RS485 Communication Manual

I. RS485 Bus Communication Function

The driver is built-in with an industrial-grade bus communication chip. Any industrial equipment with RS485 communication capability can directly control the driver's operation following the Modbus-RTU protocol.

If necessary, up to 64 drivers can be connected in series to achieve a reliable mid-to-large scale driver network at a low cost.

II. Communication Rate and Distance

The communication rate and distance are related to the specific on-site environment. The typical relationship between rate and distance is as follows:

Communication Rate (bps)	Communication Distance (m)
9600	1000
19200	1000
38400	1000
57600	800
115200	500
256000	250

Due to external interference and differences in the number of bus nodes, the actual on-site communication rate and distance may vary.

III. Modbus-RTU/RS485

For Modbus-RTU/RS485 protocol and standards, please refer to relevant documents. This manual only elaborates on protocol and standard content related to driver usage.

IV. Master Communication Parameters

- **Baud Rate:** Factory default is 115200. The driver baud rate can be set by the user. The master station must be consistent with the slave station.
- **Data Bits:** 8
- **Stop Bits:** 1
- **Parity:** None

V. Address Domain

- **0:** Broadcast address. All child nodes can recognize the broadcast address but do not return a response frame.
- **1~64:** Child node RTU addresses (RTU refers to Remote Terminal Unit, here referring to the driver).
- Child nodes can be increased according to customer needs; default is 64.

VI. Function Codes

The function codes supported by the driver are as follows:

Function Code	Function Definition	Format
0x04	Read single register	WORD
0x03	Read single or multiple registers	WORD/DWORD/QWORD

0x06	Write single register	WORD
0x10	Write multiple registers	WORD/DWORD/QWORD

Data: Contains the register address and operation data to be operated.

CRC Check Code: Performs CRC check.

Data Frame Summary								
Operation	**Data Frame**	**Address**	**Function Code**	**Register Address**		**Quantity/Data**		**CRC**
Read Single Register 0x04	Request	1 byte	0x04	2 bytes	-	2 bytes	-	2 bytes
	Response	1 byte	0x04	1 byte	-	2 bytes	-	2 bytes
Read Single/Multiple Registers 0x03	Request	1 byte	0x03	2 bytes	-	2 bytes	-	2 bytes
	Response	1 byte	0x03	1 byte	-	2n bytes	-	2 bytes
Write Single Register 0x06	Request	1 byte	0x06	2 bytes	-	2 bytes	-	2 bytes
	Response	1 byte	0x06	2 bytes	-	2 bytes	-	2 bytes
Write Multiple Registers 0x10	Request	1 byte	0x10	2 bytes	2 bytes	1 byte	2n bytes	2 bytes
	Response	1 byte	0x10	2 bytes	-	2 bytes	-	2 bytes

Note: 1. n represents data length. The driver memory unit is WORD type, i.e., 2 bytes. Therefore, in multi-byte read/write operations, the number of bytes is a multiple of 2. 2. CRC check is in little-endian format, while all others are in big-endian format.

VII. Register List

Memory	**Data Type**	**Description**	**Factory Setting**	**Access**	**Unit**
0x0000	STRING	Hardware Version	Based on model	RO	-
0x0001	-	-	-	-	-
0x0002	STRING	Software Version	Based on model	RO	-
0x0003	-	-	-	-	-
0x0004	INT32	Motor Real-time Position	-	RO	pulses
0x0005	-	-	-	-	-
0x0006	UINT32	Status Register	-	RO	-
0x0007	-	-	-	-	-
0x0008	UINT16	Serial Timeout Setting	0	RW	ms
0x0009	UINT16	Comm Parameter Setting	12	RW	-
0x000A	UINT16	Smoothing Constant (Pulse Delay)	250	RW	-
0x000B	UINT16	Dynamic Error Alarm Threshold	200	RW	Full step (1.8°)
0x000C	UINT16	Static Error Alarm Threshold	100	RW	Full step (1.8°)
0x000D	UINT16	Rated Current	Based on model	RW	0.01A
0x000E	UINT16	Idle Current & Min Running Current Percentage	Based on model	RW	%
0x000F	UINT16	Encoder Line Count	1000	RW	CPR
0x0010	UINT16	Position Deviation Warning	20	RW	Full step (1.8°)
0x0011	UINT16	Actual Position Deviation Value	-	RW	pulses

0x0012	UINT16	Shielding Settings	-	RW	-
0x0013	UINT16	Filter Frequency()	425K	RW	HZ
0x0015	UINT16	Programming Command Execution Position	0	RO	-
0x0016	UINT16	Dynamic Max Speed	-	RW	rpm
0x0017	UINT16	Min Encoder Line Count	200	RW	CPR
0x0018	UINT16	Brake Start Voltage & Output Voltage Percentage	-	RW	-
0x0019	INT16	Real-time Speed (Used for firmware version 112)	-	RO	rpm
-	INT16	Actual Given Current (Starting from firmware version 118)	-	RO	rpm
0x001A	UINT16	Real-time Current	-	RO	mA
0x001B	UINT16	Input 0 Delay Setting	2	RW	ms
0x001C	UINT16	Input 1 Delay Setting	2	RW	ms
0x001D	UINT16	Input 2 Delay Setting	2	RW	ms
0x001E	UINT16	Input 3 Delay Setting	2	RW	ms
0x001F	UINT16	Input 4 Delay Setting	2	RW	ms
0x0020	UINT16	Input 5 Delay Setting	2	RW	ms
0x0021	UINT16	Input 6 Delay Setting	2	RW	ms
0x0022	UINT16	Input 7 Delay Setting	2	RW	ms
0x0024	UINT32	Microsteps (Pulses per revolution)	4000	RW	pulses/rev
0x0025	-	-	-	-	-
0x0026	UINT16	Motor Inductance	Detected on power-up	RW	mH
0x0027	UINT16	Motor Resistance	Detected on power-up	RW	Ω
0x0028	UINT16	Motor Origin Position	Factory calibrated value	RW	-
0x0029	UINT16	Position Integral	100	RW	-
0x002C	UINT16	DIP Switch 1st Speed	5	RW	rpm
0x002D	UINT16	DIP Switch 2nd Speed	10	RW	rpm
0x002E	UINT16	DIP Switch 3rd Speed	15	RW	rpm
0x002F	UINT16	DIP Switch 4th Speed	30	RW	rpm
0x0030	UINT16	DIP Switch 5th Speed	60	RW	rpm
0x0031	UINT16	DIP Switch 6th Speed	90	RW	rpm
0x0032	UINT16	DIP Switch 7th Speed	120	RW	rpm
0x0033	UINT16	DIP Switch 8th Speed	150	RW	rpm
0x0044	UINT16	Bus Voltage Max Value	-	RW	0.01V
0x0045	UINT16	Overload Current Max Value	-	RW	0.01A
0x0046	UINT16	Lag Pulse Count Max Value	-	RW	pulses
0x0047	UINT16	Lead Pulse Count Max Value	-	RW	pulses
0x0048	UINT16	Bus Voltage Min Value	-	RW	0.01V
0x0066	UINT16	Driver Base Address	1	RW	-
0x0067	UINT16	Driver Address Source	0	RW	-

0x006B	UINT16	Motor Running Direction	0	RW	-
0x006C	UINT16	Reverse Port Level	0	WO	-
0x006D	UINT16	Limit Invalid/Valid	0	RW	-
0x006E	INT32	Software Negative Limit Setting	-2147483648	RW	pulses
0x006F	-	-	-	-	-
0x0070	INT32	Software Positive Limit Setting	2147483647	RW	pulses
0x0071	-	-	-	-	-
0x0075	UINT16	Programming Area Count Pointer	-	RW	-
0x0076	INT32	Programming Area Program Execution Counter	-	RO	counts
0x0077	-	-	-	-	-
0x0078	INT32	Programming Area Program Execution Max Count	-	RW	counts
0x0079	-	-	-	-	-
0x007A	INT32	Origin Offset Value	-	RW	pulses
0x007B	-	-	-	-	-
0x0096	UINT16	Start Speed	50	RW	rpm
0x0097	UINT16	Stop Speed	50	RW	rpm
0x0098	UINT16	Accel Time	120	RW	ms
0x0099	UINT16	Decel Time	120	RW	ms
0x009A	UINT16	Run Speed	300	RW	rpm
0x009B	UINT16	Left/Right Limit Port Setting & Cancel	-	RW	-
0x009C	UINT16	Enable & Origin Port Setting & Cancel	-	RW	-
0x009D	UINT16	Secondary Homing Setting	-	RW	-
0x009E	UINT16	Constant Torque Running Mode Setting	-	RW	-
0x009F	UINT16	Running Mode Setting	3	RW	-
0x00A0	UINT16	Open Output Port	-	WO	-
0x00A1	UINT16	Close Output Port	-	WO	-
0x00A2	UINT16	Read Output Port Status	-	RO	-
0x00A3	UINT16	Read Alarm Status	-	RO	-
0x00A4	UINT16	Clear Alarm Status	-	WO	-
0x00A5	UINT16	Set Alarm Output Port	257	RW	-
0x00A6	UINT16	Set Dynamic Output Port	514	RW	-
0x00A7	UINT16	Set In-Position Output Port	514	RW	-
0x00A8	INT32	Position Reminder Register (X11)	-	RW	pulses
0x00A9	-	-	-	-	-
0x00AA	UINT16	Set Table Size	-	RW	-
0x00AB	UINT16	Set Table Pointer	-	RW	-
0x00AC	UINT16	Set Table Start Address	-	RW	-
0x00AD	UINT16	Set Emergency Stop to Designated Input	-	RW	-

0x00AE	UINT16	Set Homing Complete to Designated Output	-	RW	-
0x00AF	UINT16	Set Speed Change Input	-	RW	-
0x00B0	UINT16	-	-	RW	-
0x00B1	UINT16	-	-	RW	-
0x00B2	UINT16	-	-	RW	-
0x00B3	UINT16	Change Speed 1	0	RW	rpm
0x00B4	UINT16	Change Speed 2	0	RW	rpm
0x00B5	UINT16	Change Speed 3	0	RW	rpm
0x00B8	UINT16	Change Speed 4	0	RW	rpm
0x00B6	UINT32	Set Dynamic Positioning	0	RW	-
0x00B7	-	-	-	-	-
0x00BA	UINT32	Config IO Port Function	-	RW	-
0x00BB	-	-	-	-	-
0x00BE	INT16	Rotor Offset	0	RW	1/4000 DEG
0x00BF	UINT16	Position Proportion	100	RW	-
0x0029	UINT16	Position Integral	100	RW	-
0x00C0	UINT16	Speed Proportion	3200	RW	-
0x00C1	UINT16	Speed Integral	25	RW	-
0x00C2	INT32	Position Reminder Register (X17)	1073741823	RW	-
0x00C3	-	-	-	-	-
0x00C4	INT32	Position Reminder Register (X18)	1073741823	RW	-
0x00C5	-	-	-	-	-
0x00C6	INT32	Position Reminder Register (X19)	1073741823	RW	-
0x00C7	-	-	-	-	-
0x00C8	UINT16	Run or Stop	-	WO	-
0x00C9	UINT16	Homing Execution Register	-	WO	-
0x00CA	UINT16	Motor Jog	-	WO	-
0x00CB	UINT16	Execute Constant Torque Running	-	WO	-
0x00CC	INT32	Motor Running Duration	-	WO	ms
0x00CD	-	-	-	-	-
0x00CE	INT32	Motor Running Pulse Count (Execute only when stopped)	-	WO	pulses
0x00CF	-	-	-	-	-
0x00D0	INT32	Motor Run to Absolute Position (Execute only when stopped)	-	WO	pulses
0x00D1	-	-	-	-	-
0x00D2	INT32	Set Current Motor Position	0	RO	pulses
0x00D3	-	-	-	-	-
0x00D4	UINT16	Release/Enable/Driver Restart	-	WO	-
0x00D5	UINT16	Actual Given Speed	-	RO	rpm-

0x00D6	INT32	Real-time Speed	0	RO	0.01rpm
0x00D7	-	-	-	-	-
0x00D8	INT32	Running Speed	30000	RW	0.01rpm
0x00D9	-	-	-	-	-
0x00DB	UINT16	Execute Programming Command	-	WO	-
0x00DC	UINT16	Power Save Command	-	WO	-
0x00DD	UINT16	Execute Table Data Register	-	WO	-
0x00DE	INT32	Motor Running Pulse Count (Execute while running or stopped)	-	WO	pulses
0x00DF	-	-	-	-	-
0x00E8	INT32	Motor Run to Absolute Position (Execute while running or stopped)	-	WO	pulses
0x00E9	-	-	-	-	-

VIII. Register Details

1. Driver Hardware Version Number

Address: 0x0000~0x0001
Description: Driver hardware version number.
Operation: ReadDWORD

BIT	Name	Type	Range	Default	Description
0~31	Driver Model	String	0~4294967295	Factory Value	Read: Driver Name, Write: Illegal

This register is factory-programmed. The register value is converted to ASCII code to form the actual version number.

Example (In the example, the station number is the driver address, set via DIP switch. If the address is changed, re-verification is required):

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC	
Send	Send	01	03	00	00	00	02	C4 0B	
Return	Return	01	03	04	37 ②	31 ①	00 ④	30 ③	A5 9C

Conversion order is ②①③④, every 8 bits are converted to an ASCII code. 0x00 means no more data. The returned value in the table is 170.

2. Driver Software Version Number

Address: 0x0002~0x0003
Description: Driver software version number.
Operation: ReadDWORD

BIT	Name	Type	Range	Default	Description
0~31	Driver Model	String	0~4294967295	Factory Value	Read: Driver Name, Write: Illegal

This register is factory-programmed. The register value is converted to ASCII code to form the actual version number.

Example (In the example, the station number is the driver address, set via DIP switch. If the address is changed, re-verification is required):

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC	
Send	Send	01	03	00	02	00	02	65 CB	
Return	Return	01	03	04	30 ②	31 ①	00 ④	35 ③	64 EB

Conversion order is ②①③④, every 8 bits are converted to an ASCII code. 0x00 means no more data. The returned value in the table is 105.

3. Motor Real-time Position Register

Address: 0x0004~0x0005
Description: Current absolute position of the motor (Command position for open-loop, Encoder position for closed-loop).
Operation: ReadDWORD

BIT	Name	Type	Range	Default	Description
0~31	Driver Model	INT32	-2147483648~2147483647	Factory Value	Read: Driver Name, Write: Illegal

Example (In the example, the station number is the driver address, set via DIP switch. If the address is changed, re-verification is required):

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC	
Send	Send	01	03	00	04	00	02	85 CA	
Return	Return	01	03	04	00	00	00	00	FA 33

4. Running and Input Status Register

Address: 0x0006~0x0007
Description: Motor running status and input status.
Operation: ReadWORD

BIT	Name	Type	Range	Default	Description
22~31	Reserved X22~X31	BIT	0	0	Reserved, value is always 0
21	Driver Alarm Status	BIT	0~1	0	1 means alarm, 0 means normal
20	Position Deviation Warning X20	BIT	0~1	0	Deviation direction, negative deviation is 0, positive deviation is 1
19	Position Reminder Flag X19	BIT	0~1	0	Can be set >= or <=, value is 1 when position is exceeded
18	Position Reminder Flag X18	BIT	0~1	0	Can be set >= or <=, value is 1 when position is exceeded
17	Position Reminder Flag X17	BIT	0~1	0	Can be set >= or <=, value is 1 when position is exceeded
16	Enable Level Flag X16	BIT	0~1	0	1 means high level enable, 0 means low level enable
15	Origin Complete Flag X15	BIT	0~1	0	1 means at origin, 0 means not at origin
14	Software Positive Limit Flag X14	BIT	0~1	0	Value is 1 when software positive limit is reached
13	Software Negative Limit Flag X13	BIT	0~1	0	Value is 1 when software negative limit is reached
12	In-Position Output Flag X12	BIT	0~1	0	1 means in position, 0 means running
11	Position Reminder Flag X11	BIT	0~1	0	Can be set >= or <=, value is 1 when position is exceeded
10	Position Deviation Warning X10	BIT	0~1	0	Value is 1 when rotor position and command position exceed 0x0010 setting
9	Running State X8,X9	BIT	0~1	0	00: Idle, 01: About to start, 10: About to stop, 11: Running
8	-	BIT	0~1	0	-
7	X7 Input Status	BIT	0~1	0	X7 input status, 1 means input (high level), 0 means no input
6	X6 Input Status	BIT	0~1	0	X6 input status, 1 means input (high level), 0 means no input
5	X5 Input Status	BIT	0~1	0	X5 input status, 1 means input (high level), 0 means no input
4	X4 Input Status	BIT	0~1	0	X4 input status, 1 means input (high level), 0 means no input
3	X3 Input Status	BIT	0~1	0	X3 input status, 1 means input (high level), 0 means no input
2	X2 Input Status	BIT	0~1	0	X2 input status, 1 means input (high level), 0 means no input

1	X1 Input Status	BIT	0~1	0	X1 input status, 1 means input (high level), 0 means no input
0	X0 Input Status	BIT	0~1	0	X0 input status, 1 means input (high level), 0 means no input

Example: When X1 has input and the motor is running, the read result is as follows.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC	
Send	Send	01	03	00	06	00	02	24 0A	
Return	Return	01	03	04	03	02	00	00	5B B7

5. Serial Timeout Setting Register

Address: 0x0008
Description: Serial port timeout setting. Exceeding the set value defaults to offline. 0 means cancel.
Operation: ReadWORD/WriteWORD, Memory (Power save requires sending power save command, applies to all memory registers)

BIT	Name	Type	Range	Default	Description
0~15	Serial Timeout	UINT16	0~65535	Memory Value	R/W: Serial timeout, factory default 0. Unit: 10ms

Example: Read serial timeout time.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC	
Send	Send	01	03	00	08	00	01	-	05 C8
Return	Return	01	03	02	00	00	B8 44	-	-

Set timeout time 100ms. Divided by 10, the value is 0x000A.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	08	00	0A	88 0F

6. Baud Rate Setting Register

Address: 0x0009
Description: Set driver baud rate.
Operation: ReadWORD/WriteWORD, Memory (Power save requires sending power save command)

BIT	Name	Type	Range	Default	Description
15~12	Reserved	Bit	0	0	Reserved
11~10	Stop Bit Selection	Bit	0~3	0	0: Stop bit 1; 1: Stop bit 0.5; 2: Stop bit 2; 3: Stop bit 1.5
9~8	Parity Selection	Bit	0~3	0	0: No parity; 1: Even parity; 3: Odd parity
7~0	Driver Baud Rate	Bit	1~15	12	R/W: Driver baud rate. Factory default 115200

Baud rate correspondence:
1=300, 2=600, 3=1200, 4=2400, 5=4800, 6=9600, 7=14400, 8=19200, 9=38400, 10=56000, 11=57600, 12=115200, 13=230400, 14=460800, 15=921600.

Example: Read default baud rate 0x000C, i.e., 115200.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC	
Send	Send	01	03	00	09	00	01	-	54 08
Return	Return	01	03	02	00	0C	B8 41	-	-

Set baud rate to 9600, Even parity, value is 0x0106.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	09	01	06	D8 5A

Note: It takes effect immediately after setting. If power-off saving is required, modify communication parameters without cutting power to the driver, then send the power save command. After completion, power can be cut. Otherwise, it will revert to factory default 115200 after power-off.

7. Smoothing Constant

Address: 0x000A
Description: Set smoothing constant.
Operation: ReadWORD/WriteWORD, Memory

BIT	Name	Type	Range	Default	Description
0~15	Smoothing Constant	UINT16	1~2500	Memory Value	R/W: Smoothing constant. Factory default: Open loop---250, Closed loop---25

Smaller value = better smoothing, longer pulse delay, slower response.
Larger value = worse smoothing, shorter pulse delay, faster response.

Pulse Delay (ms) = 1000 ÷ Smoothing Constant.

Example: Read default smoothing constant 0x00FA, i.e., pulse delay 4ms.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC	
Send	Send	01	03	00	0A	00	01	-	A4 08
Return	Return	01	03	02	00	FA	38 07	-	-

Set smoothing constant 0x03E8, i.e., pulse delay 1ms.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	0A	03	E8	A9 76

8. Dynamic Error Alarm Threshold

Address: 0x000B
Description: Set position error alarm threshold during running (Closed-loop only).
Operation: ReadWORD/WriteWORD, Memory

BIT	Name	Type	Range	Default	Description
0~15	Running Position Error Alarm Threshold	UINT16	0~65535	Memory Value	Alarm when running position error reaches this value. 0 means cancel. Unit: 1.8°

Example: Read default value 200 steps (equivalent to 360°).

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC	
Send	Send	01	03	00	0B	00	01	-	F5 C8
Return	Return	01	03	02	00	C8	B9 D2	-	-

Set running alarm threshold to 100 steps (180°) alarm.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	0B	00	64	F9 E3

9. Static Error Alarm Threshold

Address: 0x000C
Description: Set position error alarm threshold when stopped (Closed-loop only).
Operation: ReadWORD/WriteWORD, Memory

BIT	Name	Type	Range	Default	Description
0~15	Stopped Position Error Alarm Threshold	UINT16	0~65535	Memory Value	Alarm when stopped position error reaches this value. 0 means cancel. Unit: 1.8°

Example: Read default value 100 steps (equivalent to 180°).

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC	
Send	Send	01	03	00	0C	00	01	-	44 09
Return	Return	01	03	02	00	C8	B9 D2	-	-

Set stopped alarm threshold to 50 steps (90°) alarm.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	0C	00	32	C8 1C

10. Motor Rated Current

Address: 0x000D
Description: Set motor rated current.
Operation: ReadWORD/WriteWORD, Memory

BIT	Name	Type	Range	Default	Description
0~15	Set Motor Rated Current	UINT16	10~650	Memory Value	Write: Motor rated current. Unit: 0.01A

Example: Read default value 100, equivalent to 1A.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC	
Send	Send	01	03	00	0D	00	01	-	15 C9
Return	Return	01	03	02	00	64	B9 AF	-	-

Set motor rated current to 500, equivalent to 5A.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	0D	01	F4	18 1E

11. Idle Current and Min Running Current Percentage

Address: 0x000E
Description: Set motor idle current and running minimum current percentage.
Operation: ReadWORD/WriteWORD, Memory

BIT	Name	Type	Range	Default	Description	
Open loop	15~8	Reserved	BIT	1~100	0	Reserved, no meaning
-	7~0	Idle Current Percentage	BIT	1~100	Memory Value	Motor idle current percentage
Closed loop	15~8	Running Min Current Percentage	BIT	1~100	Memory Value	Min running current percentage
-	7~0	Idle Current Percentage	BIT	1~100	Memory Value	Motor idle current percentage

Example: Closed-loop read default value 0x1919. Idle current 25%, running min current 25%.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC	
Send	Send	01	03	00	0E	00	01	-	E5 C9
Return	Return	01	03	02	19	19	72 1E	-	-

Set running min current 25%, idle current 50%, value 0x1932.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	0E	19	32	62 4C

12. Encoder Line Count

Address: 0x000F
Description: Set encoder line count (Closed-loop only).
Operation: ReadWORD/WriteWORD, Memory

BIT	Name	Type	Range	Default	Description
0~15	Motor Encoder Line Count	UINT16	1~65535	Memory Value	R/W: Motor encoder line count. Unit: Lines

Encoder Resolution = Encoder Line Count x 4.
Example: Closed-loop read default value 1000.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC	
Send	Send	01	03	00	0F	00	01	-	B4 09
Return	Return	01	03	02	03	E8	B8 FA	-	-

Set encoder line count to 2500, value 0x09C4.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	0F	09	C4	BE 0A

13. Position Deviation Warning

Address: 0x0010
Description: Set position deviation between rotor and command position. When exceeded, X10 in status register becomes 1 (Closed-loop only).
Operation: ReadWORD/WriteWORD, Memory

BIT	Name	Type	Range	Default	Description
0~15	Position Deviation Warning Setting	UINT16	1~65535	Memory Value	R/W: Position deviation warning value. Factory default 20. Unit: 1.8°

Example: Closed-loop read default value 20.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC	
Send	Send	01	03	00	10	00	01	-	85 CF
Return	Return	01	03	02	00	14	B8 4B	-	-

Set rotor and command position deviation to 100, value 0x0064.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	10	00	64	89 E4

14. Actual Position Deviation Value

Address: 0x0011
Description: Actual deviation value between rotor position and command position.
Operation: ReadWORD

BIT	Name	Type	Range	Default	Description
0~15	Rotor and Command Position Deviation Value	INT16	-32768~32767	Memory Value	Read: Actual deviation value. Unit: 0.01 pulses (Firmware 112+, unit is encoder resolution counts)

Positive means lead pulse, negative means lag pulse.
Example: Read actual position deviation value.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC	
Send	Send	01	03	00	11	00	01	-	D4 0F
Return	Return	01	03	02	00	00	B8 44	-	-

15. Custom Setting Register

Address: 0x0012
Description: Custom Settings.
Operation: ReadWORD

BIT	Name	Type	Range	Default	Description
15	Reserved	BIT	0~1	0	Reserved, value always 0
14	Reserved	BIT	0~1	0	Reserved, value always 0
13	Reserved	BIT	0~1	0	Reserved, value always 0
12	Reserved	BIT	0~1	0	Reserved, value always 0
11	Disable USB	BIT	0~1	0	Disable USB debug port: 0 default, 1 disable
10	Protocol Selection	BIT	0~1	0	Default new protocol, 1 old protocol (Subdivision 7 and 36, speed 154, real-time speed 25)
9	Acceleration Priority	BIT	0~1	0	Default non-acceleration priority, 1 acceleration priority
8	Collision Homing 0 Offset Mode	BIT	0~1	0	0: Set pulse count; 1: Z-phase 16 division, nearest principle
7	Power-on Self-test	BIT	0~1	0	0 allow, 1 forbid
6	Valid Edge	BIT	0~1	0	0: Rising edge, 1: Falling edge
5	Release Brake When Off-line	BIT	0~1	0	0 allow, 1 forbid
4	Power-on Enable	BIT	0~1	0	0 enable, 1 not enable
3	Test Mode	BIT	0~1	0	0 allow enter, 1 forbid enter
2	Under-voltage Reset	BIT	0~1	0	0 forbid reset, 1 allow reset
1	Under-voltage Alarm	BIT	0~1	0	0 allow alarm, 1 forbid alarm
0	Phase Open Circuit Alarm	BIT	0~1	0	0 allow alarm, 1 forbid alarm

Example: Read factory default value, result as follows.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC	
Send	Send	01	03	00	12	00	01	-	24 0F
Return	Return	01	03	02	00	00	B8 44	-	-

Forbid phase open circuit alarm and forbid entering test mode.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	12	00	09	E9 C9

16. Programming Area Command Execution Position

Address: 0x0015
Description: Programming area command execution position.
Operation: ReadWORD

BIT	Name	Type	Range	Default	Description
0~15	Programming Area Command Execution Position	UINT16	1~4095	Memory Value	Read: Programming area command execution position

Example: Programming area command execution position.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC	
Send	Send	01	03	00	15	00	01	-	95 CE
Return	Return	01	03	02	00	00	B8 44	-	-

17. Dynamic Max Speed

Address: 0x0016
Description: Max speed during running.
Operation: ReadWORD/WriteWORD, No Memory

BIT	Name	Type	Range	Default	Description
0~15	Dynamic Max Speed	UINT16	0~65535	Memory Value	Read: Max speed during running. Write 0 to clear. Unit: rpm

Note: The max speed value during running changes at any time, only displaying the measured maximum. If you need to retest, write 0 to clear the current maximum and retest.

Example: Read max speed during running.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC	
Send	Send	01	03	00	16	00	01	-	65 CE
Return	Return	01	03	02	00	27	F8 5E	-	-

Clear max speed record value.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	16	00	00	68 0E

18. Min Encoder Line Count Setting (Open-loop/Closed-loop switching)

Address: 0x0017
Description: Set encoder min line count (Closed-loop only). If actual encoder lines are less than this, it works in open-loop mode.
Operation: ReadWORD/WriteWORD, Memory

BIT	Name	Type	Range	Default	Description
0~15	Encoder Min Resolution	UINT16	1~65535	Memory Value	R/W: Encoder min resolution. Factory default 50. Unit: Lines

Example: Closed-loop read default value 200.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC	
Send	Send	01	03	00	17	00	01	-	34 0E
Return	Return	01	03	02	00	C8	B9 D2	-	-

Assume actual encoder is 1000 lines, now change to open-loop. Set encoder min lines to 2000, value 0x07D0.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	17	07	D0	3A 62

19. Read Current Motor Actual Running Speed (Firmware version SV113+ please use register 0x00D6~0x00D7)

Address: 0x0019
Description: Read real-time speed (Pulse speed for open-loop, Rotor speed for closed-loop).
Operation: ReadWORD

BIT	Name	Type	Range	Default	Description
0~15	Real-time Speed	INT16	-32768~32767	0	Read: Real-time speed. Negative is negative direction, positive is positive. Unit: rpm. Write: Illegal

Example: Read real-time speed when static is 0.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC	
Send	Send	01	03	00	19	00	01	-	55 CD
Return	Return	01	03	02	00	00	B8 44	-	-

20. Read Current Motor Actual Running Current

Address: 0x001A
Description: Read motor real-time running current.
Operation: ReadWORD

BIT	Name	Type	Range	Default	Description
0~15	Real-time Running Current	UINT16	0~65535	0	Read: Real-time running current. Unit: mA. Write: Illegal

Example: Read motor real-time current.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC	
Send	Send	01	03	00	1A	00	01	-	A5 CD
Return	Return	01	03	02	02	0D	78 E1	-	-

Current value changes constantly, so read results should differ each time.

21. Input 0 Delay Setting

Address: 0x001B
Description: Input 0 (X0) receive signal delay time setting.
Operation: ReadWORD/WriteWORD, Memory

BIT	Name	Type	Range	Default	Description
0~15	X0 Receive Delay	UINT16	0~65535	Memory Value	R/W: X0 (Input 0) receive signal delay time. Unit: ms

Example: Read default value 2.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC	
Send	Send	01	03	00	1B	00	01	-	F4 0D
Return	Return	01	03	02	00	02	39 85	-	-

Set input 0 receive signal delay time 50ms.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	1B	00	32	78 18

22. Input 1 Delay Setting

Address: 0x001C
Description: Input 1 (X1) receive signal delay time setting.
Operation: ReadWORD/WriteWORD, Memory

BIT	Name	Type	Range	Default	Description
0~15	X1 Receive Delay	UINT16	0~65535	Memory Value	R/W: X1 (Input 1) receive signal delay time. Unit: ms

Example: Read default value 2.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC	
Send	Send	01	03	00	1C	00	01	-	45 CC
Return	Return	01	03	02	00	02	39 85	-	-

Set input 1 receive signal delay time 50ms.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	1C	00	32	C9 D9

23. Input 2 Delay Setting

Address: 0x001D
Description: Input 2 (X2) receive signal delay time setting.
Operation: ReadWORD/WriteWORD, Memory

BIT	Name	Type	Range	Default	Description
0~15	X2 Receive Delay	UINT16	0~65535	Memory Value	R/W: X2 (Input 2) receive signal delay time. Unit: ms

Example: Read default value 2.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC	
Send	Send	01	03	00	1D	00	01	-	14 0C
Return	Return	01	03	02	00	02	39 85	-	-

Set input 2 receive signal delay time 50ms.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	1D	00	32	98 19

24. Input 3 Delay Setting

Address: 0x001E
Description: Input 3 (X3) receive signal delay time setting.
Operation: ReadWORD/WriteWORD, Memory

BIT	Name	Type	Range	Default	Description
0~15	X3 Receive Delay	UINT16	0~65535	Memory Value	R/W: X3 (Input 3) receive signal delay time. Unit: ms

Example: Read default value 2.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC	
Send	Send	01	03	00	1E	00	01	-	E4 0C
Return	Return	01	03	02	00	02	39 85	-	-

Set input 3 receive signal delay time 150ms.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	1E	00	96	69 A2

25. Input 4 Delay Setting

Address: 0x001F
Description: Input 4 (X4) receive signal delay time setting.
Operation: ReadWORD/WriteWORD, Memory

BIT	Name	Type	Range	Default	Description
0~15	X4 Receive Delay	UINT16	0~65535	Memory Value	R/W: X4 (Input 4) receive signal delay time. Unit: ms

Example: Read default value 2.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC	
Send	Send	01	03	00	1F	00	01	-	B5 CC
Return	Return	01	03	02	00	02	39 85	-	-

Set input 4 receive signal delay time 200ms.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	1F	00	C8	B9 9A

26. Input 5 Delay Setting

Address: 0x0020
Description: Input 5 (X5) receive signal delay time setting.
Operation: ReadWORD/WriteWORD, Memory

BIT	Name	Type	Range	Default	Description
0~15	X5 Receive Delay	UINT16	0~65535	Memory Value	R/W: X5 (Input 5) receive signal delay time. Unit: ms

Example: Read default value 2.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC	
Send	Send	01	03	00	20	00	01	-	85 C0
Return	Return	01	03	02	00	02	39 85	-	-

Set input 5 receive signal delay time 250ms.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	20	00	FA	08 43

27. Input 6 Delay Setting

Address: 0x0021
Description: Input 6 (X6) receive signal delay time setting.
Operation: ReadWORD/WriteWORD, Memory

BIT	Name	Type	Range	Default	Description
0~15	X6 Receive Delay	UINT16	0~65535	Memory Value	R/W: X6 (Input 6) receive signal delay time. Unit: ms

Example: Read default value 2.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC	
Send	Send	01	03	00	21	00	01	-	D4 00
Return	Return	01	03	02	00	02	39 85	-	-

Set input 6 receive signal delay time 300ms.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	21	01	2C	D9 8D

28. Input 7 Delay Setting

Address: 0x0022
Description: Input 7 (X7) receive signal delay time setting.
Operation: ReadWORD/WriteWORD, Memory

BIT	Name	Type	Range	Default	Description
0~15	X7 Receive Delay	UINT16	0~65535	Memory Value	R/W: X7 (Input 7) receive signal delay time. Unit: ms

Example: Read default value 2.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC	
Send	Send	01	03	00	22	00	01	-	24 00
Return	Return	01	03	02	00	02	39 85	-	-

Set input 7 receive signal delay time 500ms.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	22	01	F4	29 D7

29. 32-bit Subdivision Register

Address: 0x0024~0x0025
Description: Set 32-bit subdivision, supports subdivision > 65535.
Operation: ReadDWORD/WriteDWORD, Memory

BIT	Name	Type	Range	Default	Description
0~31	32-bit Subdivision	UINT32	200~1000000	Factory Value	R/W: Driver subdivision, positive integer, factory default 4000. Unit: pulses/rev

Example: Read default subdivision 4000.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC	
Send	Send	01	03	00	24	00	02	84 00	-
Return	Return	01	03	04	0F	A0	00	00	F9 05

Set subdivision to 10000.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Count	Byte Count	Data Hi	Data Lo	Data Hi	Data Lo	CRC		
Send	Send	01	10	00	24	00	02	04	27	10	00	00	FB 35	
Return	Return	01	10	00	24	00	02	01	C3	-	-	-	-	-

30. Motor Inductance Register

Address: 0x0026
Description: Set motor inductance.
Operation: ReadWORD/WriteWORD, Memory

BIT	Name	Type	Range	Default	Description
0~15	Motor Inductance	UINT16	0~65535	Memory Value	R/W: Motor inductance, unsigned. Unit: 0.01mH

Note: Driver will automatically detect motor inductance and resistance on power-up. If you set it manually and save power, the set value will be used. Next power-on will not re-test.

Example: Read motor inductance 3.7 mH. Value is 370.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC	
Send	Send	01	03	00	26	00	01	-	65 C1
Return	Return	01	03	02	01	72	39 F1	-	-

Set motor inductance to 1.5 mH, value 0x0096.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	26	00	96	E8 6F

31. Motor Resistance Register

Address: 0x0027
Description: Set motor resistance.
Operation: ReadWORD/WriteWORD, Memory

BIT	Name	Type	Range	Default	Description
0~15	Motor Resistance	UINT16	0~65535	Memory Value	R/W: Motor resistance, unsigned. Unit: 0.01Ω

Note: Driver will automatically detect motor inductance and resistance on power-up. If you set it manually and save power, the set value will be used. Next power-on will not re-test.

Example: Read motor resistance 0.6Ω. Value is 60.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC	
Send	Send	01	03	00	27	00	01	-	34 01
Return	Return	01	03	02	00	3C	B8 55	-	-

Set motor resistance value to 1Ω, value 0x0064.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	27	00	64	38 2A

32. Bus Voltage Max Value

Address: 0x0044
Description: Read bus voltage max value.
Operation: ReadWORD/WriteWORD

BIT	Name	Type	Range	Default	Description
0~15	Bus Voltage Max Value	UINT16	0~65535	Factory Value	Read: Bus voltage max value, unsigned. Unit: 0.01V

Example: Read bus voltage max value 24.21V.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC	
Send	Send	01	03	00	44	00	01	-	C4 1F
Return	Return	01	03	02	09	75	7F F3	-	-

Bus voltage max value changes at any time. To retest, write 0 to clear current max value.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	44	00	00	C9 DF

33. Overload Current Max Value

Address: 0x0045
Description: Read overload current max value.
Operation: ReadWORD/WriteWORD

BIT	Name	Type	Range	Default	Description
0~15	Overload Current Max Value	UINT16	0~65535	Factory Value	Read: Overload current max value, unsigned. Unit: 0.01A

Example: Read overload current max value 4.16A.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC	
Send	Send	01	03	00	45	00	01	-	95 DF
Return	Return	01	03	02	01	A0	B9 AC	-	-

Overload current max value changes at any time. To retest, write 0 to clear current max value.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	45	00	00	98 1F

34. Lag Pulse Max Value

Address: 0x0046
Description: Read max lag pulse value during running.
Operation: ReadWORD/WriteWORD

BIT	Name	Type	Range	Default	Description

0~15	Lag Pulse Max Value	UINT16	0~65535	Factory Value	Read: Lag pulse max value, unsigned. Unit: Pulse count (Software 112+, unit: encoder resolution counts)

Example: Read lag pulse max value 199 pulses.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC	
Send	Send	01	03	00	46	00	01	-	65 DF
Return	Return	01	03	02	00	C7	F9 D6	-	-

Lag pulse max value changes at any time. To retest, write 0 to clear current max value.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	46	00	00	68 1F

35. Lead Pulse Max Value

Address: 0x0047
Description: Read max lead pulse value during running.
Operation: ReadWORD/WriteWORD

BIT	Name	Type	Range	Default	Description
0~15	Lead Pulse Max Value	UINT16	0~65535	Factory Value	Read: Lead pulse max value, unsigned. Unit: Pulse count (Software 112+, unit: encoder resolution counts)

Example: Read lead pulse max value 56 pulses.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC	
Send	Send	01	03	00	47	00	01	-	34 1F
Return	Return	01	03	02	00	38	B9 96	-	-

Lead pulse max value changes at any time. To retest, write 0 to clear current max value.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	47	00	00	39 DF

36. Bus Voltage Min Value

Address: 0x0048
Description: Read bus voltage min value.
Operation: ReadWORD/WriteWORD

BIT	Name	Type	Range	Default	Description
0~15	Bus Voltage Min Value	UINT16	0~65535	Factory Value	Read: Bus voltage min value, unsigned. Unit: 0.01V

Example: Read bus voltage min value 23.80V.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC	
Send	Send	01	03	00	48	00	01	-	04 1C
Return	Return	01	03	02	09	4C	BF E1	-	-

Bus voltage min value changes at any time. To retest, write 0 to clear current min value.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC

Send/Return	Send/Return	01	06	00	48	00	00	09 DC

37. Driver Base Address

Address: 0x0066
Description: Read/Write driver base address. When base address is 1, actual address = DIP address. Base + DIP address - 1 = actual address.
Operation: ReadWORD/WriteWORD, Memory

BIT	Name	Type	Range	Default	Description
0~15	Driver Base Address	UINT16	1~65535	Factory Value	R/W: Driver base address, factory default is 1, unsigned

Example: Read driver default base address is 1.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC
Send	Send	01	03	00	66	00	01	64 15
Return	Return	01	03	02	00	01	79 84	

Write base address as 2.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	66	00	02	E8 14

38. Motor Running Direction Setting

Address: 0x006B
Description: Read/Write motor running direction.
Operation: ReadWORD/WriteWORD, Memory (Power save requires sending power save command)

BIT	Name	Type	Range	Default	Description
0~15	Motor Running Direction	UINT16	0~1	Factory Value	R/W: Motor running direction. Factory default is 0 (CW).

Example: Read motor running direction.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC
Send	Send	01	03	00	6B	00	01	F5 D6
Return	Return	01	03	02	00	00	B8 44	

Write motor running direction as 1 (CCW).

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	6B	00	01	39 D6

39. Reverse Input Port Level

Address: 0x006C
Description: Write input port level signal.
Operation: WriteWORD, No Memory

BIT	Name	Type	Range	Description
15	Restore X7 Input Status	BIT	0~1	Restore X7 input status to factory value.
14	Restore X6 Input Status	BIT	0~1	Restore X6 input status to factory value.

13	Restore X5 Input Status	BIT	0~1	Restore X5 input status to factory value.
12	Restore X4 Input Status	BIT	0~1	Restore X4 input status to factory value.
11	Restore X3 Input Status	BIT	0~1	Restore X3 input status to factory value.
10	Restore X2 Input Status	BIT	0~1	Restore X2 input status to factory value.
9	Restore X1 Input Status	BIT	0~1	Restore X1 input status to factory value.
8	Restore X0 Input Status	BIT	0~1	Restore X0 input status to factory value.
7	Reverse X7 Input Status	BIT	0~1	Reverse X7 input status. Write 1 to reverse, write as many times to reverse as many times.
6	Reverse X6 Input Status	BIT	0~1	Reverse X6 input status. Write 1 to reverse, write as many times to reverse as many times.
5	Reverse X5 Input Status	BIT	0~1	Reverse X5 input status. Write 1 to reverse, write as many times to reverse as many times.
4	Reverse X4 Input Status	BIT	0~1	Reverse X4 input status. Write 1 to reverse, write as many times to reverse as many times.
3	Reverse X3 Input Status	BIT	0~1	Reverse X3 input status. Write 1 to reverse, write as many times to reverse as many times.
2	Reverse X2 Input Status	BIT	0~1	Reverse X2 input status. Write 1 to reverse, write as many times to reverse as many times.
1	Reverse X1 Input Status	BIT	0~1	Reverse X1 input status. Write 1 to reverse, write as many times to reverse as many times.
0	Reverse X0 Input Status	BIT	0~1	Reverse X0 input status. Write 1 to reverse, write as many times to reverse as many times.

Example: Reverse X2 level status.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	6C	00	04	48 14

40. Motor Start Speed Setting

Address: 0x0096
Description: Read/Write motor start speed. When target speed is less than start speed, target speed is used as start speed.
Operation: ReadWORD/WriteWORD, Memory

BIT	Name	Type	Range	Default	Description
0~15	Motor Start Speed	UINT16	0~300	Factory Value	R/W: Motor start speed, factory default 50. Unit: rpm

Example: Read motor start speed 50.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC
Send	Send	01	03	00	96	00	01	64 26
Return	Return	01	03	02	00	32	39 91	

Write motor start speed as 0.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	96	00	00	69 E6

41. Motor Stop Speed Setting

Address: 0x0097
Description: Read/Write motor stop speed. When target speed is less than stop speed, target speed is used as stop speed.
Operation: ReadWORD/WriteWORD, Memory

BIT	Name	Type	Range	Default	Description
0~15	Motor Stop Speed	UINT16	0~1000	Factory Value	R/W: Motor stop speed, factory default 50. Unit: rpm

Example: Read motor stop speed 50.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC
Send	Send	01	03	00	97	00	01	35 E6
Return	Return	01	03	02	00	32	39 91	

Write motor stop speed as 0.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	97	00	00	38 26

42. Motor Accel Time Setting

Address: 0x0098
Description: Read/Write motor acceleration time. Time required from start speed to target speed.
Operation: ReadWORD/WriteWORD, Memory

BIT	Name	Type	Range	Default	Description
0~15	Motor Accel Time	UINT16	0~65535	Factory Value	R/W: Motor acceleration time, factory default 120. Unit: ms

Example: Read motor default accel time 120.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC
Send	Send	01	03	00	98	00	01	05 E5
Return	Return	01	03	02	00	78	B8 66	

Write motor accel time to 200ms.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	98	00	C8	09 B3

43. Motor Decel Time Setting

Address: 0x0099
Description: Read/Write motor deceleration time. Time required from target speed to stop speed.
Operation: ReadWORD/WriteWORD, Memory

BIT	Name	Type	Range	Default	Description
0~15	Motor Decel Time	UINT16	0~65535	Factory Value	R/W: Motor deceleration time, factory default 120. Unit: ms

Example: Read motor decel time.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC
Send	Send	01	03	00	99	00	01	54 25
Return	Return	01	03	02	00	78	B8 66	

Write motor decel time to 300ms.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	99	01	2C	59 A8

44. Motor Running Target Speed Setting (For firmware version SV113 and above, please use register 0x00D8~0x00D9)

Address: 0x009A
Description: Read/Write motor running speed, i.e., target speed.
Operation: ReadWORD/WriteWORD, Memory

BIT	Name	Type	Range	Default	Description
0~15	Motor Running Speed	UINT16	0~10000	Factory Value	R/W: Motor running speed, factory default 300. Unit: rpm

Example: Read motor running speed.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC
Send	Send	01	03	00	9A	00	01	A4 25
Return	Return	01	03	02	01	2C	B8 09	

Write motor running speed to 200 rpm.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	9A	00	C8	A8 73

45. Read/Write Software Negative Limit

Address: 0x006E~0x006F
Description: Read/Write software negative limit. After setting, the motor cannot run to an absolute position smaller than this value; it stops automatically when running in reverse to this position.
Operation: ReadDWORD/WriteDWORD, Memory

BIT	Name	Type	Range	Default	Description
0~31	Read/Write Software Negative Limit	INT32	-2147483648~2147483647	-2147483648	R/W: Software negative limit

Example: Read software negative limit.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC	
Send	Send	01	03	00	6E	00	02	A5 D6	
Return	Return	01	03	04	00	00	80	00	9B F3

Write software negative limit to -10000.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Count	Byte Count	Data Hi	Data Lo	Data Hi	Data Lo	CRC	
Send	Send	01	10	00	6E	00	02	04	D8 F0	FF	FF	4F 28	
Return	Return	01	10	00	6E	00	02	20	15	-	-	-	-

46. Read/Write Software Positive Limit

Address: 0x0070~0x0071
Description: Read/Write software positive limit. After setting, the motor cannot run to an absolute position larger than this value; it stops automatically when running forward to this position.
Operation: ReadDWORD/WriteDWORD, Memory

BIT	Name	Type	Range	Default	Description
0~31	Read/Write Software Positive Limit	INT32	-2147483648~2147483647	2147483647	R/W: Software positive limit

Example: Read software positive limit.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC	
Send	Send	01	03	00	70	00	02	C5 D0	
Return	Return	01	03	04	FF	FF	7F	FF	9A 67

Write software positive limit to 10000.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Count	Byte Count	Data Hi	Data Lo	Data Hi	Data Lo	CRC	
Send	Send	01	10	00	70	00	02	04	27	10	00	00	FF FA
Return	Return	01	10	00	70	00	02	40	13	-	-	-	-

47. Positive/Negative Limit Setting (Hardware)

Address: 0x009B
Description: Read/Write motor positive/negative limits.
Operation: ReadWORD/WriteWORD, Memory

BIT	Name	Type	Range	Description
15~13	Set or Cancel Negative Limit	BIT	0~1	000 for cancel, 001 for set.
12	Negative Limit Output Signal	BIT	0~1	0: Low level active (PNP), 1: High level active (NPN).
11~8	Negative Limit Input Port Number	BIT	0~15	Port number, X0~X15 correspond to 0~15.
7~5	Set or Cancel Positive Limit	BIT	0~1	000 for cancel, 001 for set.
4	Positive Limit Output Signal	BIT	0~1	0: Low level active (PNP), 1: High level active (NPN).
3~0	Positive Limit Input Port Number	BIT	0~15	Port number, X0~X15 correspond to 0~15.

Note: After setting limits, all motion commands are executed within the limits. Motion stops immediately upon hitting a limit. When at a limit, only motion commands in the reverse direction of the limit are responded to. After setting hardware limits, software limits are invalid.

Example: Read motor positive/negative limits.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC
Send	Send	01	03	00	9B	00	01	F5 E5
Return	Return	01	03	02	00	00	B8 44	

Assume sensor is NPN type, set X0 as negative limit, X1 as positive limit input port. According to description, value is 0011 0000 0011 0001, converted to hex: 0x3031.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	9B	30	31	2D F1

48. Origin Setting

Address	Definition	BIT	Name	Type	Range	Description
0x009C	ReadWORD/WriteWORD, Memory	Set Enable Input Port				
-	-	15~13	Set or Cancel Enable Port	BIT	0~1	000 for cancel, 001 for set.
-	-	12	Enable Input Signal	BIT	0~1	0: Low level active (PNP), 1: High level active (NPN).

-	-	11~8	Enable Input Port Number	BIT	0~15	Port number, X0~X15 correspond to 0~15.
Set Origin Input Port						
-	-	7~5	Set or Cancel Origin Port	BIT	0~1	000 for cancel, 001 for set.
-	-	4	Origin Input Signal	BIT	0~1	0: Low level active (PNP), 1: High level active (NPN).
-	-	3~0	Origin Input Port Number	BIT	0~15	Port number, X0~X15 correspond to 0~15.
0x009D	ReadWORD/WriteWORD, Memory	Set Secondary Homing				
-	-	15	Secondary Homing Direction	BIT	0~1	0: CW, 1: CCW (Limit has priority).
-	-	14~0	Leave Origin Pulse Count	BIT	0~32767	After first homing, move forward (0) or reverse (1) by set pulse count, then homing again in reverse or forward.
0x00AE	ReadWORD/WriteWORD, Memory	Set Homing Complete Output Signal				
-	-	15~8	Output Status When Homing Complete	BIT	0~1	Output status when homing complete. 0: Open (Output on complete), 1: Closed (No output on complete).
-	-	7~0	Output Port Number	BIT	0~8	Port number, Y0~Y7 correspond to 1~8. 0 means cancel homing complete output function.
0x00C9	WriteWORD, No Memory	Execute Homing				
-	-	15	Homing Direction	BIT	0~1	0: Forward, 1: Reverse.
-	-	14~6	Homing Speed	BIT	0~511	Homing speed. If speed is 50, value is 0 0011 0010.
-	-	5	Stop Mode When Homing	BIT	0~1	0: Decel stop, 1: Immediate stop.
-	-	4~0	Secondary Homing Speed	BIT	0~31	Second homing speed. Speed is set value * 5. If 0, no second homing. Max 31*5 = 155 rpm.

Note: After setting limits, all motion commands are executed within limits. Motion stops immediately upon hitting a limit. Only motion commands in reverse direction of the limit are responded to.

Step 1: Set Origin Port (Required)

Assume sensor is NPN type, set X2 as origin input port. According to description, result is 0000 0000 0011 0010, converted to hex: 0x0032.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	9C	00	32	C8 31

Step 2: Set Secondary Homing Distance and Direction (Optional)

Assume after first homing, run forward 500 pulses, then homing. Binary is 0 000 0001 1111 0100, converted to hex: 0x01F4.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	9D	01	F4	18 33

Step 3: Set Homing Complete Output Signal (Optional)

Assume after homing, use Y1 as origin output port (Y1 default is In-Position output, need to cancel default first). Output signal to PLC on complete, value 0x0002.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	AE	00	02	69 EA

Step 4: Set Homing Method (Direction, Speed, Stop Mode, Secondary Speed)

Assume reverse homing, speed 200 rpm, immediate stop on origin, secondary speed 10(value)*5=50 rpm. According to description, binary is 1 011001000 1 01010, converted to hex: 0xB22A. (If limits set, reverse automatically on hitting limit).

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	C9	B2	2A	AC 8B

49. Torque Mode Setting (Closed-loop only)

Address	Definition	BIT	Name	Type	Range	Description
0x009E	ReadWORD/WriteWORD, Memory	Torque Mode Setting				
-	-	15~8	Collision Homing	BIT	1	Value 1: Execute collision homing.
-	-	-	Grab Object	BIT	2	Value 2: Execute grab object. Forward grab, reverse release; Reverse grab, forward release.
-	-	-	Constant Torque Run	BIT	3	Value 3: Constant torque running.
-	-	-	Constant Torque Hold	BIT	4	Value 4: Constant torque hold mode.
-	-	7~0	Torque Level	BIT	0~1	256 levels of torque, 0 is min, 255 is max. Motor needs to overcome own resistance. Do not set too small or motor won't move.
0x00CB	WriteWORD, Memory	Torque Mode Execute				
-	-	15	Running Direction	BIT	0~1	0: Forward, 1: Reverse. Meaningless for constant torque hold.
-	-	14~1	Offset Pulse Count	BIT	0~15	Collision homing: Offset pulses after collision as origin. Release object: Clamp release pulses. Constant torque run: Meaningless. Constant torque hold: Max correction pulses after pull.
-	-	0	Stop or Run	BIT	0~1	0: Stop, 1: Run.

Example: Step 1: Set torque mode and level. Assume collision homing, torque level 50. Value: 0x0132.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	9E	01	32	68 61

Step 2: Execute torque mode (Direction, offset, run/stop).

Assume forward collision to physical limit, offset 500 pulses as origin. Binary is 0 0000011111010 01, converted to hex: 0x03E9.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	CB	03	E9	39 4A

50. Running Mode Setting Register

Address: 0x009F
Description: Set running mode.
Operation: ReadWORD/WriteWORD, Memory

BIT	Name	Type	Range	Default	Description
0~15	Running Mode Setting	UINT16	1~3	Memory Value	R/W: Running mode. Factory default IO control mode.

1: Dual pulse mode. 2: Pulse+Direction mode. 3: I/O control mode. In dual pulse mode, X0(CW) and X1(CCW) are pulse ports. In pulse+direction mode, X0 is pulse port, X1 is direction port.

Example: Read default value 3, IO control mode.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC
Send	Send	01	03	00	9F	00	01	B4 24
Return	Return	01	03	02	00	03	F8 45	

Write running mode as Pulse+Direction mode.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	9F	00	02	38 25

51. Output Port Operation

Address	Definition	BIT	Name	Type	Range	Description
0x00A0	WriteWORD, No Memory	Open Output Port				
-	-	15~8	Reserved	BIT	0	Reserved.
-	-	7	Y7	BIT	0~1	Value 1 to open (close) Y7.
-	-	6	Y6	BIT	0~1	Value 1 to open (close) Y6.
-	-	5	Y5	BIT	0~1	Value 1 to open (close) Y5.
-	-	4	Y4	BIT	0~1	Value 1 to open (close) Y4.
-	-	3	Y3	BIT	0~1	Value 1 to open (close) Y3.
-	-	2	Y2	BIT	0~1	Value 1 to open (close) Y2.
-	-	1	Y1	BIT	0~1	Value 1 to open (close) Y1.
-	-	0	Y0	BIT	0~1	Value 1 to open (close) Y0.
0x00A1	WriteWORD, No Memory	Close Output Port				
-	-	15~8	Reserved	BIT	0	Reserved.
-	-	7	Y7	BIT	0~1	Value 1 to close (open) Y7.
-	-	6	Y6	BIT	0~1	Value 1 to close (open) Y6.
-	-	5	Y5	BIT	0~1	Value 1 to close (open) Y5.
-	-	4	Y4	BIT	0~1	Value 1 to close (open) Y4.
-	-	3	Y3	BIT	0~1	Value 1 to close (open) Y3.
-	-	2	Y2	BIT	0~1	Value 1 to close (open) Y2.
-	-	1	Y1	BIT	0~1	Value 1 to close (open) Y1.
-	-	0	Y0	BIT	0~1	Value 1 to close (open) Y0.
0x00A2	ReadWORD	Read Output Port Status				
-	-	15~8	Reserved	BIT	0	Reserved.
-	-	7	Y7	BIT	0~1	1: Y7 Closed, 0: Y7 Open.
-	-	6	Y6	BIT	0~1	1: Y6 Closed, 0: Y6 Open.

-	-	5	Y5	BIT	0~1	1: Y5 Closed, 0: Y5 Open.
-	-	4	Y4	BIT	0~1	1: Y4 Closed, 0: Y4 Open.
-	-	3	Y3	BIT	0~1	1: Y3 Closed, 0: Y3 Open.
-	-	2	Y2	BIT	0~1	1: Y2 Closed, 0: Y2 Open.
-	-	1	Y1	BIT	0~1	1: Y1 Closed, 0: Y1 Open.
-	-	0	Y0	BIT	0~1	1: Y0 Closed, 0: Y0 Open.
0x00A5	WriteWORD, Memory	Set/Cancel Alarm Output to Designated Port				
-	-	15~8	Alarm Output Status	BIT	0~1	0: Open (Output on alarm), 1: Closed (No output on alarm).
-	-	7~0	Port Number	BIT	0~8	Port number, Y0~Y7 correspond to 1~8. 0 means cancel.
0x00A6	WriteWORD, Memory	Set/Cancel Running Output to Designated Port				
-	-	15~8	Running Output Status	BIT	0~1	0: Open (Output on running), 1: Closed (No output on running).
-	-	7~0	Port Number	BIT	0~8	Port number, Y0~Y7 correspond to 1~8. 0 means cancel.
0x00A7	WriteWORD, Memory	Set/Cancel In-Position Output to Designated Port				
-	-	15~8	In-Position Output Status	BIT	0~1	0: Open (Output on in-position), 1: Closed (No output on in-position).
-	-	7~0	Port Number	BIT	0~8	Port number, Y0~Y7 correspond to 1~8. 0 means cancel.

Note: Open-loop default: Y0 is alarm output (Closed when alarming). Y1 is running output (Closed when running).
Closed-loop default: Y0 is alarm output (Closed when alarming). Y1 is in-position output (Closed when in-position).
If redefining, opening or closing Y0 or Y1, cancel the default output function first.

Example 1: Open Y0, Y1, Y6, then close all outputs.

Step 1: Cancel OUT0 and OUT1 default functions. Cancel alarm output, cancel running/in-position output.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	A5	00	00	99 E9
Send/Return	Send/Return	01	06	00	A6	00	00	69 E9
Send/Return	Send/Return	01	06	00	A7	00	00	38 29

Step 2: Open Y0, Y1, Y6. Binary: 1000011 -> Hex: 0x0043.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	A0	00	43	C8 19

Step 3: Close all outputs. Binary: 11111111 -> Hex: 0x00FF.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	A1	00	FF	98 68

Read output port status.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC
Send	Send	01	03	00	A2	00	01	25 E8
Return	Return	01	03	02	00	00	B8 44	

Example 2: Set Y0 as running output (Open when running, close when stopped). Set Y1 as alarm output (Open when alarming, close when normal).

Step 1: Cancel Y0 and Y1 default functions.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	A5	00	00	99 E9
Send/Return	Send/Return	01	06	00	A6	00	00	69 E9
Send/Return	Send/Return	01	06	00	A7	00	00	38 29

Step 2: Set Y0 and Y1 functions. Set Y0 as running output, normally open when running.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	A6	00	01	C8 19

52. Alarm Related Operations

Address	Definition	BIT	Name	Range	Definition	Description
0x00A3	ReadWORD	Historical Alarm Info				
-	-	15~13	3rd Historical Alarm	0~10	0: Normal	
-	-	-	1: Motor Phase Overcurrent	-		
-	11~8	2nd Historical Alarm	-	3: Supply Voltage High		
-	-	-	4: Supply Voltage Low	-		
-	-	7~4	1st Historical Alarm	-	5: Motor A Phase Open	
-	-	-	6: Other Alarm or Position Error			
-	-	-	7: Internal 24V Voltage Offset			
-	-	-	8: AI Voltage Error			
Current Alarm Status				3~0	Current Alarm Info	-	9: BI Voltage Error
-	-	-	10: Encoder Error			
0x00A4	WriteWORD	Clear Driver Alarm Status		0~15	Clear Alarm	BIT	0 to clear alarm status.

Example: Read alarm status.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Hi	Reg Lo	CRC
Send	Send	01	03	00	A3	00	01	74 28
Return	Return	01	03	02	00	03	F8 45	

Clear alarm status.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/ return	01	06	00	A4	00	04	29

53. Position Reminder Registers

Address	Operation	BIT	Name	Type	Range	Default	ID Bit	Description
0x00A8~0x00A9	ReadDWORD/WriteDWORD, Memory	0~31	Position Reminder Register	INT32	-2147483648~2147483647	Memory Value	X11	When MSB is 0, alert if >= value. When MSB is 1, alert if < value. Lower 31 bits are signed integer.
0x00C2~0x00C3	-	-	-	-	-	-	X17	
0x00C4~0x00C5	-	-	-	-	-	-	X18	
0x00C6~0x00C7	-	-	-	-	-	-	X19	

Example X11: Alert when current position > -500.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Count	Byte Count	Data Hi	Data Lo	Data Hi	Data Lo	CRC	
Send	Send	01	10	00	A8	00	02	04	FE	0C	7F	FF	69 EA
Return	Return	01	10	00	A8	00	02	C0	28				

Example X17: Alert when current position < 5000.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Count	Byte Count	Data Hi	Data Lo	Data Hi	Data Lo	CRC	
Send	Send	01	10	00	C2	00	02	04	13	88	80	00	9B 48
Return	Return	01	10	00	C2	00	02	E0	34	34			

54. Set, Call, Execute Table Data

Address	Definition	BIT	Name	Type	Range	Description
0x00AA	WriteWORD, Memory	0~15	Stored Data Count	BIT	1~2048	R/W: Number of data stored in the table.
0x00AB	WriteWORD, Memory	0~15	Data Execution Start Position	BIT	0~4095	R/W: Points to stored data position. First data position pointer is 0. One data occupies two registers.
0x00AC	WriteWORD, Memory	0~15	Stored Data Start Position	BIT	300~2048	R/W: Start address for stored data. Data format is 32-bit.
0x00DD	WriteWORD	15	Absolute or Relative Position	BIT	0~1	0: Absolute position, 1: Relative position.
-	14~12	Table Pointer Change Algorithm	BIT	0~1	0: Addition, 1: Subtraction.	
-	11~0	Table Pointer Change Constant	BIT	0~4095	Add constant to current pointer to get next data position.	

Example: Step 1: Determine table data.

Seq	Address	Data	Seq	Address	Data	Seq	Address	Data	Seq	Address	Data
0	500~501	25535	6	512~513	12345	12	524~525	1345	18	536~537	2345
1	502~503	-13575	7	514~515	-600	13	526~527	-6000	19	538~539	-5600
2	504~505	12352	8	516~517	5635	14	528~529	56315	20	540~541	8635
...	...	...	...	...	...	...	...	...			

Note: Table data address must be >= 300 (stored in programming area). If programming area has other commands, data must not overlap. If programming area 300-400 is used, set table start address to 500.

Step 2: Send table data to designated position. Send one by one or in batch (Max 200 bytes per command).

Step 3: Set table data quantity. Total 24 positions, set size to 24. Command: 01 06 00 AA 00 18 A9 E0

Step 4: Set table pointer. Start from 0. Execute from index 21 (value -1365), set pointer to 21. Command: 01 06 00 AB 00 15 39 E5

Step 5: Set table start address. Table start address is position in programming area. Actual address minus 300. If data starts at 500, start address is 200. Command: 01 06 00 AC 00 C8 48 7D

Step 6: Execute table data. Assuming data is absolute position, pointer decrements by 1 after each execution. Constant is 1. Command: 01 06 00 DD 10 01 D5 F0

55. Set E-Stop to Designated Input Port

Address	**Name**	**BIT**	**Definition**	**Type**	Range	**Description**
0x00AD	WriteWORD/ReadWORD, Memory	15	Reserved	BIT	0~1	Reserved, always 0.
-	-	14	E-Stop Output Open/Closed	BIT	0~1	0: Open (Output on E-Stop), 1: Closed (No output on E-Stop).
-	-	13~10	E-Stop Output Port Number	BIT	0~8	Port number, Y0~Y7 correspond to 1~8. 0 means cancel.
-	-	9	Group 1 E-Stop Valid Level	BIT	0~1	0: Low level triggers E-Stop, 1: High level triggers E-Stop.
-	-	8~5	Group 1 E-Stop Input Port	BIT	0~8	Group 1 E-Stop Input Port, X0~X7 correspond to 1~8. 0 means cancel.
-	-	4	Group 2 E-Stop Valid Level	BIT	0~1	0: Low level triggers E-Stop, 1: High level triggers E-Stop.
-	-	3~0	Group 2 E-Stop Input Port	BIT	0~8	Group 2 E-Stop Input Port, X0~X7 correspond to 1~8. 0 means cancel.

Example: X3 no input (Low level) triggers E-Stop. X4 input (High level) triggers E-Stop. Open Y2 when E-Stopped.
Value: 1 0011 0 0100 1 0101, Hex: 0x4C95.

Write	**Action**	**Station**	**Func Code**	**Addr Hi**	**Addr Lo**	**Data Hi**	**Data Lo**	**CRC**
Send/Return	Send/Return	01	06	00	AD	4C	95	EC 84

56. Set Designated Input Port for Speed Change

Address	**Name**	**BIT**	**Definition**	**Type**	Range	**Description**
0x00AF	Set Designated Input Port					
-	15~12	Port Number	BIT	0~15	Port number, X0~X14 correspond to 1~15. 0 means cancel.	
-	11	Trigger Mode	BIT	0~1	0: Level, 1: Edge.	
-	10	Valid Signal	BIT	0~1	0: Low/Falling, 1: High/Rising.	
-	9~8	Valid Direction	BIT	0~2	0: Both, 1: Positive, 2: Negative.	
-	7~0	Speed	BIT	0~255	Actual speed = Value * 5. Unit: rpm.	
0x00B3	Port Number MSB (Extends 0x00AF)					
-	15	Port MSB	BIT	0~1	Combines with 0x00AF 15~12 for 32-bit Port.	
-	14~0	Replaces 0x00AF 7~0 Speed	BIT	0~5000	R/W: 0x00AF Speed. Unit: rpm.	

0x00B4	Port Number MSB (Extends 0x00B0)				
-	15	Port MSB	BIT	0~1	Combines with 0x00B0 15~12 for 32-bit Port.
-	14~0	Replaces 0x00B0 7~0 Speed	BIT	0~5000	R/W: 0x00B0 Speed. Unit: rpm.
0x00B5	Port Number MSB (Extends 0x00B1)				
-	15	Port MSB	BIT	0~1	Combines with 0x00B1 15~12 for 32-bit Port.
-	14~0	Replaces 0x00B1 7~0 Speed	BIT	0~5000	R/W: 0x00B1 Speed. Unit: rpm.
0x00B8	Port Number MSB (Extends 0x00B2)				
-	15	Port MSB	BIT	0~1	Combines with 0x00B2 15~12 for 32-bit Port.
-	14~0	Replaces 0x00B2 7~0 Speed	BIT	0~5000	R/W: 0x00B2 Speed. Unit: rpm.

Note: For 0x00AF~0x00B2 (4 registers), you can set input ports for speed change. Priority: Low address has higher priority. High address speed cannot execute if low address is active (must reset system speed first). MSB bits extend port number.

Example 1: Set X0 input, bidirectional, speed becomes 50 rpm. Value: 1 0 1 00 0000 1010 -> Hex: 0x140A.

Write	**Action**	**Station**	**Func Code**	**Addr Hi**	**Addr Lo**	**Data Hi**	**Data Lo**	CRC	
	Send/Return	Send/Return	01	06	00	AF	14	0A	36

If speed needs to be 47 rpm, cannot do via 0x00AF alone, use 0x00B3.

Write	**Action**	**Station**	**Func Code**	**Addr Hi**	**Addr Lo**	**Data Hi**	**Data Lo**	**CRC**	
	Send/Return	Send/Return	01	06	00	B3	00	2F	39 F1

Example 2: Set X17 receives rising edge, reverse speed becomes 1000 rpm. X17 > 15, 1000 > 255, need 0x00B4 (MSB is 1, Low 14 bits are 1000 -> 0x8 3E8).

Write	**Action**	**Station**	**Func Code**	**Addr Hi**	**Addr Lo**	**Data Hi**	**Data Lo**	**CRC**		
	Send/Return	Send/Return	01	06	00	B0	2E	0A	15	8A
Send/Return	Send/Return	01	06	00	B4	83	E8	A8 92		

57. Set Dynamic Positioning

Address	**Name**	**BIT**	**Definition**	**Type**	**Range**	**Description**
0x00B6~0x00B7	Set Designated Input Port					
-	31~28	Input Port Number	BIT	0~8	Port number, X0~X14 correspond to 1~15. 0 means cancel.	
-	27	Trigger Mode	BIT	0~1	0: Level, 1: Edge.	
-	26	Input Signal	BIT	0~1	0: Low/Falling, 1: High/Rising.	
-	25~24	Valid Direction	BIT	0~2	0: Both, 1: Positive, 2: Negative.	
-	23~0	Pulse Count	BIT	0~16777215	Run pulse count when input triggered.	

Note: Must be in running state to take effect. If motor is stopped, triggering input will not run.

Example: Set forward running, X0 input runs 200 pulses then stop. Reverse invalid. Binary: 1 0 1 01 0000 0000 0000 0000 1100 1000 -> Hex: 0x1500 00C8.

Write	**Action**	**Station**	**Func Code**	**Addr Hi**	**Addr Lo**	**Reg Count**	**Byte Count**	**Data Hi**	**Data Lo**	**Data Hi**	**Data Lo**	**CRC**	
Send	Send	01	10	00	B6	00	02	04	00	C8	15	00	F7 9F
Return	Return	01	10	00	B6	00	02	A0	2E	-	-	-	-

58. Set Designated Input Port for Triggering Start Run (Speed Mode)

Address	Name	BIT	Definition	Type	Range	Description
0x00BA~0x00BB	Set Designated Input Port					
-	31~28	Group 4 Run Trigger Port	BIT	0~15	Port number, X0~X7 correspond to 1~8. 0 means cancel.	
-	27	Group 4 Run Trigger Level	BIT	0~1	0: Run on low level; 1: Run on high level.	
-	26	Group 4 Run Direction	BIT	0~1	0: CW, 1: CCW.	
-	25~24	Reserved	BIT	0	Reserved.	
-	23~20	Group 3 Run Trigger Port	BIT	0~15	Port number, X0~X7 correspond to 1~8. 0 means cancel.	
-	19	Group 3 Run Trigger Level	BIT	0~1	0: Run on low level; 1: Run on high level.	
-	18	Group 3 Run Direction	BIT	0~1	0: CW, 1: CCW.	
-	17~16	Reserved	BIT	0	Reserved.	
-	15~12	Group 2 Run Trigger Port	BIT	0~15	Port number, X0~X7 correspond to 1~8. 0 means cancel.	
-	11	Group 2 Run Trigger Level	BIT	0~1	0: Run on low level; 1: Run on high level.	
-	10	Group 2 Run Direction	BIT	0~1	0: CW, 1: CCW.	
-	9~8	Reserved	BIT	0	Reserved.	
-	7~4	Group 1 Run Trigger Port	BIT	0~15	Port number, X0~X7 correspond to 1~8. 0 means cancel.	
-	3	Group 1 Run Trigger Level	BIT	0~1	0: Run on low level; 1: Run on high level.	
-	2	Group 1 Run Direction	BIT	0~1	0: CW, 1: CCW.	
-	1~0	Reserved	BIT	0	Reserved.	

Example:
Configure X0 to run in CW direction when high level is present, and X1 to run in CCW direction when high level is present.
Value: 10 1100 0001 1000 -> Hex: 0x2C18.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Count	Byte Count	Data Hi	Data Lo	Data Hi	Data Lo	CRC
Send	Send	01	03	00	BA	00	02	-	-	-	-	E5 EE
Return	Return	01	03	04	2C	18	00	00	-	-	-	72 A4

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Count	Byte Count	Data Hi	Data Lo	Data Hi	Data Lo	CRC	
Send	Send	01	10	00	BA	00	02	04	2C	18	00	00	F0 33
Return	Return	01	10	00	BA	00	02	60	2D	-	-	-	-

59. Rotor Synchronization Deviation Value (Closed-loop)

Address: 0x00BE
Description: Set rotor synchronization deviation value, used to adjust origin deviation.
Operation: ReadWORD/WriteWORD, Memory

BIT	Name	Type	Range	Default	Description
0~15	Rotor Synchronization Deviation	INT16	-80~80	Memory Value	R/W: Rotor synchronization deviation, factory default 0, signed number, unit: pulse count

Note: The driver automatically sets a motor origin point on power-up to maximize motor torque. However, under certain external forces, the optimal value might not be reached. This requires adjusting the origin position via the rotor synchronization deviation value to achieve the best effect.

Example: Read rotor synchronization deviation value 0.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Count	CRC	
Send	Send	01	03	00	BE	00	01	E4 2E
Return	Return	01	03	02	00	00	B8 44	

Set rotor synchronization deviation value to -5, value is 0xFFFB.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	BE	FF	FB	E9 9D

60. Position Proportion (Closed-loop)

Address: 0x00BF
Description: Set position loop proportional coefficient.
Operation: ReadWORD/WriteWORD, Memory

BIT	Name	Type	Range	Default	Description
0~15	Position Loop Proportional Coefficient	UINT16	0~65535	Memory Value	R/W: Position loop proportional coefficient, actual coefficient is value divided by 100

Note: A larger setting increases stiffness and can shorten positioning time. Under the same command pulse frequency conditions, the position lag is smaller. However, a value too large may cause oscillation or overshoot. The parameter value should be determined according to the specific load conditions.

Example: Position loop proportional coefficient is 100, actual value is 1.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Count	CRC	
Send	Send	01	03	00	BF	00	01	B5 EE
Return	Return	01	03	02	00	64	B9 AF	

Set position loop proportional coefficient to 1000, actual value is 10. Value is 0x03E8.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	BF	03	E8	B8 90

61. Position Integral (Closed-loop)

Address: 0x0029
Description: Set position loop integral time constant.
Operation: ReadWORD/WriteWORD, Memory

BIT	Name	Type	Range	Default	Description
0~15	Position Loop Integral Time Constant	UINT16	0~65535	Memory Value	R/W: Position loop integral time constant

Note: A smaller setting leads to faster integration and stronger system resistance to deviation, i.e., greater stiffness, but a value too small can easily cause overshoot.

Example: Read position loop integral time constant 100, actual value is 0.001.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Count	CRC	
Send	Send	01	03	00	29	00	01	55 C2
Return	Return	01	03	02	00	64	B9 AF	

Set position loop integral time constant to 10, actual value is 0.0001. Value is 0x000A.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	29	00	0A	D8 05

62. Speed Proportion (Closed-loop)

Address: 0x00C0
Description: Set speed loop proportional coefficient.
Operation: ReadWORD/WriteWORD, Memory

BIT	Name	Type	Range	Default	Description
0~15	Speed Loop Proportional Coefficient	UINT16	0~65535	Memory Value	R/W: Speed loop proportional coefficient, actual coefficient is value divided by 100

Note: A larger setting increases stiffness. The parameter value should be determined according to the specific load conditions. Generally, a larger load inertia requires a larger setting. It can be set larger provided the system does not oscillate. This value must be greater than the position loop proportional coefficient, otherwise the system will be unstable. When increasing the position loop proportional coefficient, the speed loop proportional coefficient needs to be increased as well.

Example: Read speed loop proportional coefficient 100, actual value is 1.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Count	CRC	
Send	Send	01	03	00	C0	00	01	84 36
Return	Return	01	03	02	00	64	B9 AF	

Set speed loop proportional coefficient to 500, actual value is 5. Value is 0x01F4.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	C0	01	F4	89 E1

63. Speed Integral (Closed-loop)

Address: 0x00C1
Description: Set speed loop integral time constant.
Operation: ReadWORD/WriteWORD, Memory

BIT	Name	Type	Range	Default	Description
0~15	Speed Loop Integral Time Constant	UINT16	0~65535	Memory Value	R/W: Speed loop integral time constant, actual time constant is value divided by 100

Note: A smaller setting leads to faster integration and stronger system resistance to deviation, i.e., greater stiffness, but a value too small can easily cause overshoot.

Example: Read speed loop integral time constant 1000, actual value is 10.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Count	CRC	
Send	Send	01	03	00	C1	00	01	D5 F6
Return	Return	01	03	02	03	E8	B8 FA	

Set speed loop integral time constant to 100, actual value is 1. Value is 0x0064.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	C1	00	64	D9 DD

64. Read Current Motor Actual Running Speed (For firmware versions below SV113, please use register 0x0019)

Address: 0x00D6~0x00D7
Description: Read real-time speed (Pulse speed for open-loop, Rotor speed for closed-loop).
Operation: ReadDWORD

BIT	Name	Type	Range	Default	Description
0~31	Real-time Speed	INT32	-2147483648~2147483647	Factory Value	Read: Real-time speed. Negative is negative direction, positive is positive. Unit: 0.01 rpm. Write: Illegal

Example (In the example, the station number is the driver address, set via DIP switch. If the address is changed, re-verification is required):

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Count	CRC		
Send	Send	01	03	00	D6	00	02	25 F3	
Return	Return	01	03	04	00	00	00	00	FA 33

65. Motor Running Target Speed Setting (For firmware versions below SV113, please use register 0x009A)

Address: 0x00D8~0x00D9
Description: Read/Write motor running speed, i.e., target speed.
Operation: ReadDWORD/WriteDWORD, Memory

BIT	Name	Type	Range	Default	Description
0~31	Motor Running Speed	INT32	-999999~999999	Factory Value	R/W: Motor running speed, factory default is 30000. Unit: 0.01 rpm

Example: Read default speed 30000.

Read	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Count	CRC		
Send	Send	01	03	00	D8	00	02	44 30	
Return	Return	01	03	04	75	30	00	00	E0 30

Set speed to 50000, i.e., 500 rpm.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Count	Byte Count	Data Hi	Data Lo	Data Hi	Data Lo	CRC	
Send	Send	01	10	00	D8	00	02	04	C3	50	00	00	C3 00
Return	Return	01	10	00	D8	00	02	C1	F3	-	-	-	-

66. Motion Commands

All motion commands can be executed independently without being combined.

① Run and Stop (No target position)
Address: 0x00C8
Description: Start or stop motor running. Can be used as speed mode or jog. Speed is the value set in 0x009A.
Operation: WriteWORD, No Memory

BIT	Name	Type	Range	Description
0~15	Motor Start or Stop	UINT16	0, 1, 256, 257	Write 0: Decelerate to stop; Write 1: Run forward; Write 256: Emergency stop; Write 257: Run reverse

Example: Start motor running in reverse.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	C8	01	01	C8 64

② Jog (No target position)

Address: 0x00CA

Description: Set motor jog stop, start, jog speed, and direction.

Operation: WriteWORD, No Memory

BIT	Name	Type	Range	Description
15	Jog Direction	BIT	0~1	0: CW, 1: CCW
14~6	Jog Speed	BIT	0~511	Jog speed. If speed is 50, value is 0 0011 0010
5	Jog Stop Mode	BIT	0~1	0: Decelerate to stop, 1: Immediate stop (Meaningless when starting)
4~1	Reserved	BIT	0	Reserved
0	Jog Start or Stop	BIT	0~1	0: Stop, 1: Run

Example: Set motor to jog in CW direction at 50 rpm. According to description, result is 0000 1100 1000 0001, converted to hex value: 0x0C81.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	CA	0C	81	6C 94	

③ Run Duration (No target position)

Address: 0x00CC~0x00CD

Description: Run motor for a specified time. Writing data to the register starts running. Speed is the value set in 0x009A.

Operation: WriteDWORD, No Memory

BIT	Name	Type	Range	Description
0~31	Motor Run Duration	INT32	-2147483648~2147483647	R/W: Motor run duration. Unit: ms. For firmware versions below SV113, direction is determined by value. For SV113 and above, direction is determined by speed.

Example: Set motor to run in reverse for 6400ms. Value is -6400ms.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Count	Byte Count	Data Hi	Data Lo	Data Hi	Data Lo	CRC	
Send	Send	01	10	00	CC	00	02	04	E7	00	FF	FF	C8 AE
Return	Return	01	10	00	CC	00	02	81	F7	-	-	-	-

④ Run Pulse Count (Relative to stopped position)

Address: 0x00CE~0x00CF

Description: Run motor for a specified pulse count (relative to current position, next command is executed only after running is complete).

Operation: WriteDWORD, No Memory

BIT	Name	Type	Range	Description
0~31	Motor Run Pulse Count	INT32	-2147483648~2147483647	R/W: Run pulse count. Unit: pulse count. Positive value means forward direction, negative value means reverse direction.

Example: Set motor to run in reverse for 10000 pulses. Value is -10000.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Count	Byte Count	Data Hi	Data Lo	Data Hi	Data Lo	CRC	
Send	Send	01	10	00	CE	00	02	04	D8	F0	FF	FF	45 50
Return	Return	01	10	00	CE	00	02	20	37	-	-	-	-

⑤ Run Pulse Count (Relative to current position)

Address: 0x00DE~0x00DF

Description: Run motor for a specified pulse count (relative to current position, receiving a new command during running immediately

executes the new command, forcefully ending the current command).
Operation: WriteDWORD, No Memory

BIT	Name	Type	Range	Description
0~31	Motor Run Pulse Count	INT32	-2147483648~2147483647	R/W: Run pulse count. Unit: pulse count. Positive value means forward direction, negative value means reverse direction.

Example: Set motor to run forward for 5000 pulses from current position. Value is 5000.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Count	Byte Count	Data Hi	Data Lo	Data Hi	Data Lo	CRC	
Send	Send	01	10	00	DE	00	02	04	13	88	00	00	FB D1
Return	Return	01	10	00	DE	00	02	21	F2	-	-	-	-

⑥ Run to Absolute Position (Execute only when motor is stopped)
Register Address: 0x00D0~0x00D1
Description: Run motor to a specified position (relative to origin).
Operation: WriteDWORD, No Memory

BIT	Name	Type	Range	Description
0~31	Motor Run to Specified Position	INT32	-2147483648~2147483647	R/W: Motor run to specified position. Unit: pulse count. If less than current position, direction is reverse; if greater than current position, direction is forward.

Example: Run to absolute position 10000.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Count	Byte Count	Data Hi	Data Lo	Data Hi	Data Lo	CRC	
Send	Send	01	10	00	D0	00	02	04	27	10	00	00	F5 82
Return	Return	01	10	00	D0	00	02	40	31	-	-	-	-

⑦ Run to Absolute Position (Execute when motor is stopped or running)
Register Address: 0x00E8~0x00E9
Description: Run motor to a specified position (relative to origin), receiving this command during running immediately executes the new command, forcefully ending the current command.
Operation: WriteDWORD, No Memory

BIT	Name	Type	Range	Description
0~31	Motor Run to Specified Position	INT32	-2147483648~2147483647	R/W: Motor run to specified position. Unit: pulse count. If less than current position, direction is reverse; if greater than current position, direction is forward.

Example: Run to absolute position -8000.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Count	Byte Count	Data Hi	Data Lo	Data Hi	Data Lo	CRC	
Send	Send	01	10	00	E8	00	02	04	E0	C0	FF	FF	CA 0D
Return	Return	01	10	00	E8	00	02	C1	FC	-	-	-	-

67. Set Current Motor Absolute Position

Address: 0x00D2~0x00D3
Description: Set current motor absolute position offset to a specified value (relative to origin).
Operation: WriteDWORD, No Memory

BIT	Name	Type	Range	Description
0~31	Set Motor Current Absolute Position	INT32	-2147483648~2147483647	Set current motor position offset to a specified value (relative to origin). After changing, the physical position has not shifted, only the real-time position register value changes.

Example: Set motor current absolute position to 1000. Value is 1000.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Reg Count	Byte Count	Data Hi	Data Lo	Data Hi	Data Lo	CRC	
Send	Send	01	10	00	D2	00	02	04	03	E8	00	00	FF 5A
Return	Return	01	10	00	D2	00	02	E1	F1	-	-	-	-

68. Release/Enable/Driver Restart

Address: 0x00D4
Description: Set driver enable or release.
Operation: WriteWORD, No Memory

BIT	Name	Type	Value	Description
15~8	Driver Restart	BIT	0~1	Write 1 to restart driver
7~0	Release/Enable	BIT	0~1	Write 0: Motor enable, Write 1: Release motor

Example: Restart driver. Value: 0x0100.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send	Send	01	06	00	D4	01	00	C8 62

Note: Because the driver restarts, it cannot return data.

69. Execute Programming Command Register

Address: 0x00DB
Description: Execute or stop executing programming area commands.
Operation: WriteWORD, No Memory

BIT	Name	Type	Range	Description
0~15	Execute Programming Command	UINT16	0~1	Write: Execute or stop executing programming commands. Non-zero value means execute, 0 means stop.

Example: Execute programming commands starting from 300.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	DB	00	01	38 31

Note: Non-zero value + 300 - 1 represents the execution position. The programming area can be executed from any position.

70. Power Save Command Register

Address: 0x00DC
Description: Save programming commands or save current parameters to memory.
Operation: WriteWORD, No Memory

BIT	Name	Type	Range	Description
0~15	Save Command	UINT16	0~1	Write: Save command or restore factory settings. 1: Save, 0: Restore factory settings.

Note:
1. When used for clearing, it has a lifespan limit, with a maximum of 100,000 erase cycles. Each clear takes about 0.1 seconds. The motor output is turned off during the clear process.
2. If used for saving programming, and the original address contains data, it will automatically overwrite the original programming command.
3. When used to save current parameters to memory, all registers with memory can be saved. Without cutting power, users can set all parameters to be saved at once, and then send this command to save.

Example: Save command.

Write	Action	Station	Func Code	Addr Hi	Addr Lo	Data Hi	Data Lo	CRC
Send/Return	Send/Return	01	06	00	DC	00	01	89 F0

Appendix 1: CRC Check Routine

```
unsigned char *puchMsg ;
unsigned short usDataLen ;
unsigned short CRC16(unsigned char *puchMsg, unsigned short usDataLen)
{
unsigned char uchCRCHi = 0xFF ;
unsigned char uchCRCLo = 0xFF ;
unsigned uIndex ;
while (usDataLen--)
{
uIndex = uchCRCHi ^ *(puchMsg++) ;
uchCRCHi = uchCRCLo ^ u8_CrcTabHi[uIndex] ;
uchCRCLo = u8_CrcTabLo[uIndex] ;
}
return (uchCRCHi << 8 | uchCRCLo) ;
}
uint16_t crc_value = CRC16(usart_rxbuff[Tail_index], 6);

static const unsigned char u8_CrcTabHi[] = {
0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40,
0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41,
0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41,
0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40,
0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41,
0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40,
0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40,
0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41,
0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41,
0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40,
0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40,
0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41,
0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40,
0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41,
0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41,
0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40
};
static const unsigned char u8_CrcTabLo[] = {
0x00, 0xC0, 0xC1, 0x01, 0xC3, 0x03, 0x02, 0xC2, 0xC6, 0x06, 0x07, 0xC7, 0x05, 0xC5, 0xC4, 0x04,
0xCC, 0x0C, 0x0D, 0xCD, 0x0F, 0xCF, 0xCE, 0x0E, 0x0A, 0xCA, 0xCB, 0x0B, 0xC9, 0x09, 0x08, 0xC8,
0xD8, 0x18, 0x19, 0xD9, 0x1B, 0xDB, 0xDA, 0x1A, 0x1E, 0xDE, 0xDF, 0x1F, 0xDD, 0x1D, 0x1C, 0xDC,
0x14, 0xD4, 0xD5, 0x15, 0xD7, 0x17, 0x16, 0xD6, 0xD2, 0x12, 0x13, 0xD3, 0x11, 0xD1, 0xD0, 0x10,
0xF0, 0x30, 0x31, 0xF1, 0x33, 0xF3, 0xF2, 0x32, 0x36, 0xF6, 0xF7, 0x37, 0xF5, 0x35, 0x34, 0xF4,
0x3C, 0xFC, 0xFD, 0x3D, 0xFF, 0x3F, 0x3E, 0xFE, 0xFA, 0x3A, 0x3B, 0xFB, 0x39, 0xF9, 0xF8, 0x38,
0x28, 0xE8, 0xE9, 0x29, 0xEB, 0x2B, 0x2A, 0xEA, 0xEE, 0x2E, 0x2F, 0xEF, 0x2D, 0xED, 0xEC, 0x2C,
0xE4, 0x24, 0x25, 0xE5, 0x27, 0xE7, 0xE6, 0x26, 0x22, 0xE2, 0xE3, 0x23, 0xE1, 0x21, 0x20, 0xE0,
0xA0, 0x60, 0x61, 0xA1, 0x63, 0xA3, 0xA2, 0x62, 0x66, 0xA6, 0xA7, 0x67, 0xA5, 0x65, 0x64, 0xA4,
0x6C, 0xAC, 0xAD, 0x6D, 0xAF, 0x6F, 0x6E, 0xAE, 0xAA, 0x6A, 0x6B, 0xAB, 0x69, 0xA9, 0xA8, 0x68,
0x78, 0xB8, 0xB9, 0x79, 0xBB, 0x7B, 0x7A, 0xBA, 0xBE, 0x7E, 0x7F, 0xBF, 0x7D, 0xBD, 0xBC, 0x7C,
0xB4, 0x74, 0x75, 0xB5, 0x77, 0xB7, 0xB6, 0x76, 0x72, 0xB2, 0xB3, 0x73, 0xB1, 0x71, 0x70, 0xB0,
0x50, 0x90, 0x91, 0x51, 0x93, 0x53, 0x52, 0x92, 0x96, 0x56, 0x57, 0x97, 0x55, 0x95, 0x94, 0x54,
0x9C, 0x5C, 0x5D, 0x9D, 0x5F, 0x9F, 0x9E, 0x5E, 0x5A, 0x9A, 0x9B, 0x5B, 0x99, 0x59, 0x58, 0x98,
0x88, 0x48, 0x49, 0x89, 0x4B, 0x8B, 0x8A, 0x4A, 0x4E, 0x8E, 0x8F, 0x4F, 0x8D, 0x4D, 0x4C, 0x8C,
0x44, 0x84, 0x85, 0x45, 0x87, 0x47, 0x46, 0x86, 0x82, 0x42, 0x43, 0x83, 0x41, 0x81, 0x80, 0x40
};
```

Appendix 2: Examples

Run Absolute Position

1. 01 06 00 0D 00 64 19 E2 Set current 1A
2. 01 10 00 24 00 02 04 0F A0 00 00 F3 72 Set subdivision 4000
3. 01 10 00 D8 00 02 04 27 10 00 00 F4 24 Set run speed 100rpm
4. 01 10 00 D0 00 02 04 27 10 00 00 F5 82 Run to absolute position 10000