3/5, IEC61000-2/-3/4
9	Work system	Continuous
10	Vibration level	49m/s2 (5G) or below during rotating, 24.5 m/s2 (2.5 G) or below during stop
11	Insulation resistance	48V DC, > 10MΩ
12	Ambient temperature	-15℃~40℃
13	Ambient humidity	20% to 80% RH (no condensation)

14	Excitation mode	Permanent magnet
15	Installation method	Flange
16	Insulation Class	F
17	Insulation voltage	AC1500V 1 minute (class 200V)
18	Storage temperature	-15℃~60℃
19	Storage humidity	20% to 80% RH (no condensation)
20	IP	P67 (except outlet end)

2.5 Torque characteristics

RB300-L06G-R2030-mouth-mouth-CA-YK RB300-L06G-R4030-mouth-mouth-CA-YK
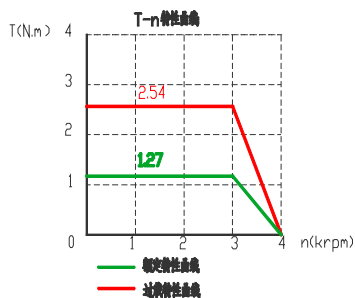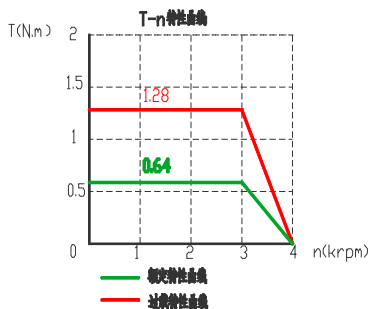
RB300-L08G-R7530-mouthmouth-CA-YK RB300-M13G-1R530-Q2K-CA
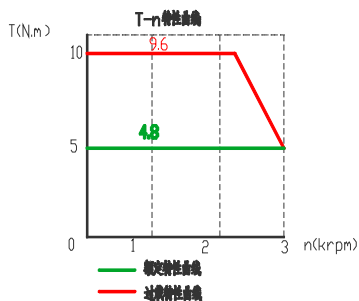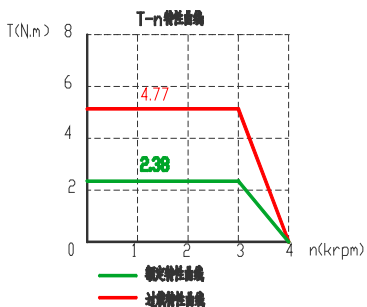
Chapter 3 Debugging Guide

3.1 VCSDSoft _ L Debugging Software

VCSDSoft _ L is an upper computer software that matches the RB300 driver to realize monitoring and debugging on the PC platform, as shown in Figure 3-1.

Figure 3-1 VCSDSoft _ L software interface

Customers can realize the communication between the RB300 driver and the PC through the USB to RS-485 data cable, and after installing the VCSDSoft _ L host computer software and driver, realize the function and performance debugging of the RB300 driver. Figure 3-2 is a schematic diagram of the physical connection between the all-in-one machine and the PC.
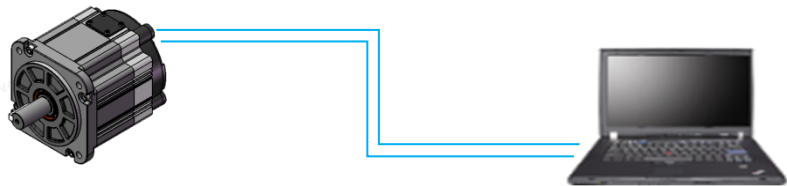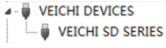
Figure 3-2 Schematic diagram of physical connection between all-in-one machine and PC

Table 3-1 shows the details of VCSDSoft _ L upper computer software.

Table 3-1 Details of VCSDSoft _ L host computer software

VCSDSoft _ L Software	Details
Software Version	VCSDSoft _ L Ver2.1 RB300/RB300/RB300 compatible debugging software
Software environment	Windows 7/Windows10/Windows11
Software-driven	▲ VEICHI DEVICES └ VEICHI SD SERIES

	driver software path:\ VCSDSoft _ L Ver2.1\ driver
Communication connection	USB to RS-485

3.2 Basic Information

3.2. 1 Connection configuration

Open the debugging software of the host computer, and connect the debugging software through RS-485 communication mode for debugging.

First, open the software and click Project to create a new project project. Temporary project properties are provided in the software, which can be used to create temporary projects. This manual takes the temporary project as an example, and establishes the following project documents, as shown in Figure 3-3.
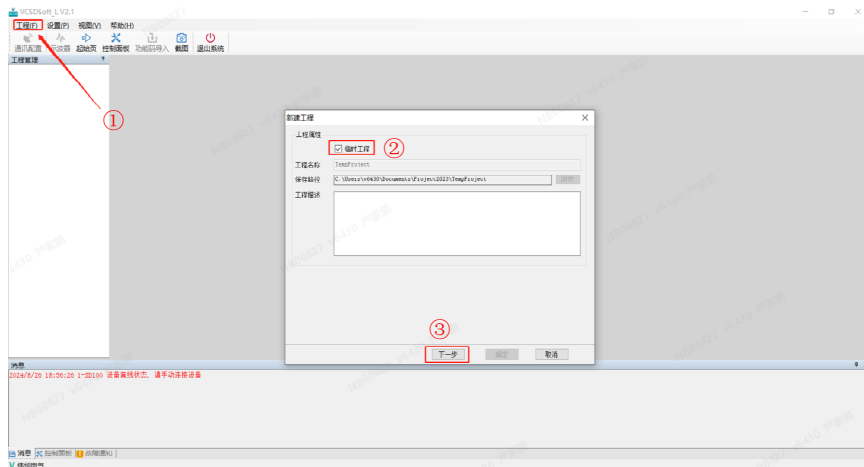
Figure 3-3 Create A New Project

The communication mode is RS485, and the serial port option can be refreshed to re-identify the port number. The specific port number can be viewed in the PC Device Manager. Configure the communication parameters as follows (the factory default baud rate of RS485 is 115200). After completing, click online search. When a device is found, the communication is successful. Select the device and click OK. As shown in Figure 3-4.

Figure 3-4 Communication parameter settings

After the project is successfully created, the main interface of VCSDSoft _ L host computer software can be displayed, as shown in Figure 3-5:

Figure 3-5 Main interface of VCSDSoft _ L host computer software

① Navigation bar: used for operation management of project files, project configuration information, opening the bottom page layout view window, and help information.

② Shortcut toolbar: Provides the most commonly used tools quick access buttons, communication configuration, oscilloscope, control panel and function code import, etc.

③ Project management column: Provides various operation items of project management and various auxiliary function entrances supported by the controller, including reading and writing parameters, quick monitoring, fault diagnosis, JOG, motor writing, program JOG, inertia identification, FFT analysis, mechanical characteristics, bandwidth setting, digital IO, diagnostic parameters, overload monitoring,

PDO configuration.

④   Read and write parameter column: a classified list of various parameters, which is used to switch the content displayed in the ⑤ interface.

⑤   Function parameter main interface: the main interface for reading and writing all Pn parameters, and supports functions such as import, export and comparison of batch data. (Note: ④ and ⑤ are a whole, and this interface is called up by double-clicking the read and write parameter items in column ③)

⑥   Quick monitoring main interface: used for real-time monitoring and display of various parameters. (This interface is called up by double-clicking the shortcut monitoring item in column ③)

⑦   Control panel: used for quick debugging of servo controller, including enabling, restoring factory settings, fault status, etc.

⑧   Upper computer message window: Used to display the debugging information output by the upper computer.

⑨   Fault Notification Bar: Used to display fault information.

1.2. 2 Read and write parameters and quick monitoring

The read and write parameter interface (as shown in Figure 1-6) can write and read all Pn group parameters, and supports the following functions:

(1) Writing of individual Pn parameters: you only need to select the function code to be modified, input the appropriate parameter value, and enter enter to effectively write;

(2) Parameter batch reading: click The parameters of the current group and all groups can be read in batches;

(3) Batch import and export of parameters: The modified parameters can be exported to the current parameter group as a. param file, which can be imported in batches later. The param file matches the parameter record before;

(4) Commonly used parameter record: Add commonly used parameters to the commonly used parameter column to facilitate parameter modification;

(5) Compare different parameters: compare the current parameter with the default parameter or the previous. The param file is compared to obtain the modified parameters, which is convenient for difference comparison analysis.
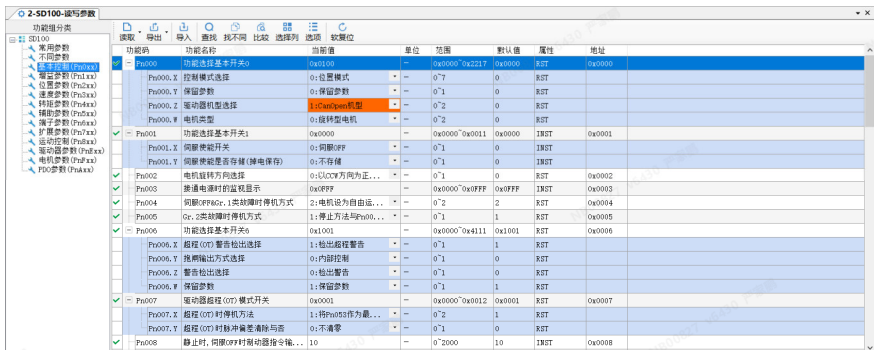
Figure 3-6 Read and write parameter interface

In the real-time monitoring interface (as shown in Figure 3-7), all Un group parameters and 6000 groups of bus communication object dictionary parameters can be read in real time (check the check box to enable data collection). You can select commonly used parameters from the monitoring parameters, right-click and add them to the commonly used parameters column to read data in real time in a cycle to filter other redundant parameters.

Figure 3-7 Real-time monitoring interface

1.3 Oscilloscope

A high-speed digital oscilloscope is integrated in the upper computer, which can be used to collect data and display it in the form of graphic curves, which is convenient for data analysis. Its interface structure is shown in Figure 3-8:

Figure 3-8 Oscilloscope interface

①   Toolbar: The toolbar includes functions such as start, pause, X and Y cursors, label, scale, visible (show or hide curves), adaptive, move, restore, play, pause, stop, decelerate, accelerate, export, import, history, options (settings related to oscilloscope), save, full screen, etc.;

②   Waveform display area: provides visual waveform display for the tracking data of each channel, and serves as the main operation interface of the toolbar debugging tool;

③   Channel selection and trigger options: Provides channel-related parameter selection and trigger-related parameter setting functions. The parameter settings include trigger mode and trigger condition settings;

④   Sampling period: the sampling period in real-time recording mode, the unit is ms, the minimum sampling period in real-time mode is 1ms, and the minimum sampling period in trigger mode is 125us;

⑤   Timeline: It is used to adjust the stretching degree of the horizontal timeline in the waveform display area. You can increase the timeline to make the interface display more periodic waveforms;

⑥   Channel name: displays the observation parameters of each channel added by the user in the channel selection function of ③;

⑦   Channel details: Contains the basic waveform information of each channel parameter and the actual sampled value;

⑧   Message printing window: used to print the output information during the communication between the oscilloscope and the servo controller.

Precautions
● The oscilloscope cannot be used normally when performing the auxiliary function of debugging software.

3.4 CANopen debugging case

The RB300 series products support the CANopen communication protocol, and users can use the CANopen communication method to debug the RB300 driver. This section uses our VC5-3232MAT-32 PLC as the control master and RB300 as the controlled slave to perform an operation example of contour position mode control, and briefly introduces the control process of CANopen mode.

There are two main ways to configure a servo controller using CANopen communication: access SDO or PDO.

1.4. 1 Environment construction and PDO configuration reading and writing:

Step 1: Open the PLC programming software AutoStudio and create a temporary project with PLC type VC5, as shown in Figure 3-9.
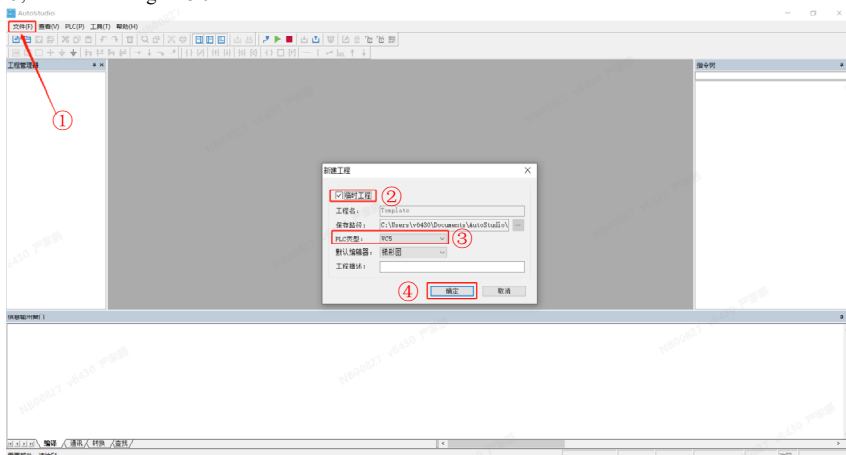
Figure 3-9 VC5 New Project

Step 2: Find the communication configuration tab in the project manager on the left, double-click the CAN option, set the protocol type as the master station in the CAN configuration window, set the correct baud rate and station number, and click OK, as shown in Figure 3-10.
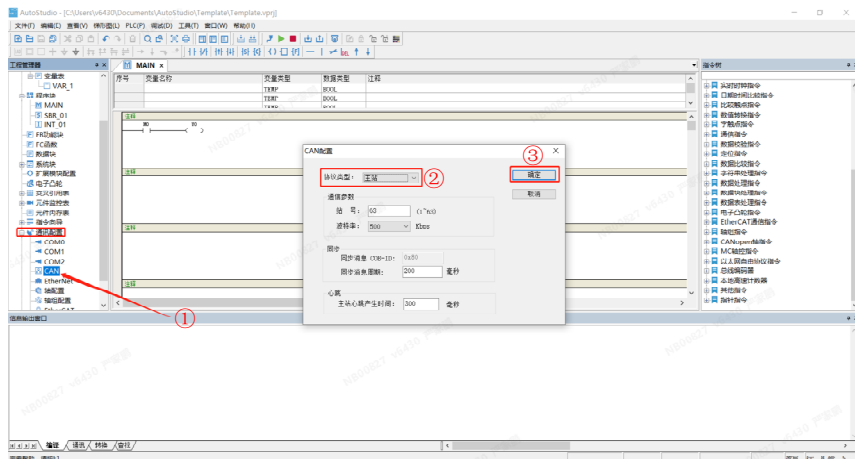
Figure 3-10 CAN configuration

Step 3: Right-click on the CAN option in the previous step and select Add Configuration, as shown in Figure 3-11.
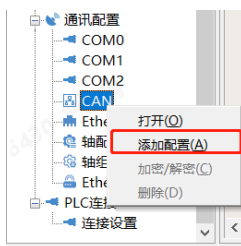
Figure 3-11 Adding CAN configuration

Step 4: Double-click the added CANopen configuration to open and enter the CANopen configuration interface, as shown in Figure 3-12.
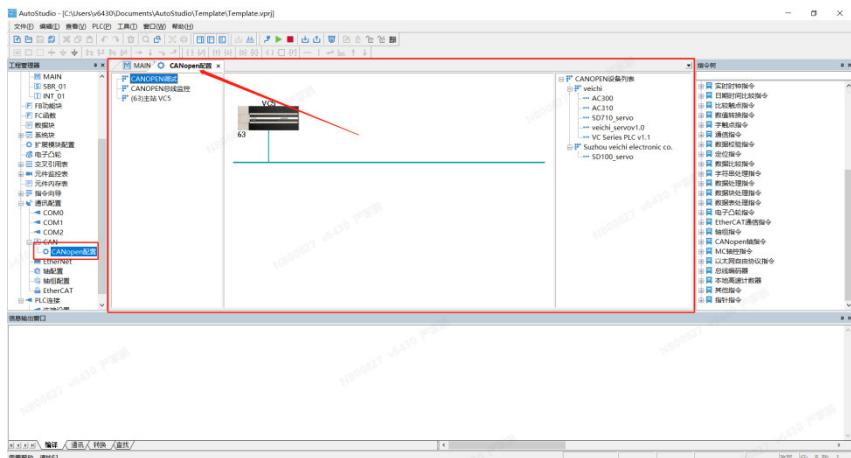
Figure 3-12 CANopen configuration interface

Step 5: Right-click the CANOPEN device list on the right side of the configuration interface and click Import EDS. The purpose of this step is to import the configuration file of EDS type matching the servo controller, as shown in Figure 1-13.
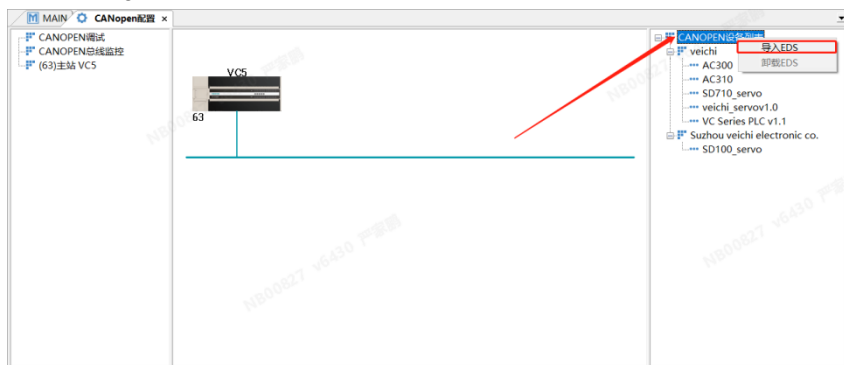
Figure 1-13 Importing EDS file

Step 6: After importing the EDS file, the device option with the same name as the controller will appear in the list on the right. Double-click to configure the controller to the bus deployment on the left, as shown in Figure 3-14.
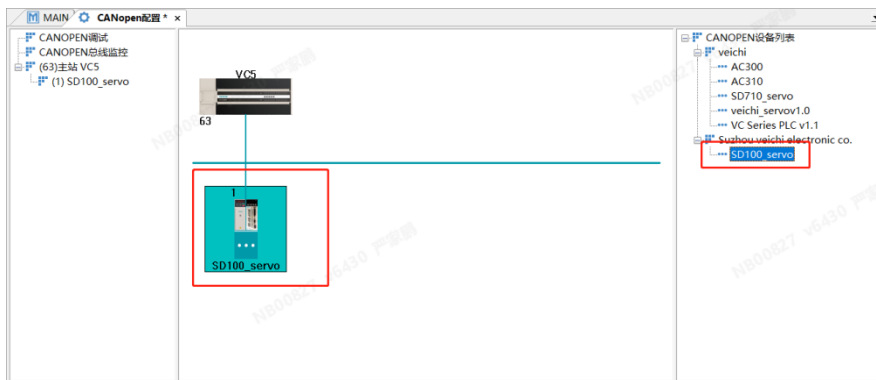
Figure 3-14 Adding devices to bus

Step 7: Double-click the slave controller icon added to the bus to enter the relevant configuration interface of the slave, as shown in Figure 3-15.
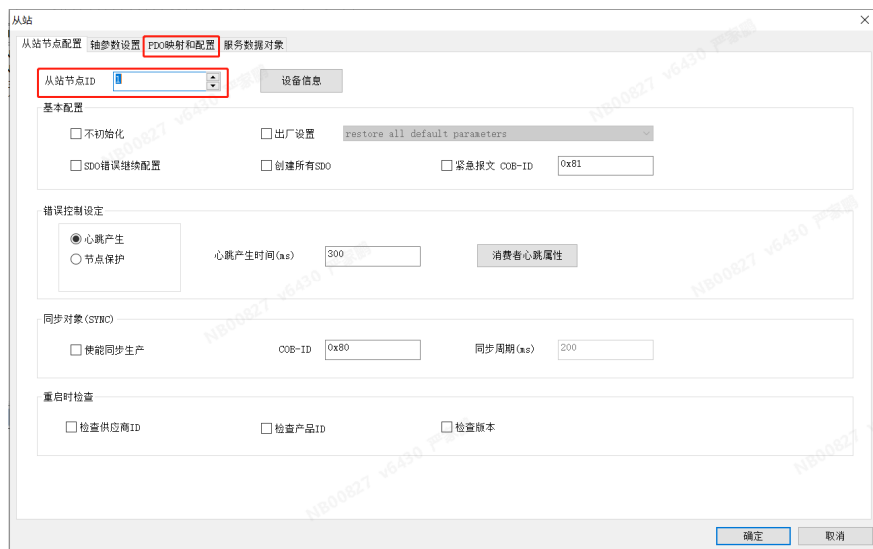
Figure 3-15 Slave Station Configuration Interface

Step 8: On the premise of ensuring that the node ID of the slave station is the same as that of the controlled slave station, click the PDO mapping and configuration tab to enter the mapping configuration of the PDO. Take configuring RPDO2 mapping as object dictionary 6060 (control mode) as an example, select PDO2 in RPDO, click Add to bring up the object dictionary index, find the 6060 index, select it, and click Add to add PDO

mapping to the corresponding position, as shown in Figure 3-16. If you need to enable this PDO communication, you need to check the previous check box, as shown in Figure 3-17.
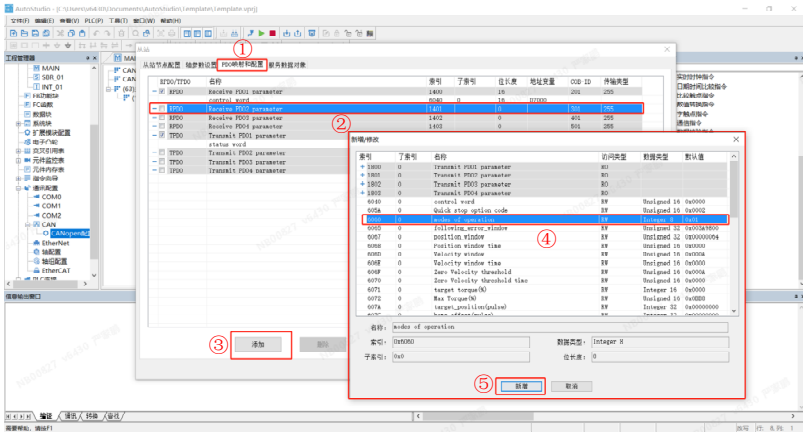
Figure 3-16 Configuring PDO mapping
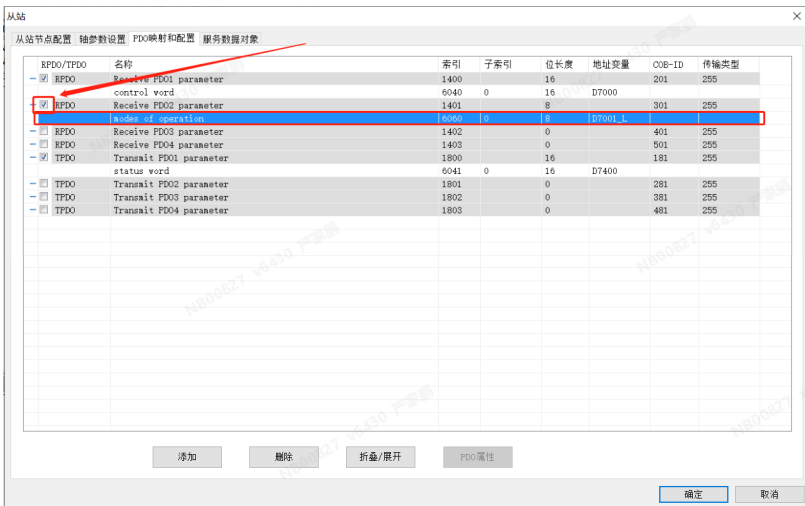
Figure 3-17 Check the PDO to be enabled

Step 9: After adding the basic index that needs to be accessed by the contour speed mode to the PDO map as described in the above step, record the corresponding address variable, as shown in the red box in Figure 3-18, and click OK to exit the configuration interface. After modifying the PLC file each time, the program needs to be downloaded to the PLC again and put the PLC into running state.

Figure 3-18 PDO mapping of profile velocity mode

Step 10: Write the CANopen control program and write the parameters as shown in Table 1-2:

Table 1-2 Object dictionary parameter writing

Item	Step	Parameter input
Contour position parameter assignment	0	607Ah = 100000
	1	6081h = 10000
Control modelelection	4	6060h = 0x01
Enable servo	5	6040h = 0x06
	6	6040h = 0x07
	7	6040h = 0x0F
	8	6040h = 0x1F

After the servo is enabled, the motor can be controlled to move at a speed of 60rpm to the position where the user position feedback (6064) is 100000. Turn on the oscilloscope to observe the writing object and feedback speed waveform. The waveform is shown in Figure 3-19
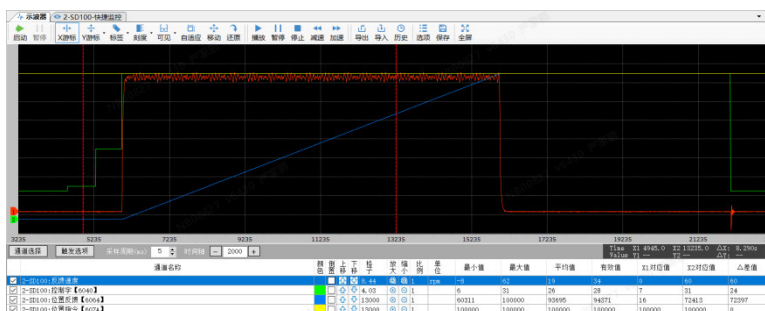
Figure 3-19 Oscilloscope observation waveform

1.4. 2 SDO Read and write

In fact, in the CANopen communication process, the mapping of PDO is realized through SDO, that is, SDO can also perform data communication. The difference is that SDO read and write efficiency is low. Now, the above contour position mode is used to demonstrate the process of configuring with SDO.

Step 1: Click the CANOPEN debugging option on the CANOPEN configuration interface, enter the CANOPEN debugging interface, and start monitoring, as shown in Figure 3-20.
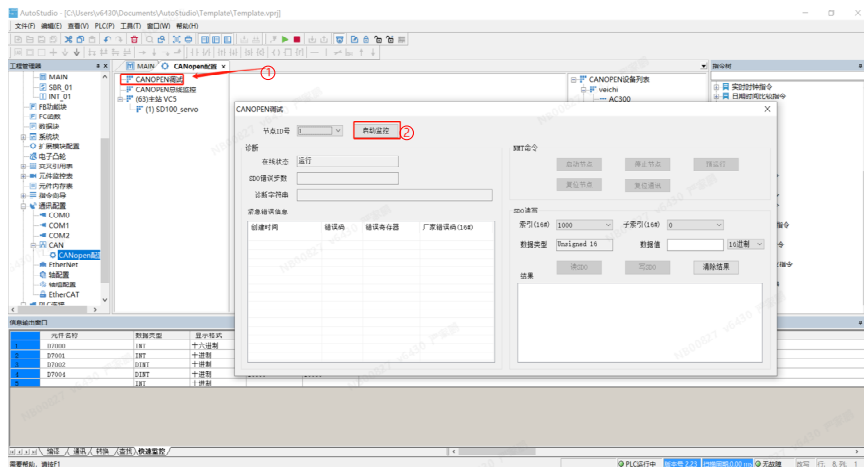
Figure 3-20 CANOPEN debugging monitoring

Step 2: Find the indexes 607A, 6081, 6060, and 6040 in SDO read and write, as shown in Figure 1-21, and write the values shown in Table 3-21 in turn at the data values. (Note: The value type in the drop-down box later is related to the data value filled in)
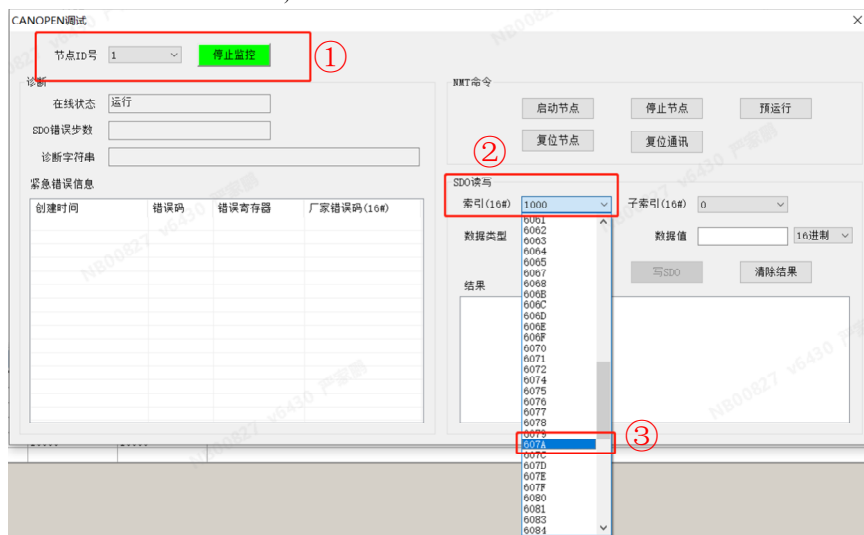
Figure 3-21 SDO read and write object dictionary

Step 3: You can access the corresponding index by writing SDO and reading SDO, as shown in Figure 3-22. Control the motor to move in profile position mode after writing parameters as per Table 3-2.
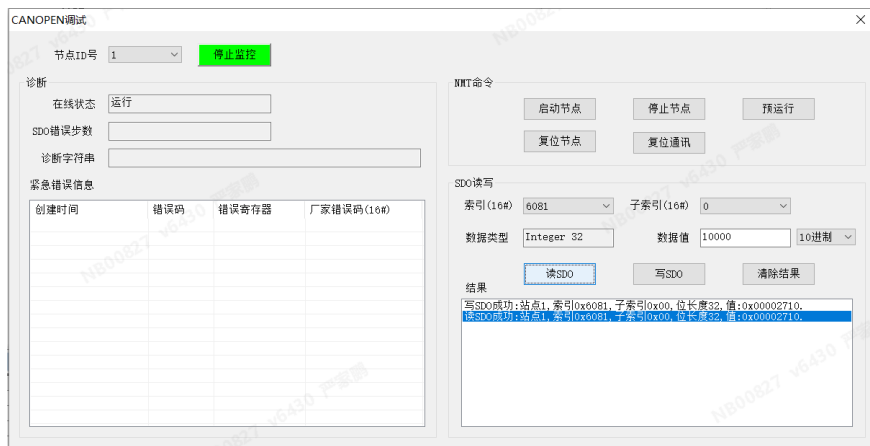
Figure 3-22 Read and write SDO successfully

For the object dictionary parameters required for other control modes, please refer to the relevant description of motion modes in the communication chapter.

Chapter 4 Parameter Guidelines

4.1 Parameter classification

The RB300 driver has 11 sets of set Pn parameters and 1 set of Un monitoring parameters. All parameters are

classified as follows:

Group	Parameter function classification
Pn0xx	Basic parameters on control mode, brake control, encoder reset, and communication.
Pn1xx	Gain parameters on basic speed and position loop and speed loop gain as well as self-tuning, tuning-free, A vibration suppression, auto notch filter, friction compensation, speed observation, disturban observation, and other advanced debugging functions.
Pn2xx	Position parameter Basic configurations such as position command selection, electronic gear setting, gear backlash compensation, home return, positioning control output, etc., and also position control functions such as low-frequency support and model tracking control.
Pn3xx	Speed parameters on internal speed, acceleration/deceleration, zero-speed clamping, and speed output control.
Pn4xx	Torque parameters on internal torque, torque filter, speed limit, and other torque control.
Pn5xx	Auxiliary parameters on JOG operation.
Pn6xx	Terminal parameters on the functions and polarity configuration of DI/DO switches and virtual I/O functions.
Pn7xx	Expansion parameters
Pn8xx	Motion control parameters on Pr internal position.
PnExx	Drive parameter on internal drive, not recommended for modification.
PnFxx	Motor parameters on internal setting, not recommended for modification.
Unxxx	Monitoring parameter

4.2 Pn parameter writing method

4.2. 1 Parameter writing method of "numerical setting type"

Parameter No. ※ represents user rights 2indicates factory	Function code enable timeenable immediatelyenable after re-power-up	Address ★ means that the 32-bit data Address is represented in hexadecimal

Pn204	Electronic gear numerator		■	Address: 0x0204 ★
Default: 4	Range: 1 ~ 1073741824	Unit: Command		Control Mode:

Mode for this parameter: Position control: Speed control: Torque control

4.2. 2 Parameter writing method of "function selection"

Parameter No. indicates user parametersindicates factory	Function code enable timeenable immediatelyenable after re-power-up	Address ★ means 32-bit data Address in hexadecimal

Pn001	Function selection basic switch1		○	Address: 0x0001
Default: 0x0000	Range: 0x0000 ~ 0x0011	Unit: N/A		Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W Z Y X

W/Z/Y/X representations setting on each bit.Pn001. X indicates set values on 0-3 bitPn001. Y indicates set values on 4-7 bitPn001. Z indicates set values on 7-11 bitPn001. W indicates set values on 11-12 bit (In hexadecimal)

Servo enable	
0	Servo OFF
1	Servo ON

Servo enabling storage (Power-off storage)	
0	OFF
1	ON

Reserved parameters (Not ready for use)

Reserved parameters (Not ready for use)

4.2. 3 Parameter Format of Switches

Parameter No. indicates user parametersindicates factory	Function code enable timeenable immediately enable after re-power-up	Address
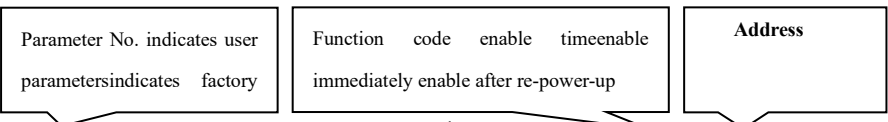
Pn630	Internal software setting for input terminal (X) state		○	Address: 0x0630
Default: 0000	Range: 0000 ~ 03FF		Unit: N/A	Control Mode:

W Z Y X

Input terminal status group 1 given internally	
Bit0	Virtual input terminal X1
Bit1	Virtual input terminal X2
Bit2	Virtual input terminal X3
Bit3	Virtual input terminal X4
Input terminal status group 2 given internally	
Bit4	Virtual input terminal X5
Bit5	Virtual input terminal X6
Bit6	Virtual input terminal X7
Bit7	Virtual input terminal X8
Input terminal status group 3 given internally	
Bit8	Virtual input terminal X9
Reserved parameters (Not ready for use)	

4.3 Pn Parameter Overview

4.3. 1 Basic parameter (Pn0xx)

Pn000	Function selection basic switch 0		■	Address: 0x0000
Default: 0x0000	Range: 0x0000 ~ 0x2217		Unit: N/A	Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W	Z	Y	X

Control mode selection	
0	Position control mode
1	Speed control mode
2	Torque control mode
3	Speed-Position control mode
4	Torque-Position control mode
5	Speed <-> Torque Control Mode
6	Speed-Position-Torque control mode
7	Reserved (Please do not use)

Reserved parameters (Not ready for use)	

Drive model selection	
0	Standard pulse
1	CANopen
2	EtherCAT type

Motor type	
0	Rotary electric machine
1	Linear motor
2	Virtual motor

Description	Control mode selection: to set the command signal source of the drive, command source under position mode via Pn200; command source under speed mode via Pn300; command source under torque mode via Pn400.

Pn001	Function selection basic switch 1		○	Address: 0x0001
Default: 0x0000	Range: 0x0000 ~ 0x0011	Unit: N/A		Control Mode:

3rd bit 2nd bit 1st bit 0th bit

| W | Z | Y | X |

Servo enable	
0	Servo OFF
1	Servo ON
Servo enabling storage (Power-off storage)	
0	OFF
1	ON
Reserved parameters (Not ready for use)	
Reserved parameters (Not ready for use)	

Pn002	Motor Direction		■	Address: 0x0002
Default: 0x0000	Range: 0x0000 ~ 0x0001	Unit: N/A		Control Mode:

Used to set the absolute encoders with batteries.

Setting	Description	Comment
0	CCW direction as forward direction (counterclockwise)	-
1	CW as forward direction (clockwise)	-

Motor rotates counterclockwise in face of the axis end (CCW) Motor rotates clockwise in face of the axis end (CW)

Pn004	Stop mode during Servo OFF and Gr.1warning		■	Address: 0x0004
Default: 0x0002	Range: 0x0000 ~ 0x0002	Unit: N/A		Control Mode:

To set drive stop mode during OFF and a 1st fault type warning

Setting	Description	Comment
2	Free running	By default

Pn005	Stop mode during Gr.2 warning		■	Address: 0x0005
Default: 0x0000	Range: 0x0000 ~ 0x0001	Unit: N/A		Control Mode:

Used to set the shutdown mode when the belt drive generates a Type 2 fault alarm.

Setting	Description	Comment
0	Zero speed stop	-
1	Free running	[Model related]

Pn006	Function selection basic switch 6		■	Address: 0x0006
Default: 0x1001	Range: 0x0000 ~ 0x4121	Unit: N/A		Control Mode:

3rd bit 2nd bit 1st bit 0th bit

| W | Z | Y | X |

Over-Travel (OT) warning detection option	
0	Warning detection OFF
1	Warning detection ON

Reserved parameters (not for modification)

Warning detection selection	
0	Check out warning
1	Warning OFF

Cooling fan control (for drives with fans)	
0	Fan runs when the temperature exceeds 45 ℃ and stops when the temperature is lower than 42 ℃ when the servo is enabled.
1	Fan runs immediately when servo is ON. Fan runs when the temperature exceeds 45 ℃ and stops when the
2	Fan runs immediately when servo is ON.Fan stops immediately
3	Forced OFF.
4	Forced ON.

Pn007	Stop mode during drive over-travel (OT)		■	Address: 0x0007
Default: 0x0001	Range: 0x0000 ~ 0x0012	Unit: N/A		Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W	Z	Y	X

Over-Travel (OT) warning detection option	
0	DB stop or free stop (the same as Pn004)
1	Pn053 as the max. torque to stop motor and lock serve.
2	Pn053 as the max.

Pulse deviation reset during overtravel (OT)	
0	Reset OFF.
1	Reset ON when Positive Limit (POT) or Negative Limit (NOT) is

Reserved parameters (not for modification)

Reserved parameters (not for modification)

Precautions
● For the vertical axis, after entering the overtravel, the workpiece may fall due to the brake (/BK) signal ON (brake release). To prevent this, set to make the servomotor fixed at the zero position after stopping (Pn007 = 1) "; ● When subjected to external force, after entering overtravel, the motor will become a base blocked state after stopping, and the load shaft end may be pushed back under external force. To prevent this, set to make the servo motor fixed at the zero position after stopping (Pn007 = 1) ";

Pn008	**Motor output delay time when brake command-servo OFF**	○	Address: 0x0008
Default: 10	**Range: 0 ~ 2000**	Unit: ms	Control Mode:
Description	When the servo motor stops, the brake (/BK) and servo ON (/S-ON) signal are OFF at the same time. By setting this function code, it is possible to change the time from when the servo ON (/S-ON) signal is OFF to when the motor actually enters the non-energized state. Note: the servomotor immediately enters the de-energized state when a warning occurs regardless of this setting, and at this time the mechanism sometimes moves before the brake is actuated due to the self-weight **Note: When an alarm occurs, regardless of this setting, the servomotor immediately enters a non-energized state. At this time, the machine sometimes moves before the brake is actuated due to the self-weight or external force of the mechanical movement part.**		
Pn009	**Servo OFF-brake command waiting time**	○	Address: 0x0009
Default: 500	**Range: 100 ~ 2000**	Unit: ms	Control Mode:

Pn00A	Motor speed setting during electromagnetic brake release	○	Address: 0x000A
Default: 100	Range: 0 ~ 10000	Unit: rpm	Control Mode:
Description	When an alarm occurs during the rotation of the servo motor, the servo motor stops and the brake signal (/BK) OFF is sent. When a warning occurs while the servo motor is running, the servo motor stops and the brake (/BK) OFF signal is sent. In this case, the brake (/BK) sending time can be adjusted by setting Brake Command Speed and Servo OFF-Brake Command Wait Time. When any of the following conditions is true, the brake will operate: After the motor enters the de-energized state, the motor speed is lower than the motor speed setting when the electromagnetic brake is released; When the brake command-servo OFF waiting time is passed after the motor enters the de-energized state.

Precautions	
	When a warning occur under zero-speed stop, the system outputs a brake signal (/BK) via Pn007 after stopping the motor by a zero-speed command; Even if Pn009 exceeds the max. speed of the servomotor, it is still limited to the max.

Pn00B	Brake command-contracting brake release delay time when servo ON	○	Address: 0x000B
Default: 10	Range: 0 ~ 2000	Unit: ms	Control Mode:
Description	When a servo moto starts, the delay time (Pn00B) for the motor to release the contracting brake can be set to control the time from the ON signal reception of the servo to actual power-up to the motor. When used for vertical axes, the self-weight of or external force may cause slight movement of the mechanical moving part. Set this function code to to release the brake after enabling the motor.

Precautions
⚠️ For single-tube circuits, after the servo enable signal (/S-ON) becomes ON when Pn00B = 0, the contracting brake output signal (/BK) is released after about 20ms.

Pn00D	Function Select Basic Switch D		■	Address: 0x000D
Default: 0x0000	Range: 0x0000 ~ 0x2111	Unit: N/A		Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W Z Y X

Speed detection mode selection	
0	Speed detection method 1
1	Speed detection method 2
2	Speed detection method 3
3	Speed detection mode 4

Absolute position limit switch (soft limit switch)	
0	Absolute position soft limit invalid
1	The absolute position soft limit is valid, set by function codes
2	The absolute position soft limit is valid and is set by object

Precautions
⚠ The absolute soft limit switch can only be switched on if both of the following conditions are valid. 　　The motor encoder is an absolute value encoder (PnF00.W = 1); 　　Use the absolute value encoder normally (Pn040 = 1). The external input terminal limit switch is always ON (when configured) when absolute limit switch is ON or OFF.

Pn00E	Function selection basic switchE		■	Address: 0x000E
Default: 0x4000	Range: 0x0000 ~ 0x4111	Unit: N/A		Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W	4	Y	X

Absolute encoder multi-turn overflow fault (ER.C21)	
0	Report ON
1	Block

Drive and motor voltage match detection switch	
0	ON
1	OFF

Virtual motor encoder type	
0	Incremental
1	Absolute

Virtual motor encoder bit	
0	16-bit
1	17-bit
2	20-bit
3	23-bit
4	24-bit
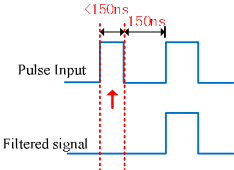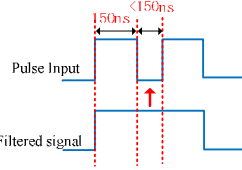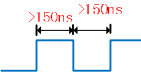
Precautions
⚠ The absolute encoder multi-turn count overflow monitoring function is ON only when both of the following conditions are valid. 　　The motor encoder is an absolute value encoder (PnF00.W = 1); 　　Use the absolute value encoder normally (Pn040 = 1). The absolute encoder multi-turn counting range is [-32768, 32767], beyond which an ER.C21 fault is generated. When the rotation limit function (Pn276 not 0) is ON, the absolute multiturn overflow fault detection turns OFF automatically.
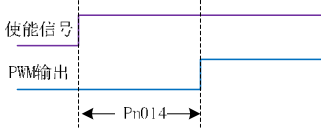
Pn011	External pulse signal filtering time customization		○	Address: 0x0011
Default: 400	Range: 0-5000		Unit: 12.5 ns	Control Mode:
Description	To set the filter time for external pulse command signals. When Pn011 = 12 (12 × 12.5 ns = 150 ns), the filter width duration less than 150 ns will be regarded as an interference signal. 当此段脉冲频宽小于150ns，会被视为低准位，因此这两个输入脉冲被视为一个脉冲 当此段脉冲频宽小于150ns，会被视为低准位，因此这两个输入脉冲被视为一个脉冲 当脉冲的High、Low duty的宽度均大于150ns，可以确保脉冲命令不被滤掉 Calculation method: The maximum pulse frequency sent by the host computer is f kHz, then $$Pn011 = \frac{40000}{f} + 1$$ Note: The customized time is based on the calculation when the hardware filter is turned OFF, and the customized time will be adjusted according to the actual working condition after the hardware filter is actually turned ON.			

Pn012	External regenerative resistor power		○	Address: 0x0012
Default: 0	Range: 0 ~ 65535		Unit: 10W	Control Mode:
Description	When connecting an external regenerative resistor, set the power accordingly. Note: The setpoint varies depending on the cooling of the external regenerative resistor. When an alarm occurs and the temperature of the regeneration resistor is not high at this time, the corresponding power value can be set to be large; Instead, set a smaller value. Self-cooling method (natural): Set the regenerative resistor power to 20% or lower (W). Forced air cooling: Set the regenerative resistor power to 50% or lower (W). For example, if the power of self-cooling external regenerative resistor is 100W, 100W × 20% = 20W, Pn012 should be set to "2" (Setting Unit: 10W).			

Precautions	
⚠	● If the drive is equipped with a built-in regenerative braking resistor as standard, the drive protects the built-in resistor when the setting is 0. ● If the setting value is inappropriate, the drive may display ER.320 alarm.

Pn013	External regenerative resistance		○	Address: 0x0013
Default: 0	Range: 0 ~ 65535	Unit: 1 Ω		Control Mode:
Description	When an external regenerative resistor is connected, the resistance is set accordingly.			

Precautions	
⚠	The min. regeneration resistance allowed for each power band is different, see "Setting Regeneration Resistance" for details, otherwise the internal components of the servo unit may be damaged.

Pn014	Servo drive power-up enable delay time		○	Address: 0x0014
Default: 0	Range: 0-6000	Unit: ms		Control Mode:
Description	To delay for a set period of time after the bus voltage is building up before power-up is enabled. 使能信号 PWM输出 ◄— Pn014 —►			

Pn015	Motor overload warning value		■	Address: 0x0015
Default: 50	Range: 1-100	Unit:%		Control Mode:

Pn016	Motor overload base current derating setting		■	Address: 0x0016
Default: 100	Range: 10-100	Unit:%		Control Mode:
Description	An overload (continuous and max.) fault (ER.720) can be reported in advance to prevent the motor from being overloaded, which can cause motor burnout. By detecting the overload alarm using "base current after rating reduction" in the following formula, the overload fault detection time can be shortened. Note that the detected value of the overload (instantaneous maximum) alarm (ER.710) cannot be changed.			

Motor base current after derating = Motor base current × Motor overload base current derating setting.

Description of terms:

Motor base current: The motor current threshold at which the overload alarm is started to be calculated.

Motor overload base current derating: Derating rate of motor base current.

For example, after setting Pn018 to 50%, the motor overload is calculated from 50% of the base current, so the overload alarm can be detected early. After changing the value of Pn018, since the overload alarm detection time will be changed, the overload alarm detection time will be changed accordingly.

Pn030	Max.absolute position single-turn limit (internal soft limit)		○	Address: 0x0030 ★
Default: 0	Range:-231 ~ 231-1		Unit: Encoder unit	Control Mode:

Pn032	Max.absolute position multi-turn limit (internal soft limit)		○	Address: 0x0032
Default: 32767	Range:-32768 ~ 32767		Unit: circle	Control Mode:
Description	Through the internal position feedback of the driver, it is compared with the set limit value, and when the limit value is exceeded, it will immediately give an alarm and perform relevant operations. The user can make relevant selections through the function code Pn000A.3 switch. **Note:** • **When (Pn030 × one turn pulse count+Pn032) is lower than (Pn035 × one turn pulse count+Pn033), the absolute position limit minimum and maximum values will be interchanged;** ● Only applicable to absolute encoders.			

Pn033	Min.absolute position single-turn limit (internal soft limit)		○	Address: 0x0033 ★
Default: 0	Range:-231 ~ 231-1		Unit: Encoder unit	Control Mode:

Pn035	Min.absolute position multi-turn limit (internal soft limit)		○	Address: 0x0035

Default:-32768	Range:-32768 ~ 32767		Unit: circle	Control Mode:
Description	Through the internal position feedback of the driver, it is compared with the set limit value, and when the limit value is exceeded, it will immediately give an alarm and perform relevant operations. The user can make relevant selections through the function code Pn000A.3 switch. Note: • When (Pn030 × one turn pulse count+Pn032) is lower than (Pn035 × one turn pulse count+Pn033), the absolute position limit minimum and maximum values will be interchanged; ● Only applicable to absolute encoders.			
Pn036	**Absolute position limit hysteresis**	○	Address: 0x0036	
Default: 200	Range: 0-30000		Unit: Encoder unit	Control Mode:
Description	**When using this function, since it is encoder unit for soft limit, frequent entering and exiting may occur after entering soft limit state. According to the actual situation, setting the corresponding hysteresis value can effectively avoid frequent entry-exit soft limit state.**			

Pn039	**Servo OFF deceleration stop time (DEC)**	○	Address: 0x0039	
Default: 0	Range: 0 ~ 10000		Unit: 1ms	Control Mode:
Description				

Precautions	
⚠	When Pn039 is set to 0, the deceleration stop function is invalid when the servo is OFF. The servo OFF stop function is valid only for the external input terminal and internal Pn001. X, and is not valid for other enable modes; Valid for position mode, speed mode and torque mode.

Pn040	Absolute Encoder		■	Address: 0x0040
Default: 0x0001	Range: 0x0000 ~ 0x0021		Unit: N/A	Control Mode:
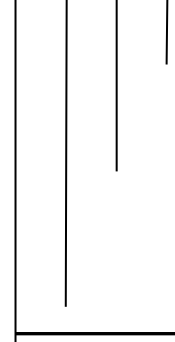
3rd bit 2nd bit 1st bit 0th bit

W Z Y X

Method of using standard pulse type servo absolute value encoder	
0	Use as an absolute encoder
1	Use as an increased encoder
How to use EtherCAT bus type servo absolute value encoder	
0	Use as an absolute encoder
1	Use as an increased encoder
2	Use as a single-turn absolution encoder
Reserve parameters (do not use)	
Reserved parameters (Not ready for use)	

Precautions
⚠ An externally equipped battery is required when it is used as an absolute encoder, otherwise the drive generates a battery undervoltage warning or fault alarm.

Pn041	Absolute encoder battery undervoltage alarm/alarm		○	Address: 0x0041
Default: 0x0000	Range: 0x0000 ~ 0x0001		Unit: N/A	Control Mode:

Used to set the absolute encoders with batteries.

Setting	Description	Comment
0	Set battery undervoltage to warning (Er.830)	-
1	Set battery undervoltage to alarm (AL.930)	-

⚠	Er.830: The drive checks which the encoder backup battery is normal within 8 seconds after power-up and no longer check it afterwards. AL.930: The drive dynamically checks the voltage of the encoder backup battery in time after power-up and generates a correcting alarm if it is below the set value, and the alarm disappears automatically if it is above the set value.

Pn045	Main circuit (DC) undervoltage function		○	Address: 0x0045
Default: 0x0000	Range: 0x0000 ~ 0x0002		Unit: N/A	Control Mode:

To set the torque limit threshold for the drive output.

Setting	Description	Comment
0	Undervoltage report OFF	-
1	Undervoltage report ON	-
2	Undervoltage report ON and torque limitation is executed via Pn046 and Pn047.	-

Pn046	Torque limit when main circuit voltage drops		○	Address: 0x0046
Default: 50	Range: 0-100		Unit: 1	Control Mode:
Description	Percentage to the rated torque of the motor.			

Pn047	Torque limit release time when main circuit voltage drops		○	Address: 0x0047
Default: 100	Range: 0-1000		Unit: 1ms	Control Mode:
Description	Based on the undervoltage warning, torque limitation is performed inside the servo drive. When the undervoltage warning is released, the torque limit value is controlled according to the set time.			

Pn050	Torque limiting method selection		○	Address: 0x0050
Default: 0x0002	Range: 0x0000 ~ 0x0005		Unit: N/A	Control Mode:

To set the torque limit threshold for the drive output.

Setting	Description	Comment
0	Reserved	-
1	Reserved	-
2	Internal forward/reverse limit	-
3	Internal forward limit and internal reverse limit	-
4	External Terminal Limit Selection	-
5	Pulse command is 0 and limit after positioning is completed	-

Torque limit method selection description:

Pn0050		FWD	REV	Description
0		Reserved		-
1		Reserved		-
2		Pn051		Limit the max. torque for forward/reverse rotation by Pn051.
3		Pn051	Pn0052	Set the max. torque for forward rotation by Pn051. Set the max. torque for reverse rotation by Pn052.
4	OFF	Pn054		The torque limit value is selected through the external terminal. When TL-SEL is low (OFF), the function code Pn054 sets values to limit the maximum torque values for forward and reverse rotation; When TL-SEL is high (ON), set Pn055 to limit the max. torque for forward/reverse rotation.
	ON	Pn055		
5	OFF	Pn051		①　When the external pulse command is 0 (after filtering); ②　Positioning is completed. When either of the two conditions is not true, the max. torque for forward/reverse rotation is limited by Pn051; When both conditions are true, the max. torque for forward/reverse rotation is limited by Pn052.
	ON	Pn052		

Precautions
⚠	● Torque limiting mode is only valid in non-torque mode. The torque limit in torque mode can only be implemented by: Function code Pn051 performs forward torque limitation and reverse torque limitation; The external torque limit is switched to the external torque limit Pn051 via the external X terminal.

Pn051	Internal forward torque limiting		○	Address: 0x0051
Default: by model	Range: 0-500	Unit: 1		Control Mode:

Pn052	Internal reverse torque limiting		○	Address: 0x0052
Default: by model	Range: 0-500	Unit: 1		Control Mode:
Description	The output torque can be limited for the purpose of protecting the machine, etc. When internal torque is limited, the maximum output torque is always limited by parameters. (1) The setting unit is a percentage of the rated torque of the motor. If the torque limit setting is too small, the servo motor may not have enough torque during acceleration and deceleration. 			

Pn053	Emergency stop torque		○	Address: 0x0053
Default: 800	Range: 0-800	Unit: 1		Control Mode:
Description	Maximum torque display for emergency stop in specific cases and overtravel.			

Pn054	External torque limit1		○	Address: 0x0054
Default: 100	Range: 0-500	Unit: 1		Control Mode:

Pn055	External torque limit2		○	Address: 0x0055
Default: 100	Range: 0-500	Unit: 1		Control Mode:

Pn056	Stall torque threshold		○	Address: 0x0056

Default: 100	Range: 0-255	Unit: 1	Control Mode:
Description	When the current torque is larger than the threshold set by Pn056 and the speed is larger than the threshold set by Pn057, the stall detection is ON. Note: ① This torque threshold is the max. ② When Pn056 is set to 0, the stall detection function is OFF.		

Pn057	**Stall speed threshold**		○	Address: 0x0057
Default: 20	**Range: 0-200**	Unit: 1		Control Mode:
Description	When the current torque is larger than the threshold set by Pn056 and the speed is larger than the threshold set by Pn057, the stall detection is ON. Note: This speed is the max.			

Pn059	**KTY typ-temperature sensor warning threshold**		○	Address: 0x0059
Default: 0	**Range: 0-180**	Unit: 1 °C		Control Mode:
Description	For over-temperature protection of motors configured with KTY-type sensors, when the motor temperature is higher than this set threshold, a correcting over-temperature error (ER.42A) will be reported. Note: When set to 0, the overtemperature monitoring function is invalid. Valid only for motors equipped with KTY temperature sensors.			

Pn076	**Serial encoder single-turn resolution**		■	Address: 0x0076
Default: 0x0020	**Range: 0x0000 ~ 0x0051**	Unit: N/A		Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W Z Y X

Encoder single-turn resolution adjustment switch	
0	No adjustment
1	Adjustment
Single turn resolution setting	
0	15-bit
1	16-bit
2	17-bit
3	18-bit
4	19-bit
5	20-bit
Reserved parameters (Not ready for use)	
Reserved parameters (Not ready for use)	
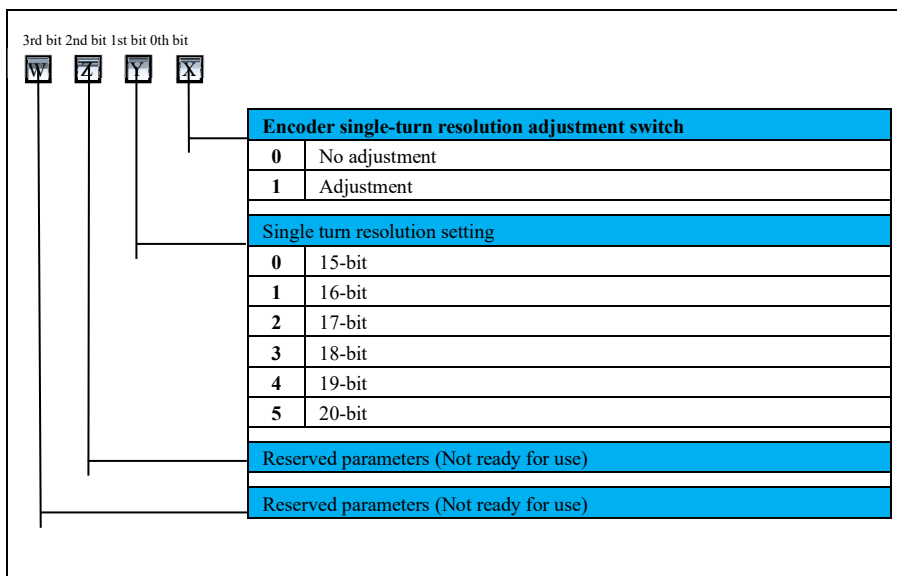
Precautions	
⚠	Valid only for serial encoders. Refer to the actual encoder resolution if the set resolution is lower than the actual encoder resolution.

Pn07F	Serial encoder multi-turn fault reset		○	Address: 0x007F
Default: 0x0000	**Range: 0x0000 ~ 0xFFFF**	Unit: N/A	Control Mode:	
Description	For multi-turn and battery failure reset of the serial encoder. the effect is the same as the auxiliary function Fn008, so users can reset the multi-turn of absolute encoder via RS485.			

Precautions	
⚠	Valid only for absolute serial encoders. Pn07F is not saved when power is OFF and is automatically reset when execution is completed. Execution under drive enable state is prohibited.

Pn080	Local communication address (485 & CANopen)	■	Address: 0x0080

Default: 1	Range: 0-255	Unit: N/A	Control Mode:
Description	This function code is used to set the drive axis address. 0: Broadcast address, the host computer can write to all drives by broadcasting the address, and the drives received the frame of the Broadcast address to perform accordingly, but do not respond. 1 ~ 255: When multiple servo drives are networked, each drive can only have a unique address, otherwise it will lead to abnormal communication or no communication. Note: For CANopen models, the allowed max.		

Pn081	Local communication format	■	Address: 0x0081
Default: 0x0502	**Range: 0x0000 ~ 0x0655**	Unit: N/A	Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W Z Y X

485 communication baud rate

0	4800bps
1	9600bps
2	19200bps
3	38400bps
4	57600bps
5	115200bps

485 communication parity mode

0	No parity, 8-bit data, 1 stop bit (N-8-1)
1	Even parity, 8 bits data, 1 stop bit (N-8-1)
2	Odd parity, 8-bit data, 1 stop bit (O-8-1)
3	No parity, 8-bit data, 2 stop bit (N-8-2)
4	Even parity, 8 bits data, 2 stop bit (N-8-2)
5	Odd check, 8-bit data, 2-bit stop bit (N-8-2)

CAN communication baud rate

0	20K
1	50K
2	100K
3	125K
4	250K
5	500K
6	1000K (1M)

Preserve parameters (do not change)

Precautions
⚠ The baud rate and communication checksum method of the servo drive must be the same as that of the host computer, otherwise communication is not performed.

Pn085	Communication writing function code to EEPROM storage	○	Address: 0x0085
Default: 0x0000	Range: 0x0000 ~ 0x0111	Unit: N/A	Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W Z Y X

485 communication	
0	OFF
1	ON

CANopen Communications	
0	OFF
1	ON

Preserve parameters (do not change)

Preserve parameters (do not change)

Description	If the changed parameter does not need to be stored during power down, please set the correcting function to storage off, otherwise, large-volume modification of function code data for a long period of time and storing it into the EEPROM will lead to damage of the EEPROM, and the drive will generate Er.021.

Pn087	485 communication register address mapping	○	Address: 0x0087
Default: 0x0000	Range: 0x0000 ~ 0x0011	Unit: N/A	Control Mode:

```
3rd bit 2nd bit 1st bit 0th bit
  W      Z      Y      X
```

register address mapping	
0	OFF
1	ON

2 # register address mapping switch	
0	OFF
1	ON

Reserved parameters (Not ready for use)

Reserved parameters (Not ready for use)
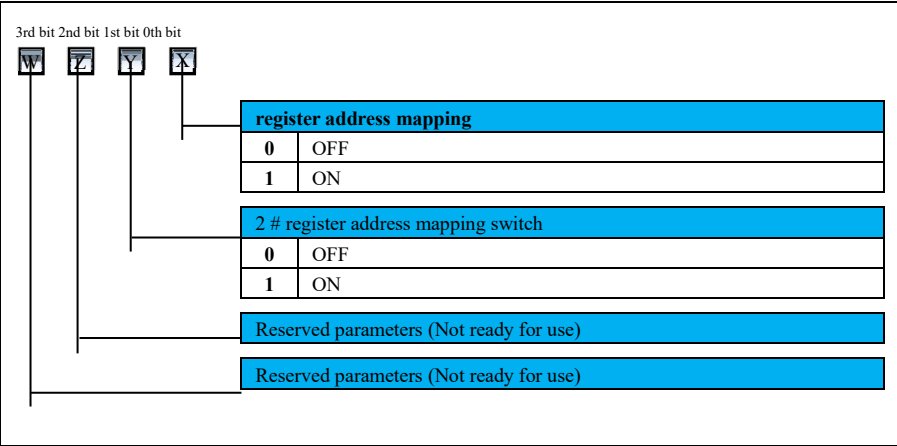
Pn088	Register mapping source address		○	Address: 0x0088
Default: 0x0000	**Range: 0x0000 ~ 0x1FFF**	Unit: N/A	Control Mode:

Pn089	Register mapping target address		○	Address: 0x0089
Default: 0x0000	**Range: 0x0000 ~ 0x1FFF**	Unit: N/A	Control Mode:

Pn08A	2 # register mapping source address		○	Address: 0x008A
Default: 0x0000	**Range: 0x0000 ~ 0x1FFF**	Unit: N/A	Control Mode:

Pn08B	2 # register mapping destination address		○	Address: 0x008B
Default: 0x0000	**Range: 0x0000 ~ 0x1FFF**	Unit: N/A	Control Mode:
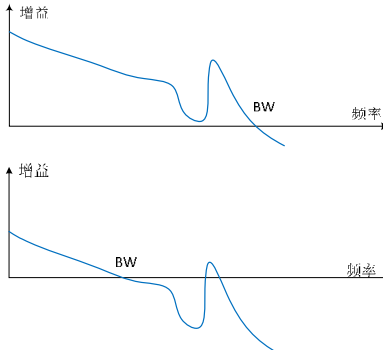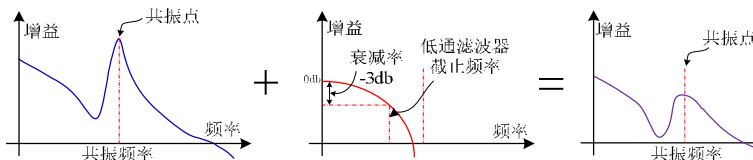
4.3. 2 Gain parameter (Pn1xx)

Pn100	Pn100Moment of inertia ratio (J) ○ Address: 0x0100		○	Address: 0x0100
Default: 100	**Range: 0 ~ 20000**	Unit: 1	Control Mode:
Description	Set the total inertia to motor rotor inertia ratio $$Pn100 = \frac{\text{负载惯量 + 电机转子惯量}}{\text{电机转子惯量}} \times 100\%$$			

Pn101	Speed loop proportional gain (ASR _ KP)		○	Address: 0x0101
Default: 40.0	Range: 1.0 ~ 2000.0	Unit: Hz		Control Mode:
Description	Set the speed regulator gain (ASR _ KP) to determine the responsiveness of the speed control loop. The larger the ASR _ KP value is, the higher the speed loop response frequency and the better it follows speed commands. By increasing the setting value of speed loop gain, the response characteristics of servo system can be improved. However, when the ASR _ KP setting value is too large, vibration is likely to occur.			

Pn102	Speed loop integral time constant (ASR _ KI)		○	Address: 0x0102
Default: 20.00	Range: 0.15 ~ 512.00	Unit: ms		Control Mode:
Description	Set the integral time of the speed regulator (ASR _ Ki) to determine the responsiveness of the speed control loop. The smaller the ASR _ Ki value is, the higher the response frequency of the speed loop and the better it follows speed commands. By reducing the set value of the speed loop integration time, the response characteristics of the servo system can be improved. However, when the ASR _ Ki set value is too small, vibration is likely to occur.			

Pn103	Position loop proportional gain (APR _ KP)		○	Address: 0x0103
Default: 40.0	Range: 1.0 ~ 2000.0	Unit: 1/s		Control Mode:
Description	Set the position regulator gain (APR _ KP) determines the responsiveness of the position control system. The larger the APR _ KP value is, the higher the position response frequency, the better it follows position commands, the smaller the position deviation, and the shorter the positioning setup time. However, when the APR _ KP setting value is too large, vibration is likely to occur.			

Pn104	Moment command filter time constant		○	Address: 0x0104
Default: 1.00	Range: 0.00 ~ 655.35	Unit: ms		Control Mode:
Description	The resonance suppression low-pass filtering time constant is set. When the constant is set to 0, the low pass filtering function is turned off. When the resonance occurs in the mechanical structure, it is possible that the rigidity of the drive control system is too large or the correcting bandwidth is too fast, so the resonance of the control system can be suppressed by this parameter together with the parameter of resonance suppression notch filter without changing the control parameters. When the torque command filter time parameter is gradually increased from 0, the correcting BW point will be smaller and smaller. Resonance frequency generation will be solved, but the bandwidth and phase boundaries of the system response will be reduced at the same time. Suppress by low-pass filter: When the low-pass filter is increased from 0, the same frequency band will become smaller and smaller. Although the resonance generation is solved, the system response bandwidth and			

phase boundaries are also reduced and the system become more unstable.

Sugg.

Adjust value of stable control range: Pn104ms = $1000 2\pi \times$ Pn102 [Hz] $\times 4$

Adjust value of limit control range: Pn104ms = $1000 2\pi \times$ Pn102 [Hz] $\times 1$

Pn105	Second speed loop proportional gain		○	Address: 0x0105
Default: 40.0	Range: 1.0 ~ 2000.0	Unit: Hz		Control Mode:

Pn106	Second velocity loop integration time constant		○	Address: 0x0106
Default: 20.0	Range: 0.15 ~ 512.00	Unit: ms		Control Mode:

Pn107	Second position loop proportional gain		○	Address: 0x0107
Default: 40.0	Range: 1.0 ~ 2000.0	Unit: 1/s		Control Mode:

Pn108	Second torque command filter time constant		○	Address: 0x0108
Default: 1.00	Range: 0.00 ~ 655.35	Unit: 1ms		Control Mode:

Pn10A	Automatic adjustment mode selection		○	Address: 0x010A
Default: 0	Range: 0-1	Unit:-		Control Mode:

Setting	Description	Comment
0	Manual tuning	-
1	Standard rigidity table	-

Pn10B	Rigidity level setting		○	Address: 0x010B
Default: 15	Range: 1-32	Unit:-		Control Mode:

Pn110	Auto gain switching		○	Address: 0x0110
Default: 0x0000	Range: 0x0000 ~ 0x0051	Unit: N/A	Control Mode:	

3rd bit 2nd bit 1st bit 0th bit

| W | Z | Y | X |

Gain switching selector switch	
0	Gain switching selector switchManual gain switching, manual gain switching by external gain signal (G-SEL)
1	Auto switching When switching condition A is true, the gain is automatically switched from the 1st gain to the 2nd gain. When switching condition A is not true, the gain is automatically switched from the 2nd gain to the 1st gain.

Switching condition A	
0	Positioning completion signal (/COIN) ON
1	Positioning completion signal (/COIN) OFF
2	Positioning NEAR signal (/NEAR) ON
3	Position NEAR signal (/NEAR) OFF
4	Position command filter output equal to 0 and command input OFF
5	Position command pulse input ON

Preserve parameters (do not change)

Preserve parameters (do not change)

Pn112	Gain switching time1		○	Address: 0x0112
Default: 0	Range: 0 ~ 65535	Unit: ms	Control Mode:	

Pn113	Gain switching time 2		○	Address: 0x0113
Default: 0	Range: 0 ~ 65535	Unit: ms	Control Mode:	

Pn114	Gain switching waiting time1		○	Address: 0x0114
Default: 0	Range: 0 ~ 65535	Unit: ms	Control Mode:	

Pn115	Gain switching waiting time2		○	Address: 0x0115
Default: 0	Range: 0 ~ 65535	Unit: ms	Control Mode:	

Pn120	Position integral time constant		○	Address: 0x0120
Default: 0.0	Range: 0.0 ~ 5000.0	Unit: ms	Control Mode:	

Description	The integral function of the position loop when the position integral is set for electronic cams and electronic shafts.
	Note: The position loop integral is OFF when it is set to 0.

Pn121	**Speed feedforward gain**		○	Address: 0x0121
Default: 0	**Range: 0-100**	**Unit: 1**		Control Mode:
Description	Speed feedforward is a function that shortens the positioning time, and this function is effective when the servo drive is performing position control. The speed feedforward is a command generated by differentiating the position command of the host device. When the position control command changes smoothly, increasing the gain value can improve the position following error. If the position control command is not smooth, reducing the position feedforward gain value can reduce the running vibration phenomenon of the mechanism. Feed-forward gain: Reduce the phase backward error.			

Pn122	**Speed feedforward filter time**		○	Address: 0x0122
Default: 2.00	**Range: 0.00 ~ 64.00**	**Unit: ms**		Control Mode:

Pn123	**Torque feedforward gain**		○	Address: 0x0123
Default: 0	**Range: 0-500**	**Unit:%**		Control Mode:
Description	Torque feedforward is only valid for position and speed control.			

Pn124	**Torque feedforward filter time**		○	Address: 0x0124
Default: 2.00	**Range: 0.00 ~ 64.00**	**Unit: ms**		Control Mode:

Pn125 ★	**Speed feedback low-pass filter time constant**		○	Address: 0x0125
Default: 0.00	**Range: 0.00 ~ 655.35**	**Unit: ms**		Control Mode:
Description	**A first-order low-pass filter is set in the speed feedback of the speed loop. The speed contains resonance and high-frequency interference signals, and the noise can be**			

	eliminated by this parameter. Set this value to smooth feedback speed and reduce vibration. If a large value is input, it will become a delay factor and reduce the corresponding performance, resulting in a slower loop response.			
Pn130	**Speed loop P/PI control**		■	Address: 0x0130
Default: 0x0000	Range: 0x0000 ~ 0x0114	Unit: N/A		Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W	Z	Y	X

Speed loop P/PI control switch selection	
0	Conditioned on internal torque command (Pn132)
1	Subject to speed command (correlation value setting function code:
2	Subject to acceleration (correlation value setting function code:
3	Subject to position deviation (correlation value setting function code:
4	No mode switch function

Control method of speed loop	
0	PI Control
1	I-P Control

Preserve parameters (do not change)

Preserve parameters (do not change)

Pn132	**Speed loop P/PI switching condition (torque command)**		○	Address: 0x010C
Default: 200	Range: 0-800	Unit: 1		Control Mode:

Pn133	**Speed Loop P/PI Switching Condition (Speed Command)**		○	Address: 0x010D
Default: 0	Range: 0 ~ 10000	Unit: 1rpm		Control Mode:

Pn134	**Speed Loop P/PI Switching Conditions (Acceleration)**		○	Address: 0x010E
Default: 0	Range: 0-30000	Unit: 1rpm/s		Control Mode:

Pn135	**Speed loop P/PI switching condition (position deviation)**		○	Address: 0x010F
Default: 0	Range: 0 ~ 10000	Unit: 1 instruction unit		Control Mode:

Pn140	**A-type vibration support switch**		○	Address: 0x0140

Default: 0x0010	Range: 0x0000 ~ 0x0011	Unit: N/A	Control Mode:

3rd bit 2nd bit 1st bit 0th bit

| W | Z | Y | X |

Type A vibration suppression control switch selection

0	Type A vibration suppression control function is not used
1	Use Type A vibration suppression control function

A-type vibration suppression tuning

0	Auto tuning without auxiliary function
1	Auto tuning with auxiliary function

Preserve parameters (do not change)

Preserve parameters (do not change)

Pn141	**A-type vibration suppression gain compensation**	○	Address: 0x0141
Default: 100	Range: 1 to 1000	Unit:%	Control Mode:

Pn142	**A-type vibration suppression frequency**	○	Address: 0x0142
Default: 100.0	Range: 1.0 ~ 2000.0	Unit: Hz	Control Mode:

Pn143	**A-type vibration suppression damping gain**	○	Address: 0x0143
Default: 0	Range: 0-300	Unit:%	Control Mode:

Pn144	**A-type vibration suppression filter constant1 compensation**	○	Address: 0x0144
Default: 0	Range:-10.00 ~ 10.00	Unit: ms	Control Mode:

Pn145	**Type A vibration suppression filter constant 2 compensation**	○	Address: 0x0145
Default: 0	Range:-10.00 ~ 10.00	Unit: ms	Control Mode:

Pn14A	**Type II notch filter 1 vibration suppression frequency**	○	Address: 0x014A
Default: 5000	Range: 50 ~ 5000	Unit: Hz	Control Mode:
Parameter description: Set the center frequency of the first group notch filter			

Pn14B	Type II notch filter 1 attenuation rate		○	Address: 0x014B
Default: 0	Range: 0-32	Unit: dB		Control Mode:
Parameter description: Set the attenuation rate of the first group of notch filters. When set to 0, turn off the new notch filter 1 function				

Pn14C	Type II notch filter 2 vibration suppression frequency		○	Address: 0x014C
Default: 5000	Range: 50 ~ 5000	Unit: Hz		Control Mode:
Parameter description: Set the center frequency of the second group of notch filters				

Pn14D	II notch filter2 attenuation rate		○	Address: 0x014D
Default: 0	Range: 0-32	Unit: dB		Control Mode:
Parameter description: Set the attenuation rate of the second group of notch filters. When set to 0, turn off the new notch filter 2 function				

Pn150	Notch filter function switch 1		○	Address: 0x0150
Default: 0x0000	Range: 0x0000 ~ 0x1101	Unit: N/A		Control Mode:

3rd bit 2nd bit 1st bit 0th bit

| W | Z | Y | X |

Selection of notch filter 1	
0	First segment notch filter is invalid
1	The first segment notch filter is effective

Preserve parameters (do not change)	

Selection of notch filter 2	
0	Stage 2 notch filter is invalid
1	The second stage notch filter is effective

Friction compensation function	
0	No friction compensation function is used
1	Use the friction compensation function

Pn151	Notch filter function switch 2		○	Address: 0x0151

Default: 0x0101	Range: 0x0000 ~ 0x0101	Unit: N/A	Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W	Z	Y	X

Notch filter 1 adjustment selection	
0	The first section notch filter is not automatically adjusted by the
1	The first segment notch filter is automatically adjusted by auxiliary

Preserve parameters (do not change)

Notch filter 2 adjustment selection	
0	The second stage notch filter is not automatically adjusted by the
1	The 2nd segment notch filter is automatically adjusted by auxiliary

Preserve parameters (do not change)

Pn152	**Auto notch resonance sensitivity**	○	Address: 0x0152
Default: 100	Range: 1-200	Unit:%	Control Mode:

Pn153	**Frequency of notch filter 1**	○	Address: 0x0153
Default: 5000	Range: 50 ~ 5000	Unit: Hz	Control Mode:

Pn154	**Q value of notch filter 1**	○	Address: 0x0154
Default: 0.70	Range: 0.50 ~ 10.00	Unit: N/A	Control Mode:

Pn155	**Depth of notch filter 1**	○	Address: 0x0155
Default: 0.000	Range: 0.000 ~ 1.000	Unit: N/A	Control Mode:

Pn156	**Frequency of notch filter 2**	○	Address: 0x0156
Default: 5000	Range: 50 ~ 5000	Unit: Hz	Control Mode:

Pn157	**Q value of notch filter 2**	○	Address: 0x0157
Default: 0.70	Range: 0.50 ~ 10.00	Unit: N/A	Control Mode:

Pn158	**Depth of notch filter 2**	○	Address: 0x0158

Default: 0.000	Range: 0.000 ~ 1.000	Unit: N/A	Control Mode:
Pn159	**Frequency of notch filter 3**	○	Address: 0x0159
Default: 5000	Range: 50 ~ 5000	Unit: Hz	Control Mode:
Parameter description Set the center frequency of the notch filter. When the frequency of the notch filter is set to 5000, the notch filter is invalid.			

Pn15A	**Q value of notch filter 3**	○	Address: 0x015A
Default: 0.70	Range: 0.50 ~ 10.00	Unit: N/A	Control Mode:

Pn15B	**Depth of notch filter 3**	○	Address: 0x015B
Default: 0.000	Range: 0.000 ~ 1.000	Unit: N/A	Control Mode:

Pn15C	**Frequency of the notch filter 4**	○	Address: 0x015C
Default: 5000	Range: 50 ~ 5000	Unit: Hz	Control Mode:
Parameter description Set the center frequency of the notch filter. When the frequency of the notch filter is set to 5000, the notch filter is invalid.			

Pn15D	**Q value of notch filter 4**	○	Address: 0x015D
Default: 0.70	Range: 0.50 ~ 10.00	Unit: N/A	Control Mode:

Pn15E	**Depth of notch filter 4**	○	Address: 0x015E
Default: 0.000	Range: 0.000 ~ 1.000	Unit: N/A	Control Mode:

Pn161	**Friction compensation gain**	○	Address: 0x0161
Default: 100	Range: 10 ~ 1000	Unit:%	Control Mode:

Pn162	**Second friction compensation gain**	○	Address: 0x0162
Default: 100	Range: 10 ~ 1000	Unit:%	Control Mode:

Pn163	**Friction compensation factor**	○	Address: 0x0163
Default: 0	Range: 0-100	Unit:%	Control Mode:
Pn164	**Friction compensation frequency correction**	○	Address: 0x0164

Default: 0.0	Range: 0.0-1000.0	Unit: Hz	Control Mode:

Pn165	**Friction compensation gain correction**		○	Address: 0x0165
Default: 100	Range: 0-1000	Unit:%		Control Mode:

Pn175	**Adjustment-free switch**		■	Address: 0x0175
Default: 0x1400	Range: 0x0000 ~ 0x2911	Unit: N/A		Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W	Z	Y	X

Adjustment-free selection	
0	Nullify adjustment-free
1	Make adjustment-free valid

Adjustment-free speed control method	
0	Used as speed control
1	For speed control, and the upper device is used as position control

Adjustment-free rigidity value		
0	Rigidity Value 0	Response: slow
1	Rigidity Value 1	
2	Rigidity Value 2	
3	Rigidity Value 3	
4	Rigidity Value 4	
5	Rigidity Value 5	
6	Rigidity Value 6	
7	Rigidity Value 7	
8	Rigidity Value 8	
9	Rigidity value 9	Response: fast

Adjustment-free load inertia	
0	Small load inertia
1	Load inertia
2	Large load inertia

Pn17A	**Tuning-free interference compensation gain**		○	Address: 0x017A
Default: 600.0	Range: 0: 0 ~ 6553.5	Unit: Hz		Control Mode:

Pn17B	**Adjustment-free inertia correction coefficient**		○	Address: 0x017B

Default: 100	Range: 0-100	Unit:%	Control Mode:

Pn17C	Adjustment-free torque filtering time coefficient	○	Address: 0x017C
Default: 0.10	Range: 0:00 ~ 655.35	Unit: ms	Control Mode:

Pn17D	Adjustment-free speed feedback filtering low pass filtering time	○	Address: 0x017D
Default: 0.10	Range: 0:00 ~ 655.35	Unit: ms	Control Mode:

Pn185	Abnormal motor vibration	○	Address: 0x0185
Default: 0x0000	Range: 0x0000 ~ 0x0002	Unit: N/A	Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W	Z	Y	X

Motor abnormal vibration detection switch	
0	No vibration detected
1	Report error after detection (Er.911)
2	Report fault after detection (Er.520)

Preserve parameters (do not change)

Preserve parameters (do not change)

Preserve parameters (do not change)

Pn186	Abnormal motor vibration sensitivity	○	Address: 0x0186
Default: 100	Range: 50 ~ 500	Unit:%	Control Mode:

Pn187	Motor abnormal vibration detection value	○	Address: 0x0187
Default: 50	Range: 0-5000	Unit: rpm	Control Mode:
Description	The threshold value of vibration detection is set, and the vibration detection value = Pn186 × Pn187. The smaller the setting, the easier it is to detect vibration, but too small the setting may mistakenly detect vibration during normal operation.		

Pn192	Position overshoot detection sensitivity during advanced tuning (relative positioning completion)	○	Address: 0x0192
Default: 100	Range: 0-100	Unit:%	Control Mode:

Pn193	Max. gain explored during advanced tuning		○	Address: 0x0193
Default: 300.0	Range: 1.0 ~ 400.0	Unit: Hz		Control Mode:

4.3. 3 Position parameters (Pn2xx)

Pn200	Position command source selection		■	Address: 0x0200
Default: 0x0020	Range: 0x0000 ~ 0x0084	Unit: N/A		Control Mode:

3rd bit 2nd bit 1st bit 0th bit

| W | Z | Y | X |

	External pulse instruction logic
0	2: reserved
1	External low speed pulse sequence
2	Reserved
3	Internal position

	External pulse command filtering time (software filtering) selection
0	Pulse filter 1 (~ 52 Kpps, 9.6 us)
1	Pulse filter 2 (~ 104Kpps, 4.8 us)
2	Pulse filter 3 (~ 208Kpps, 2.4 us)
3	Pulse filter 4 (~ 416Kpps, 1.2 us)
4	Pulse filter 5 (~ 832Kpps, 0.6 us)
5	Pulse filter 6 (~ 1664Kpps, 0.3 us)
6	Pulse filter 7 (~ 3328Kpps, 0.15 us)
7	Pulse filter 8 (~ 4Mpps, 0.125 us)
8	Pulse filter time setting Pn011

Preserve parameters (do not change)

Preserve parameters (do not change)

Precautions	
⚠	● The max. pulse frequency of the open collector pulse is 200 kHz, pulse filter 0 to 2 is valid. ● There are differences in the interface connection definitions for open collector inputs and different pulse inputs, so please refer to typical wiring for connection.
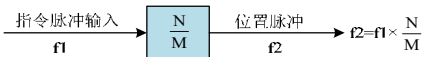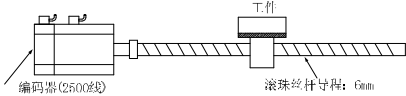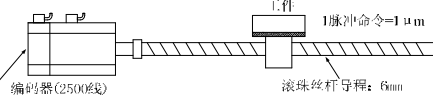
Pn201	External pulse instruction logic		■	Address: 0x0202
Default: 0x0000	Range: 0x0000 ~ 0x0004		Unit: N/A	Control Mode:

In position mode, the type of pulse used to set the driver.

Setting	Description	Comment
0	Pulse + Direction	-
1	Forward pulse train and reverse pulse train (CW + CCW)	-
2~3	Reserved	-
4	90 ° phase difference orthogonal pulse AB (4X frequency)	-

Pn202	External pulse instruction logic		■	Address: 0x0202
Default: 0x0000	Range: 0x0000 ~ 0x0001		Unit: N/A	Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W   Z   Y   X

External pulse instruction logic	
0	Positive logic (original)
1	Negative logic (reverse)

Preserve parameters (do not change)

Preserve parameters (do not change)

Preserve parameters (do not change)
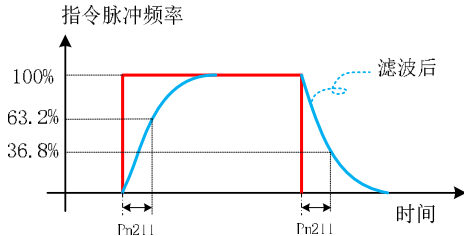
Pn203	External pulse command multiplier		○	Address: 0x0203
Default: 1	Range: 1-100	Unit: × 1		Control Mode:
Description	It is used to perform corresponding rate processing on external pulse commands, and can be switched through the digital input terminal X (P-GAIN). It can be switched from 1 times to an arbitrarily set N times (up to 100 times). $\dfrac{\text{指令脉冲输入}}{f1} \longrightarrow \boxed{\times\text{Pn203}} \dfrac{\text{指令脉冲输出}}{f2} \longrightarrow$ Note: The multiplication rate is valid only for external pulse commands, but not for internal programs such as JOG and intelligent tuning.				

Pn204	Electronic gear numerator (N)		○	Address: 0x0204 ★
Default: 1	Range: 0 ~ 1073741824	Unit: N/A		Control Mode:

Parameter Description	The numerator value used to set the electronic gear ratio.

Precautions
When this function code is set to 0, the drive automatically sets the electronic gear numerator internally with the resolution of the encoder. For example: When the serial encoder resolution is 17 bits and is set to 0, the drive sets N = 131072. When the serial encoder resolution is 24 bits and is set to 0, the drive sets N = 16777216. When the serial encoder resolution is 23 bits and is set to 0, the drive sets N = 8388608.
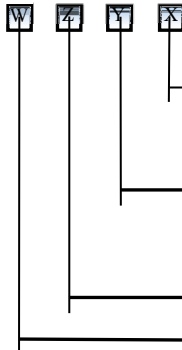
Pn206	Electronic gear denominator (M)		○	Address: 0x0206 ★
Default: 1	Range: 1 ~ 1073741824		Unit: NA	Control Mode:
Description	The electronic gearing function is designed to provide easy proportional travel changes. Large electronic gear ratios usually result in a step change in the position command, which can be improved by smoothing it out with an S-curve or a low-pass filter. For example, when the electronic gear ratio is equal to 1, the motor encoder enters the weekly pulse number of 10000ppr, when the electronic gear ratio is equal to 0.5, every two pulses on the command side responds to one pulse wave of motor rotation. The servo motor is prone to surge when set incorrectly, so please set the electronic gear ratio reasonably. 指令脉冲输入 $\frac{f1}{}$ → $\frac{N}{M}$ → 位置脉冲 $\frac{f2}{}$ → $f2 = f1 \times \frac{N}{M}$ When the machine reduction ratio of the motor shaft and the load side is (the load rotates A turns when the motor rotates B turns), the set value of the electronic gear ratio can be expressed by the following formula: ● Electronic gear ratio Example: The servo motor encoder resolution is 10000p/rev, the ball screw lead is 6mm, and the number of pulses output from the upper unit is input when the workpiece moves 编码器(2500线) 工件 滚珠丝杆导程：6mm **No electronic gear ratio used** The servo motor rotates one turn when the screw moves 6mm, and when it moves 10mm, the servo motor needs to rotate $10 \div 6 = 1.6666$ turns, then it needs $1.6666 \times 2500 \times 4 = 16666$ pulses, and the command from the upper computer outputs 16666 pulses. 编码器(2500线) 工件 1脉冲命令=1μm 滚珠丝杆导程：6mm **Using electronic gear ratios** 1 pulse is set to 1 μm when the servo motor rotates to move the workpiece away 10 mm (10000 μm), one pulse is equivalent to 1 μm, so $10000 \div 1 = 10000$ is required, and the upper computer outputs 10000 pulses.

Precautions	
	● It is recommended that users change the electronic gear ratio after the motor is stopped or at low speed, otherwise it may cause large vibration. If vibration occurs while switching, use position smoothing related parameters to mitigate vibration;
	When using internal multi-segment position for control, when the servo driver executes a certain segment of positioning, the electronic gear ratio changes during that time but not act on the current position immediately until the current position segment is completed and the next position segment is executed.
	When an external pulse command is used, a change in the electronic gear ratio is immediately applied to the input pulse.
	● The setting range of electronic gear ratio is: when it exceeds this setting range, ER.d04 fault alarm will occur.

Pn211	Position command low-pass filter time constant		○	Address: 0x0211
Default: 0.0	Range: 0.0 ~ 655.0	Unit: ms		Control Mode:
Description	Position command low-pass filter, mainly to provide buffer processing for excessive changes in the input pulse command signal. **This low-pass filter is invalid when set to 0.** Generally used for: The upper computer has no acceleration and deceleration function; The electronic gear is relatively large; The pulse command frequency is low; There are occasions such as step jumps and unstable phenomena in the operation of the motor.			
Pn212	Position command moving average filtering		○	Address: 0x0212
Default: 0.0	Range: 0.0-1000.0	Unit: ms		Control Mode:

**Descrip
tion**
	Smoothing the position command. Smoothing at the beginning and end of the step command, but delays the position command.
	
	速度 滤波前位置指令速度
	            Pn212
	
	                   滤波后位置指令速度
	
	          Pn212 时间

Precautions
⚠ When set to 0, the position command linear filter function is turned off.

Pn220	**Backlash compensation function switch**		■	Address: 0x0220
Default: 0x0000	**Range: 0x0000 ~ 0x0011**	Unit: N/A		Control Mode:

3rd bit 2nd bit 1st bit 0th bit

Backlash compensation function switch
0 OFF
1 ON

Backlash compensation direction
0 Forward compensation
1 Reverse compensation

Reserved parameters (Not ready for use)

Reserved parameters (Not ready for use)

Descripti on	For ball screws and other similar drive mechanism, there will be a repeatability error after a long period of wear and tear, and set backlash compensation at this time to reduce the error caused by the design of the mechanism. Compensation can reduce errors caused by mechanism design.

Pn220. Y = 0 (forward compensation)

Pn220. Y = 1 (negative compensation)
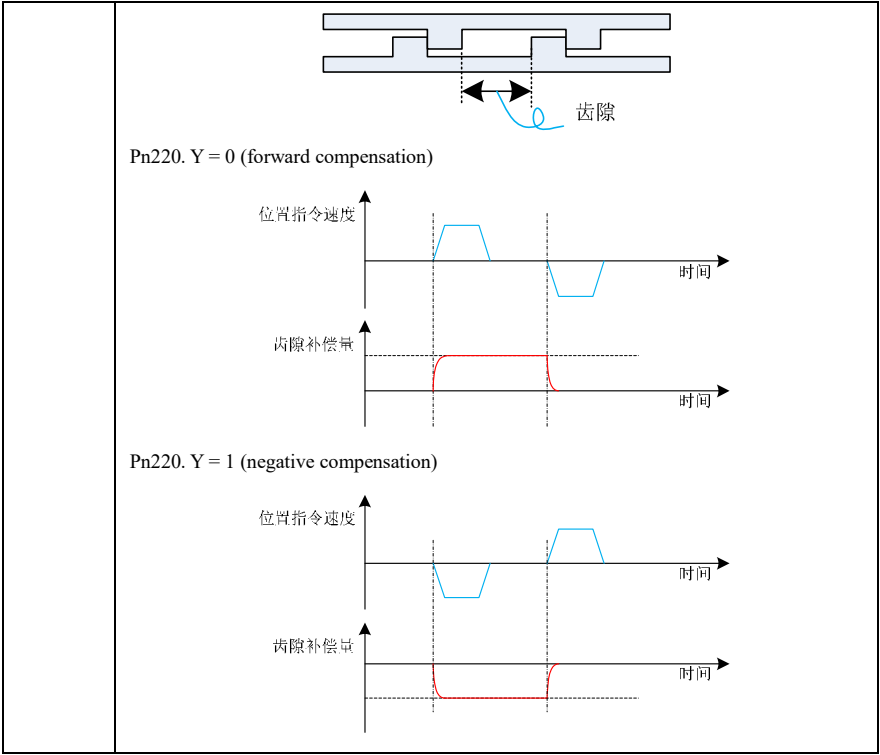
Pn221	Backlash compensation		○	Address: 0x0221 ★
Default: 0.0	Range:-5000.0 ~ 5000.0		Unit: 0.1 instruction unit	Control Mode:

Pn223	Backlash compensation filter time constant		○	Address: 0x0223
Default: 10.00	Range: 0.00 ~ 100.00	Unit: ms		Control Mode:
Description	The amount of backlash compensation shows an exponential relationship with time when performing a fixed point start/stop and is used to determine the rate of convergence of this compensation curve. **The convergence rate of.**			
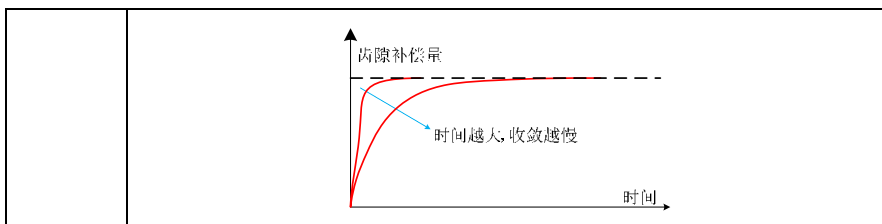
Pn232	Low frequency vibration detection sensitivity (relative to positioning completion signal threshold)		○	Address: 0x0232
Default: 40.0	Range: 0.1-300.0	Unit:%		Control Mode:
Description	Set the threshold for low-frequency vibration detection, vibration detection value = Pn232 × Pn262. The smaller the easier it is to detect vibration.			

Pn233	Low frequency vibration suppression1 frequency A	○	Address: 0x0233
Default: 50.0	Range: 1.0 ~ 250.0	Unit: Hz	Control Mode:

Pn234	Low frequency vibration suppression 1 frequency B	○	Address: 0x0234
Default: 70.0	Range: 1.0 ~ 250.0	Unit: Hz	Control Mode:

Pn235	Low-frequency vibration suppression 2 frequency	○	Address: 0x0235
Default: 200.0	Range: 1.0 ~ 200.0	Unit: Hz	Control Mode:
Description	To set the support center frequency for low frequency vibration, this function is on when this function code is not 200.0 Hz. When this function is turned on, the response of the driver is reduced. After the model tracking function is turned on (Pn240.X = 1), this function can be turned on with Pn240.Y = 2.		

Pn236	Low frequency vibration suppression 2 gain	○	Address: 0x0236
Default: 100	Range: 10 ~ 1000	Unit:%	Control Mode:
Description	To set the support gain for low-frequency vibration, the smaller the setting of this function code, the more obvious the support of vibration, and if it is too small, it may lead to excessive positioning time.		

Pn240	MFC function switch	○	Address: 0x0240
Default: 0x0100	Range: 0x0000 ~ 0x1121	Unit: N/A	Control Mode:

Pn241	Model tracking gain		○	Address: 0x0241
Default: 50.0	Range: 1.0 ~ 2000.0	Unit: 1/s		Control Mode:

Pn242	Model tracking control gain correction		○	Address: 0x0242
Default: 100.0	Range: 50.0 ~ 200.0	Unit:%		Control Mode:

Pn243	Model tracking controlling speed feedforward compensation		○	Address: 0x0243
Default: 100.0	Range: 0.0-1000.0	Unit:%		Control Mode:

Pn244	Model tracking control offset (forward direction)		○	Address: 0x0244
Default: 100.0	Range: 0.0-1000.0	Unit:%		Control Mode:

Pn245	Model tracking control bias (reverse direction)		○	Address: 0x0245
Default: 100.0	Range: 0.0-1000.0	Unit:%		Control Mode:

Pn246	Second model tracking control gain		○	Address: 0x0246
Default: 50.0	Range: 1.0 ~ 2000.0	Unit: 1/s		Control Mode:

Pn247	Second model tracking control gain correction		○	Address: 0x0247
Default: 100.0	Range: 50.0 ~ 200.0	Unit:%		Control Mode:

Pn248 ※	Control class selector switch		■	Address: 0x0248
Default: 0x0001	Range: 0x0000 ~ 0x0011	Unit: N/A		Control Mode:

3rd bit 2nd bit 1st bit 0th bit

| W | Z | Y | X |

MFC control type selection	
0	Using Type I MFC Control
1	Control using Type II MFC

Adjustment-free type	
0	Use Type I adjustment-free
1	Use Type II adjustment-free

Preserve parameters (do not change)

Preserve parameters (do not change)

Pn260	Position Near signal (/Near) threshold		○	Address: 0x0206 ★
Default: 1073741824	Range: 1 ~ 1073741824	Unit: Command		Control Mode:
Description	A signal is output when the difference between the command pulse number of the upper unit and the servomotor movement (position deviation) is lower than Pn260. In position control, the upper unit can receive a position near signal before positioning completion signal to prepare for the sequence of movements or other operations that are to be performed after the positioning is completed. 速度　　　　　位置指令速度 　　　　　　　　　　　　　　速度反馈 　　　　　　　　　　　　　时间 位置偏差 　　　　　Pn260 　　　　　　　　时间 /Near Set a value greater than the positioning completion width (Pn262).			
Pn262	Position completion signal (/COIN) threshold		○	Address: 0x0262

Default: 7	Range: 0 ~ 1073741824	Unit: Command	Control Mode:
Description	A signal is output when the difference between the command pulse number of the upper unit and the servomotor movement (position deviation) is lower than Pn262. Note: Note: ① This parameter has no effect on the final positioning accuracy. ② If the setting value is too large, position completion signal (/Coin) may be output for a long time when the deviation is small in low-speed operation. When a long position signal is output, the position completion threshold is lowered until the signal is no longer output.		

Pn264	**Excessive position deviation fault threshold**		○	Address: 0x0264 ★
Default: 5242880	**Range: 1 ~ 1073741824**	Unit: Command		Control Mode:

Description	If the deviation between the position command and the actual feedback during motor operation exceeds this threshold, a position deviation fault is generated. The position deviation during normal operation varies according to the setting of operation speed, gain, feedforward, etc. Therebefore, it is set by the following formula during actual use:. $$Pn264 = \frac{F_c}{K_p} \times (1.2 \sim 2.0)$$ In the formula: : Highest frequency of position command pulse (pulse/s); : position loop gain (1/s) 1.2 to 2.0: Safety coefficient (protection against frequent excessive position deviation)

Pn266	**Excessive position deviation alarm threshold**		○	Address: 0x0266
Default: 100	**Range: 10-100**	Unit:%		Control Mode:
Description	Set the excessive position deviation alarm threshold. The drive generates an excessive position deviation alarm when the current position deviation value is > this setting.			

Pn267	Maximum error threshold for excessive position deviation at servo-ON		○	Address: 0x0267 ★
Default: 5242880	Range: 1 ~ 1073741823		Unit: Command	Control Mode:
Description	External terminal clearing (CLR) position deviation signal method			

Pn269	Excessive position deviation warning threshold when servo ON		○	Address: 0x0269
Default: 100	Range: 10-100		Unit:%	Control Mode:
Description	External terminal clearing (CLR) position deviation signal method			

Pn270	Speed limit value when servo ON	○	Address: 0x0270
Default: 1000	Range: 0 ~ 10000	Unit: rpm	Control Mode:

Pn271	External pulse command multiplier selection	■	Address: 0x0271
Default: 0x0000	Range: 0x0000 ~ 0x0002	Unit: N/A	Control Mode:

Pn272	External Terminal Clear (CLR) Position Deviation Signal Mode		■	Address: 0x0272
Default: 0x0000	Range: 0x0000 ~ 0x0003		Unit: N/A	Control Mode:

In position mode, this is used to set the method of clear the position deviation generated by the drive.

Setting	Description	Comment
0	Clear position deviation at high level (H)	-
1	Clear position deviation at rising edge	-
2	Clearing position deviation at low level (L)	-
3	Clearposition deviation at falling edge	-

Position deviation clear (CLR) signal status:

Rising Edge Clear Falling Edge Clear
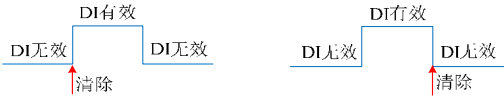
Pn273	Position deviation clearing action		■	Address: 0x0273
Default: 0x0000	Range: 0x0000 ~ 0x0002	Unit: N/A		Control Mode:

Position deviation clear is performed when the correcting conditions are satisfied at different set values.

Setting	Description	Comment
0	Servo OFF, clear on malfunction	-
1	Clear by CLR signal only	-
2	Clear on failure	-

Pn274	Positioning completion signal (/Coin) output timing		○	Address: 0x0274
Default: 0x0000	Range: 0x0000 ~ 0x0002	Unit: N/A		Control Mode:

In position mode, this is used to set the timing of the position completion signal output.

Setting	Description	Comment
0	When the absolute value of position deviation is less than the positioning completion range (Pn262)	-
1	When the absolute value of position deviation is lower than the position command filtered command is 0.	-
2	when the absolute value of position deviation is lower than Pn262) and the position command input is 0.	-

Pn276	Upper limit of revolution		■	Address: 0x0276
Default: 0	Range: 0-30000	Unit: Laps		Control Mode:

Description	The upper limit value of the number of rotations can be used for position control of a rotary body such as a turntable. The upper limit of the number of revolutions is used to keep the number of revolutions of the motor and the number of revolutions of the rotary table as an integer ratio and to avoid the generation of decimals.

Precautions	
⚠️	● The setting of the upper limit of the number of revolutions is valid only when an absolute encoder is used; When Pn201 = 0, the setting of the upper limit of the number of rotations is invalid.

Pn277	Encoder unidirectional operation setting		■	Address: 0x0277
Default: 0x0000	Range: 0x0000 ~ 0x0011	Unit: N/A		Control Mode:

3rd bit 2nd bit 1st bit 0th bit

| W | Z | Y | X |

Function switch	
0	OFF
1	ON

Position feedback direction selection	
0	Periodicity
1	Aperiodic accumulation

Preserve parameters (do not change)

Preserve parameters (do not change)

Precautions	
⚠️	● If the direction of motor rotation (Pn277) is set incorrectly, an absolute position abnormality is caused, resulting in ER.840.

Pn290	Home mode		○	Address: 0x0290
Default: 0.100	Range: 0x0000 ~ 0x23B4	Unit: N/A		Control Mode:

3rd bit 2nd bit 1st bit 0th bit

| W | Z | Y | X |

Origin reversion enable control	
0	Turn off origin regression function
1	Enable by DI terminal signal
2	Enable after power-up, and the drive is enabled after home is
3	Immediate origin regression
4	Take the current position as the home position

Origin regression mode	
0	Forward, deceleration point and home point are home switches
1	Anyway, it returns to zero, and the deceleration point and origin
2	Forward return to zero, deceleration point and origin point are motor
3	Anyway, it returns to zero, and the deceleration point and origin
4	Forward, deceleration point is the home switch, home is the motor Z
5	Return to zero in reverse direction, the deceleration point is the
6	Forward return to zero, deceleration point and origin are forward
7	Return to zero in reverse direction, and the deceleration point and
8	Forward return to zero, deceleration point and origin point are motor
9	Anyway, it returns to zero, and the deceleration point and origin
A	Absolute position return to zero
B	Take the current position as the home position

Origin regression terminal trigger mode mode selection	
0	Trigger at low level and stop at high
1	Trigger at rising edge
2	Trigger at falling edge
3	Trigger at high level and stop at low

Home timeout unit	
0	1ms
1	10ms
2	100ms

Pn291	**Home high speed**		○	Address: 0x0291
Default: 100.0	**Range: 0.0 ~ 3000.0**		**Unit: rpm**	Control Mode:
Description	**Home return process should first find the reference point (deceleration point), to determine the homing range; the speed of finding the reference point should not be too slow, or it may report the home timeout fault.**			

Pn292	**Low home speed**		○	Address: 0x0292
Default: 10.0	**Range: 0.0-1000.0**		**Unit: rpm**	Control Mode:

Description	First determine the home range and then decelerate to locate the home position and lock it. Zeroing speed should not be too fast, or home position may be lost or the difference may be large.

Pn293	**Home acceleration/deceleration time**		○	Address: 0x0293
Default: 3000	**Range: 0 ~ 3000**	Unit: ms		Control Mode:
Description	Home acceleration time is the time required for the motor to accelerate from 0rpm to 3000rpm; Home deceleration time is the time required for the motor to accelerate from 0rpm to 3000rpm.			

Pn294	**Home offset position**		○	**Address: 0x0294 ★**
Default: 0	**Range:-231 ~ 231-1**	**Unit: Command**		**Control Mode:**
Description	The home offset position means that the motor needs to travel a further distance after finding the home position, and this distance is the motor's home offset position, i.e., the motor's absolute position coordinates.			

Pn296	**Absolute position home multi-turn value**		○	Address: 0x0296
Default: 0	**Range:-32768 ~ 32767**	Unit: rev		Control Mode:

Pn297	**Absolute position home single-turn value**		○	**Address: 0x0297 ★**
Default: 0	**Range: 0 ~ 2147483647**	**Unit: Encoder unit**		**Control Mode:**
Description	The multi-turn value and the single-turn value of the absolute position home point together indicate the target absolute position of the motor, which is used to set the target position of the motor when the servo selects the absolute position to home, i.e., the multi-turn and the single-turn value of the motor at the time of the final shutdown are equal to or close to the set value.			

Pn299	**Home timeout**		○	**Address: 0x0299**
Default: 10000	**Range: 0 ~ 65535**	**Unit: ms**		**Control Mode:**
Settings	To set the maximum time to search for a home signal To set the maximum time to search for a home signal If this function code is set too small or the home signal is not searched within the time set by this function code, the drive will generate the home timeout fault ER.8A1. Note: 0 disables this function.			

4.3. 4 Speed parameters (Pn3xx)

Pn300	**Speed command source selection**		○	Address: 0x0300
Default: 0000	**Range: 0x0000 ~ 0x0005**	Unit: N/A		Control Mode:

To select the speed command source in speed mode.

Setting	Description	Comment		
0	Given by internal digit	by Pn304.		
2	Reserved	-		
3	Reserved	-		
4	Internal digital hybrid given	SPDB	SPDA	Command source
		0	0	Pn303.X
		0	1	Pn303. Y
		1	0	Pn303. Z
		1	1	Pn303. W
5	Reserved	-		

Pn301	Speed command direction			○	Address: 0x0301
Default: 0x0000	Range: 0x0000 ~ 0x0001		Unit: N/A		Control Mode:

Setting	Description	Comment
0	Same direction as current speed command	-
1	Opposite to the current speed command	-

Pn302	Speed command low-pass filter			○	Address: 0x0302
Default: 0.40	Range: 0.00 ~ 655.35		Unit: ms		Control Mode:
Description	Applying 1 low-pass filter to the speed command input to smooth it 				

Pn303	Speed control switch 1		■	Address: 0x0303
Default: 0x0000	Range: 0x0000 ~ 0x2222	Unit: N/A		Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W	Z	Y	X

Speed command source 1	
0	Internal Number Given (Pn304)

Speed command source 2	
0	Internal Number Given (Pn305)

Speed command source 3	
0	Internal Number Given (Pn306)

Speed command source 4	
0	Internal Number Given (Pn307)

Pn304	Internal Speed 0		○	Address: 0x0304
Default: 100	Range:-10000 ~ 10000	Unit: 1rpm		Control Mode:

Pn305	Internal Speed 1		○	Address: 0x0305
Default: 200	Range:-10000 ~ 10000	Unit: 1rpm		Control Mode:

Pn306	Internal Speed 2		○	Address: 0x0306
Default: 300	Range:-10000 ~ 10000	Unit: 1rpm		Control Mode:

Pn307	Internal Speed 3		○	Address: 0x0307
Default: 400	Range:-10000 ~ 10000	Unit: 1rpm		Control Mode:

Pn308	Internal speed command unit		○	Address: 0x0308
Default: 0x0000	Range: 0x0000 ~ 0x0001	Unit: N/A		Control Mode:

Setting	Description	Comment
0	1rpm	-
1	0.1 rpm	-

Precautions
⚠ ● The internal speed command unit is valid only for the internal speed commands Pn304 to Pn307.

Pn310	**Soft start acceleration time (ACC) in speed control mode**		○	Address: 0x0310
Default: 200	**Range: 0 ~ 10000**	Unit: 1ms		Control Mode:

Pn311	**Soft start deceleration time (ACC) in speed control mode**		○	Address: 0x0311
Default: 200	**Range: 0 ~ 10000**	Unit: 1ms		Control Mode:
Description	The soft start function refers to the conversion of a step speed command into a smoother constant acceleration and deceleration speed command, the acceleration and deceleration time can be set. Pn310: The time required for the motor to reach the maximum speed of the motor from the stop state. Pn311: The time required for the motor to reach the motor stop from the maximum speed. The actual acceleration and deceleration times are calculated by the following formula.			
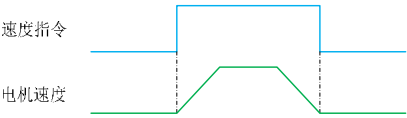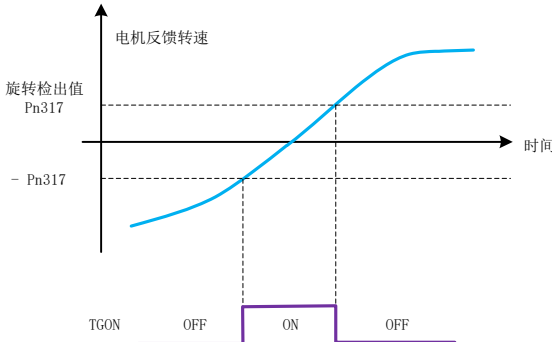
Pn313	**Home position fixed speed threshold**		○	Address: 0x0313
Default: 10	**Range: 0 ~ 10000**	**Unit: rpm**	**Control Mode:**	
Description	The zero position fixing function is a function of servo locking when the input voltage of the speed command is lower than the speed set by the zero position fixing speed threshold value in a state where the zero position fixing signal (/ZCLAMP) is ON. At this time, a position loop is formed inside the servo unit, and the speed command will be ignored. When used for speed control, the upper device does not build a system of position loops.			
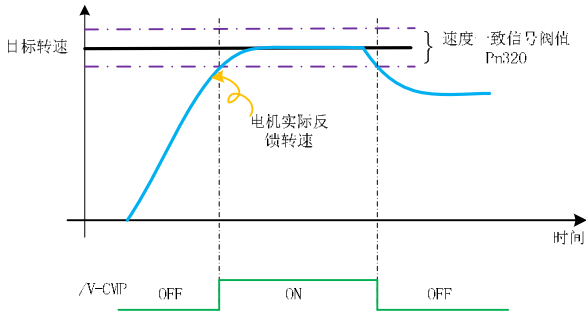
Precautions	
⚠️	This function is to lock servo when the input voltage of the speed command is lower than the speed set here when the zero clamp (/ZCLAMP) is ON. In this case, a position loop is formed inside the servo unit and the speed command is ignored. For speed control, no position loop is constructed from the upper unit.

Pn314	**Zero clamp compensation max. speed**		○	Address: 0x0314
Default: 1000	**Range: 50 ~ 10000**	**Unit: rpm**	**Control Mode:**	
Description	When the servomotor is fixed in the zero position, it will return even if rotation occurs by an external force, set this code to limit the maximum speed during return.			

Pn317	**Rotation detection**		○	Address: 0x0317
Default: 20	**Range: 1-10000**	**Unit: rpm**	**Control Mode:**	
Description	Conditional range for setting the/TGON signal. When the actual feedback speed of the motor is within the range set by this function code, report the correcting TGON signal. 			

Pn318	**Maximum running speed**		○	Address: 0x0318
Default: 10000	**Range: 0 ~ 10000**	**Unit: rpm**	**Control Mode:**	
Description	Set the maximum running speed of the servo motor.			

	When this limit value is greater than the maximum motor speed.

Pn320	**Velocity clamp threshold value**		○	Address: 0x0320
Default: 10	**Range: 0-100**		Unit: rpm	Control Mode:
Description	Set the time used to determine which the actual speed reaches the set target speed threshold. If the deviation value between the motor feedback speed and the speed given is within the threshold value, it means that the user speed is reached, and the/V-CMP signal assigned to the output terminal is output at a high level (ON). Example: Pn320 = 50 rpm, the target speed is 2000 rpm, the motor speed is in the range of 1950 rpm to 2050 rpm, output/V-CMP signal. 			

4.3. 5 Torque parameters (Pn4xx)

Pn400	**Torque control switch1**		■	Address: 0x0400
Default: 0x0020	**Range: 0x0000 ~ 0x0045**		**Unit: N/A**	**Control Mode:**

3rd bit 2nd bit 1st bit 0th bit

W   Z   Y   X

Command source selection		
0	Given by internal digit	Function code Pn410 given
1	Reserved	-
2	Reserved	-
3	Internal digital hybrid given	(see table below)
4	Single trigger mode	
5	CANopen given	

TorqB	TorqA	Command source
0	0	Pn409.X
0	1	Pn409. Y
1	0	Pn409. Z
1	1	Pn409. W

Speed Limit Source Selection		
0	Reserved	-
1	Reserved	-
2	Given by internal digit	Function code Pn415 given
3	Given by DI terminal	OFF: Pn415; ON: Pn416
4	Torque command	Positive instruction: Pn415; Inversion:

Preserve parameters (do not

Preserve parameters (do not change)

Pn401	**Torque command second-order low-pass filtering cutoff frequency**	○	Address: 0x0401
Default: 5000	**Range: 100-5000**	**Unit: Hz**	**Control Mode:**
Description	**Filter is invalid when set to 5000**		

Pn402	**Torque command second-order low-pass filtering Q value**	○	Address: 0x0402
Default: 0.50	**Range: 0.50 ~ 1.00**	**Unit: N/A**	**Control Mode:**

Pn403	Torque command direction		○	Address: 0x0403
Default: 0x0000	Range: 0x0000 ~ 0x0001		Unit: N/A	Control Mode:

Setting	Description	Comment
0	In the same direction as the torque command	-
1	Reverse to torque command	-
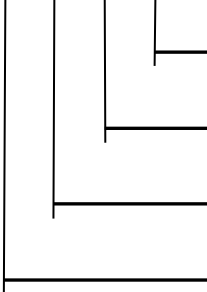
Precautions	
⚠	• Pn403 and external terminal torque command direction (TPR-D) are valid for internal register torque commands. ● The logic for combining Pn403 with the direction of external terminal torque command (TPR-D) is as follows (CCW direction as positive as a reference):

Given Torque command	External terminal TPR-D	Pn403.X	Inspection Command direction
Positive instruction	OFF	0	Positive instruction
		1	Counter-instruction
	ON	0	Counter-instruction
		1	Positive instruction
Negative instruction	OFF	0	Counter-instruction
		1	Positive instruction
	ON	0	Positive instruction
		1	Counter-instruction

Pn404	Torque command filter time		○	Address: 0x0404
Default: 0.00	Range: 0.00 ~ 655.35		Unit: ms	Control Mode:
Description	A 1st order low-pass filter is applied to the torque command input to smooth the torque command.			

转矩

滤波前转矩

100%

63.2%

滤波后转矩

时间ms

Pn404
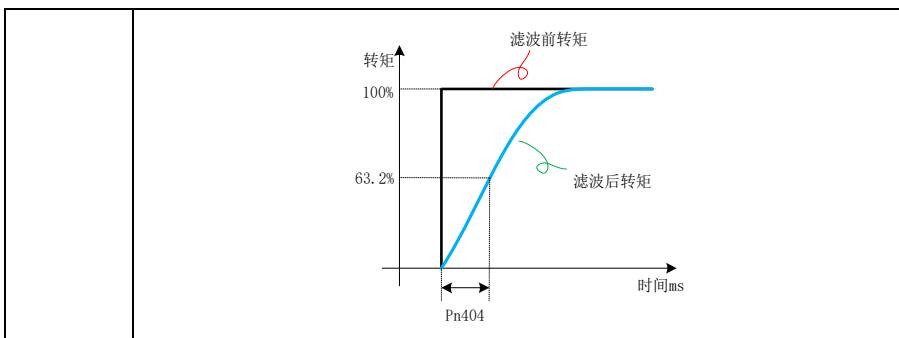
Pn409	Torque control switch 3		○	Address: 0x0409
Default: 0x0000	Range: 0x0000 ~ 0x2222	Unit: N/A		Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W	Z	Y	X

Torque command source 1	
0	Internal Number Given (Pn410)

Torque command source 2	
0	Internal Number Given (Pn411)

Torque command source 3	
0	Internal Number Given (Pn412)

Torque command source 4	
0	Internal Number Given (Pn413)

Pn410	Internal torque command1		○	Address: 0x0410
Default: 0.0	Range:-500.0 ~ 500.0	Unit:%		Control Mode:

Pn411	Internal torque command 2 setpoint		○	Address: 0x0411
Default: 0.0	Range:-500.0 ~ 500.0	Unit:%		Control Mode:
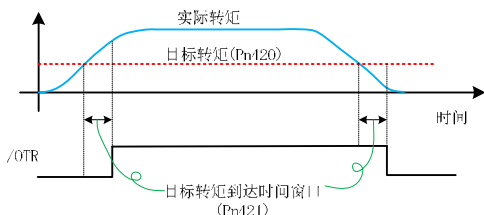
Pn412	Internal torque command 3 setpoint		○	Address: 0x0412
Default: 0.0	Range:-500.0 ~ 500.0	Unit:%		Control Mode:

Pn413	Internal torque command 4 setpoint		○	Address: 0x0413
Default: 0.0	Range:-500.0 ~ 500.0	Unit:%		Control Mode:

Pn415	Internal speed limit1 in torque control		○	Address: 0x0415
Default: 1000	Range: 0 ~ 10000	Unit: rpm		Control Mode:

Pn416	Internal speed limit value 2 during torque control		○	Address: 0x0416
Default: 1000	Range: 0 ~ 10000	Unit: rpm		Control Mode:

Pn420	**Target torque reaches set value**		○	Address: 0x0420
Default: 100.0	**Range: 0.0-500.0**	Unit:%		Control Mode:

Pn421	**Target torque reaches time window**		○	Address: 0x0421
Default: 5	**Range: 0-1000**	Unit: ms		Control Mode:
Description	When the torque output from the drive is greater than the set target torque and lasts longer than the set time window time, the target torque arrive signal is output.			

Pn430	**Torque control switch 2**		○	Address: 0x0430
Default: 0x0001	**Range: 0x0000 ~ 0x0013**	Unit: N/A		Control Mode:

3rd bit 2nd bit 1st bit 0th bit

Single torque command trigger mode	
0	Low level
1	Rising edge
2	High level
3	Falling edge

Control priority in torque mode	
0	Speed first
1	Torque first

Preserve parameters (do not change)

Preserve parameters (do not change)

4.3. 6 Auxiliary parameters (Pn5xx)

Pn500	JOG speed (JOG)		○	Address: 0x0500
Default: 200	Range: 0 ~ 3000	Unit: rpm		Control Mode:

Pn502	JOG operation mode		○	Address: 0x0502
Default: 0x0000	Range: 0x0000 ~ 0x0005	Unit: N/A		Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W Z Y X

Program JOG running mode	
0	(Waiting time Pn535 → Forward Pn531) × Move times Pn536
1	(Waiting time Pn535 → Reverse Pn531) × Move times Pn536
2	(Waiting time Pn535 → Forward Pn531) × Move times Pn536 (Waiting time Pn535 → Reverse Pn531) × Move times Pn536
3	(Waiting time Pn535 → Reverse Pn531) × Move times Pn536 (Waiting time Pn535 → Forward Pn531) × Move times Pn536
4	(Wait time Pn535 → Forward movement Pn531 → (Waiting time Pn535 → Reverse Pn531) × Move times Pn536
5	(Wait time Pn535 → Reverse movement Pn531 → (Waiting time Pn535 → Forward Pn531) × Move times Pn536

Preserve parameters (do not change)

Preserve parameters (do not change)

Preserve parameters (do not change)

Pn503	Program JOG travel distance		○	Address: 0x0503 ★
Default: 60000	Range: 1 ~ 1073741824	Unit:　　Instruction unit		Control Mode:

Pn505	Program JOG acceleration/deceleration time		○	Address: 0x0505
Default: 100	Range: 2 ~ 10000	Unit: ms		Control Mode:
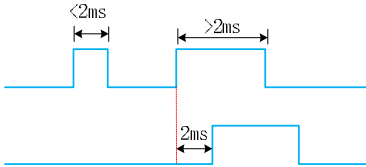
Pn506	Program JOG waiting time		○	Address: 0x0506
Default: 100	Range: 0 ~ 10000	Unit: ms		Control Mode:

Pn507	Program JOG travel No.		○	Address: 0x0507
Default: 1	Range: 0-1000	Unit: times		Control Mode:
Description	Used to set the number of cycle times during JOG.			

Precautions
⚠ When Pn502 is set to 2 or 3 and Pn507 is set to 0, the JOG is invalid When Pn507 = 0, the JOG move times is not limited.

Pn508	Program JOG travel speed		○	Address: 0x0508
Default: 500	Range: 1-10000	Unit: rpm		Control Mode:

4.3. 7 Terminal parameters (Pn6xx)

Pn600	Switching input terminal X filter time		○	Address: 0x0600
Default: 2	Range: 0 ~ 3000	Unit: ms		Control Mode:
Description	Used to set the filter time for external signals input to the drive from the X terminal. Example: When Pn600 filter time is 2ms, signals smaller than 2ms are filtered out. 输入端子X信号（滤波前）　<2ms　>2ms 输入端子X信号（滤波后）　2ms			

Precautions
⚠ The filter time of switching input terminal X is valid from X1 to X4; ● The monitoring function code Un100 monitors the input terminal X status after filtering.

Pn601	**Input terminal IN1 configuration**	○	Address: 0x0601
Default: 0x0001	**Range: 0x0000 ~ 0x112F**	Unit: N/A	Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W   Z   Y   X

Function assignment value	
00	Invalid
01	
...	See "Appendix 1 Input Terminal Function Definitions".
2F	

Input Terminal Contact Properties	
0	Normally ON
1	Normally OFF

Input terminal signal source	
0	Given by external hardware terminal X1
1	Given by internal software status bit Pn630.Bit0

Pn602	**Configuration of input terminal IN2**	○	Address: 0x0602
Default: 0x0002	**Range: 0x0000 ~ 0x112F**	Unit: N/A	Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W   Z   Y   X

Function assignment value	
00	Invalid
01	
...	See "Appendix 1 Input Terminal Function Definitions".
2F	

Input Terminal Contact Properties	
0	Normally ON
1	Normally OFF

Input terminal signal source	
0	Given by external hardware terminal X1
1	Given by internal software status bit 1 Pn630.Bit0

Pn603	Input terminal IN3		○	Address: 0x0603
Default: 0x0003	Range: 0x0000 ~ 0x112F	Unit: N/A		Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W Z Y X

Function assignment value	
00	Invalid
01	
…	See "Appendix 1 Input Terminal Function Definitions".
2F	

Input Terminal Contact Properties	
0	Normally ON
1	Normally OFF

Input terminal signal source	
0	External hardware terminal X3
1	Internal software status bit given Pn630.Bit2

Pn604	Input terminal IN4 configuration		○	Address: 0x0604
Default: 0x0005	Range: 0x0000 ~ 0x112F	Unit: N/A		Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W Z Y X

Function assignment value	
00	Invalid
01	
…	See "Appendix 1 Input Terminal Function Definitions".
2F	

Input Terminal Contact Properties	
0	Normally ON
1	Normally OFF

Input terminal signal source	
0	External hardware terminal X4
1	Internal software status bit given Pn630.Bit3

Pn611	Output terminal OUT1		○	Address: 0x0611
Default: 0x0001	Range: 0x0000 ~ 0x110F		Unit: N/A	Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W Z Y X

Function assignment value	
00	
...	See "Schedule 2 Output Terminal Function Definition"
0F	

Output terminal contact properties	
0	Normally ON
1	Normally OFF

Output terminal signal source	
0	Function Code Pn610 Distribution Signal Control
1	by Pn631.Bit0

Pn612	Output terminal OUT2 configuration		○	Address: 0x0612
Default: 0x0002	Range: 0x0000 ~ 0x110F		Unit: N/A	Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W Z Y X

Function assignment value	
00	
...	See "Schedule 2 Output Terminal Function Definition"
0F	

Output terminal contact properties	
0	Normally ON
1	Normally OFF

Output terminal signal source	
0	Function Code Pn610 Distribution Signal Control
1	Function code Pn631.Bit1 bit control

Pn630	Internal software setting for input terminal (X) state	○	Address: 0x0630
Default: 0x0000	Range: 0x0000 ~ 0x03FF	Unit: N/A	Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W Z Y X

Internally given input terminal state group 1	
Bit0	Virtual input terminal X1
Bit1	Virtual input terminal X2
Bit2	Virtual input terminal X3
Bit3	Virtual input terminal X4

Internally given input terminal state group 2	
Bit4	Reserved
Bit5	Reserved
Bit6	Reserved
Bit7	Reserved

Input terminal status group 3 given internally	
Bit8	Reserved

Reserve parameters (do not use)

Pn631	Internal software given output terminal (Y) status	○	Address: 0x0631
Default: 0x0000	Range: 0x0000 ~ 0x003F	Unit: N/A	Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W Z Y X

Internal given output terminal state group 1	
Bit0	Given the output terminal Y1 state
Bit1	Given output terminal Y2 state
Bit2	Reserved
Bit3	Reserved

Output terminal status group 2 given internally	
Bit4	Reserved
Bit5	Reserved

Reserved parameters (Not ready for use)

Reserved parameters (Not ready for use)

4.3. 8 Expanded Parameters (Pn7xx)

Pn702	Advanced adjustable range		○	Address: 0x0702
Default: 3.0	Range: 0.5 ~ 10.0	Unit: circle		Control Mode:

Pn705	Inertia detection initial value		○	Address: 0x0705
Default: 300	Range: 0 ~ 20000	Unit:%		Control Mode:

Pn706	Vibration detection threshold in inertia detection		○	Address: 0x0706
Default: 250	Range: 0-5000	Unit: rpm		Control Mode:

Pn720 ※	EasyFFT sweep frequency start		○	Address: 0x0720
Default: 400	Range: 1 to 5000	Unit: Hz		Control Mode:

Pn721 ※	EasyFFT sweep frequency end		○	Address: 0x0721
Default: 4000	Range: 50 ~ 5000	Unit: Hz		Control Mode:

Pn722 ※	EasyFFT lower limit of resonance frequency detection		○	Address: 0x0722
Default: 500	Range: 50 ~ 5000	Unit: Hz		Control Mode:

Pn723 ※	EasyFFT scanning torque command amplification		○	Address: 0x0723
Default: 15	Range: 1-800	Unit:%		Control Mode:
Description	Used to set the amplitude value for the EasyFFT scanning torque command.			

Pn740 ※	Speed pulse compensation		○	Address: 0x0740
Default: 0x0000	Range: 0x0000 ~ 0x0011	Unit: N/A		Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W Z Y X

Speed pulsation compensation function switch	
0	Speed pulsation compensation function is not used
1	Use the velocity pulsation compensation function

Effective condition of velocity fluctuation compensation	
0	Speed command
1	Motor speed

Reserved parameters (Not ready for use)

Reserved parameters (Not ready for use)

Description	Used to turn the speed fluctuation compensation on and off.

Pn741 ※	Speed fluctuation compensation speed		■	Address: 0x0741
Default: 0	Range: 0 ~ 10000	Unit: rpm		Control Mode:

Description	After the speed pulsation compensation function is effective, even when the speed command is 0 or the motor speed is 0, the pulsation compensation value compensation process is performed to reduce the pulsation. In order to prevent this phenomenon, it is necessary to set the effective speed of velocity pulsation compensation accordingly.

Pn742 ※	Speed fluctuation compensation gain		■	Address: 0x0742
Default: 80	Range: 0-100	Unit:%		Control Mode:

Pn743 ※	Speed fluctuation compensation 1st component frequency		■	Address: 0x0743

Default: 0	Range: 0-100	Unit: N/A	Control Mode:

Pn744 ※	Speed pulsation compensation 1st component amplitude (max.current)	■	Address: 0x0744
Default: 0.0	Range:-10.0% ~ 10.0%	Unit:%	Control Mode:

Pn745 ※	Speed pulsation compensation 1st component phase	■	Address: 0x0745
Default: 0	Range: 0 ~ 360	Unit: ° (deg)	Control Mode:

Pn746 ※	Speed fluctuation compensation 2nd component frequency	■	Address: 0x0746
Default: 0	Range: 0-100	Unit: N/A	Control Mode:

Pn747 ※	Speed pulsation compensation 2nd component amplitude (max.current)	■	Address: 0x0747
Default: 0.0	Range:-10.0% ~ 10.0%	Unit:%	Control Mode:

Pn748 ※	Speed pulsation compensation 2nd component phase	■	Address: 0x0748
Default: 0	Range: 0 ~ 360	Unit: ° (deg)	Control Mode:

Pn749 ※	Speed fluctuation compensation 3rd component frequency	■	Address: 0x0749
Default: 0	Range: 0-100	Unit: N/A	Control Mode:

Pn74 A ※	Speed pulsation compensation 3rd component amplitude (max.current)	■	Address: 0x074A
Default: 0.0	Range:-10.0% ~ 10.0%	Unit:%	Control Mode:

Pn74B ※	Speed pulsation compensation 3rd component phase	■	Address: 0x074B
Default: 0	Range: 0 ~ 360	Unit: ° (deg)	Control Mode:

Pn74 C ※	Speed fluctuation compensation 4th component frequency	■	Address: 0x074C
Default: 0	Range: 0-100	Unit: N/A	Control Mode:

Pn74 D ※	Speed pulsation compensation 4th component amplitude (max.current)		■	Address: 0x074D
Default: 0.0	Range:-10.0% ~ 10.0%	Unit:%		Control Mode:

Pn74 E ※	Speed pulsation compensation 4th component phase		■	Address: 0x074E
Default: 0	Range: 0 ~ 360	Unit: ° (deg)		Control Mode:

Pn755	Weak magnetic control switch		○	Address: 0x0755
Default: 0x0001	Range: 0x0000 ~ 0x0001	Unit: N/A		Control Mode:

3rd bit 2nd bit 1st bit 0th bit

	Weak magnetic control
0	OFF
1	ON

Reserved parameters (Not ready for use)

Reserved parameters (Not ready for use)

Reserved parameters (Not ready for use)

Pn756	Field-weakening for circuit proportional gain		○	Address: 0x0756
Default: 30	Range: 10 ~ 1000	Unit: Hz		Control Mode:

Pn757	Field-weakening for circuit integral time constant		○	Address: 0x0757
Default: 16	Range: 10 ~ 1000	Unit: us		Control Mode:

Pn758	Field-weakening for circuit integral upper limit		○	Address: 0x0758
Default: 100	Range: 0-200	Unit:%		Control Mode:

Pn759	Field-weakening for voltage threshold		○	Address: 0x0759
Default: 115	Range: 50 ~ 150	Unit:%		Control Mode:

Pn75A	Max. weak magnet current in field-weakening control		○	Address: 0x075A
Default: 95	Range: 50 ~ 150	Unit:%		Control Mode:

Pn75B	Main circuit voltage filter time in field-weakening control		○	Address: 0x075B
Default: 2.0	Range: 1.0 ~ 10.0	Unit: ms		Control Mode:
Description	The smooth filter times to the DC voltages used for weak magnetism calculations are averaged.			

Pn781 ※	Drive bus overvoltage point		■	Address: 0x0781
Default: by model	Range: 0-1000	Unit: V		Control Mode:
Description	Set the bus voltage over-voltage point threshold, when the bus voltage is great than this value it will report over-voltage fault. For DC 48 V model, the default value of driver overvoltage is 85 V, and the setting range is 80 V ~ 90 V. Note: Do not change the parameters without the factory's permission, or it may cause irreversible damage to the machine!			

Pn782 ※	Drive regenerative braking point		■	Address: 0x0782
Default: by model	Range: 0-1000	Unit: V		Control Mode:
Description	Set the threshold value when the bus regenerative voltage is braked to release the capacity charge to drop the bus voltage. For DC 48 V model, the default value of driver overvoltage is 75 V, and the setting range is 70 V ~ 80 V.			

Pn783 ※	Regeneration OFF hysteresis loop width		■	Address: 0x0783
Default: by model	Range: 0-50	Unit: V		Control Mode:
Description	For DC 48V models, the default value is 3V. To avoid frequent access to the bus drain, this function code can effectively reduce the number of frequent access to regenerative braking. It should not be set too large, as it is likely to cause large fluctuations in the DC bus.			

Pn784 ※	Drive bus undervoltage point		■	Address: 0x0784
Default: by model	Range: 0-500	Unit: V		Control Mode:

Description	Set the bus voltage undervoltage point threshold value, when the bus voltage is lower than this value, it will report undervoltage fault. For DC 48V model, the default value of drive undervoltage point is 18V, and the setting range is 18V ~ 20V.

Pn785 ※	Drive bus undervoltage detection filter time constant		■	Address: 0x0785
Default: 10	Range: 0 ~ 2000	Unit: ms		Control Mode:

Pn786 ※	Drive bus undervoltage warning value		■	Address: 0x0785
Default: by model	Range: 0-1000	Unit: V		Control Mode:
Description	when the bus voltage is lower than this value, it will report undervoltage warning. For DC 48V models, the drive undervoltage warning value defaults to 20V.			

Pn788	Motor max. speed fine-tuning		■	Address: 0x0788
Default: 0	Range: 0-2	Unit: 100rpm		Control Mode:

Pn790 ※	Motor code setting		○	Address: 0x0790
Default: by model	Range: 0x0000 ~ 0xFFFF	Unit: N/A		Control Mode:
Description	Used to set the motor type assigned to the drive, the specific code setting value is based on the motor nameplate only for photoelectric incremental encoder motors. Serial encoder motor (factory value): 0x1000. When this function code is set to 0x1000, the drive recognizes the encoder type by itself. Currently, only Nikon 24-bit encoders and Tamagawa 17-bit or 23-bit encoders are supported. At the same time, the drive will update the correcting recognized encoder to function code. Note: When Pn790 is set to 0x1000, the set value of function code Pn791 is invalid. Incremental encoder motor (set according to ID value). **Custom serial encoder motor: 0x3000** When this function code is set to 0x3000, the drive processes serial communication according to the encoder set by function code Pn791.			

Pn791 ※	Encoder control switch			○	Address: 0x0791
Default: by model		Range: 0x0000 ~ 0x000A	Unit: N/A		Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W Z Y X

Encoder type	
0	Non-wire-saving increased encoder (2500 lines)
1	Wire-saving increased encoder (2500 wires)
2	Tamagawa 17-bit absolute encoder
3	Tamagawa 23-bit absolute encoder
4	Nikon 20-bit single-turn encoder
5	Nikon 20-bit multi-turn encoder
6	Nikon 24-bit single-turn encoder
7	Nikon 24-bit multi-turn encoder
8	Serial incremental encoder (10000 wires)

Reserved parameters (Not ready for use)

Reserved parameters (Not ready for use)

Reserved parameters (Not ready for use)

Description	Used to set the encoder type.

Precautions
When using a motor equipped with an absolute encoder, set the value in Pn790 (Motor code setting) to 1000, and set the correcting value to function code Pn791 (Encoder type) according to the actual encoder installed.   ● When the value set in Pn790 is an incremental encoder motor in the motor bank, the encoder type is set automatically and function code Pn791 is invalid.   • Pn790 has the highest priority. The driver automatically determines the type of encoder according to the value in Pn790.

Pn792 ※	Motor zero pole position			○	Address: 0x0792
Default: by model		Range:-360 ~ 360	Unit: °		Control Mode:
Description	It is used to display the reference position of the motor's zero pole. The auxiliary function Fn080 will update the value of this function code when it finishes recognizing it, and it is exclusively used for serial encoders.				

Pn793 ※	Position sensor resolution		■	Address: 0x0793 ★
Default: 10000	Range 1-231	Unit: N/A		Control Mode:
Description	Used to set the encoder resolution for customized motor parameters. For increased encoder, the set value is the value after 4 times of frequency. **Example: Incremental encoder is 2500 wires, then the value of position sensor resolution is 10000.**			

Pn795 ※	Incremental encoder control switch		■	Address: 0x0795
Default: 0x0000	Range: 0x0000 ~ 0x0111	Unit: N/A		Control Mode:

3rd bit 2nd bit 1st bit 0th bit

| W | Z | Y | X |

Hall signal WVU angle value	
0	Use internal factory values
1	Use external Pn796 to Pn79B values

How to use the latch value of encoder Z signal	
0	Use internal factory values
1	Use external Pn79C values

How to use incremental encoder resolution	
0	Use internal factory values
1	Use external Pn793 values

Reserved parameters (Not ready for use)

Pn796 ※	Angle when increased encoder Hall signal WVU is1 (001)		■	Address: 0x0796
Default: 240.0	Range: 0.0 ~ 359.9	Unit:		Control Mode:

Pn797 ※	Angle when incremental encoder Hall signal WVU is 2 (002)		■	Address: 0x0797
Default: 0.0	Range: 0.0 ~ 359.9	Unit: °		Control Mode:

Pn798 ※	Angle when increased encoder Hall signal WVU is 3 (011)		■	Address: 0x0798
Default: 300.0	Range: 0.0 ~ 359.9	Unit: °		Control Mode:

Pn799 ※	Angle when increased encoder Hall signal WVU is 4 (100)		■	Address: 0x0799

Default: 120.0	Range: 0.0 ~ 359.9	Unit: °	Control Mode:
Pn79A ※	**Angle when increased encoder Hall signal WVU is 5 (101)**	■	Address: 0x079A
Default: 180.0	Range: 0.0 ~ 359.9	Unit: °	Control Mode:

Pn79B ※	**Angle when increased encoder Hall signal WVU is 6 (110)**	■	Address: 0x079B
Default: 60.0	Range: 0.0 ~ 359.9	Unit: °	Control Mode:

Pn79C ※	**Angle of increased encoder Z signal**	○	Address: 0x079C
Default: 330.0	Range: 0.0 ~ 359.9	Unit: °	Control Mode:

Pn79E	**Reserved**	■	Address: 0x079E
Default: 0000	Range: 00000 ~ 65535	Unit: N/A	Control Mode:

Pn79F	**User Password**	○	Address: 0x079F
Default: 0x0000	Range: 0x0000 ~ 0xFFFF	Unit: N/A	Control Mode:

4.3. 9 Motion control parameters (Pn8xx)

Pn800	**Internal position command**	■	Address: 0x0800
Default: 0x0000	Range: 0x0000 ~ 0x0000	Unit: N/A	Control Mode:

3rd bit 2nd bit 1st bit 0th bit

| W | Z | Y | X |
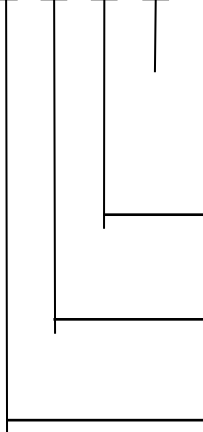
Internal position instruction source	
0	Internal multi-segment position (Pr command)

Reserved parameters (Not ready for use)

Reserved parameters (Not ready for use)

Reserved parameters (Not ready for use)

Pn802	**Internal multi-segment position (speed) operation mode**	○	**Address: 0x0802**
Default: 0x0000	Range: 0x0000 ~ 0x1113	**Unit: N/A**	**Control Mode:**

3rd bit 2nd bit 1st bit 0th bit

| W | Z | Y | X |

Internal Location Operation Mode	
0	Single segment operation (input terminal X or communication)
1	Stop at the end of a single run
2	Cyclic operation
3	Sequential operation

Remaining path handling in multi-segment operation mode	
0	Continue to run the unfinished path
1	Restart from path 1

Single-segment operation mode update	
0	Non-immediate update
1	Immediately after the communication command is given

Absolute position starting point selection	
0	Motor position after home as the starting point of the absolution
1	Absolution zero (Pn296, Pn297) as the starting point of the absolute

Description	When Pn802.Z = 0, the DI terminal or the communication is stored in the buffer after the Pr command is given, and the command given in the previous communication is taken out from the buffer after the current command is executed.
	When Pn802.Z = 1, the communication command is executed immediately after it is given.

Pn803	**Multi-segment position (speed) endpoint path**		○	**Address: 0x0803**
Default: 1	**Range: 1-15**		**Unit: N/A**	**Control Mode:**

Pn804	**Sequential running start path**		○	**Address: 0x0804**
Default: 1	**Range: 0-15**		**Unit: N/A**	**Control Mode:**
Description	① The first round of sequential operation starts from Pr1 and runs to the path pointed by Pn803; ② If Pn804 = 0 or Pn804 > Pn803, the sequence runs for 1 round and then stops. ③ If Pn804 ≤ Pn803, the first round is followed by cyclic operation, and the starting segment number is Pn804; ④ The enable signal CTRG is valid at high level.			

Pn806	**Pr command communication parameters (single segment operation)**		○	**Address: 0x0806**
Default: 10000	**Range: 0 ~ 65535**		**Unit: N/A**	**Control Mode:**

Description	① DI terminal switching mode is valid, input 1 ~ 15 to trigger the correresponding Pr path, input 1000 to force the end of the current operation mode; In position mode, input 0 to trigger home, input 1000 to force end home.			
Pn810	**PR path1 control word L**		O	Address: 0x0810
Default: 0x0000	**Range: 0x0000 ~ 0x0121**		Unit: N/A	Control Mode:

3rd bit 2nd bit 1st bit 0th bit

| W | Z | Y | X |

PR TYPE (TYPE)	
0	Positioning control
1	Constant speed control

Position control type	
0	Position control for increased position
1	Position control for absolute position
2	Position control for relative position

Fixed speed control unit	
0	Speed unit is 0.1 rpm
1	Speed unit is PPS

Reserved parameters (Not ready for use)

Pn811	PR path1 control word H		O	Address: 0x0811
Default: 0x0000	Range: 0x0000 ~ 0x7777	Unit: N/A		Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W	Z	Y	X

Acceleration time (ACC)

0	
•••	Select "Acceleration Time" function code Pn890 ~ Pn89F
7	

Deceleration time (DEC)

0	
•••	Select "Deceleration Time" function code Pn890 ~ Pn89F
7	

Internal target speed

0	
•••	Select via Pn8B0 to Pn8BF.
7	

Delay time (pause time)

0	
•••	Select "Delay time after location arrival" function code Pn8A0 ~ Pn8AF
7	

Pn812	PR1 information		O	Address: 0x0812 ★
Default: 0	Range:-231 ~ 231-1	Unit: N/A		Control Mode:

Pn814	Pn814PR2 control word L ○ Address: 0x0814		O	Address: 0x0814
Default: 0x0000	Range: 0x0000 ~ 0x0121	Unit: N/A		Control Mode:

Pn815	PR2 Control Word H		O	Address: 0x0815
Default: 0x0000	Range: 0x0000 ~ 0x7777	Unit: N/A		Control Mode:

Pn816	PR2 information		O	Address: 0x0816 ★
Default: 0	Range:-231 ~ 231-1	Unit: N/A		Control Mode:

Pn818	PR3 Control Word L		O	Address: 0x0818
Default: 0x0000	Range: 0x0000 ~ 0x0121	Unit: N/A		Control Mode:

Pn819	PR3 Control Word H		O	Address: 0x0819
Default: 0x0000	Range: 0x0000 ~ 0x7777	Unit: N/A		Control Mode:

Pn81A	PR3 information		O	**Address: 0x081A ★**
Default: 0	Range:-231 ~ 231-1	**Unit: N/A**		**Control Mode:**

Pn81C	PR4 Control Word L		O	Address: 0x081C
Default: 0x0000	Range: 0x0000 ~ 0x0121	Unit: N/A		Control Mode:

Pn81D	PR4 Control Word H		O	Address: 0x081D
Default: 0x0000	Range: 0x0000 ~ 0x7777	Unit: N/A		Control Mode:

Pn81E	PR4 information		O	**Address: 0x081E ★**
Default: 0	Range:-231 ~ 231-1	**Unit: N/A**		**Control Mode:**

Pn820	PR5 Control Word L		O	Address: 0x0820
Default: 0x0000	Range: 0x0000 ~ 0x0121	Unit: N/A		Control Mode:

Pn821	PR5 Control Word H		O	Address: 0x0821
Default: 0x0000	Range: 0x0000 ~ 0x7777	Unit: N/A		Control Mode:

Pn822	PR5 information		O	**Address: 0x0822 ★**
Default: 0	Range:-231 ~ 231-1	**Unit: N/A**		**Control Mode:**

Pn824	PR6 Control Word L		O	Address: 0x0824
Default: 0x0000	Range: 0x0000 ~ 0x0121	Unit: N/A		Control Mode:

Pn825	PR6 Control Word H		O	Address: 0x0825

Default: 0x0000	Range: 0x0000 ~ 0x7777	Unit: N/A	Control Mode:

Pn826	PR6 information	O	Address: 0x0826 ★
Default: 0	Range:-231 ~ 231-1	Unit: N/A	Control Mode:

Pn828	PR7 Control Word L	O	Address: 0x0828
Default: 0x0000	Range: 0x0000 ~ 0x0121	Unit: N/A	Control Mode:

Pn829	PR7 Control Word H	O	Address: 0x0829
Default: 0x0000	Range: 0x0000 ~ 0x7777	Unit: N/A	Control Mode:

Pn82A	PR7 information	O	Address: 0x082 A ★
Default: 0	Range:-231 ~ 231-1	Unit: N/A	Control Mode:

Pn82C	PR8 Control Word L	O	Address: 0x082C
Default: 0x0000	Range: 0x0000 ~ 0x0121	Unit: N/A	Control Mode:

Pn82D	PR8 Control Word H	O	Address: 0x082D
Default: 0x0000	Range: 0x0000 ~ 0x7777	Unit: N/A	Control Mode:

Pn82E	PR8 information	O	Address: 0x082E ★
Default: 0	Range:-231 ~ 231-1	Unit: N/A	Control Mode:

Pn830	PR9 Control Word L	O	Address: 0x0830
Default: 0x0000	Range: 0x0000 ~ 0x0121	Unit: N/A	Control Mode:

Pn831	PR9 Control Word H	O	Address: 0x0831
Default: 0x0000	Range: 0x0000 ~ 0x7777	Unit: N/A	Control Mode:

Pn832	PR9 information	O	Address: 0x0832 ★
Default: 0	Range:-231 ~ 231-1	Unit: N/A	Control Mode:

Pn834	PR10 Control Word L		○	Address: 0x0834
Default: 0x0000	Range: 0x0000 ~ 0x0121	Unit: N/A		Control Mode:

Pn835	PR10 Control Word H		○	Address: 0x0835
Default: 0x0000	Range: 0x0000 ~ 0x7777	Unit: N/A		Control Mode:

Pn836	PR10 information		○	Address: 0x0836 ★
Default: 0	Range:-231 ~ 231-1	Unit: N/A		Control Mode:

Pn838	PR11 Control Word L		○	Address: 0x0838
Default: 0x0000	Range: 0x0000 ~ 0x0121	Unit: N/A		Control Mode:

Pn839	PR11 Control Word H		○	Address: 0x0839
Default: 0x0000	Range: 0x0000 ~ 0x7777	Unit: N/A		Control Mode:

Pn83A	PR11 information		○	Address: 0x083A ★
Default: 0	Range:-231 ~ 231-1	Unit: N/A		Control Mode:

Pn83C	PR12 Control Word L		○	Address: 0x083C
Default: 0x0000	Range: 0x0000 ~ 0x0121	Unit: N/A		Control Mode:

Pn83D	PR12 Control Word H		○	Address: 0x083D
Default: 0x0000	Range: 0x0000 ~ 0x7777	Unit: N/A		Control Mode:

Pn83E	PR12 information		○	Address: 0x083E ★
Default: 0	Range:-231 ~ 231-1	Unit: N/A		Control Mode:

Pn840	PR13 Control Word L		○	Address: 0x0840
Default: 0x0000	Range: 0x0000 ~ 0x0121	Unit: N/A		Control Mode:

Pn841	PR13 Control Word H		○	Address: 0x0841

Default: 0x0000	Range: 0x0000 ~ 0x7777	Unit: N/A	Control Mode:

Pn842	PR13 information		O	Address: 0x0842 ★
Default: 0	Range:-231 ~ 231-1	Unit: N/A		Control Mode:

Pn844	PR14 Control Word L		O	Address: 0x0844
Default: 0x0000	Range: 0x0000 ~ 0x0121	Unit: N/A		Control Mode:

Pn845	PR14 Control Word H		O	Address: 0x0845
Default: 0x0000	Range: 0x0000 ~ 0x7777	Unit: N/A		Control Mode:

Pn846	PR14 information		O	Address: 0x0846 ★
Default: 0	Range:-231 ~ 231-1	Unit: N/A		Control Mode:

Pn848	PR15 Control Word L		O	Address: 0x0848
Default: 0x0000	Range: 0x0000 ~ 0x0121	Unit: N/A		Control Mode:

Pn849	PR15 Control Word H		O	Address: 0x0849
Default: 0x0000	Range: 0x0000 ~ 0x7777	Unit: N/A		Control Mode:

Pn890	Acceleration/deceleration time (No. # 0)		O	Address: 0x0890
Default: 30	Range: 0 ~ 65500	Unit: ms		Control Mode:
Description	PR mode acceleration and deceleration time indicates the acceleration time from 0rpm to 3000rpm, the same below.			

Pn891	Acceleration/deceleration time (No. # 1)		O	Address: 0x0891
Default: 50	Range: 0 ~ 65500	Unit: ms		Control Mode:

Pn892	Acceleration/deceleration time (No. # 2)		O	Address: 0x0892
Default: 200	Range: 0 ~ 65500	Unit: ms		Control Mode:

Pn893	Acceleration/deceleration time (No. # 3)		O	Address: 0x0893

Default: 300	Range: 0 ~ 65500	Unit: ms	Control Mode:

Pn894	**Acceleration/deceleration time (No. # 4)**	O	Address: 0x0894
Default: 500	Range: 0 ~ 65500	Unit: ms	Control Mode:

Pn895	**Acceleration/deceleration time (No. # 5)**	O	Address: 0x0895
Default: 600	Range: 0 ~ 65500	Unit: ms	Control Mode:

Pn896	**Acceleration/deceleration time (No. # 6)**	O	Address: 0x0896
Default: 800	Range: 0 ~ 65500	Unit: ms	Control Mode:

Pn897	**Acceleration/deceleration time (No. # 7)**	O	Address: 0x0897
Default: 900	Range: 0 ~ 65500	Unit: ms	Control Mode:

Pn898	**Delay time after position arrival (No. # 0)**	O	Address: 0x0898
Default: 0	Range: 0-60000	Unit: ms	Control Mode:
Description	**The delay time after PR mode completion, below.**		

Pn899	**Delay time after position arrival (No. # 1)**	O	Address: 0x0899
Default: 100	Range: 0-60000	Unit: ms	Control Mode:

Pn89A	**Delay time after position arriving (No. # 2)**	O	Address: 0x089A
Default: 200	Range: 0-60000	Unit: ms	Control Mode:

Pn89B	**Delay time after position arrival (No. # 3)**	O	Address: 0x089B
Default: 400	Range: 0-60000	Unit: ms	Control Mode:

Pn89C	**Delay time after position arrival (No. # 4)**	O	Address: 0x089C
Default: 500	Range: 0-60000	Unit: ms	Control Mode:

Pn89D	**Delay time after position arrival (No. # 5)**	O	Address: 0x089D

Default: 800	Range: 0-60000	Unit: ms	Control Mode:

Pn89E	**Delay time after position arrival (No. # 6)**	○	Address: 0x089E
Default: 1000	Range: 0-60000	Unit: ms	Control Mode:

Pn89F	**Delay time after position arriving (No. # 7)**	○	Address: 0x089F
Default: 1500	Range: 0-60000	Unit: ms	Control Mode:

Pn8A0	**Internal target speed (No. # 0)**		○	Address: 0x08A0
Default: 20.0	Range: 0.0 ~ 6000.0	Unit: rpm		Control Mode:
Description	PR mode target speed setting, below.			

Pn8A2	**Internal target speed (No. # 2)**	○	Address: 0x08A2
Default: 100.0	Range: 0.0 ~ 6000.0	Unit: rpm	Control Mode:

Pn8A3	**Internal target speed (No. # 3)**	○	Address: 0x08A3
Default: 200.0	Range: 0.0 ~ 6000.0	Unit: rpm	Control Mode:

Pn8A4	**Internal target speed (No. # 4)**	○	Address: 0x08A4
Default: 300.0	Range: 0.0 ~ 6000.0	Unit: rpm	Control Mode:

Pn8A5	**Internal target speed (No. # 5)**	○	Address: 0x08A5
Default: 500.0	Range: 0.0 ~ 6000.0	Unit: rpm	Control Mode:

Pn8A6	**Internal target speed (No. # 6)**	○	Address: 0x08A6
Default: 600.0	Range: 0.0 ~ 6000.0	Unit: rpm	Control Mode:

Pn8A7	**Internal target speed (No. # 7)**	○	Address: 0x08A7
Default: 800.0	Range: 0.0 ~ 6000.0	Unit: rpm	Control Mode:

4.3. 10 Driver Parameters (PnExx)

PnE00 ★	Servo drive model selection		■	Address: 0x0E00
Default: by model	Range: 0x0000 ~ 0xFFFF	Unit: N/A		Control Mode:

Description	Set the servo drive model, and re-power-up is required to take effect after the setting is completed.		
	Setting	Servo drive coding	Remark
	0x0001	RB300-110A	Rated current 11A, main circuit power supply
	0x0002	RB300-210A	Rated current 21A, main circuit power supply

PnE01 ★	Servo drive power		■	Address: 0x0E01
Default: by model	Range: 0 ~ 65535	Unit: W		Control Mode:

nE02 ★	Driver voltage rating		■	Address: 0x0E02
Default: by model	Range: 0x0000 ~ 0x0004	Unit: N/A		Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W Z Y X

Driver voltage level	
0	AC 100V (reserved)
1	AC 220V
2	AC 380V
3	DC 24V
4	DC 48V

Preserve parameters (do not change)

Preserve parameters (do not change)

Preserve parameters (do not change)

PnE03 ★	Servo driver current rating (peak)		■	Address: 0x0E03
Default: by model	Range: 0.0 ~ 6553.5	Unit: A		Control Mode:

PnE04 ★	Servo drive rated current (peak)		■	Address: 0x0E04
Default: by model	Range: 0.0 ~ 6553.5	Unit: A		Control Mode:

PnE05 ★	Drive module overheat detection threshold		■	Address: 0x0E05
Default: by model	Range: 60.0 ~ 100.0	Unit: °C		Control Mode:
Description	Used to set the threshold for the drive module temperature detection alarm, when the temperature value of the module is great than this threshold, the drive will send out a module overheat fault.			

PnE06 ★	Drive overload current		■	Address: 0x0E06
Default: by model	Range: 0x0000 ~ 0xFFFF	Unit: N/A		Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W	Z	Y	X

Drive overload base current

00	
•••	Range: 0 ~ 255, unit: 1%
FF	

Drive overload intermediate current

00	
•••	Range: 0 ~ 255, unit: 10%
FF	

PnE07 ★	Drive overload time		■	Address: 0x0E07
Default: by model	Range: 0x0000 ~ 0xFFFF	Unit: N/A		Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W	Z	Y	X

Drive overload intermediate time

00	
•••	Setting range 0 to 255, unit 1s.
FF	

Drive overload detection maximum time

00	
•••	Setting range 0 to 255, unit 1s.
FF	

Description	Used to set the drive's overload protection time.

PnE08 ★	**Driver overload time fine-tuning**		■	Address: 0x0E08
Default: by model	**Range: 0x0000 ~ 0xFFFF**	Unit: N/A		Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W	Z	Y	X

Drive overload intermediate time fine tuning
00
•••
FF

Setting range 0 ~ 255, unit: 1%

Drive overload detection maximum time fine adjustment
00
•••
FF

Setting range 0 ~ 255, unit: 1%

PnE09 ★	**Motor overload time fine-tuning**		■	Address: 0x0E09
Default: by model	**Range: 0x0000 ~ 0xFFFF**	Unit: N/A		Control Mode:

1

3rd bit 2nd bit 1st bit 0th bit

| W | Z | Y | X |

Motor overload detection intermediate time fine adjustment	
00	
•••	Setting range 0 ~ 255, unit: 1%
FF	

Motor overload max.time fine-tuning	
00	
•••	Setting range 0 ~ 255, unit: 1%
FF	

PnE0A ★	Low 8 bits (L): reserved parameters High 8 bits (H): motor overspeed point threshold fine-tuning	■	Address: 0x0E0A
Default: by model	Range: 0x0000 ~ 0xFFFF	Unit: N/A	Control Mode:

3rd bit 2nd bit 1st bit 0th bit

| W | Z | Y | X |

Reserved parameters (Not ready for use)	
00	
•••	Reserved parameters.
FF	

Motor overspeed point threshold adjustment	
00	
•••	The setting range is 0 to 255, and the overspeed point fine-tuning is calculated as follows.
FF	

PnE0B ★	Built-in regenerative braking resistance	■	Address: 0x0E0B
Default: by model	Range: 0 ~ 65535	Unit: Ω	Control Mode:

PnE0C ★	Built-in regenerative resistance capacity	■	Address: 0x0E0C
Default: by model	Range: 0.0 ~ 6553.5	Unit:%	Control Mode:

PnE10 ★	P-N voltage detection level (max. voltage that can be detected by the hardware)		■	Address: 0x0E10
Default: by model	Range: 0-1000	Unit: V		Control Mode:
Description	Set the calibration value for bus voltage detection, which is adjusted based on the hardware section. For DC48V models, set to 123V. **Note: Do not change the parameters without the factory's permission, or it may cause irreversible damage to the machine!**			

PnE11 ★	P-N voltage detection low-pass filtering time constant	■	Address: 0x0E11
Default: 0	Range: 0 ~ 10000	Unit: us	Control Mode:

PnE12 ★	P-N voltage detection zeroing	○	Address: 0x0E12
Default: factory setting	Range:-50 ~ 50	Unit: V	Control Mode:

PnE13 ★	P-N voltage detection gain fine-tuning	○	Address: 0x0E13
Default: 0	Range:-127 ~ 127	Unit: N/A	Control Mode:
Description	**Set the linearity of busbar voltage detection for relevant adjustments.** $$U_{dc} \times \frac{256+PnE13}{256}$$ **Note: Do not change the parameters without the factory's permission, or it may cause irreversible damage to the machine!**		

PnE14 ★	Main circuit detection filter selector switch	■	Address: 0x0E14
Default: 0x0055	Range: 0x0000 ~ 0x7777	Unit: N/A	Control Mode:

3rd bit 2nd bit 1st bit 0th bit

| W | Z | Y | X |

Main circuit voltage detection abnormality detection filter

0	
•••	Range: 0 ~ 7, unit: 250us
7	

Overvoltage alarm filter

0	
•••	Range: 0 ~ 7, unit: 250us
7	

Regenerative braking start filter time

0	
•••	Range: 0 ~ 7, unit: 250us
7	

Regenerative braking end filter time

0	
•••	Range: 0 ~ 7, unit: 250us
7	

PnE15 ★	Alarm blocking switch 1		■	Address: 0x0E15
Default: 0x0000	Range: 0x0000 ~ 0xFFFF		Unit: N/A	Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W   Z   Y   X

System switch A	
Bit0	Reserved
Bit1	Motor and drive capacity ratio check switch within 4 times (0:
Bit2	Motor and drive overload monitoring (0: monitoring ON; 1:
Bit3	Serial encoder over-temperature monitoring Er.860 (0: monitoring

System switch	
Bit	Drive-supported operation mode detection switch [EtherCAT] (0: OFF; 1: ON)
Bit5	FPGA backup operation detection switch (0: OFF; 1: ON)
Bit6	Non-standard CANopen life protection auto switch (0: OFF; 1:
Bit3	Reserved

Reserved parameters (Not ready for use)	
Bit7	FPGA backup operation detection switch (0: OFF; 1: ON)
Bit8	MicroChip ESC manual selection (0: 9253; 1: 9252)
Bit9	MicroChip ESC selection method (0: auto; 1: manual)
Bit10	Reserved

Reserved parameters (Not ready for use)

PnE17 ★	Single tube fail-safe time & bootstrap charging time		■	Address: 0x0E17
Default: by model	Range: 0x0000 ~ 0xFFFF		Unit: N/A	Control Mode:

3rd bit 2nd bit 1st bit 0th bit

| W | Z | Y | X |

Rated speed

Range: 0-255
Unit: 1ms
Incremental encoder

Max. speed

Range: 0-255
Unit: 1ms
Incremental encoder

PnE1C ★	System switch 2		■	Address: 0x0E1C
Default: 0x0003	Range: 0x0000 ~ 0xFFFF	Unit: N/A	Control Mode:	

3rd bit 2nd bit 1st bit 0th bit

| W | Z | Y | X |

System switch 2A	
Bit0	Regenerative braking protection switch (0: OFF; 1: ON)
Bit1	Phase compensation switch (0: ON; 1: OFF)
Bit2	DB brake protection switch (0: ON; 1: OFF)
Bit3	ESC manufacturer selection (0: MicroChip; 1: BeckOff)

System switch 2B	
Bit4	Incremental encoder AB signal (Er.C91) error detection switch (0: ON; 1: OFF)
Bit5	Incremental encoder Z signal (Er.C92) error detection switch (0:
Bit6	FPGA to ARM watchdog monitoring (Error) detection switch (0: ON; 1: OFF)
Bit7	EtherCat model auto-detect switch (0: ON; 1: OFF)

System switch 2C	
Bit8	ACR working mode (0: mode 1; 1: mode 2)
Bit9	Current feedback mode selection (0: mode 0; 1: mode 1)
Bit100	Silent mode switch (0: OFF; 1: ON)
Bit11	Single-tube bootstrap charging manual switch (0: ON; 1: OFF)

System switch 2D	
Bit12	Single-tube bootstrap mode switch (0: ON; 1: OFF)
Bit13	Current sampling chip manual (0: C796/NSI1306; 1: AM1305)
Bit14	Power level detection switch (0: ON; 1: OFF)
Bit15	Single-tube model current sampling chip auto-recognition switch

PnE1D ☆	System switch 3	■	Address: 0x0E1D
Default: 0000	Range: 0x0000 ~ 0x0001	Unit: N/A	Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W Z Y X

System switch 3A	
0	Function code parameter allows writing
1	Function code parameter prohibits writing

Reserved parameters (Not ready for use)

Reserved parameters (Not ready for use)

Reserved parameters (Not ready for use)

PnE1E ☆	Serial communication considerative failure times allowed	■	Address: 0x0E1E
Default: by model	Range: 0x0000 ~ 0x00FF	Unit: N/A	Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W Z Y X

Allowable number of successive serial communication failures	
00	
•••	Setting range 0 ~ 255, unit: times
FF	

Reserved parameters (Not ready for use)

Description	Set the drive to generate Er.C90 if the number of considerable communication failures with the serial encoder is greater than the set value.

PnE1F ☆	Silent mode filter time constant	■	Address: 0x0E1F
Default: by model	Range: 1 ~ 65535	Unit: us	Control Mode:

PnE20 ☆	Current loop gain (D-axis	■	Address: 0x0E20
Default: by model	Range: 100 ~ 10000	Unit: Hz	Control Mode:

PnE21 ★	Current loop gain (Q-axis)		■	Address: 0x0E21
Default: by model	Range: 100 ~ 10000	Unit: Hz		Control Mode:
PnE22 ★	Current loop integral time constant (D-axis)		■	Address: 0x0E22
Default: by model	Range: 0 ~ 65535	Unit: us		Control Mode:

PnE23 ★	Current loop integral time constant (Q-axis)		■	Address: 0x0E23
Default: by model	Range: 0 ~ 65535	Unit: us		Control Mode:

PnE24 ★	Current loop integral limit (D-axis)		■	Address: 0x0E24
Default: 10430	Range: 0 ~ 65535	Unit: N/A		Control Mode:

PnE25 ★	Current loop integration limit value (Q axis)		■	Address: 0x0E25
Default: 10430	Range: 0 ~ 65535	Unit: N/A		Control Mode:

PnE28 ★	Current detection gain 1		■	Address: 0x0E28
Default: by model	Range: 0 ~ 16384	Unit: N/A		Control Mode:
Description	Set the hardware current detection factor of the drive. $$PnE28 = \frac{电流检测电阻(m\Omega) \times 驱动器最大电流\ PnE15(峰值，0.1A)}{模拟量数字转换芯片满量程电压(320mV)} \times 8192$$ Note: Do not change the parameters without the factory's permission, or it may cause irreversible damage to the machine!			

PnE29 ★	Voltage compensation gain		■	Address: 0x0E29
Default: 115	Range: 0-300	Unit:%		Control Mode:
Description	Set voltage compensation gain.			

PnE2A ★	Carrier Frequency		■	Address: 0x0E2A
Default: by model	Range: 2000 ~ 16000	Unit: HZ		Control Mode:
Description	Set the carrier wave (PWM) frequency of the servo drive			

PnE2B ★	Dead time compensation gain dead time		■	Address: 0x0E2B
Default: by model	Range: 0x0000 ~ 0xFFFF	Unit: N/A		Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W	Z	Y	X

Dead time	
00	
•••	Range: 1.6 ~ 6.0, unit: 0.1 us
FF	

Deadband Compensation Gain	
00	
•••	Range: 0 ~ 100, unit: 1%
FF	

PnE2C ★	Current predictive gain		■	Address: 0x0E2C
Default: by model	Range: 0.00 ~ 100.00	Unit: N/A		Control Mode:

PnE2D ★	Current detection gain 2		■	Address: 0x0E2D
Default: by model	Range: 0 ~ 16384	Unit: N/A		Control Mode:

PnE30 ★	Max. drive overvoltage allowed		■	Address: 0x0E30
Default: by model	Range: 0-1000	Unit: V		Control Mode:
Description	Set the max. overvoltage of the servo drive allowed			

PnE31 ★	Set the minimum value allowed for servo drive overvoltage		■	Address: 0x0E31
Default: by model	Range: 0-1000	Unit: V		Control Mode:
Description	Set the minimum allowable value of servo drive overvoltage			

PnE32	Drive overcurrent protection filter tim		■	Address: 0x0E32
Default: by model	Range: 0x0000 ~ 0xFFFF	Unit: NA		Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W	Z	Y	X

Drive overcurrent protection filter time	
00	
•••	Range: 0 ~ 255, unit: 1.6 us
FF	

External hardware overcurrent signal filtering time	
00	
•••	Range: 0 ~ 255, unit: 1us
FF	

PnE33 ★	Driver overcurrent protection threshold		■	Address: 0x0E33
Default: by model	Range: 0.0 ~ 6553.5	Unit: A		Control Mode:
Description	Set the hardware overcurrent threshold of the drive, and the value is different for different models, do not change the parameter on your own without the manufacturer's permission, or it may cause irreversible damage to the machine!			

PnE35 ★	Allowable upper limit of drive PWM frequency		■	Address: 0x0E34
Default: by model	Range: 3000 ~ 16000	Unit: Hz		Control Mode:
Description	Set the upper limit frequency of the servo driver.			

PnEA8 ★	2nd speed feedback filter time constant		■	Address: 0x0EA8
Default: by model	Range: 0.02 ~ 655.35	Unit: ms		Control Mode:

PnF1B☆	Motor pole start position value		■	Address: 0x0F1B
PnF1B ☆	Motor pole start position value		■	Address: 0x0F1B
Default: by model	Range: -360~360	Unit: deg		Control Mode:□,P
Default: by model	Range:-360 ~ 360	Unit: deg		□,S□,T
				Control Mode:

4.3. 11 Motor parameters (PnFxx)

| PnF00 ☆ | Encoder Type & Motor Voltage Level Code | | ■ | Address: 0x0F00 |
| Default: by model | Range: 0x0000 ~ 0x22FF | Unit: N/A | }}}Control Mode: |

3rd bit 2nd bit 1st bit 0th bit

| W | Z | Y | X |

Reserved parameters (Not ready for use)	

Motor voltage level code	
0	Reserved
3	DC24V
4	DC48V

Encoder type	
1	Multi-turn absolute encoder
2	Incremental or single-turn absolution encoder

| PnF02 ☆ | Motor Power | | ■ | Address: 0x0F02 |
| Default: by model | Range: 0 ~ 65535 | Unit: W | }}}Control Mode: |

| PnF03 ☆ | Encoder bits (resolution) | | ■ | Address: 0x0F03 |
| Default: by model | Range: 0x0000 ~ 0x00FF | Unit: N/A | }}}Control Mode: |

3rd bit 2nd bit 1st bit 0th bit

| W | Z | Y | X |

Encoder bits
0x01: 2500 Line
0X11: 17 Bit
0X17: 23 Bit0X18: 24 Bit

Reserve parameters (do not use)

PnF05 ☆	Max. speed & rated speed		■	Address: 0x0F05
Default: by model	Range: 0x0000 ~ 0xFFFF	Unit: N/A		}}}Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W Z Y X

Rated speed
Range: 0-255
Unit: 100rpm
Incremental encoder

Max. speed
Range: 0-255
Unit: 100rpm
Incremental encoder

PnF06	Motor poles & overspeed detection threshol		■	Address: 0x0F06
Default: by model	Range: 0x0000 ~ 0xFF32	Unit: N/A		}}}Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W Z Y X

Overspeed detection threshold
Range: 0x00 ~ 0x32
Unit:%
Incremental encoder

Number of motor poles	
06	6-pole motor (3 pairs)
08	8-pole motor (4 pairs)
0A	10-pole motor (5 pairs)

PnF07 ☆	Rated torque		■	Address: 0x0F07
Default: by model	Range: 0.00 ~ 655.35	Unit: Nm		}}}Control Mode:

PnF08 ☆	Maximum moment		■	Address: 0x0F08
Default: by model	Range: 0 ~ 65535	Unit:%		}}}Control Mode:

PnF09 ☆	Motor rated current (peak)		■	Address: 0x0F09
Default: by model	Range: 0.0 ~ 6553.5	Unit: A		}}}Control Mode:

PnF0A ☆	Max. instantaneous motor current (peak)		■	Address: 0x0F0A
Default: by model	Range: 0.0 ~ 6553.5	Unit: A		}}}Control Mode:

PnF0B ☆	Reverse potential (RMS)		■	Address: 0x0F0B
Default: by model	Range: 0.0 ~ 6553.5	Unit: mV/rpm		}}}Control Mode:

PnF0C ☆	Motor rotor inertia		■	Address: 0x0F0C
Default: by model	Range: 0 ~ 65535	Unit: 10-6kgm2		}}}Control Mode:

PF0D ☆	Motor stator resistance (line resistance R)		■	Address: 0x0F0D
Default: by model	Range: 0.000 ~ 65.535	Unit: Ω		}}}Control Mode:

PF0E ☆	Motor induction (line induction)		■	Address: 0x0F0E
Default: by model	Range: 0.00 ~ 655.35	Unit: mH		}}}Control Mode:

PnF0F ☆	Motor overload detection base current		■	Address: 0x0F0F
Default: by model	Range: 0 ~ 65535	Unit:%		}}}Control Mode:

PnF10 ☆	Motor overload intermediate current		■	Address: 0x0F10
Default: by model	Range: 0 ~ 65535	Unit:%		}}}Control Mode:

PnF11 ☆	Motor overload intermediate current duration		■	Address: 0x0F11
Default: by model	Range: 0 ~ 65535	Unit: 10S		}}}Control Mode:

PnF12 ☆	Max. motor overload current		■	Address: 0x0F12
Default: by model	Range: 0 ~ 65535	Unit:%		}}}Control Mode:

PnF13 ☆	Max. motor overload current duration		■	Address: 0x0F13
Default: by model	Range: 0 ~ 65535	Unit: S		}}}Control Mode:
PnF15				
Default: 0000	Range: 0x0000 ~ 0xFFFF	Unit: N/A		}}}Control Mode:

3rd bit 2nd bit 1st bit 0th bit

| W | Z | Y | X |

Encoder manufacturer	
0	Regardless of manufacturer
1	NK
2	DMC
3	RY

Rotary motor type	
0	Surface mounted permanent magnet (SPM)
1	Interior permanent magnet (IPM)

Reserved parameters (Not ready for use)
Reserved parameters (Not ready for use)

PF16 ☆	Convex-pole motor induction Lq		■	Address: 0x0F16
Default: by model	Range: 0.00 ~ 655.35	Unit: mH		}}}Control Mode:

PF17 ☆	Convex-pole motor induction Ld		■	Address: 0x0F17
Default: by model	Range: 0.00 ~ 655.35	Unit: mH		}}}Control Mode:

PnF18	Rotor inertia index unit rated torque index unit		■	Address: 0x0F18
Default: by model	Range: 0x0000 ~ 0xFFFF	Unit: N/A		}}}Control Mode:

3rd bit 2nd bit 1st bit 0th bit

| W | Z | Y | X |

Rated torque index unit	
n	Range:-128 ~ 127, 10n

Rotor inertia index unit	
n	Range:-128 ~ 127, 10n

PnF19 ☆	Speed index unit Power index unit		■	Address: 0x0F19
Default: by model	Range: 0x0000 ~ 0xFFFF	Unit: N/A		}}}Control Mode:

3rd bit 2nd bit 1st bit 0th bit

W Z Y X

Power index unit	
n	10n

Speed index unit	
n	10n
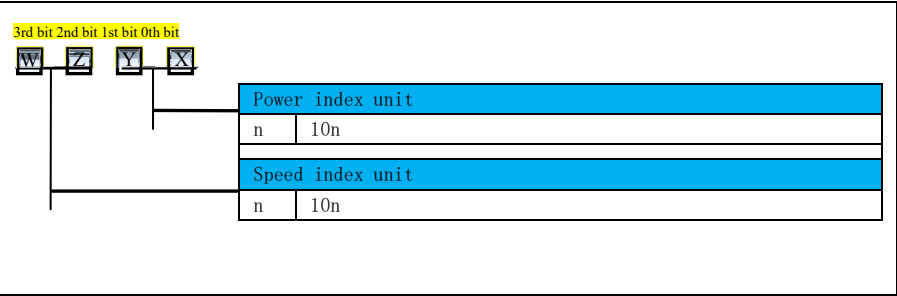
PnF1E☆	Associated flag bit (FLAG)	■	Address: 0x0110
PnF1E ☆	Associated FLAG bit (FLAG)	■	Address: 0x0110
Default: by model	Range: 0x0000~0xFFFF	Unit: N/A	Control Mode:□,P
Default: by model	Range: 0x0000 ~ 0xFFFF	Unit: N/A	□,S□,T
			Control Mode:

第 3 位 第 2 位 第 1 位 第 0 位

W Z Y X

Flag position switch1	
Flag position switch1	
Bit0	Reserved
Bit0	Reserved
Bit1	Reserved
Bit1	Reserved
Bit2	Speed feedback 2nd filter on(0:OFF;1: ON)
Bit2	Speed feedback 2nd filter ON (0: OFF; 1: ON)
Bit3	Reserved
Bit3	Reserved

标志位开关 2	
Flag Switch 2	
Bit4	Reserved
Bit5	Reserved
Bit6	Reserved
Bit7	Reserved

Preserve parameters (do not change)

Preserve parameters (do not change)

4.4 Overview of Un parameters

The monitor display function starts with Un for displaying the status of input and output signals and related information of the servo drive.

Un No.	Display description	Unit	Data Type ①	Address
Un000	Motor feedback speed	rpm	int16	0xE000
Un001	Speed command	rpm	int16	0xE001
Un002	Internal torque command	%	int16	0xE002
Un004	Rotary angle (angle from the original of the magnetic poles [electrical angle])	deg	uint16	0xE004
Un005	Input command pulse speed (valid only for position control)	rpm	int16	0xE005
Un006	Input command pulse counter	Command unit	int32	0xE006
Un007	Motor encoder feedback pulse counter1	Command unit	int32	0xE007
Un008	Motor encoder feedback pulse counter2	Encoder unit	int32	0xE008
Un009	Position deviation (valid only for position control)	User unit	int32	0xE009
Un00A	Accumulated load ratio (100% of rated torque, valid for 10s)	%	uint16	0xE00A
Un00B	Regenerative load factor (display of regenerative power consumption for a 10s cycle with the value at 100% of the regenerative power that can be handled)	%	uint16	0xE00B
Un00D	Effective gain monitoring (1: first gain; 2: second gain)	-	uint16	0xE00D
Un00E	Total power-up duration of the drive ②	0.1 s	uint32	0xE00E
Un00F	Port input signal monitoring	-	uint16	0xE00F
Un010	Absolute Encoder Single Turn	Encoder unit	uint32	0xE010
Un011	Absolute encoder multi-turn value	rev	int16	0xE011
Un017	Number of encoder Z signal output	-	int32	0xE017
Un018	Number of unidirectional encoder Z signal output	-	int32	0xE018

Un02A	Internal control state1	-	uint16	0xE02A
Un02B	Internal control state (input terminal) 2	-	uint16	0xE02B
Un02C	Internal control state (input terminal) 3	-	uint16	0xE02C
Un02D	Internal control state (input terminal) 4	-	uint16	0xE02D
Un02E	CAN status		uint16	0xE02E
Un02F	CAN command word		uint16	0xE02F
Un030	Servo operation status	-	uint16	0xE030
Un031	CANopen operation status	-	uint16	0xE031
Un035	MCU master version	-	uint16	0xE035
Un036	FPGA version (master version)	-	uint16	0xE036
Un037	MCU secondary version	-	uint16	0xE037
Un038	FPGA secondary version	-	uint16	0xE038
Un087	Serial encoder communication error counter	times	uint16	0xE087
Un089	Module temperature	0.1℃	uint16	0xE089
Un100	Input signal monitor	-	uint16	0xE100
Un101	Output signal monitor	-	uint16	0xE101
Un10	Position tuning tim	0.1 m	uint1	0xE10
Un106	Position overshoot	Command unit	uint16	0xE106
Un10B	KTY temperature sensor detection	1℃	uint16	0xE10B
Un10D	Internal chip temperature (ambiente temperature)	0.1℃	uint16	0xE10D
Un140	Bus Voltage	1V	uint16	0xE140
Un141	Current detection value (RMS)	0.1 A	uint16	0xE141
Un142	Accumulated load ratio (100% of rated torque, valid for 2ms)	0.1%	uint16	0xE142
Un143	Regenerative load accumulation	0.1%	uint16	0xE143
Un144	DB load accumulation	%	uint16	0xE144
Un203	Function code number for abnormal parameters setting (Er.040)	-	uint16	0xE203
Un212	System time monitoring A (Avg)	0.1 us	uint16	0xE212
Un213	System time monitoring A (Max)	0.1 us	uint16	0xE213

Un214	System time monitoring B (Avg)	0.1 us	uint16	0xE214
Un215	System time monitoring B (Max)	0.1 us	uint16	0xE215
Un216	System time monitoring C (Avg)	0.1 us	uint16	0xE216
Un217	System time monitoring C (Max)	0.1 us	uint16	0xE217
Un218	System time monitoring R (Avg)	0.01 ms	uint16	0xE218
Un219	System time monitoring R (Max)	0.01 ms	uint16	0xE219
Un511	U phase current zero value	-	int16	0xE511
Un512	V phase current zero value	-	int16	0xE512
Un513	Hardware version code	-	int16	0xE513
Un603	Absolute encoder pulse [low 32 bits]	Encoder unit	uint32	0xE603
Un605	Absolute encoder pulse [high 32 bits]	Encoder unit	uint32	0xE605
Un60	Mechanical absolute position [low 32 bits]	Encoder unit	uint32	0xE607
Un609	Mechanical absolute position [high 32 bits]	Encoder unit	uint32	0xE609
Un800	Current error or alarm code	-	uint16	0xE800
Un801	Time stamp at alarm occurence	-	uint16	0xE801
Un802	Timestamp when alarm occurred	100ms	uint32	0xE802
Un803	Actual motor speed at alarm occurence	rpm	int16	0xE803
Un804	Speed command at alarm occurence	rpm	int16	0xE804
Un805	Input command pulse speed at alarm occurrence	%	int16	0xE805
Un806	Deviation counter (positional deviation) at alarm occurence	rpm	int16	0xE806
Un807	Deviation counter (position deviation amount) when alarm occurs	pulse	int32	0xE807
Un808	Main circuit bus voltage at alarm occurence	V	uint16	0xE808
Un809	Current feedback RMS value at alarm occurence	A	int16	0xE809
Un80A	Accumulated load factor [2ms] at alarm occurence	%	uint16	0xE80A
Un80B	Regenerative load factor at alarm occurrence [2ms]	%	uint16	0xE80B
Un80C	DB resistor power consumption at alarm occurrence [2ms]	%	uint16	0xE80C

Un80D	Max. cumulative load rate at alarm occurence	%	uint16	0xE80D
Un80E	Moment of inertia ratio at alarm occurence	%	uint16	0xE80E
Un80F	Serial encoder communication abnormality count at alarm occurence	-	uint16	0xE80F
Un810	Internal input signal monitoring at alarm occurence	-	uint32	0xE810
Un814	Internal input signal monitoring when alarm occurs	-	uint32	0xE814
Un818	Internal output signal monitoring at alarm occurence	-	uint32	0xE818
Un820	Alarm record 0	-	uint16	0xE820
Un821	Alarm record 1	-	uint16	0xE821
Un822	Alarm record 2	-	uint16	0xE822
Un823	Alarm record 3	-	uint16	0xE823
Un824	Alarm record 4	-	uint16	0xE824
Un825	Alarm record 5	-	uint16	0xE825
Un826	Alarm record 6	-	uint16	0xE826
Un827	Alarm record 7	-	uint16	0xE827
Un828	Alarm record 8	-	uint16	0xE828
Un829	Alarm record 9	-	uint16	0xE829
Un830	Alarm record0 occurrence time	0.1 s	uint32	0xE830
Un832	Alarm record 1 occurrence time	0.1 s	uint32	0xE832
Un834	Alarm record 2 occurrence time	0.1 s	uint32	0xE834
Un836	Alarm record 3 occurrence time	0.1 s	uint32	0xE836
Un838	Alarm record 4 occurrence time	0.1 s	uint32	0xE838
Un83A	Alarm record 5 occurrence time	0.1 s	uint32	0xE83A
Un83C	Alarm record 6 occurrence time	0.1 s	uint32	0xE83C
Un83E	Alarm record 7 occurrence time	0.1 s	uint32	0xE83E
Un840	Alarm record 8 occurrence time	0.1 s	uint32	0xE840
Un842	Alarm record 9 occurrence time	0.1 s	uint32	0xE842

Note:

The data type definitions marked ① in the above table are described as follows.

Type	Description
int16	Signed word (16 bits)
uint16	Unsigned word (16 bits)
int32	Signed double word (32-bit)
uint32	Unsigned double word (32-bit)

② The monitoring function code Un00E may actually have a deviation of ± 1 hour.

Chapter 5 Communication Instructions

5.1 Object Dictionary

5.1. 1 Description of object properties

Term expansion

"Index": Specifies the position of each object in the object dictionary, expressed in hexadecimal (h).
"Data Type": See Table 9-28 for details.

Table 9-28 Description of data types

Type	Numerical range	Data Length	DS301 Value
Int8	-128~127	1 byte	2
Uint8	0~255	1 byte	5
Int16	-32768~+32767	2 bytes	3
Uint16	0~65535	2 bytes	6
Int32	-2147483648~+2147483647	4 bytes	4
Uint32	0~4294967295	4 bytes	7
String	ASCII	-	9

"Read and write types": Please refer to Table 9-29 for details.

Table 9-29 Description of read and write types

Read and write types	Description
RW	Readable and writeable
WO	WO
RO	Read-only
CONST	Constant, read-only

"Object Structure": See Table 9-30 for details.

Table 9-30 Description of object structure

Object structure	Description	DS301 Value
VAR	Single simple numeric value containing the data types in Table 3-1	7
ARR	Data blocks with the same type	8
REC	Blocks with different types of data	9

5.1. 2 List of 100 0h group objects

Index	Sub-index	Name	Object	Data Type	R/W Type	Can you Map

			Structure			
1000h	-	Device type	VAR	Uint16	RO	N
1001h	-	Error Register	VAR	Uint8	RO	N
1003h	-	Predefined error field	ARR	Uint32	RO	N
	00h	Number of errors	VAR	Uint8	RW	N
	01 ~ 04h	Error field	VAR	Uint32	RO	N
1005h	-	Synchronization message COB-ID	VAR	Uint32	RW	N
1006h	-	Synchronous cycle period	VAR	Uint32	RW	N
100Ch	-	Node guard time	VAR	Uint16	RW	N
100D	-	Lifetime factor	VAR	Uint8	RW	N
1010h	-	Save parameters	ARR	Uint32	RW	N
	00h	Maximum supported sub-index	VAR	Uint8	RO	N
	02h	Save all object parameters	VAR	Uint16	RW	N
1011h	-	Restore default parameters	ARR	Uint32	RW	N
	00h	Maximum supported sub-index	VAR	Uint8	RO	N
	02h	Restore so default parameters	VAR	Uint16	RW	N
1014h	-	Emergency message COB-ID	VAR	Uint32	RW	N
1016h	-	Consumer heartbeat time	ARR	-	-	-
	00h	Supports maximum sub-index	VAR	Uint8	RO	N
	01h	Consumer heartbeat time	VAR	Uint32	RW	N
1017h	-	Producer heartbeat time	VAR	Uint16	RW	N
1018h	-	Device object description	REC	-	-	-
	00h	Supports maximum sub-index	VAR	Uint8	RO	N
	01h	Factory ID	VAR	Uint16	RO	N
	02h	Device Code	VAR	Uint16	RO	N
	03h	Device Revision Number	VAR	Uint16	RO	N
1029h	-	Error behavior object	ARR	-	-	-
	00h	Supports maximum sub-index	VAR	Uint8	RO	N
	01h	Communication error!	VAR	Uint8	RW	N
1200h	-	SDO server parameters	ARR	-	-	-
	00h	Supports maximum sub-index	VAR	Uint8	RO	N
	01h	Client-to-server COB-ID	VAR	Uint32	RW	N
	02h	Server-to-client COB-ID	VAR	Uint32	RW	N
1400h	-	RPDO1 mapping parameters	REC	-	-	-

	00h	RPDO1 maximum sub-index	VAR	Uint8	RO	N
	01h	COB-ID of RPDO1	VAR	Uint32	RW	N
	02h	Transmission Type of RPDO1	VAR	Uint-	RW	N
1401h	-	RPDO2 mapping parameters	REC		-	-
	00h	RPDO2 maximum sub-index	VAR	Uint8	RO	N
	01h	COB-ID of RPDO2	VAR	Uint32	RW	N
	02h	Transmission Types of RPDO2	VAR	Uint8	RW	N
1402h	-	RPDO3 mapping parameters	REC	-	-	-
	00h	RPDO3 maximum sub-index	VAR	Uint8	RO	N
	01h	COB-ID of RPDO3	VAR	Uint32	RW	N
	02h	Transmission Type of RPDO3	VAR	Uint8	RW	N
1403h	-	RPDO4 mapping parameters	REC	-	-	-
	00h	RPDO4 maximum sub-index	VAR	Uint8	RO	N
	01h	COB-ID of RPDO4	VAR	Uint32	RW	N
	02h	Transmission Type of RPDO4	VAR	Uint8	RW	N
1600h	-	RPDO1 mapping parameters	REC	-	-	-
	00h	Number of valid mappings for RPDO1	VAR	Uint8	RW	N
	01h	RPDO1 mapping object 1	VAR	Uint32	RW	N
	02h	RPDO1 mapping object 2	VAR	Uint32	RW	N
	03h	RPDO1 mapping object 3	VAR	Uint32	RW	N
	04h	RPDO1 mapping object 4	VAR	Uint32	RW	N
1601h	-	RPDO2 mapping parameters	REC	-	-	-
	00h	Number of effective mappings of RPDO2	VAR	Uint8	RW	N
	01h	RPDO2 mapping object 1	VAR	Uint32	RW	N
	02h	RPDO2 mapping object 2	VAR	Uint32	RW	N
	03h	RPDO2 mapping object 3	VAR	Uint32	RW	N
	04h	RPDO2 mapping object 4	VAR	Uint32	RW	N
1602h	-	RPDO3 mapping parameters	REC	-	-	-
	00h	Number of valid RPDO3 mappings	VAR	Uint8	RW	N
	01h	RPDO3 mapping object 1	VAR	Uint32	RW	N
	02h	RPDO3 mapping object 2	VAR	Uint32	RW	N
	03h	RPDO3 mapping object	VA	Uint3	RW	N
	04h	RPDO3 mapping object 4	VAR	Uint32	RW	N
1603h	-	RPDO4 mapping parameters	REC	-	-	-
	00h	Number of valid mappings for RPDO4	VAR	Uint8	RW	N

	01h	RPDO4 mapping object 1	VAR	Uint32	RW	N
	02h	RPDO4 mapping object 2	VAR	Uint32	RW	N
	03h	RPDO4 mapping object 3	VAR	Uint32	RW	N
	04h	RPDO4 mapping object 4	VAR	Uint32	RW	N
1800h	-	TPDO1 parameters	REC	-	-	-
	00h	TPDO1 maximum sub-index	VAR	Uint8	RO	N
	01h	COB-ID of TPDO1	VAR	Uint32	RW	N
	02h	TPDO1 Transmission Type	VAR	Uint8	RW	N
	03h	Forbidden time	VAR	Uint16	RW	N
	04h	NA	VAR	Uint8	RW	N
	05h	Event timing	VA	Uint1	R	N
1801h	-	TPDO2 parameters	REC	-	-	-
	00h	TPDO2 maximum sub-index	VAR	Uint8	RO	N
	01h	COB-ID of TPDO2	VAR	Uint32	RW	N
	02h	TPDO2 transmission type	VAR	Uint8	RW	N
	03h	Forbidden time	VAR	Uint16	RW	N
	04h	NA	VAR	Uint8	RW	N
	05h	Event Timer	VAR	Uint16	RW	N
1802h	-	TPDO3 parameters	REC	-	-	-
	00h	TPDO3 maximum sub-index	VAR	Uint8	RO	N
	01h	COB-ID of TPDO3	VAR	Uint32	RW	N
	02h	TPDO3 Transmission Type	VAR	Uint8	RW	N
	03h	Forbidden time	VAR	Uint16	RW	N
	04h	NA	VAR	Uint8	RW	N
	05h	Event Timer	VAR	Uint16	RW	N
1803h	-	TPDO4 parameters	REC	-	-	-
	00h	TPDO1 maximum sub-index	VAR	Uint8	RO	N
	01h	COB-ID of TPDO4	VAR	Uint32	RW	N
	02h	TPDO4 Transmission Type	VAR	Uint8	RW	N
	03h	Forbidden time	VAR	Uint16	RW	N
	04h	NA	VAR	Uint8	RW	N
	05h	Event Timer	VAR	Uint16	RW	N
1A00h	-	TPDO1 mapping parameters	REC	-	-	-
	00h	Number of valid mappings of TPDO1	VAR	Uint8	RW	N
	01h	TPDO1 mapping object 1	VAR	Uint32	RW	N
	02h	TPDO1 mapping object 2	VAR	Uint32	RW	N
	03h	TPDO1 mapping object	VA	Uint3	RW	N
	04h	TPDO1 mapping object 4	VAR	Uint32	RW	N
1A01h	-	TPDO4 mapping parameters	REC	-	-	-
	00h	TPDO2 effective mapping number	VAR	Uint8	RW	N
	01h	TPDO2 mapping object 1	VAR	Uint32	RW	N
	02h	TPDO2 mapping object	VA	Uint3	RW	N

	03h	TPDO2 mapping object 3	VAR	Uint32	RW	N
	04h	TPDO2 mapping object 4	VAR	Uint32	RW	N
	-	TPDO3 mapping parameters	REC	-	-	-
	00h	Number of valid TPDO3 mappings	VAR	Uint8	RW	N
1A02h	01h	TPDO3 mapping object 1	VAR	Uint32	RW	N
	02h	TPDO3 mapping object 2	VAR	Uint32	RW	N
	03h	TPDO3 mapping object 3	VAR	Uint32	RW	N
	04h	TPDO3 mapping object 4	VAR	Uint32	RW	N
	-	TPDO4 mapping parameters	REC	-	-	-
	00h	Number of valid mappings of TPDO4	VAR	Uint8	RW	N
1A03h	01h	TPDO4 mapping object 1	VAR	Uint32	RW	N
	02h	TPDO4 mapping object	VAR	Uint32	RW	N
	03h	TPDO4 mapping object 3	VAR	Uint32	RW	N
	04h	TPDO4 mapping object 4	VAR	Uint32	RW	N

5.1. 3 List of 2000 h group objects

The 2000h group object dictionary is a mapping of the internal parameters of the drive. Object dictionaries 2000h to 2006h correspond to parameter groups of Pn0xx to Pn6xx respectively; 2E00h ~ 2E08h correspond to the monitoring parameters of Un0xx ~ Un8xx. The specific function code of the driver corresponds to the sub-index of the 2000h group object dictionary. The specific correspondence rule is that the last two digits of the function code plus 1 is the corresponding sub-index of the object dictionary.

The following table shows the corresponding relationship between the 2000h object dictionary index number and the driver function code

Index	Sub-index	Description	Data Type	R/W Type	Can you Map
	-	Pn0xx basic control parameters	-	-	-
	00h	Supports maximum sub-index	Uint8	RO	N
	01h	Pn000: Function Select Base Switch 0	Uint16	RW	N
	02h	Pn001: Function Select Basic Switch 1	Uint16	RW	N
2000h	03h	Pn002: Motor rotation direction selection	Uint16	RW	N
	...	...	...	RW	N
	82h	Pn081: local communication format	Uint16	RW	N
	86h	Pn085: Whether communication write function code stores EEPRO	Uint1	R	N
	-	Pn1xx gain class parameters	-	-	N
	00h	Supports maximum sub-index	Uint8	RO	N
	01h	Pn100: moment of inertia	Uint1	R	N
2001h	02h	Pn101: Speed loop proportional gain	Uint16	RW	N
	...	...	...	RW	N
	94h	Pn193: Maximum gain during advanced tuning	Uint16	RW	N

2002 h	-	Pn2xx position class parameter	-	-	N
	00h	Supports maximum sub-index	Uint8	RO	N
	01h	Pn200: Position command source selection	Uint16	RW	N
	02h	Pn201: External pulse input type	Uint16	RW	N
	03h	Pn202: Position control function switch 1	Uint16	RW	N
	04h	Pn203: External pulse command rate	Uint16	RW	N
	…	…	…	RW	N
	98h	Pn297: Absolute value zero point lap value setting	Uint16	RW	N
	9Ah	Pn299: Origin regression timeout	Uint16	RW	N
2003h	-	Pn3xx speed class parameters	-	-	N
	00h	Supports maximum sub-index	Uint8	RO	N
	01h	Pn300: Speed command source selection	Int16	RW	N
	02h	Pn301: speed command direction	Int16	RW	N
	…	…	…	RW	N
	21h	Pn320: Speed consistent signal range	Uint16	RW	N
2004 h	-	Pn4xx speed class parameters	-	-	N
	00h	Supports maximum sub-index	Uint8	RO	N
	01h	Pn400: torque control switch 1	Uint16	RW	N
	02h	Pn401: Torque command 2nd order low-pass filter cutoff frequency	Uint16	RW	N
	…	…	…	RW	N
	31 h	Pn430: torque control switch 2	Uint16	RW	N
2005h	-	Pn5xx speed class parameters	-	-	N
	00h	Supports maximum sub-index	Uint8	RO	N
	01h	Pn500: Jog speed	Uint16	RW	N
	02h	Pn502: Program JOG operation mode	Uint16	RW	N
	…	…	…	RW	N
	09h	Pn508: Program JOG moving speed	Uint16	RW	N
2006 h	-	Pn6xx speed class parameters	-	-	N
	00h	Supports maximum sub-index	Uint8	RO	N
	01h	Pn600: filtering time of switching value input terminal X	Uint16	RW	N
	02h	Pn601: Switching value input terminal X1 configuration	Uint16	RW	N
	…	…	…	RW	N
	31 h	Pn630: Internal software setting for input terminal (X) state	Uint16	RW	N
2E00h	-	Un0xx monitoring parameters	-	-	N
	00h	Supports maximum sub-index	Uint8	RO	N
	01h	Un000: Motor Feedback Speed	Int16	RO	N
	02h	Un001: command speed	Int16	RO	N
	…	…	…	RO	N

	38h	Un038: MCU version (secondary version number)	Uint16	RO	N
	39h	Un039: FPGA version (secondary version number)	Uint16	RO	N
2E01h	-	Un1xx monitoring parameters	-	-	N
	00h	Supports maximum sub-index	Uint8	RO	N
	01h	Un100: Input signal monitoring	Uint16	RO	N
	02h	Un101: Output signal monitoring	Uint16	RO	N
	06h	Un105: Position setting time	Uint16	RO	N
	…	…	…	RO	N
	45h	Un144: DB load accumulation value	Uint16	RO	N
2E02	-	Un2xx monitoring parameters	-	-	N
	00h	Supports maximum sub-index	Uint8	RO	N
	04h	Un203: Set abnormal parameter function code number (Er040)	Uint16	RO	N
	13h	Un212: System Monitoring Time A (Average)	Uint16	RO	N
	…	…	…	RO	N
	1Ah	Un219: System monitoring time R (max	Uint16	RO	N
2E05h	-	Un5xx monitoring parameters	-	-	N
	00h	Supports maximum sub-index	Uint8	RO	N
	12h	Un511: U-phase current zero value	Uint16	RO	N
	13h	Un512: V phase current zero point value	Uint16	RO	N
2E06h	-	Un6xx: Monitoring parameters	-	-	N
	00h	Supports maximum sub-index	Uint8	RO	N
	04h	Un603: Absolute encoder pulse (low 32 bits)	Uint32	RO	N
	06h	Un605: Absolute encoder pulse (high 32 bits)	Uint32	RO	N
2E08h	-	Un8xx monitoring parameters	-	-	N
	00h	Supports maximum sub-index	Uint8	RO	N
	01h	Un800: Current fault or warning code	Uint16	RO	N
	02h	Un801: Code when alarm occurs	Uint16	RO	N
	…	…	…	RO	N
	43h	Un842: Alarm record 9 occurred time	Uint32	RO	N

	Precautions
⚠	● The last two digits of the function code correspond to the sub-index. The function code is a hexadecimal number, and the sub-index is also a hexadecimal number. For example, when the function code Pn299 is read and written, the corresponding object dictionary is 2002: 9Ah.

5.1. 4 List of 6000 0h group objects

The CANopen6000h group object dictionary allocation is shown in the following table:

Index	Sub-index	Name	Access rights	Map Properties	Type	Unit	Scope
603Fh	00h	Error code	RO	Y	UINT16	-	UINT16
6040h	00h	Control word	RW	Y	UINT16	-	UINT16
6041h	00h	Status wor	R	Y	UINT16	-	UINT16
605Ah	00h	Quick shutdown mode	RW	Y	UINT16		UINT16
605D	00h	Suspend shutdown party	R	Y	UINT16		UINT16
6060h	00h	Mode selection	RW	Y	INT8	-	INT8
6061h	00h	Operation mode display	RO	Y	INT8	-	INT8
6062h	00h	User location instruction	RO	Y	INT32	Command unit	INT32
6063h	00h	Motor position feedback	RO	Y	INT32	Encoder unit	INT32
6064h	00h	User location feedback	RO	Y	INT32	Command unit	INT32
6065h	00h	Excessive position deviation threshold	RW	Y	UINT32	Command unit	UINT32
6067h	00h	Location arrival threshold	RW	Y	UINT32	Command unit	UINT32
6068h	00h	Location arrival time	RW	Y	UINT16	0.1 ms	UINT16
606B	00h	Speed command	R	Y	INT32	Command unit/s	INT32
606Ch	00h	Actual speed feedback value	RO	Y	INT32	Command unit/s	INT32
606Dh	00h	Velocity reaches threshold	RW	Y	UINT16	0.1 rpm	UINT16
606Eh	00h	Velocity arrival time window	RW	Y	UINT16	ms	UINT16
606Fh	00h	Zero-frequency Threshold	RW	Y	UINT16	0.1 rpm	UINT16
6070h	00h	Zero speed time window	RW	Y	UINT16	ms	UINT16
6071h	00h	Target torque value	RW	Y	INT16	0.1%	INT16
6072h	00h	Maximum torque	RW	Y	UINT16	0.1%	UINT16
6074h	00h	Torque command value	RO	Y	INT16	0.1%	INT16

6075h	00h	Rated current value	RO	Y	UINT32	mA	UINT32
6076h	00h	Rated torque value	RO	Y	UINT32	mNm	UINT32
6077h	00h	Actual torque value	RO	Y	INT16	0.1%	INT16
6078h	00h	Actual current value	RO	Y	INT16	0.1%	INT16
607Ah	00h	Target position value	RW	Y	INT32	Command unit	INT32
607Ch	00h	Origin regression bias	RW	Y	INT32	Command unit	INT32
607Dh	01h	Software limit minimum	RW	Y	INT32	Command unit	INT32
	02h	Software limit max	RW	Y	INT32	Command unit	
607F	00h	Maximum speed limit	RW	Y	UINT32	Command unit/s	UINT32
6080h	00h	Motor maximum speed	RW	Y	UINT32	rpm	UINT32
6081h	00h	Contour position target velocity value	RW	Y	INT32	Command unit/s	INT32
6083h	00h	Contour acceleration	RW	Y	UINT32	Command unit/s2	UINT32
6084h	00h	Contour deceleration	RW	Y	UINT32	Command unit/s2	UINT32
6085h	00h	Contour emergency stop deceleration	RW	Y	UINT32	Command unit/s2	UINT32
6086h	00h	Type of motor running curve	RW	Y	INT16		INT16
6087h	00h	Torque smoothing time	RW	Y	UINT32	0.1%/s	UINT32
6091h	01h	Electronic gear numerator	RW	Y	UINT32	-	UINT32
	02h	Electronic gear denominator	RW	Y	UINT32	-	UINT32
6098h	00h	No.	RW	Y	INT8	-	INT8
6099h	01h	Origin regression high speed	RW	Y	UINT32	Command unit/s	UINT32
	02h	Origin regression low speed	RW	Y	UINT32	Command unit/s	UINT32
609Ah	00h	Back to zero acceleration/deceleration	RW	Y	UINT32	Command unit/s2	UINT32
60C1h	01h	Interpolated position absolute position value	RW	Y	INT32	Command unit	INT32
60C2h	01h	Interpolation period value	RW	Y	UINT8	-	UINT8
	02h	Interpolation period unit	RW	Y	INT8	-	INT8
60C5h	00h	Maximum contour acceleration	RW	Y	UINT32	Command unit/s2	UINT32

60C6h	00h	Maximum contour deceleration	RW	Y	UINT32	Command unit/s2	UINT32
60E0h	00h	Forward torque limit	RW	Y	UINT16	0.1%	UINT16
60E1h	00h	Reverse torque limit	RW	Y	UINT16	0.1%	UINT16
60F4h	00h	User position deviation	RO	Y	INT32	Command unit	INT32
60FCh	00h	Motor position command	RO	Y	INT32	Encoder unit	INT32
60FDh	00h	Digital input status	RO	Y	UINT32	-	UINT32
60FEh	00h	Number of digital outputs	RO	N	UINT8	-	UINT8
	01h	Digital output state	RO	Y	UINT32	-	UINT32
60FFh	00h	Contour velocity target velocity value	RW	Y	INT32	Command unit/s	INT32
6502h	00h	Servo drive support operating mode	RO	Y	UINT16	-	UINT16

5.1. 5 100 0h object detailed description

Object 1000h					
Index	**1000h**		-		
Name	**Device Type**				
Object structure	VAR	**Type**	Uint16	**Data Range**	Uint16
Can you map	NO	**Accessibility**	RO	**Factory setting**	0x20192
Function Description	The device type parameter is used to describe the device sub-protocol or application specification used.				

Bit	Name	Description
0~15	Device sub-protocol	402 (0x192): Device subprotocol
16~23	Type	02 servo driver
25~31	Mode	Manufacturer customized

Object 1001h					
Index	**1001h**		-		
Name	**Error Register**				
Object knot	VA	**Typ**	Uint	**Data range**	Uint
Can you map	N	**Accessibility**	RO	**Factory setting**	0x0
Function Description	Contains error type information bitwise, as shown in the following table:				

Bit	Meaning	Bit	Meaning
0	Convention	4	Communication
1	Current	5	Subprotocols
2	Voltage	6	NA
3	Temperature	7	Vendor definition

When an error occurs, the corresponding bit of the error is "1", and as long as there is an error, the 0th bit must be "1".

Object 1003h					
Index	**1003h**		-		
Name	**Pro-defined Error Field**				
Object structure	ARR	**Type**	Uint32	**Data Range**	Uint32
Can you map	NO	**Accessibility**	RO	**Factory setting**	-

Sub-index	00h		-		
Name	**Number of Errors**				
Object structure	-	**Type**	Uint8	**Data Range**	Uint8

Can you map	NO	**Accessibility**	RW	**Factory setting**	0x0
Function Description	Only 0 can be written, clearing all error records at this time				

Sub-index	**1 ~ 4h**			**-**	
Name	**Standard Error Field**				
Object structure	-	**Type**	Uint32	**Data Range**	Uint32
Can you map	NO	**Accessibility**	RO	**Factory setting**	0x0
Function Description	When the child index is 0, it is not readable; When there is an error, store the error in the following format:				

MSB LSB

31 16	15 0
Manufacturer error code	Standard error code

Object 1005h					
Index	**1005h**			**-**	
Name	**COB-ID SYNC Message**				
Object structure	VAR	**Type**	Uint32	**Data Range**	Uint32
Can you map	NO	**Accessibility**	RW	**Factory setting**	0x80
Function Description	Only 0x80 and 0x40000080 can be written. When writing to 0x80, the sync generator does not work; When 0x40000080 is written, the sync generator is activated. The synchronization cycle period 1006h must be configured to be non-zero before activating the synchronization generator.				

Object 1006h					
Index	**1006h**			**-**	
Name	**Communication Cycle Period**				
Object structure	VAR	**Type**	Uint32	**Data Range**	Uint32
Can you map	NO	**Accessibility**	RW	**Factory setting**	0x0
Function Description	Cycle time for the synchronous generator in 125us.				

Object 1008h					
Index	**1008h**			**-**	
Name	**Manufacturer Device Name**				

Object structure	REC	Type	Uint8	Data Range	-
Can you map	NO	Accessibility	RO	Factory setting	Servo Device

Object 100Ah					
Index	100Ah		-		
Name	SoftWare Version				
Object structure	REC	Type	Uint8	Data Range	-
Can you map	NO	Accessibility	RO	Factory setting	Up to model

Object 100Ch					
Index	100Ch		-		
Name	Guard Time				
Object structure	VAR	Type	Uint16	Data Range	Uint16
Can you map	NO	Accessibility	RW	Factory setting	0x0
Function Description	For synchronous generators only, the unit is ms. Used with lifetime factor for node protection.				

Object 100Dh					
Index	**100Dh**		-		
Name	**Life Time Factor**				
Object structure	VAR	**Type**	Uint8	**Data Range**	Uint8
Can you map	NO	**Accessibility**	RW	**Factory setting**	0x0
Function Description	It must be greater than 1 when used.				

Object 1010h					
Index	**1010h**		-		
Name	**Store Parameters**				
Object structure	ARR	**Type**	Uint32	**Data Range**	Uint32
Can you map	NO	**Accessibility**	RW	**Factory setting**	0x0
Function Description	Saving parameters is to save the current value of the parameter to the EEPROM. The next time the EEPROM is loaded (power-on again, node reset or communication reset), the saved value will be loaded. When you need to save parameters, in addition to specifying the sub-index corresponding to the save area, you also need to write "save" according to the ASCII code. Writing other values cannot be saved successfully. The written correspondence is as follows: MSB LSB <table><tr><td>**ASCII**</td><td>E</td><td>v</td><td>a</td><td>s</td></tr><tr><td>Hex</td><td>65h</td><td>76</td><td>61h</td><td>73h</td></tr></table> The corresponding sub-index read return value indicates how the sub-index holds the parameter. Return value format and meaning: MSB LSB <table><tr><td>**31 2**</td><td>**1**</td><td>**0**</td></tr><tr><td>NA</td><td>0/1</td><td>0/1</td></tr></table> <table><tr><td>**Value**</td><td>**Meaning**</td></tr><tr><td>0</td><td>Does not save parameters automatically or as commanded</td></tr><tr><td>1</td><td>Only save parameters according to commands, not automatically</td></tr><tr><td>2</td><td>Only automatically save parameters, do not receive commands to save parameters</td></tr><tr><td>3</td><td>You can automatically save parameters or save numbers according to commands</td></tr></table>					

Object 1011h					

Index	1011h	-			
Name	**Restore Default Parameters**				
Object structure	ARR	**Type**	Uint32	**Data Range**	-
Can you map	NO	**Accessibility**	RW	**Factory setting**	
Function Description	Restoring default parameters restores the default parameters to the EEPROM and does not take effect immediately. The default value (factory setting) is loaded the next time the EEPROM is loaded (power up again, node reset, or communication reset). When you need to restore the default parameters, in addition to specifying the sub-index corresponding to the recovery area, you also need to write "load" according to the ASCII code. Writing other values cannot successfully restore the default value. The written correspondence is as follows:				

MSB   LSB

ASCII	d	a	○	l
Hex	64h	61h	6Fh	6Ch

The corresponding sub-index read return value indicates how the sub-index holds the parameter. Return format and meaning:

MSB LSB

31 1	0
NA	0/1

Value	Meaning
0	Device cannot restore default parameters
1	Device can restore default parameters

Object 1014h					
Index	1014h	-			
Name	**COB-ID Emergency Message**				
Object structure	VAR	**Type**	Uint32	**Data Range**	Uint32
Can you map	NO	**Accessibility**	RW	**Factory setting**	0x80 + Node-ID
Function Description	Bit31 is 0, indicating that the Emergency (EMCY) function is turned on (the servo will send an EMCY command); Bit31 of 1 indicates that the Emergency (EMCY) function is turned off (the servo does not send an EMCY command). MSB LSB				

31	30 11	10 0
0/1	0x0	11-bits verification COB-ID

	When an emergency message takes effect, its COB-ID must be consistent with this object.

Object 1016h					
Index	**1016h**		-		
Name	**Consumer Heartbeat Time**				
Object structure	ARR	**Type**	Uint32	**Data Range**	Uint32
Can you map	NO	**Accessibility**	RW	**Factory setting**	
Function Description	The parameters include the monitored node address and the actual consumer time, and this time must be greater than the heartbeat producer time (in ms) of the corresponding node. You cannot set two consumer times for the same node. The parameters are as follows: MSB LS 				

31 24	23 16	15 0
NA	Monitored address	Monitoring time

The corresponding sub-index read return value indicates how the sub-index restores the default parameters.

Sub-inde	00h	-			
Name	Number Entries				
Object structure	-	Type	Uint8	Data Range	1
Can you map	NO	Accessibility	RO	Factory setting	1
Function Description	Only 0 can be written, at which time all error records are cleared.				

Sub-index	01h	-			
Name	Consumer Heartbeat Time				
Object structure	-	Type	Uint32	Data Range	Uint32
Can you map	NO	Accessibility	RW	Factory setting	0
Function Description	Save all parameters of the object dictionary list.				

Object 1017h					
Index	1017h	-			
Name	Producer Heartbeat Time				
Object structure	VAR	Type	Uint16	Data Range	Uint16
Can you map	NO	Accessibility	RW	Factory setting	
Function Description	Units (ms).				

Object 1018h					
Index	1018h	-			
Name	Producer Heartbeat Time				
Object knot	RE	Typ	Uint16	Data Range	-
Can you map	NO	Accessibility	RO	Factory setting	

Sub-index	00h	-			
Name	Number of Entries				
Object structure	-	Type	Uint8	Data Range	3
Can you map	NO	Accessibility	RO	Factory setting	3

Sub-index	01h	-			

Name	Vendor-ID				
Object structure	-	**Type**	Uint16	**Data Range**	Uint16
Can it be reflected	N	**Accessible**	RO	**Factory setting**	0x3B9
Function Description	A unique number assigned uniformly by the CiA organization.				

Sub-index	02h		-		
Name	Product Code				
Object structure	-	**Type**	Uint16	**Data Range**	Uint16
Can you map	NO	**Accessibility**	RO	**Factory setting**	-
Function Description	The device code corresponds to the product series and product model of the electronic tag, and the corresponding relationship is as follows: MSB LSB <table><tr><td>31 16</td><td>15 0</td></tr><tr><td>Product series</td><td>Product model</td></tr></table>				

Sub-index	03h		-		
Name	Revision Number				
Object structure	-	**Type**	Uint16	**Data Range**	Uint16
Can you map	NO	**Accessibility**	RO	**Factory setting**	-
Function Description	Corresponding to the software version number 100Ah, the specific meaning is as follows: MSB LSB <table><tr><td>31 1</td><td>15 0</td></tr><tr><td>Master Revision</td><td>Second revision</td></tr></table>				

Object 1029h					
Index	1029h		-		
Name	Error Behavior				
Object structure	ARR	**Type**	Uint8	**Data Range**	Uint8
Can you map	NO	**Accessibility**	RW	**Factory setting**	-

Function Description	When different types of errors occur, the NMT of CANopen communication needs to be automatically turned to the state control. According to different values, NMT turns to different states.		
	Value	**Meaning**	
	0	When it is currently operating, it turns to the pre-operating state.	
	1	Keep the current state unchanged.	
	2	Turn to a stop state.	
	Other	NA.	

Sub-index	01h		-		
Name	**Communication Error**				
Object structure	-	**Type**	Uint8	**Data Range**	Uint8
Can you map	NO	**Accessibility**	RW	**Factory setting**	0
Function Description	Included communication errors include: NMT error control timeout, PDO length error, bus disengagement, etc.				

Sub-index	00h		-		
Name	**Largest Sub-index Supported**				
Object structure	-	**Type**	Uint8	**Data Range**	Uint8
Can you map	NO	**Accessibility**	RO	**Factory setting**	1

Sub-index	01h		-		
Nam	**Communication Erro**				
Object structure	-	**Type**	Uint8	**Data Range**	Uint8
Can you map	NO	**Accessibility**	RW	**Factory setting**	0
Function Description	Included communication errors include: NMT error control timeout, PDO length error, bus disengagement, etc.				

Object 1200h					
Index	**1200h**		-		
Name	**SDO Server Parameter**				
Object structure	REC	**Type**	-	**Data Range**	-
Can you map	NO	**Accessibility**	RO	**Factory setting**	-

Function Description	The highest bit of "0" indicates that the SDO is valid, and the highest bit of "1" indicates that the SDO is invalid. The default SDO always exists and is a read-only constant.

MSB LSB

31	30 11	10 0
0/1	0x0	11-bits verification COB-ID

Sub-index	00h	-			
Name	Number of Entries				
Object knot	-	Type	Uint8	Data Range	Uint8
Can you map	NO	Accessibility	RO	Factory setting	2

Sub-index	01h	-			
Name	COB-ID Client → Server (rx)				
Object structure	-	Type	Uint32	Data Range	Uint32
Can you map	NO	Accessibility	RW	Factory setting	0x600 + Node-ID

Sub-index	02h	-			
Name	COB-ID Server → Client (tx)				
Object structure	-	Type	Uint32	Data Range	Uint32
Can you map	NO	Accessibility	RW	Factory setting	0x580 + Node-ID

Object 1400h: RPDO1 Communication Parameter Object 1402h: RPDO2 Communication Parameter Object 1403h: RPDO3 Communication Parameter Object 1404h: RPDO4 Communication Parameter					
Index	1400h ~ 1403h	-			
Name	RPDO message COB-ID				
Object structure	REC	Type	-	Data Range	-
Can you map	NO	Accessibility	RW	Factory setting	-

Sub-index	00h	-			
Name	Largest Sub-index Supported				
Object knot	-	Type	Uint8	Data Range	0~2

Can you map	NO	**Accessibility**	RO	**Factory setting**	2

Sub-index	01h		-		
Name	**COB-ID Used by RPDO**				
Object structure	-	**Type**	Uint32	**Data Range**	Uint32
Can you map	NO	**Accessibility**	RW	**Factory setting**	See function description
Function Description	Only the highest bit can be changed, with the highest bit "0" indicating that the PDO is valid and the highest bit "1" indicating that the PDO is invalid. MSB LSB 	31	30 11	10 0
---	---	---
0/1	0	11-bits verification COB-ID | The factory settings are as follows (Node-ID default is 1): 1400h: 0x80000200 + Node-ID 1401h: 0x80000300 + Node-ID 1402h: 0x80000400 + Node-ID 1403h: 0x80000500 + Node-ID				

Sub-index	02h		-		
Name	**Reception type**				
Object structure	-	**Type**	Uint8	**Data Range**	Uint8
Can you map	NO	**Accessibility**	RW	**Factory setting**	0
Function Description	This value can only be modified when the PDO is invalid. Different values represent different PDO transmission types, as shown in the following table: 	Value	Meaning
---	---
0	Synchronous acyclic
1~240	Synchronous cycle
254,255	Heteroacyclic					

Object 1600h: RPDO1 Mapping Parameter **Object 1601h: RPDO2 Mapping Parameter** **Object 1602h: RPDO3 Mapping Parameter** **Object 1603h: RPDO4 Mapping Parameter**		
Sub-index	1600h ~ 1603h	-
Name	**RPDO Mapping Parameter**	

Object structure	REC	Type	-	Data Range	-
Can you map	NO	**Accessibility**	RW	**Factory setting**	-
Function Description	You can only modify this object if the PDO is invalid. The total bit length of the mapped object must not exceed 64 bits. Only byte-wise mapping is supported, not bitwise mapping.				

Sub-index	00h	-			
Name	**Number of Mapped Application Objects in PDO**				
Object structure	-	**Type**	Uint8	**Data Range**	0~4
Can you map	NO	**Accessibility**	RW	**Factory setting**	-
Function Description	When writing 0, other sub-index mapping objects are invalid.				

Sub-index	1h ~ 4h	-			
Name	**PDO Mapping for the nth Application Object to be Mapped**				
Object structure	-	**Type**	Uint32	**Data Range**	Uint32
Can it be reflected	N	**Accessible**	R	**Factory equipment**	-
Function Description	The mapping object content index and sub-index must exist in the object dictionary list, the attribute is writable, and it is mappable. Write the corresponding sub-index in the following format:				

MSB LSB

31 16	15 8	7 0
Index	Sub-index	Object Length

RPDO default mapping content:

(1) RPDO1 (1600h)

Word index	Value	Description
0	1	Map 1 object
1	0x60400010	Command word

(2) RPDO2 (1601h)

Word index	Value	Description
0	2	Map 2 objects
1	0x60410010	Control word
2	0x60600008	Operation mode

(3) RPDO3 (1602h)

Word index	Value	Description
0	2	Map 2 objects
1	0x60410010	Control word
2	0x607A0020	Target position (position command)

(4) RPDO4 (1603h)

Word index	Value	Description
0	2	Map 2 objects
1	0x60410010	Control word
2	0x60FF0020	Target speed (speed command)

Object 1800h: TPDO1 Communication Parameter					
Object 1801h: TPDO2 Communication Parameter					
Object 1802h: TPDO3 Communication Parameter					
Object 1803h: TPDO4 Communication Parameter					
Index	1800h ~ 1803h				
Name	TPDO Communication Parameter				
Object structure	REC	Type	-	Data Range	-
Can you map	NO	Accessibility	RW	Factory setting	-

Sub-index	00h		-	
Name	Largest Sub-index Supported			
Object structure	-	Type	Uint8	Data Range	0~4
Can you map	NO	Accessibility	RO	Factory setting	5

Sub-index	01h		-	
Nam	COB-ID Used by TPD			
Object structure	-	Type	Uint32	Data Range	Uint32
Can you map	NO	Accessibility	RW	Factory setting	See function description
Function Description	Only the highest bit can be changed, with the highest bit "0" indicating that the TPDO is valid and the highest bit "1" indicating that the PDO is invalid. MSB LSB <table><tr><td>31</td><td>30 1</td><td>10 0</td></tr><tr><td>0/1</td><td>0</td><td>11-bits verification COB-ID</td></tr></table> Factory settings are as follows (Node-ID defaults to 1): 1800h: 0x80000180 + Node-ID 1801h: 0x80000280 + Node-ID 1802h: 0x80000380 + Node-ID 1803h: 0x80000480 + Node-ID				

Sub-index	02h		-	
Name	Transmission type			

Object structure	-	**Type**	Uint8	**Data Range**	Uint8
Can you map	NO	**Accessibility**	RW	**Factory setting**	255
Function Description	This value can only be modified when the PDO is invalid. Different values represent different PDO transmission types, as shown in the following table: 				

Value	Meaning
0	Synchronous, non-weekly
1~240	Synchronous cycle
255	Asynchronous, periodic

Sub-index	03h			-	
Name	**Inhibit Time**				
Object structure	-	**Type**	Uint16	**Data Range**	Uint16
Can you map	NO	**Accessibility**	RW	**Factory setting**	8
Function Description	You can only modify this object if the PDO is invalid. The unit is 125us. Note: The inhibition time is invalid when set to 0.				

Sub-index	04h			-	
Name	**Reserved**				
Object structure	-	**Type**	Uint8	**Data Range**	Uint8
Can you map	NO	**Accessibility**	RW	**Factory setting**	0

Sub-index	05h			-	
Name	**Event Timer**				
Object structure	-	**Type**	Uint16	**Data Range**	Uint16
Can it be reflected	N	**Accessible**	RW	**Factory setting**	2
Function Description	You can only modify this object if the PDO is invalid. The unit is 1ms. Note: The time timer is invalid when set to 0.				

1A00h: TPDO1 Mapping Parameter 1A01h: TPDO2 Mapping Parameter 1A02h: TPDO3 Mapping Parameter 1A03h: TPDO4 Mapping Parameter		
Index	**1A00h ~ 1A03h**	

Name	TPDO Mapping Parameter				
Object structure	REC	Type	-	Data Range	-
Can you map	NO	Accessibility	RW	Factory setting	-
Function Description	You can only modify this object if the PDO is invalid. The total bit length of the mapped object must not exceed 64 bits. Only byte-wise mapping is supported, not bitwise mapping.				

Sub-index	00h	-		
Name	Number of Mapped Application Objects in PDO			
Object structure	-	Type	Uint8	Data Range	0~4
Can you map	NO	Accessibility	RW	Factory setting	-
Function Description	When writing 0, the child index map object is invalid.			

Sub-index	1h ~ 4h	-		
Name	Application Object			
Object structure	-	Type	Uint32	Data Range	Uint32
Can you map	NO	Accessibility	RW	Factory setting	-
Function Description	The mapping object content index and sub-index must exist in the object dictionary list, the attribute is writable, and it is mappable. Write the corresponding mapping object in the following format: MSB LSB				

31 16	15 8	7 0
Index	Sub-index	Object Length

TPDO default mapping content:

(1) TPDO1 (1A00h)

Word index	Value	Description
0	1	Map 1 pair
1	0x60410010	Status word

(2) TPDO2 (1A01h)

Word index	Value	Description
0	2	Map 2 objects
1	0x60410010	Status word
2	0x60610008	Current Operating Mode

(3) TPDO3 (1A02h)

Word index	Value	Description
0	2	Map 2 objects
1	0x60410010	Status word
2	0x60640020	Current position

(4) TPDO4 (1A03h)

Word index	Value	Description
0	2	Map 2 objects
1	0x60410010	Status word
2	0x606C0020	Current speed

5.1. 6 6000 0h object details

Object 603Fh		-		PP	PV	PT	HM	IP
Index	**603Fh**			-				
Name	**Error Code**							
Object structure	VAR	**Type**	Uint16	**Data Range**		0~65535		
Can you map	Y	**Accessibility**	RO	**Factory setting**		-		
Function Description	The fault code is the error that occurred on the last drive. See the fault list for details.							

Object 6040h		-		PP	PV	PT	HM	IP
Index	**6040h**			-				
Name	**Control Word**							
Object structure	VAR	**Type**	Uint16	**Data Range**		0~65535		
Can you map	Y	**Accessibility**	RW	**Factory setting**		0		

	Bit definition of control word:					
	Bit	**Meaning**	**Description**			
	0	Servo Ready	0: Invalid 1: Valid			
	1	Switch on the main circuit	0: Invalid 1: Valid			
	2	Quick shutdown	1: invalid 0: valid			
	3	Servo operation	0: Invalid 1: Valid			

Function Description				**Bit**	**Mode of operation**			
					PP	**PV**	**PT**	**HM**
	4~6	Related to patterns		4	New position rising edge trigger	NA	NA	Return to zero on
				5	0: Non-immediate update 1: Update now	NA	NA	NA
				6	0: Absolute position 1: Relative position	NA	NA	NA
	7	Fault reset	bit7 rising edge valid bit7 remains 1, other control instructions are invalid					
	8	Paus	0: Invalid 1: Yes					
	9~10	NA						
	11~15	Manufacturer customized						
	Note: Each bit in the control word needs to form a control instruction together with other bits.							

Object 6041h		-		PP	PV	PT	HM	IP
Index	**6041h**		-					
Name	**Status Word**							
Object knot	VA	**Typ**	Uint1	**Data range**		0~6553		
Can you map	Y	**Accessibility**	RO	**Factory setting**		0		

	Bit definition of status word:		
Function Description	**Bit**	**Name**	**Bit definition**
	0	Servo Ready	1: valid 0: invalid
	1	Wait to turn on servo enable	1: valid 0: invalid
	2	Servo operation	1: valid 0: invalid
	3	Malfunction	0: no fault 1: fault
	4	Power on the main circuit	1: valid 0: invalid
	5	Quick shutdown	0: valid 1: invalid
	6	Powered up to allow operation	1: valid 0: invalid
	7	Warn	1: valid 0: invalid
	8	Manufacturer customized	-
	9	Remote control	0: Non-CANopen mode 1: CANopen remote control mode
	10	Target arrived	Speed Mode: 0: Target speed not reached1: Target speed to 达 Position mode: 0: Target position not reached 1: Target position arrived
	11	Software internal location overrun	0: The position command or feedback does not reach the internal position limit of the software 1: The position instruction or feedback reaches the internal position limit of the software
	12~13	Related to control mode	-
	14	NA	-
	15	Origin return to zero completed	0: Origin return to zero is not performed or not completed 1: The origin return to zero has been completed, and the reference point has been found

Object 605Ah	-			PP	PV	PT	HM	IP
Index	**605Ah**		-					
Name	Quick Stop Option Code							
Object structure	VAR	**Type**	Int16	**Data Range**		0~2		

Can you map	NO	**Accessibility**	RW	**Factory setting**		2	
Function Description		**Display Value**	**Control mode display**				
		0	Free shutdown, keep free running state after the shutdown is completed.				
		1	Stop the machine at a deceleration ramp set at 6084h (hm: 609Ah), and keep the free running state after the shutdown is completed.				
		2	Stop the machine at the deceleration ramp set at 6085h, and keep the free running state after the shutdown is completed.				

Object 605Dh		-		PP	PV	PT	HM	IP
Index	**605Dh**		-					
Name	Halt Stop Option Code							
Object structure	VAR	**Type**	Int16	**Data Range**		1~3		
Can you map	NO	**Accessibility**	RW	**Factory setting**		1		
Function Description		**Display Value**	**Control mode display**					
		1	Stop the machine at a 6084h/6087h (hm: 609Ah) ramp and keep the position locked after the shutdown is completed.					
		2	Stop the machine at 6085h/6087h ramp, and keep the position locked after the shutdown is completed.					
		3	Emergency stop torque stop, and keep the position locked state after the stop is completed.					

Object 6060h		-		PP	PV	PT	HM	IP
Index	**6060h**		-					
Name	**Modes of Operation**							
Object structure	VAR	**Type**	Int8	**Data Range**		0~7		
Can you map	Y	**Accessibility**	RW	**Factory setting**		1		

Function Description	Set the servo operation mode:		
	Setting	**Description**	
	0	NA	
	1	Profile Position Mode (PP)	
	3	Profile Velocity Mode (PV)	
	4	Profile Torque Mode (PT)	
	6	Zero Return Mode (HM)	
	7	Interpolation Mode (IP)	

Object 6061h	-			PP	PV	PT	HM	IP
Index	**6061h**		-					
Name	Modes of Operation Display							
Object structure	VAR	**Type**	Int8	**Data Range**		0~7		
Can you map	Y	**Accessibility**	RO	**Factory setting**		0		
Function Description	**Display Value**	**Control mode display**						
	0	NA						
	1	Profile Position Mode (PP)						
	3	Profile Velocity Mode (PV)						
	4	Profile Torque Mode (PT)						
	6	Zero Return Mode (HM)						
	7	Interpolation Mode (IP)						

Object 6062h	-				PP	HM	IP
Index	**6062h**			-			
Name	Position Demand Value						
Object structure	VAR	**Type**	Int 32	**Data Range**		$-231 \sim (231\text{-}1)$	
Can you map	Y	**Accessibility**	RO	**Factory setting**		0	
Function Description	Position command value (unit: command unit).						

Object 6063h	-				PP	PV	PT	HM	IP
Index	**6063h**			-					
Name	**Position Actual Value**								
Object structure	VAR	**Type**	Int32	**Data Range**		$-231 \sim (231\text{-}1)$			
Can you map	Y	**Accessibility**	RO	**Factory setting**		0			
Function Description	Reflects real-time motor absolute position feedback (unit: encoder unit).								

Object 6064h	-				PP	PV	PT	HM	IP
Index	**6064h**			-					
Name	**Position Actual Value**								
Object structure	VAR	**Type**	Int32	**Data Range**		$-231 \sim (231\text{-}1)$			
Can you map	Y	**Accessibility**	RO	**Factory setting**		0			
Function Description	Reflect real-time motor absolute position feedback (unit: command unit). User position feedback 6064h × gear ratio (6091h) = motor position feedback 6063h.								

Object 6065h	-				PP	HM	IP
Index	**6065h**			-			
Name	**Following ErroObject structure Window**						
	VAR	**Type**	Uint32	**Data Range**		$0 \sim (231\text{-}1)$	
Can you map	Y	**Accessibility**	RW	**Factory setting**		3840000	
Function Description	Set the position deviation excessive threshold (unit: command unit). When the difference between user position command 6062h and user position feedback 6064h exceeds ± 6065h, excessive position deviation fault (ER.d00) occurs.						

	When 6065h is set to 4294967295, the servo does not monitor excessive position deviation.

Object 6067h	-				PP	HM	IP
Index	**6067h**		-				
Name	**Position Window**						
Object structure	VAR	**Type**	Uint32	**Data Range**	0 ~ (231-1)		
Can it be reflected	Y	**Accessibility**	RW	**Factory setting**	100		
Function Description	Sets the threshold for position arrival (unit: command units). When the difference between the user position instruction 6062h and the user actual position feedback 6064h is within ± 6067h, and the time reaches 6068h, it is considered that the position has arrived. In the contour position mode, bit10 of the status word 6041h is 1.						

Object 6068h	-				PP	HM	IP
Index	**6068h**		-				
Name	**Position Windows Time**						
Object structure	VAR	**Type**	Uint16	**Data Range**	0~65535		
Can you map	Y	**Accessibility**	RW	**Factory setting**	0		
Function Description	Set the time window (unit: 0.1 ms) for determining that the position reaches an effective position. When the difference between the user position instruction 6062h and the user actual position feedback 6064h is within ± 6067h, and the time reaches 6068h, it is considered that the position has arrived. In the contour position mode, the status word 6041h bit10 = 1.						

Object 606Bh	-			PP	PV	PT	HM	IP
Inde	**606B**		-					
Name	**Velocity Demand Value**							
Object structure	VAR	**Type**	Int32	**Data Range**	-231 ~ (231-1)			
Can you map	Y	**Accessibility**	RO	**Factory setting**	-			
Function Description	Reflect the user's actual speed command (unit: command unit/s). In the position mode, the speed command corresponding to the output of the position regulator is reflected; In speed class mode, it reflects the input command of the speed regulator.							

Object 606C					PP	PV	PT	HM	IP
Index	**606Ch**			-					
Name	**Velocity Actual Value**								
Object structure	VAR	**Type**	Int32	**Data Range**		-231 ~ (231-1)			
Can you map	Y	**Accessibility**	RO	**Factory setting**		-			
Function Description	Reflect the user's actual speed feedback value (unit: command unit/s).								

Object 606Dh						PV
Index	**606Dh**			-		
Name	**Velocity Window**					
Object structure	VAR	**Type**	Uint16	**Data Range**	0~65535	
Can you map	Y	**Accessibility**	RW	**Factory setting**	100	
Function Description	Set the threshold at which the speed reaches (unit: 0.1 rpm). When the difference between the target speed 60FFh and the user's actual speed 606Ch is within ± 606Dh, and the time reaches 606Eh, it is considered that the speed has arrived. In the contour speed mode, bit10 of the status word 6041h = 1. Otherwise, bit10 of status word 6061h = 0.					

Object 606Eh						PV
Index	**606Eh**			-		
Name	**Velocity Window Time**					
Object structure	VAR	**Type**	Uint16	**Data Range**	0~65535	
Can you map	Y	**Accessibility**	RW	**Factory setting**	0	
Function Description	Set the time window (unit: ms) for the decision speed to reach an effective time window. When the difference between the target speed 60FFh and the user's actual speed 606Ch is within ± 606Dh, and the time reaches 606Eh, it is considered that the speed has arrived. In the contour speed mode, bit10 of the status word 6041h = 1. Otherwise, bit10 of status word 6061h = 0.					

Object 606Fh						PV
Index	**606Fh**			-		
Name	**Velocity Threshold**					

Object structure	VAR	Type	Uint16	Data Range	0~65535
Can you map	Y	Accessibility	RW	Factory setting	10
Function Description	Sets a threshold value (unit: 1rpm) for determining whether the user speed is 0. The user speed feedback 606Ch is within ± 606Fh, and the time reaches the set value of 6070h, indicating that the user speed is 0, at this time, bit12 of the status word 6041h = 1; If either of the two conditions is not satisfied, it is considered that the user speed is not 0, and at this time, bit 12 of the status word 6041h = 0.					

Object 6070h	-						PV
Index	6070h	-				
Name	Zero Velocity Threshold Time					
Object structure	VAR	Type	Uint16	Data Range	0~65535	
Can it be reflected	Y	Accessibility	RW	Factory setting	0	
Function Description	Set the time window (unit: 2ms) used to judge whether the user speed is 0. The user speed feedback 606Ch is within ± 606Fh, and the time reaches the set value of 6070h, indicating that the user speed is 0, at this time, bit12 of the status word 6041h = 1; If either of the two conditions is not satisfied, it is considered that the user speed is not 0, and at this time, bit 12 of the status word 6041h = 0.						

Object 6071h	-						PT
Index	6071h	-				
Name	Target torque					
Object structure	VAR	Type	Int16	Data Range	-5000~5000	
Can you map	Y	Accessibility	RW	Factory setting	0	
Function Description	Used for command target value (unit: 0.1%) in contour torque mode and periodic synchronous torque mode.						

Object 6072h	-	PP	PV	PT	HM	IP
Index	6072h	-				
Name	Maximum torque limit					
Object structure	VAR	Type	Uint16	Data Range	-5000~5000	
Can it be reflected	Y	Accessibility	RW	Factory setting	3000	
Function Description	Set the maximum output torque value of the servo (unit: 0.1%).						

Object 6074h	-			PP	PV	PT	HM	IP
Index	**6074h**			**-**				
Name	**Torque demand value**							
Object knot	VA	**Typ**	Uint1	**Data range**		-5000~500		
Can you map	Y	**Accessibility**	RO	**Factory setting**		-		
Function Description	Displays the current torque command (unit: 0.1%).							

Object 6075	-			PP	PV	PT	HM	IP
Index	**6075h**			**-**				
Name	Motor rate current							
Object structure	VAR	**Type**	Uint 32	**Data Range**		Uint 32		
Can you map	Y	**Accessibility**	RO	**Factory setting**		0		
Function Description	Current rating of motor nameplate (unit: mA). All current-related parameter values are related to this parameter.							

Object 6076h	-			PP	PV	PT	HM	IP
Inde	**6076h**			**-**				
Nam	**Motor rated torque**							
Object structure	VAR	**Type**	Uint32	**Data Range**		Uint32		
Can you map	Y	**Accessibility**	RO	**Factory setting**		0		
Function Description	Motor nameplate rated torque (unit: mNm). All torque-related parameter values are associated with this parameter.							

Object 6077h	-			PP	PV	PT	HM	IP
Index	**6077h**			**-**				
Name	**Motor actual torque**							
Object structure	VAR	**Type**	Int16	**Data Range**		Int16		
Can you map	Y	**Accessibility**	RO	**Factory setting**		0		
Function Description	Reflect the instantaneous torque output of the servo motor (unit: 0.1%).							

Object 6078h	-			PP	PV	PT	HM	IP

Index	6078h			-		
Name	Current actual value					
Object structure	VAR	Type	Int16	Data Range	Int16	
Can you map	Y	Accessibility	RO	Factory setting	0	
Function Description	Reflect the instantaneous current output of the servo motor (unit: 0.1%).					

Object 607Ah			-			PP
Index	607Ah			-		
Name	**Target Posion**					
Object structure	VAR	Type	Int32	Data Range	-231 ~ (231-1)	
Can you map	Y	Accessibility	RW	Factory setting	0	
Function Description	Set the servo target position in profile position mode (unit: command unit). When bit6 of the control word 6040h is 0, 607Ah is the target absolute position of the current segment; When bit6 of control word 6040h is 1, 607Ah is the target incremental displacement of the current segment.					

Object 607Ch			-		HM
Index	607Ch			-	
Name	**Home Offset**				
Object structure	VAR	Type	Int32	Data Range	-231 ~ (231-1)
Can you map	Y	Accessibility	RW	Factory setting	0
Function Description	In position class control mode, the mechanical zero deviates from the physical position of the motor origin (unit: command unit). Mechanical Zero = Mechanical Origin + 607Ch (Origin Bias). When set to 0, the origin is unbiased.				

Object 607Dh		-	PP	PV	PT	HM	IP

Index	607Dh	-				
Name	**Software position Limit**					
Object structure	ARR	**Type**	Int32	**Data Range**	Int32	
Can you map	Y	**Accessibility**	RW	**Factory setting**	0	
Function Description	Set the minimum and maximum values of the software absolute position limit. Minimum absolute position limit = (607D: 01h) Maximum absolute position limit = (607D: 02h) Software absolute position limit setting: 1. When both (607D: 01h) and (607D: 02h) are set to default values, the software limit does not take effect. 2. When the minimum absolute position limit (607D: 01h) is greater than the maximum absolute position limit (607D: 02h), the software Part automatically adjusts its value. 3. When the position command or position feedback reaches the software limit value, in the position mode, the servo will limit the position Run for the target location, stop at the location limit and prompt an override warning. Entering a reverse command causes Motor exit position overrun state. 4. Absolute position limit relative to motor feedback position 6064h (user unit).					

Sub-index	00h	-			
Name	**Number of Entries**				
Object structure	VAR	**Type**	Uint8	**Data Range**	2
Can you map	Y	**Accessibility**	RO	**Factory setting**	2

Sub-index	01h	-			
Name	**Min Position Limit**				
Object structure	VAR	**Type**	Int32	**Data Range**	Int32
Can you map	Y	**Accessibility**	RW	**Factory setting**	-231

Sub-index	02h	-			
Name	**Max Posion Limit**				
Object structure	VAR	**Type**	Int32	**Data Range**	Int32
Can you map	Y	**Accessibility**	RW	**Factory setting**	231

Object 607Eh	-	PP	PV	PT	HM	IP

Index	607Eh				-	
Name	Polarity					
Object structure	VAR	Type	Uint8	Data Range		Int8
Can you map	Y	Accessibility	RW	Factory setting		0
Function Description	Set the polarity of the position command, the speed command and the torque command. MSB LSB 					

7	6	5	4 0
Position command polarity	Speed command polarity	Torque command polarity	NA

Function Description	Bit7 = 1, indicating the standard position mode, turn the position command × (-1), and the motor steer is reversed. In the contour position mode and the periodic synchronous position mode, the position command and the target position are reversed. Bit6 = 1, indicating that in the speed mode, the speed command (60FFh) × (-1) is turned in the reverse direction. **Bit5 = 1 indicates that in the torque mode, the torque command × (-1) is given.**

Object 607Fh			-		PP	PV	PT	HM	IP
Index	607Fh				-				
Name	Max Profile Velocity								
Object structure	VAR	Type	Uint32	Data Range			0 ~ (2³²-1)		
Can you map	Y	Accessibility	RW	Factory setting			838860800		
Function Description	Set the maximum user running speed (unit: command unit/s). When the slave speed command changes, the set value takes effect. $$最大轮廓速度\,(\text{rpm}) = \frac{607Fh \times \dfrac{6091:01h}{6091:02h}}{编码器分辨率} \times 60$$ Note: In each mode, the maximum operating speed is limited by function code Pn318 in addition to the 607Fh limit. Take the smallest value of the two for limit.								

Object 6080h			-		PP	PV	PT	HM	IP
Index	6080h				-				
Name	Max Motor Speed								
Object structure	VAR	Type	Uint32	Data Range			0 ~ (2³²-1)		
Can you map	Y	Accessibility	RW	Factory setting			Maximum speed limit		

Function Description	The maximum allowable operating speed of the motor can be obtained from the instruction manual of the servo motor (unit: rpm).

Object 6081h	-					PP
Index	**6081h**		-			
Name	**Profile Velocity**					
Object structure	VAR	**Type**	Uint32	**Data Range**	0 ~ (232-1)	
Can you map	Y	**Accessibility**	RW	**Factory setting**	8388608	
Function Description	In the contour position mode, the running speed of the uniform speed segment (unit: command unit/s) reached after the acceleration segment is completed. $$电机转速\,(rpm)=\dfrac{6081h\times\dfrac{6091:01h}{6091:02h}}{编码器分辨率}\times 60$$					

Object 6083h	-				PP	PV
Index	**6083h**		-			
Name	**Profile Acceleration**					
Object structure	VAR	**Type**	Uint32	**Data Range**	0~(232-1)	
Can you map	Y	**Accessibility**	RW	**Factory setting**	83886080	
Function Description	Acceleration when setting profile position mode and profile velocity mode (unit: command units/s2). In position contour mode, the change before the instruction in this paragraph is triggered is valid, and after the instruction in this paragraph is triggered, it is valid when the current segment is finished running. When speed profile mode, it takes effect immediately. When the parameter is set to 0, the software internally forces it to 1.					

Object 6084h	-				PP	PV
Index	**6084h**		-			
Name	**Profile Deceleration**					
Object structure	VAR	**Type**	Uint32	**Data Range**	0~(232-1)	
Can you map	Y	**Accessibility**	RW	**Factory setting**	83886080	
Function Description	Deceleration when setting the contour position mode and contour speed mode (unit: command units/s2). When speed profile mode, it takes effect immediately. When the parameter is set to 0, the software internally forces it to 1.					

Object 6085h	-					PP	PV	PT	HM	IP
Index	**6085h**				-					
Name	**Quick Stop Deceleration**									
Object structure	VAR	**Type**	Uint32	**Data Range**		0~(232-1)				
Can you map	Y	**Accessibility**	RW	**Factory setting**		2147483647				
Function Description	When quick stop 6040h: bit2 = 0, it is valid, and when 605Ah (quick stop mode) = 2, it is the deceleration of the deceleration section.									

Object 6086h	-				PP	PV
Index	**6086h**			-		
Name	**Motion Profile Type**					
Object structure	VAR	**Type**	Int16	**Data Range**	Int16	
Can you map	Y	**Accessibility**	RW	**Factory setting**	-	
Function Description	Curve type of motor position command or speed command.					

Object 6087h	-					PT
Index	**6087h**			-		
Name	**Torque Slope**					
Object structure	VAR	**Type**	Uint32	**Data Range**	0~65535	
Can you map	Y	**Accessibility**	RW	**Factory setting**	1000	
Function Description	The torque command acceleration in the profile torque mode is set, which represents the torque command increment per second (0.1%/s). In contour torque mode, when the quick stop 605Ah = 1, 2 or the pause stop 605Dh = 1, 2, the deceleration stop will be performed at 6087h. The parameter is casted to 1 when set to 0.					

Object 6091h	-			PP	PV	PT	HM	IP
Index	**6091h**		-					
Name	**Gear Ratio**							

Object structure	ARR	Type	Uint32	Data Range	Uint32
Can you map	Y	Accessibility	RW	Factory setting	-
Function Description	\multicolumn{5}{l}{The position factor is used to establish a user-specified proportional relationship between load displacement and motor displacement: 电机位移(电机单位)=负载位移(用户单位)×位置因子 The setting of the position factor is related to the mechanical reduction ratio, mechanical size-related parameters, and motor resolution. The calculation method is as follows: - The 6091h gear ratio setting is in series relationship with the gear ratios of Pn204 and Pn206. The setting result of electronic gear ratio in CAN model is: $$电子齿轮比 = \frac{Pn204}{Pn206} \times \frac{6091:01h}{6091:02h}$$}

Sub-index	00h			-	
Name	Number of Entries				
Object structure	VAR	Type	Uint8	Data Range	2
Can you map	Y	Accessibility	RO	Factory setting	2

Sub-index	01h			-	
Name	Motor revolutions				
Object structure	VAR	Type	Uint32	Data Range	Uint32
Can you map	Y	Accessibility	RW	Factory setting	1

Sub-index	02h			-	
Name	Shaft revolutions				
Object structure	VAR	Type	Uint32	Data Range	Uint32
Can you map	Y	Accessibility	RW	Factory setting	1

Object 6098h			-		HM
Index	6098h		-		
Name	Homing method				
Object structure	VAR	Type	Int8	Data Range	0~35

Can you map	Y	**Accessibility**	RW	**Factory setting**	0
Function Description		Select the origin return to zero method:			

Value	Description
1	Regression is performed when encountering negative limit switch and Z pulse signal
2	Regression when encountering forward limit switch and Z pulse signal
3，4	Regression when encountering forward origin switch and Z pulse signal
5，6	Regression is performed when encountering negative origin switch and Z pulse signal
7~14	Regression when encountering the origin switch and Z pulse signal
15~16	NA
17~30	Regression without reference to the Z pulse signal
31~32	NA
33~34	Regression without reference to the Z pulse signal
35	Take the current position as zero

Precautions
● An ER.E03 alarm will be generated when data other than the above is set.

Object 6099h	-				HM
Index	**6099h**	-			
Name	**Homing Speeds**				
Object structure	ARR	**Type**	Uint8	**Data Range**	Uint32
Can you map	Y	**Accessibility**	RW	**Factory setting**	-
Function Description	In zero return mode, there are 2 speed value settings included: 6099: 01h Search deceleration point signal speed (unit: command unit/s); 6099: 02h Search origin signal speed (unit: command unit/s).				

Sub-index	**00h**	-

Name	Number of Entries				
Object structure	VAR	**Type**	Uint8	**Data Range**	2
Can you map	Y	**Accessibility**	RO	**Factory setting**	2

Sub-index	01h			-	
Name	Speed During Search for Switch				
Object structure	VAR	**Type**	Uint32	**Data Range**	$0 \sim 232\text{-}1$
Can you map	Y	**Accessibility**	RW	**Factory setting**	27962027
Function Description	This sub-index is used to set the signal speed of the search deceleration point. This speed can be set to a higher value to prevent the zero return time from being too long and causing the zero return timeout failure.				

Sub-index	02h			-	
Name	Speed During Search for Zero				
Object structure	VAR	**Type**	Uint32	**Data Range**	1~500
Can you map	Y	**Accessibility**	RW	**Factory setting**	5592405

Precautions
● When returning to zero, after finding the deceleration point from the station, it will decelerate; ● During the deceleration process, the slave station shields the change of the origin signal. In order to avoid encountering the origin signal during the deceleration process, The switch position of the deceleration point signal should be reasonably set; Such as leaving enough deceleration distance, increasing the acceleration back to zero, etc.

Object 609Ah	-					HM
Index	609Ah		-			
Name	Home Acceleration/Homing Deceleration					
Object structure	VAR	**Type**	Uint32	**Data Range**	$0 \sim 232\text{-}1$	
Can you map	Y	**Accessibility**	RW	**Factory setting**	83886080	

Function Description	Set the acceleration and deceleration in the origin-back-to-zero mode (unit: command units/s2).

Object 60C1h	-					IP
Index	60C1h		-			
Name	Interpolation data record					
Object structure	ARR	Type	Int32	Data Range	Int32	
Can you map	Y	Accessibility	RW	Factory setting	0	
Function Description	Interpolation mode instruction parameter settings.					

Sub-index	00h	-			
Name	Number of Entries				
Object structure	VAR	Type	Uint8	Data Range	3
Can you map	N	Accessibility	RO	Factory setting	3

Sub-index	01h	-			
Name	Position Command				
Object structure	VAR	Type	Int32	Data Range	Int32
Can you map	Y	Accessibility	RW	Factory setting	0
Function Description	Interpolation mode absolute position command value, unit: command unit.				

Object 60C2h	-					IP
Index	60C2h		-			
Name	Interpolation Time Period					
Object structure	ARR	Type	Uint8	Data Range	Uint8	
Can you map	Y	Accessibility	RW	Factory setting	0	

Sub-index	00h	-			
Name	Number of Entries				
Object structure	VAR	Type	Uint8	Data Range	2

Can you map	N	**Accessibility**	RO	**Factory setting**	2
Function Description	Number of sub-indexes of interpolation period object dictionary				

Sub-index	01h	-		
Name	Interpolation Time Units			
Object structure	VAR	**Type**	Uint8	**Data Range**	Uint8
Can you map	Y	**Accessibility**	RW	**Factory setting**	1
Function Description	Interpolation cycle time, given by 60C2: 02h. Example: When 60C2: 02h is − 3, and when 60C2: 01h is 1, it means that the currently set interpolation period is 1ms. Note: The interpolation and synchronization cycles must be consistent.				

Sub-index	02h	-		
Name	Interpolation Time Index			
Object structure	VAR	**Type**	Int8	**Data Range**	Int8
Can you map	Y	**Accessibility**	RW	**Factory setting**	-3
Function Description	Given the interpolation period unit. Given-3, it means that the interpolation period unit is ms. Given-4, it means that the interpolation period unit is 0.1 ms. Given-2, it means that the interpolation period unit is 10 ms.				

Object 60C5h	-			PP	PV	PT	HM	IP
Index	**60C5h**	-						
Name	Max Profile Acceleration							
Object structure	VAR	**Type**	Uint32	**Data Range**	0~(232-1)			
Can you map	Y	**Accessibility**	RW	**Factory setting**	2147483647			
Function Description	Contour maximum acceleration (in command units/s2).							

Object 60C6h	-			PP	PV	PT	HM	IP
Index	**60C6h**	-						
Name	Max Profile Deceleration							
Object structure	VAR	**Type**	Uint32	**Data Range**	0~(232-1)			

Can you map	Y	**Accessibility**	RW	**Factory setting**	2147483647
Function Description	Contour maximum deceleration (unit: command units/s2).				

Object 60E0h	-			PP	PV	PT	HM	IP
Index	**60E0h**			**-**				
Name	**Positive torque limit**							
Object structure	VAR	**Type**	Uint16	**Data Range**		Uint16		
Can you map	Y	**Accessibility**	RW	**Factory setting**		3000		
Function Description	**The maximum forward torque is limited (unit: 0.1%).**							

Object 60E1h	-			PP	PV	PT	HM	IP
Index	**60E1h**			**-**				
Name	**Negtive torque limit**							
Object structure	VAR	**Type**	Uint16	**Data Range**		Uint16		
Can you map	Y	**Accessibility**	RW	**Factory setting**		3000		
Function Description	**The maximum negative torque is limited (unit: 0.1%).**							

Object 60F4h	-			PP	HM	IP
Index	**60F4h**			**-**		
Name	**Following Error Actual Value**					
Object structure	VAR	**Type**	Int32	**Data Range**	-231~(231-1)	
Can you map	Y	**Accessibility**	RO	**Factory setting**	0	
Function Description	**Real-time position deviation (unit: user unit).**					

Object 60FCh	-			PP	HM	IP
Index	**60FCh**			**-**		
Name	**Position Demand Value ***					
Object structure	VAR	**Type**	Int32	**Data Range**	-231~(231-1)	

Can you map	Y	Accessibility	RO	Factory setting	0
Function Description	Real-time motor position command (unit: encoder unit). **User position command (6062h) × electronic gear ratio = motor position command (60FCh)**				

Object 60FDh		-		PP	PV	PT	HM	IP
Index	60FDh		-					
Name	Digital Input							
Object structure	VAR	Type	Uint32	Data Range		0~(232-1)		
Can you map	Y	Accessibility	RO	Factory setting		0		
Function Description	Reflect that current DI terminal logic of the drive, 0 means invalid, 1 means valid The DI signals represented by each are as follows: MSB LSB							

31 16	15 4	3	2	1	0
Manufacturer customized	NA	Undefined	Undefined	Forward overtravel switch	Reverse overtravel switch

Object 60FEh		-		PP	PV	PT	HM	IP
Index	60FEh		-					
Name	Digital Output							
Object structure	ARR	Type	Uint32	Data Range		Uint32		
Can you map	Y	Accessibility	RO	Factory setting		0		

Sub-index	00h		-	
Name	Number of Entries			
Object structure	VAR	Type	Uint8	Data Range	1
Can you map	N	Accessibility	RO	Factory setting	1

Sub-index	01h		-	
Name	Physical Output			
Object structure	VAR	Type	Uint32	Data Range	Uint32
Can you map	Y	Accessibility	RO	Factory setting	0

Function Description	Reflects the current DO terminal logic of the driver, 0 means invalid and 1 means valid. **MSB LSB**		
	31 16	**15 1**	**0**
	Manufacturer customized	NA	Brake output

Object 60FFh	-					PV
Index	**60FFh**		-			
Name	**Target Velocity**					
Object structure	VAR	**Type**	Int32	**Data Range**	Int32	
Can you map	Y	**Accessibility**	RW	**Factory setting**	0	
Function Description	In the contour speed mode, user speed command (unit: command unit/s).					

Supported Drive Modes					
Index	**6502h**		-		
Name	**Support servo operation mode**				
Object structure	VAR	**Type**	Uint16	**Data Range**	Uint16
Can you map	Y	**Accessibility**	RO	**Factory setting**	6Dh
Function Description	Servo operation mode supported by the drive, 0 means not supported, 1 means supported.				

Bit	Description	Value
0	Contour Position Mode	1
1	NA	0
2	Contour velocity mode	1
3	Contour torque mode	1
4	NA	
5	Zero return mode	1
6	Interpolation position pattern	1
7~15	NA	0

5.2 CANopen Transmission Abort Code

Abort code	Description
0x05040001	Invalid control command (SDO only supports 0x40, 0x2F, 0x2B, 0x23 instructions)
0x06010002	Attempted to write to a read-only object
0x06020000	The object in the object dictionary does not exist
0x06040041	PDO Mapping Failure
0x06040042	The number and length of mapped objects exceed the PDO length
0x06070010	Write length mismatch (the length defined by the object dictionary does not match the length written)
0x06070012	Data type mismatch, service parameter length mismatch
0x06090011	Sub-index Not Exist
0x06090031	Write parameter value is too large
0x06090032	Write parameter value too small

Chapter 6 Appendix