

V1.3

Version:

Status:

CTB GH series v1 drive manual -ETHERCAT Communication

Draft/Date:

Audit/Date:

Approve/Date:

CTB Co., Ltd

目录

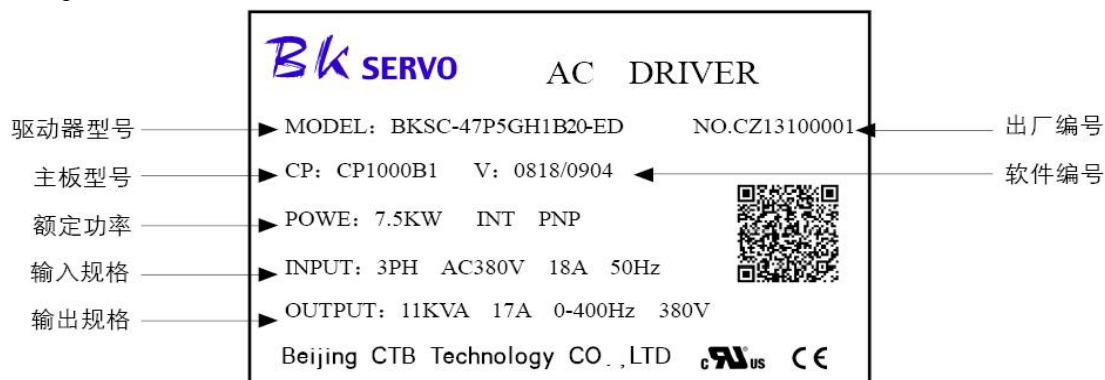
1	Product information.....	3
1.1	Servo drive nameplate and model description.....	3
1.2	Comprehensive performance parameters.....	3
2	Servo operation mode overview.....	3
2.1	Profile position mode.....	3
2.2	Profile speed Mode.....	4
2.3	Interpolation mode.....	5
2.4	Probe mode (customized make).....	6
2.5	CSP mode (synchronous position mode).....	6
3	Fault treatment.....	7
3.1	ETHERCAT Communication fault code.....	7
4	Object dictionary.....	8
4.1	Object classification description.....	8
4.1.1	Data type specification.....	8
4.1.2	Data read/write type description.....	8
4.2	Object group 2000h distribution list.....	8
4.2.1	2000h status monitoring parameter group.....	8
4.2.2	2001h status monitoring parameter group.....	9
4.2.4	2003h basic parameter group.....	11
4.2.5	2004h bus parameter group.....	12
4.2.6	2005h control parameter group.....	14
4.2.7	2006h motor parameters group.....	16
4.2.8	2007h encoder parameters group.....	18
4.2.9	2008h function parameter group.....	20
4.2.11	200Ah protection parameter group.....	25
4.2.12	200Bh system parameter group.....	26
4.3	Object group 6000h assignment list.....	28
4.4	Custom object assignment list.....	30
5	Drive hardware description.....	30
5.1	Drive Probe Input.....	30
5.2	Drive digital input (60FDh).....	31
5.3	Drive digital output (60FEh).....	31
5.4	Drive analog output.....	31
5.5	Drive analog input.....	31
6	standard PDO process data mapping.....	31
7	Application case.....	33
7.1	Drive access to Beckhoff TwinCAT master station.....	33
1)	Process data (PDO) speed mode running motor.....	35

1 Product information

First of all, thank you for purchasing CTB ETHERCAT high speed field bus GH/D18 series servo driver. This manual only introduces ETHERCAT related applications. For other common functions, please refer to our servo drive manual. If you have any questions about the usage of ETHERCAT, please consult our technical staff for help. Due to the continuous improvement of our servo drive, the information provided by the company is subject to change without notice.

1.1 Servo drive nameplate and model description

At the lower right side of the drive housing, there is a nameplate identifying the drive model and rating. The content of the nameplate is shown as follows:



1.2 Comprehensive performance parameters

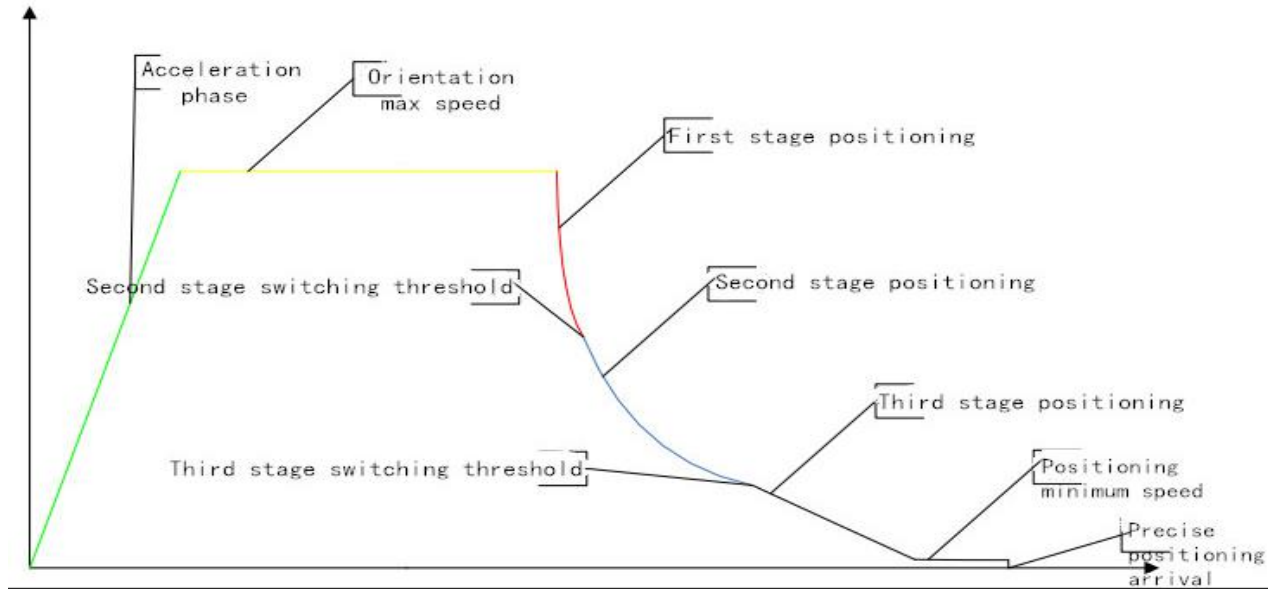
Item	Description
Communicating rate	100M
Data link layer protocol	ETHERCAT bus
Application layer protocol	CANOpen Protocol
Support sub-protocols	CIA-301 CIA-402
Support service	NMT SDO PDO SYNC
PDO Transfer Type	Synchronously trigger
Support servo operation mode	Profile position mode Profile velocity mode Profile torque mode Homing mode Interpolated position mode Cyclic synchronous position mode

2 Servo operation mode overview

2.1 Profile position mode

This mode completes the positioning function according to the preset parameters and exits the preset speed curve. The mode receives the user displacement command in real time, and the acceleration time, deceleration time and maximum running speed displacement of each displacement command can be separately controlled. The profile position mode is mostly used for

point-to-point positioning operation. The running curve is planned by the servo driver itself, and the position, speed and torque control are completed inside the servo driver.



● Relevant driver parameters

Index	Sub-index	Parameters No.	Name	Data type	unit	Data range	Factory Settings
2008h	01 h	Fn.00	Positioning mode selection	Uint16	-	0 ~ 6	3
	02 h	Fn.01	Positioning target position lower16 bit	Uint16	pulse	0 ~ 65535	0
	03 h	Fn.02	Positioning target position higher 16 bits	Uint16	pulse	0 ~ 65535	0
	04 h	Fn.03	Positioning first gain	Uint16	-	0 ~ 60000	300
	05 h	Fn.04	Positioning second gain	Uint16	-	0 ~ 60000	50
	06 h	Fn.05	Position gain switching distance threshold	Uint16	0.01 R	0 ~ 10.00	0.1
	07 h	Fn.06	Maximum positioning speed	Uint16	The	0 ~ 30000	300
	08 h	Fn.07	Minimum positioning speed	Uint16	0.0001 r	0 ~ 60000	1
	0Bh	Fn.10	Locating direction	Uint16	-	0, 1	0
	0Ch	Fn.11	Coarse positioning range	Uint16	pulse	0 ~ 65535	2
	0Dh	Fn.12	Fine positioning range	Uint16	pulse	0 ~ 65535	2
	0Eh	Fn.13	Positioning resolution	Uint16	-	0 ~ 65535	1
	0Fh	Fn.14	Positioning detection window time	Uint16	ms	0 ~ 65535	50

- 6060h enters this mode when the object is 1.
- 6040h object is 1Fh enable positioning function
- The Fn.00 parameter is fixed to 4
- 607Fh/6080h/6081h The small value of the object is written to the Fn.06 parameter.
- The value of the 607Ah object is written to the fn.01 and fn.02 parameters
- The master station can detect the 6041h object bit10, and the positioning is completed when it is 1
- The remaining parameters can be configured as SDO

2.2 Profile speed Mode

In profile speed mode, after the user has given the speed, acceleration and deceleration, the servo driver can plan the motor's

speed curve according to this setting, and realize the smooth switch of different speed instructions.

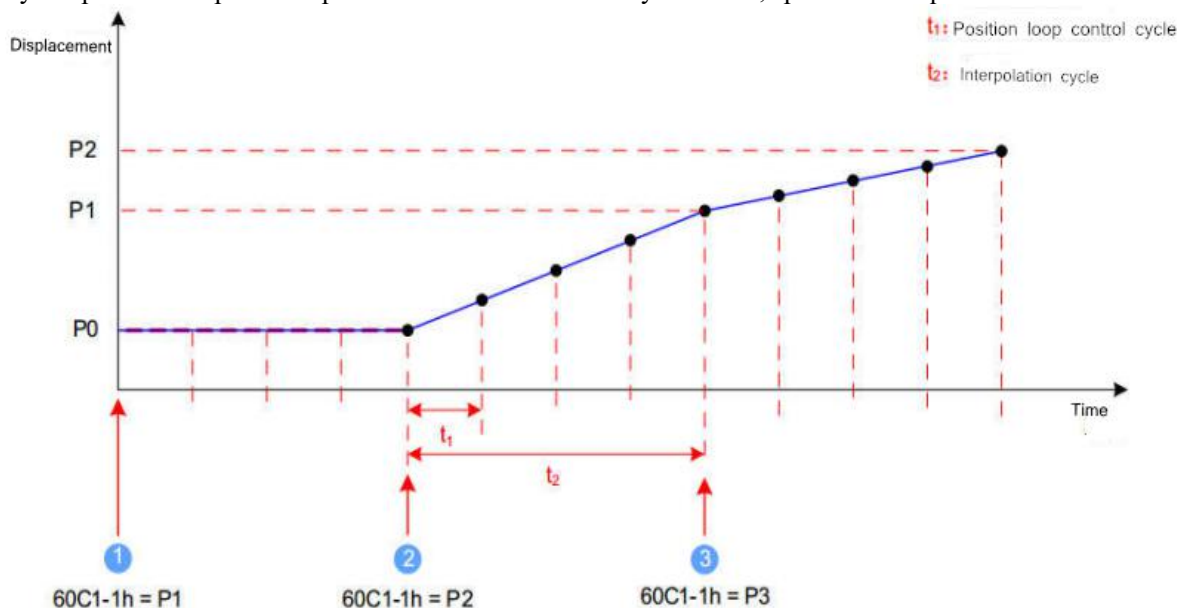
- Drive related parameters are involved

Index	Sub-index	Parameters No.	Name	Data type	unit	Data range	Factory Settings
2005 h	02 h	Cn.01	Acceleration time	Uint1	s	0 ~ 200.00	0.8
	03 h	Cn. 02	Deceleration time	Uint1	s	0 ~ 200.00	0.8
	14 h	Cn.19	Motor 1 speed loop proportional gain	Uint1	-	0 ~ 65535	100
	15 h	Cn.20	Motor 1 speed loop integral time constant	Uint1	-	0 ~ 65535	40
	16 h	Cn.21	Motor 1 speed loop second proportional gain	Uint1	-	0 ~ 65535	300
	17 h	Cn. 22	Motor 1 speed loop second integral time constant	Uint1	-	0 ~ 65535	20
	18 h	Cn.23	Motor 1 speed loop PI parameter switching speed	Uint1	RPM	0 ~ 6000.0	0

- 6060h Enter this mode when the object is 3
- This mode is enabled when the 6040h object is 0Fh
- 6083h object value is written to Cn.01 parameter
- 6084h object value is written to Cn.02 parameter
- The motor operates at 60FFh object value
- The remaining parameters can be configured by SDO

2.3 Interpolation mode

Interpolation mode enables simultaneous operation of multi-axis or single-axis servo drives. After setting the interpolation period in the servo non-enable state, the master station pre-plans the displacement curve according to the actual application requirements, and then sends the different absolute position points on the displacement curve to the slave periodically in the servo running state. The slave receives the displacement command synchronously, and subdivides the displacement increment by the position loop control period and transmits it evenly. Position, speed and torque control are done inside the servo drive.



- Note 1: The current absolute position of the servo motor is P0, and the first absolute position command P1 is received, and the first stage displacement curve is planned.

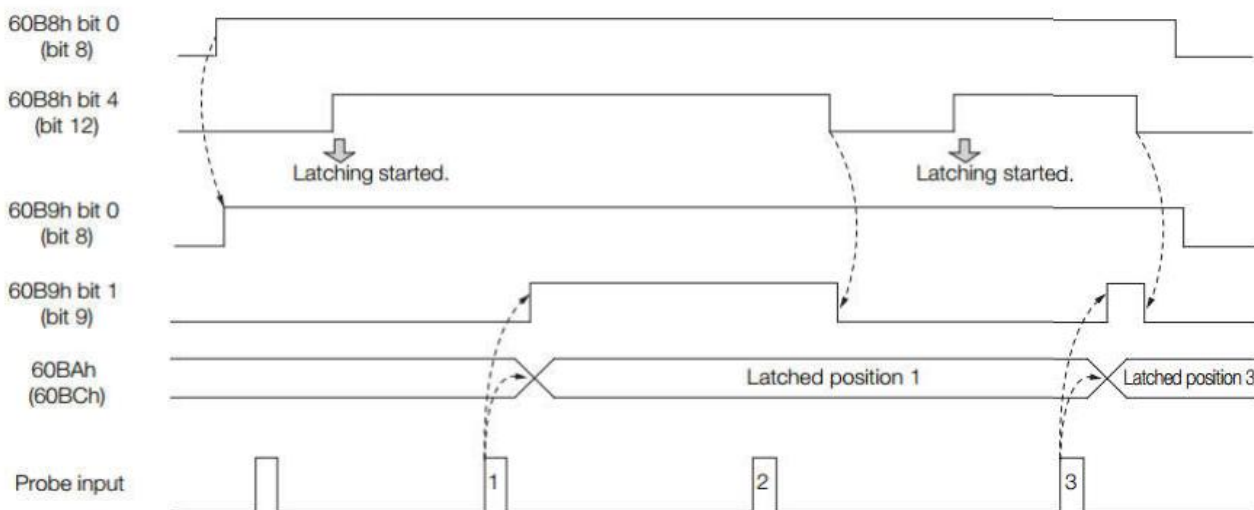
- Note 2: The current absolute position of the servo motor is P0, starting to move to the first absolute position P1, and receiving the second absolute position command P2, planning the second displacement curve.
- Note 3: The servo motor reaches the first absolute position P1 and starts to move to the second absolute position P2. At the same time, it receives the third absolute position command P3 and plans the third displacement curve.
- Note 4: The t1-position loop control period is determined internally by the servo driver.
- Note 5: t2-interpolation cycle can be set by object dictionary 60C2h.
- Note 6: The increment of the displacement command for each synchronization cycle is P1-P0, P2-P1

Index	Sub-index	Parameter s No.	Name	Data type	unit	Data range	Factory Settings
2005 h.	11 h	Cn. 16	Motor 1 current loop proportional parameter	Uint16	-	0 ~ 30000	100
	12 h	Cn. 17	Motor 1 current loop integral time constant	Uint16	-	0 ~ 300.00	4
	13 h	Cn.18	Motor 1 current loop decoupling function	Uint16	-	0, 1	0
	14 h	Cn. 19	Motor 1 speed loop proportional gain	Uint16	-	0 ~ 65535	100
	15 h	Cn.20	Motor 1 speed loop integral time constant	Uint16	-	0 ~ 65535	40
	16 h	Cn.21	Motor 1 speed loop second proportional gain	Uint16	-	0 ~ 65535	300
	17 h	Cn. 22	Motor 1 speed loop second integral time constant	Uint16	-	0 ~ 65535	20
	18 h	Cn.23	Motor 1 speed loop PI parameter switching speed	Uint16	RPM	0 ~ 6000.0	0
	1Eh	Cn. 29	Motor 1 position loop proportional gain	Uint16	-	0 ~ 65535	100
	1Fh	Cn. 30	Motor 1 position loop second proportional gain	Uint16	-	0 ~ 65535	0
	20 h	Cn. 31	Motor 1 position loop proportional gain switching speed	Uint16	RPM	0 ~ 6000.0	0
	21 h	Cn. 32	Motor 1 position loop speed feed forward	Uint16	%	0 ~ 60000	0

- 6060h Enter this mode when the object is 7
- 6040h object is 1Fh enable interpolation function
- Fn.00 parameter is fixed to 3
- Position command for each position loop cycle is written to the Hn-31 and Hn-32 parameters

2.4 Probe mode (customized make)

- Single Trigger Mode (60B8h bit 1 = 0 or bit 9 = 0)



2.5 CSP mode (synchronous position mode)

In the synchronous position mode, the system sends the target position to the drive every communication cycle, and the servo drive completes the internal position, speed and torque control.

- 6060h When the object is 8, enter this mode.
- 6040h The object is 0Fh. Enable the synchronous position function.
- The system sends the target position to the drive through the 607Ah object.
- The Fn.00 parameter is fixed to 3.
- The position command is written for each position ring cycle to Hn-31 and Hn-32 parameters

3 Fault treatment

GH/D18 series servo drives send emergency messages to the master station in the form of a producer when the communication or drive is abnormal.

3.1 ETHERCAT Communication fault code

Display	Error code (603Fh)	Fault description	Error reasons and handling methods	Reset
E.O V	22	Over-voltage		
E.U V	24	Under voltage		
E1. OC	25	Over current		
E1. OH1	29	Module high temperature alarm		
E1. OH3	31	Motor overheating alarm 2		
E1.EE2	35	Base EE read failed		
E1. OC4	45	Over current		
E1. OL2	49	Motor low speed overload		
E1. CPU	53	small CPU fault		
E1. CO	60	Communication		
E1.OC2	62	Over current		
E1. OC3	63	Over current		
E1. EL	65	Encoder wiring break		
E1. FE	66	CPU over-utilization		
E1. EC	67	Encoder Z signal failure		
E1. OS	69	Over-speed alarm		
E1. OP	70	Follow-up error overshoot		
E1. SE	71	Stall warning		
E1. TA	74	Abnormal hall		
E1. EP	76	Encoder battery alarm		
E1. OL	78	Motor overload		

4 Object dictionary

4.1 Object classification description

4.1.1 Data type specification

Data type	Value range	Data length (bytes)	DS301 value
Int8	-128~127	1	0002
Int16	-32768~32767	2	0003
Int32	-2147483648~2147483647	4	0004
UInt8	0~255	1	0005
UInt16	0~65535	2	0006
UInt32	0~4294967295	4	0007
String	ASCII	-	0009

4.1.2 Data read/write type description

Read/write type	
RW	Read-write
WO	Write only
RO	Read only
CONST	Constant, read only

4.2 Object group 2000h distribution list

4.2.1 2000h status monitoring parameter group

Index	Sub-index	Parameters No.	Name	Data type	unit	Data range	Default Value
2000 h	01 h 02 h << 16	U1.00	Set speed/frequency	int32	RPM	- 2147483647 ~ 2147483647	0
	03 h 04 h << 16	U1.01	Output speed/frequency	int32	RPM		0
	05 h 06 h << 16	U1.02	Output speed/frequency	int32	RPM		0
	07h	U1.03	Output current	int16	A	-32767~ 32767	0
	08h	U1.04	Output voltage	int16	V		0
	09h	U1.05	DC bus voltage	int16	V		0
	0Ah	U1.06	Output torque	int16	%		- 500.0 ~

4.2.2 2001h status monitoring parameter group

Index	Sub-index	Parameters No.	Name	Data type	unit	Data range	Default Value
2001 h	01 h 02 h << 16	U2.00	Motor encoder counts value	Uint32	pulse	0 ~ 4294967295	0
	03 h 04 h << 16	U2.01	Second encoder counts value	Uint32	pulse	0 ~ 4294967295	0
	05 h 06 h << 16	U2.02	Follow-up error	int32	pulse	-2147483647 ~ 2147483647	0
	7 h.	U2.03	Input points I1 ~ I6, ST, RST state	Uint16	-	0 ~ 255	0
	08 h	U2.04	Input point I7 ~ I12 status	Uint16	-	0 ~ 255	0
	09 h	U2.05	Output points M0, M1, Q1 ~ Q6 state	Uint16	-	0 ~ 255	0
	0Ah	U2.06	Analog input FV digital quantity	Uint16	-	0 ~ 4095	0
	0Bh	U2.07	Analog quantity input FI digital quantity	Uint16	-	0 ~ 4095	0
	0Ch	U2.08	Analog input FT digital quantity	Uint16	-	0 ~ 4095	0
	0Dh	U2.09	FV analog input voltage value	Int16	V	- 10.00 ~ 10.00	0
	0Eh	U2.10	FI analog input voltage value	Uint16	V	0 ~ 10.00	0
	0Fh	U2.11	FT analog input voltage value	Uint16	V	0 ~ 10.00	0
	10 h	U2.12	Analog output DA1 digital quantity	Uint16	-	0 ~ 4095	0
	11 h	U2.13	Analog output DA2 digital quantity	Uint16	-	0 ~ 4095	0
	12 h	U2.14	Motor encoder current absolute position angle value	Uint16	0.01 degree	0 ~ 360.00	0
	13 h 14 h << 16	U2.15	Motor encoder current absolute Position pulse meter value	Uint32	pulse	0 ~ 4294967295	0
	15 h	U2.16	Second encoder current absolute Position angle value	Uint16	0.01 degree	0 ~ 360.00	0
	16 h 17 h << 16	U2.17	Second encoder single coil opposite pulse position pulse counting value	Uint32	pulse	0 ~ 4294967295	0
	18 19 h << 16	U2.18	T2 pulse port count value	Uint32	pulse	0 ~ 4294967295	0
20 h 21 h << 16	U2.19	T3 pulse port count value	Uint32	pulse	0 ~ 4294967295	0	

22 h 23 h << 16	U2.20	T2 pulse velocity	Int32	RPM	- 900000000 - 900000000	0
24 h 25 h << 16	U2.21	T3 pulse velocity	Int32	RPM	- 900000000 - 900000000	0
26 h 27 h << 16	U2.22	Second encoder /T4 pulse speed	Int32	RPM	- 900000000 - 900000000	0
28 h	U2.23	Drive temperature	Uint16	°C	0 ~ 300.00	0
29 h	U2.24	Motor temperature	Uint16	°C	0 ~ 300	0
2Ah	U2.25	Drive status 1	Uint16	-	0 ~ 65535	0
2Bh	U2.26	Drive status 2	Uint16		0 ~ 65535	
2Ch	U2.27	Drive status 3	Uint16		0 ~ 65535	
2Dh	U2.28	Drive status 4	Uint16		0 ~ 65535	
2Eh	U2.29	Drive power on time	Uint16	h	0 ~ 65535	0
2Fh	U2.30	Drive running time	Uint16			0

4.2.3 2002h Fault information parameter group

Index	Sub-index	Parameters No.	Name	Data type	unit	Data range	Default Value
2002 h	01 h	U3.00	Latest alarm code	Uint16	-	0 ~ 65535	255
	02 h	U3.01	First previous failures	Uint16	-	0 ~ 65535	255
	03 h	U3.02	Secondary previous failures	Uint16	-	0 ~ 65535	255
	04 h	U3.03	Three previous failures	Uint16	-	0 ~ 65535	255
	05 h	U3.04	Four previous failures	Uint16	-	0 ~ 65535	255
	06 h	U3.05	Five previous failures	Uint16	-	0 ~ 65535	255
	07 h	U3.06	Six previous failures	Uint16	-	0 ~ 65535	255
	08 h	U3.07	Seven previous failures	Uint16	-	0 ~ 65535	255
	09 h	U3.08	Eight times previous failures	Uint16	-	0 ~ 65535	255
	0Ah	U3.09	Nine previous failures	Uint16	-	0 ~ 65535	255
	0Bh	U3.10	First failure time	Uint16	h	0 ~ 65535	255
	0Ch	U3.11	Second failure time	Uint16	h	0 ~ 65535	255
	0Dh	U3.12	Three failure time	Uint16	h	0 ~ 65535	255
	0Eh	U3.13	Four failure time	Uint16	h	0 ~ 65535	255
	0Fh	U3.14	Five failure time	Uint16	h	0 ~ 65535	255
	10 h	U3.15	Six failure time	Uint16	h	0 ~ 65535	255
	11 h	U3.16	Seven failure time	Uint16	h	0 ~ 65535	255
12 h	U3.17	Eight failure time	Uint16	h	0 ~ 65535	255	
13 h	U3.18	Nine failure time	Uint16	h	0 ~ 65535	255	

4.2.4 2003h basic parameter group

Index	Sub-index	Parameters No.	Name	Data type	unit	Data range	Default Value
2003 h	01 h	A1.00	Parameter level selection	Uint16	-	0, 1	0
	02 h	A1.01	Control mode selection	Uint16	-	0 ~ 3	3
	03 h	A1.02	Command mode selection	Uint16	-	0 ~ 3	0
	04 h	A1.03	Control mode	Uint16	-	0 ~ 3	0
	05 h	A1.04	Save				
	~	~			-	-	-
	0 bh	A1.10					
	0 ch	A1.11	Parameters backup	Uint16	-	0 ~ 65535	0
	0 dh	A1.12	Parameter recovery	Uint16	-	0 ~ 65535	0
	~	~	Save		-	-	-
	51 h	A1.80	Ipm motor id index 1	Uint16	A	0 ~ 6553.5	0
	52 h	A1.81	Ipm motor id index 2	Uint16	A	0 ~ 6553.5	0
	53 h	A1.82	Ipm motor id index 3	Uint16	A	0 ~ 6553.5	0
	54 h	A1.83	Ipm motor id index 4	Uint16	A	0 ~ 6553.5	0
	55 h	A1.84	Ipm motor id index 5	Uint16	A	0 ~ 6553.5	0
	56 h	A1.85	Ipm motor id index 6	Uint16	A	0 ~ 6553.5	0
	57 h	A1.86	Ipm motor id index 7	Uint16	A	0 ~ 6553.5	0
	58 h	A1.87	Ipm motor id index 8	Uint16	A	0 ~ 6553.5	0
	59 h	A1.88	Ipm motor id index 9	Uint16	A	0 ~ 6553.5	0
	5Ah	A1.89	Ipm motor id index 10	Uint16	A	0 ~ 6553.5	0
	5Bh	A1.90	Ipm motor ip index 1	Uint16	A	0 ~ 6553.5	0
	5Ch	A1.91	Ipm motor ip index 2	Uint16	A	0 ~ 6553.5	0
	5Dh	A1.92	Ipm motor ip index 3	Uint16	A	0 ~ 6553.5	0
	5Eh	A1.93	Ipm motor ip index 4	Uint16	A	0 ~ 6553.5	0
	5Fh	A1.94	Ipm motor ip index 5	Uint16	A	0 ~ 6553.5	0
	60 h	A1.95	Ipm motor ip index 6	Uint16	A	0 ~ 6553.5	0
	61 h	A1.96	Ipm motor ip index 7	Uint16	A	0 ~ 6553.5	0
	62 h	A1.97	Ipm motor ip index 8	Uint16	A	0 ~ 6553.5	0
	63 h	A1.98	Ipm motor ip index 9	Uint16	A	0 ~ 6553.5	0
	64 h	A1.99	Ipm motor ip index 10	Uint16	A	0 ~ 6553.5	0

4.2.5 2004h bus parameter group

Index	Sub-index	Parameters No.	Name	Data type	unit	Data range	Default Value	
2004 h	01 h	Bn.00	Modbus stand No.	Uint16	-	1-254	1	
	02 h	Bn.01	Modbus communication baud rate	Uint16	bps	0 ~ 4	1	
	03 h	Bn.02	Modbus parity check	Uint16	-	0 ~ 2	0	
	04 h	Bn.03	Modbus high and low byte selection	Uint16	-	0, 1	0	
	05 h	Bn.04	485 terminal resistance selection	Uint16	-	0, 1	0	
	06 h	Bn.05	Modbus TCP IP address	Uint16	-	0 ~ 65535	0	
	07 h	Bn.06	High speed field bus selection	Uint16	-	0 ~ 6	0	
	08 h	Bn.07	Profinet MAC address	Uint16	-	1-255	1	
	09 h	Bn.08	Powerlink stand No.	Uint16	-	1-239	1	
	0Ah	Bn.09	Ethernet - IP station No.	Uint16	-	0 ~ 255	0	
	0Bh	Bn.10	Mechatrolink II station No.	Uint16	-	0 ~ 255	4	
	0Ch	Bn.11	Mechatrolink III station No.	Uint16	-	0 ~ 255	4	
	0Dh	Bn.12	Mechatrolink III station No.	Uint16	-	0 ~ 255	4	
	0Eh	Bn.13	Bus interpolation cycle setting	Uint16	ms	0 ~ 65535	3	
	0Fh	Bn.14	Bus domain parameter setting	Uint16	ms	0 ~ 65535	2	
	10 h	Bn.15	Bus interrupt cycle	Uint16	us	0 ~ 65535	1	
	11 h 12 h < < 16	Bn.16	Bus speed instruction gear ratio numerator	Uint32	-	1 ~ 4294967296	1	
	13 h 14 h < < 16	Bn.18	Bus speed instruction gear ratio denominator	Uint32	-	1 ~ 4294967296	1	
	15 h	Bn.20	Mechatrolink bus master station selection	Uint16	-	0 ~ 6	0	
	16 h	Bn.21	Ethercat bus master station selection	Uint16	-	0 ~ 3	0	
	17 h	Bn.22	Profibus slave station number	Uint16	-	1-255	1	
	18 h	Bn.23	CIA402 return to zero mode	Uint16	-	0 to 35	0	
	19 h	Bn.24	CIA402 back to zero offset	Uint16	degree	0 ~ 359	0	
	1Ah	Bn.25	CIA402 quasi - stop bias	Uint16	degree	0 ~ 359	0	
	1Bh	Bn.26	Save			-	-	-
	1Ch	Bn.27						
	1Dh	Bn.28	Whether to enable extended I/O board (only in D18)	Uint16	-	0, 1	0	
	1Eh	Bn.29	Number of extended IO boards (only on D18)	Uint16	-	1-255	1	
	1Fh	Bn.30	CAN stand No.	Uint16	-	0 ~ 9	0	
	20 h	Bn.31	CAN terminal resistor electronic switch	Uint16	-	0, 1	0	
	21 h	Bn.32	CAN slave station enable selection	Uint16	-	0 ~ 9	0	
	22 h	Bn.33	CAN execute cycle setting	Uint16	-	0 ~ 20	0	
	23 h	Bn.34	CAN communication mode	Uint16	-	0, 1	0	

24 h	Bn.35	CAN communication timeout	Uint16	-	0 ~ 1000	0
25 h	Bn.36	CAN baud rate setting	Uint16	kbps	0 ~ 65535	5
26 h	Bn. 37	Save		-	-	-
27 h	Bn. 38					
28 h 29 h << 16	Bn. 39	Bus bit control	Uint32	-	0 ~ 4294967296	0
2Ah	Bn. 41	Control mode	Uint16	-	0 ~ 15	0
2Bh 2Ch << 16	Bn. 42	Target speed	Int32	0.0001 rpm	- 214748364 7 ~ 2147483647	0
2Dh 2Eh << 16	Bn. 44	Target location	Uint32	pulse	0 ~ 4294967296	0
2Fh 30 h << 16	Bn. 46	Back to the zero offset	Uint32	pulse	0 ~ 4294967296	0
31 h	Bn.48	Return to zero first speed	Uint16	RP	0 ~ 65535	0
32 h	Bn.49	Return to zero second speed	Uint16	RP	0 ~ 65535	0
33 h 34 h << 16	Bn.50	Motor reset position	Uint32	pulse	0 ~ 4294967296	0
35 h	Bn.52	Bus interrupt count	Uint16	-	0 ~ 65535	0
~	~	~	~	~	~	~
3Ch 3Dh << 16	Bn.59	Drive state	Uint32	-	0 ~ 4294967296	0
3Eh 3Fh << 16	Bn.61	The current speed	Int32	0.0 00 1rp m- 0.0001 rpm	- 214748364 7 ~ 2147483647	0
40 h h << 16	Bn.63	The motor position	Uint32	pulse	0 ~ 4294967296	0
42 43 h h << 16	Bn.65	Motor over z count	Uint32	-	0 ~ 4294967296	0
44 h 45 h << 16	Bn.67	Motor latch position	Uint32	pulse	0 ~ 4294967296	0
46 h	Bn.69	Motor load factor	Uint16	%	0 ~ 1000	0
47 h	Bn.70	Save		-	-	-
~	~					
4Eh	Bn.77					
4Fh 50 h << 16	Bn.78	Manufacturer retention parameter	Int32	pulse	- 214748364 7 ~ 2147483647	0
51 h	Bn.80	Manufacturer retention parameter	Uint16	-	0 ~ 65535	0
~	~					
64 h	Bn.99					

4.2.6 2005h control parameter group

Index	Sub-index	Parameters No.	Name	Data type	unit	Data range	Default Value
2005 h	01	Cn.00	Motor running direction selection	Uint16	-	0, 1	0
	02	Cn.01	Acceleration time	Uint16	s	0 ~ 200.00	0.8
	03	Cn.02	Deceleration time	Uint16	s	0 ~ 200.00	0.8
	04	Cn.03	Acceleration start S curve time	Uint16	s	0 ~ 200.00	0
	05	Cn.04	Acceleration over S curve time	Uint16	s	0 ~ 200.00	0
	06	Cn.05	Deceleration start S curve time	Uint16	s	0 ~ 200.00	0
	07	Cn.06	Deceleration end S curve time	Uint16	s	0 ~ 200.00	0
	08	Cn.07	Emergency deceleration time	Uint16	s	0 ~ 200.00	0.8
	09	Cn.08	Enable shutdown delay time	Uint16	s	0 ~ 200.00	0.4
	0A	Cn.09	Parking mode selection	Uint16	-	0, 1	0
	0B	Cn.10	Load current limit	Uint16	%	0 ~ 1000	150
	0C	Cn.11	Energy consumption brake current limit	Uint16	%	0 ~ 1000	0
	0D	Cn.12	DC braking starting speed	Uint16	RPM	0 ~ 60000	0
	0E	Cn.13	DC brake current limit	Uint16	%	0 ~ 1000	50
	0Fh	Cn.14	DC brake delay time	Uint16	s	0 ~ 200.00	0
	10	Cn.15	Motor control parameters matching	Uint16	-	1	0
	11	Cn.16	Motor 1 current loop scaling parameter	Uint16	-	0 ~ 30000	100
	12	Cn.17	Motor 1 current loop integral time constant	Uint16	-	0 ~ 300.00	4
	13	Cn.18	Motor 1 current loop decoupling function	Uint16	-	0, 1	0
	14	Cn.19	Motor 1 speed loop proportional gain	Uint16	-	0 ~ 65535	100
	15	Cn.20	Motor 1 speed loop integral time constant	Uint16	-	0 ~ 65535	40
	16	Cn.21	Motor 1 speed loop 2 proportional gain	Uint16	-	0 ~ 65535	300
	17	Cn.22	Motor 1 speed loop 2 integral time constant	Uint16	-	0 ~ 65535	20
	18	Cn.23	Motor 1 speed loop PI parameter switching speed	Uint16	RPM	0 ~ 6000.0	0
	19	Cn.24	Save				
	1A	Cn.25	Save				
	1B	Cn.26	Save				
	1C	Cn.27	Save				
	1D	Cn.28	Save				
	1E	Cn.29	Motor 1 position loop proportional gain	Uint16	-	0 ~ 65535	100
	1Fh	Cn.30	Motor 1 position loop 2 proportional gain	Uint16	-	0 ~ 65535	0
	20h	Cn.31	Motor 1 position loop proportional gain switching speed	Uint16	RPM	0 ~ 6000.0	0
	21h	Cn.32	Motor 1 position loop speed feed forward	Uint16	%	0 ~ 60000	0
	22h	Cn.33	Save				
	23h	Cn.34	Save				
	24h	Cn.35	Save				
25h	Cn.36	Save					

26 h	Cn.37	Motor 2 current loop proportional gain	Uint16	-	0 ~ 30000	100
27 h	Cn.38	Motor 2 current loop integral time constant	Uint16	-	0 ~ 300.00	4
28 h	Cn.39	Motor 2 speed loop proportional gain	Uint16	-	0 ~ 65535	100
29 h	Cn.40	Motor 2 speed loop integral time constant	Uint16	-	0 ~ 65535	4
2Ah	Cn.41	Motor 2 speed loop 2 proportional gain	Uint16	-	0 ~ 65535	300
2Bh	Cn.42	Motor 2 speed loop 2 integral time constant	Uint16	-	0 ~ 65535	2
2Ch	Cn.43	Motor 2 speed loop PI parameter switching speed	Uint16	RPM	0 ~ 6000.0	0
2Dh	Cn.44	Motor 2 position loop proportional gain	Uint16	-	0 ~ 65535	100
2Eh	Cn.45	Motor 2 position loop 2 proportional gain	Uint16	-	0 ~ 65535	0
2Fh	Cn.46	Motor 2 position loop proportional gain switching speed	Uint16	RPM	0 ~ 6000.0	0
30 h	Cn.47	Motor 2 position loop speed feed forward	Uint16	%	0 ~ 60000	0
31 h	Cn.48	Save				
32 h	Cn.49	Save				
33 h	Cn.50	Save				
34 h	Cn.51	Zero speed switch to position mode	Uint16	-	0, 1	
35 h	Cn.52	Notch filter filtering function	Uint16	-	0 ~	0
36	Cn.53	Resonance detection	Uint16	-	1	0
37 h	Cn.54	Notch filter 1 resonant frequency	Uint16	-	0 ~ 32767	0
38 h	Cn.55	Notch filter 1 resonance amplitude	Uint16	-	- 32767 -	0
39 h	Cn.56	Notch filter 2 resonant frequency	Uint16	-	0-32767.	0
3Ah	Cn.57	Notch filter 2 resonance amplitude	Uint16	-	- 32767 -	0
3Bh	Cn.58	Feedback velocity filter time coefficient	Uint16	-	0 ~ 20	0
3Ch	Cn.59	Back-end low pass filter coefficient	Uint16	-	0 ~ 256	60
3Dh	Cn.60	Back emf identifies current/low speed minimum current	Uint16	%	0 ~ 100	3
3Eh	Cn.61	Stator resistance estimation coefficient	Uint16	-	0 ~ 200	1
3Fh	Cn.66	Rotation estimation parameter 1	Uint16	-	1-1000	2
40 h	Cn.63	Rotation estimation parameter 2	Uint16	-	1-1000	3
41 h	Cn.64	Minimum operating speed	Uint16	%	0 ~ 100	2
42 h	Cn.65	Rotor starting position detection method	Uint16	-	0 ~	0
43 h	Cn.66	Save				
44 h	Cn.67	Save				
45 h	Cn.68	Save				
46 h	Cn.69	Save				
47 h	Cn.70	Save				
48 h	Cn.71	Save				
49 h	Cn.72	Save				
4Ah	Cn.73	Save				
4Bh	Cn.74	Save				
4Ch	Cn.75	Save				
4Dh	Cn.76	Save				
4Eh	Cn.77	Save				

	4Fh	Cn.78	Save				
	50 h	Cn.79	Save				
	51 h	Cn.80	Save				
	52 h	Cn.81	Save				
	53 h	Cn.82	Save				
	54 h	Cn.83	Save				
	55 h	Cn.84	Save				
	56 h	Cn.85	Save				
	57 h	Cn.86	Save				
	58 h	Cn.87	Save				
	59 h	Cn.88	Save				
	5Ah	Cn.89	Save				
	5Bh	Cn.90	Output maximum voltage ratio	Uint16	%	0 ~ 200	100
	5Ch	Cn.91	Voltage closed loop KP	Uint16	-	0 ~ 65535	200
	5Dh	Cn.92	Voltage closed loop TI	Uint16	-	0 ~ 65535	60
	5Eh	Cn.93	Save				
	5Fh	Cn.94	Save				
	60 h	Cn.95	Save				
	61 h	Cn.96	Save				
	62 h	Cn.97	Save				
	63 h	Cn.98	Save				
	64 h	Cn.99	Save				

4.2.7 2006h motor parameters group

Index	Sub-index	Parameters No.	Name	Data type	unit	Data range	Default Value
2006 h	01 h	Dn.00	Motor type selection	Uint16	-	0 ~ 2	0
	02 h	Dn.01	First motor rated current	Uint16	A	0 ~ 6000.0	11.5
	03 h	Dn.02	First motor rated speed	Uint16	RPM	0 ~ 60000	1500
	04 h	Dn.03	First motor rated voltage	Uint16	V	0 ~ 20000	380
	05 h	Dn.04	First motor rated power	Uint16	K	0 ~ 6000.0	5.5
	06 h	Dn.05	First motor power factor	Uint16	-	0 ~ 1.00	0.86
	07 h	Dn.06	First motor rated frequency	Uint16	HZ	0 ~ 6000.0	50.8
	08 h	Dn.07	First motor rated torque	Uint16	N.M	0 ~ 60000	35
	09 h	Dn.08	First motor pole pairs	Uint16	pairs	0 ~ 10000	2
	0Ah	Dn.09	First motor maximum output speed	Uint16	RPM	0 ~ 60000	8000
	0Bh	Dn.10	First motor back EMF coefficient	Uint16	V	0 ~ 65535	110

0Ch	Dn.11	First motor rotational inertia	Uint16	10-4 kgm	0 ~ 60000	0
0Dh	Dn.12	First motor motor load inertia ratio	Uint16	-	0 ~ 400	0
0Eh	Dn.13	First motor stator resistance	Uint16	Ω	0 ~ 65.535	0
0Fh	Dn.14	First motor rotor resistance	Uint16	Ω	0 ~ 65.535	0
10 h	Dn.15	First motor d axis inductance/stator leakage inductance	Uint16	mH	0 ~ 655.35	0
11 h	Dn.16	First motor q-axis inductance/rotor leakage inductance	Uint16	mH	0 ~ 655.35	0
12 h	Dn.17	First, motor excitation inductance	Uint16	mH	0 ~ 6553.5	0
13 h	Dn.18	First motor weak magnetic region q axis current limit Limit coefficient	Uint16	-	0 ~ 100	10
14 h	Dn.19	First motor pre-excitation time	Uint16	ms	0 ~ 30000	0
15 h	Dn.20	The first motor minimum excitation current	Uint16	A	0 ~ 300.00	0.01
16 h	Dn.21	First motor constant power maximum speed	Uint16	RPM	0 ~ 60000	1500
17 h	Dn.22	First motor slip compensation coefficient	Uint16	-	0 ~ 1000	200
18 h	Dn.23	First motor peak torque	Uint16	nm	0 ~ 65535	40
1Ah	Dn.25	Second motor rated current	Uint16	A	0 ~ 6000.0	11.5
1Bh	Dn.26	Second motor rated speed	Uint16	RPM	0 ~ 60000	1500
1Ch	Dn.27	Second motor rated voltage	Uint16	V	0 ~ 20000	380
1Dh	Dn.28	Second motor rated power	Uint16	K	0 ~ 6000.0	5.5
1Eh	Dn.29	The second motor power factor	Uint16	-	0 ~ 1.00	0.86
1Fh	Dn.30	Second motor rated frequency	Uint16	HZ	0 ~ 6000.0	50.8
20 h	Dn.31	Second motor rated torque	Uint16	N.M	0 ~ 60000	35
21 h	Dn.32	The second motor pole pairs	Uint16	pairs	0 ~ 10000	2
22 h	Dn.33	The second motor maximum output speed	Uint16	RPM	0 ~ 60000	8000
23 h	Dn.34	Second motor back EMF coefficient	Uint16	V	0 ~ 65535	110
24 h	Dn.35	Second motor motor rotational inertia	Uint16	10-4 kgm	0 ~ 60000	0
25 h	Dn.36	Second motor motor load inertia ratio	Uint16	-	0 ~ 400	0
26 h	Dn.37	The second motor stator resistance	Uint16	Ω	0 ~ 65.535	0
27 h	Dn.38	The second motor rotor resistance	Uint16	Ω	0 ~ 65.535	0
28 h	Dn.39	Second motor d axis inductance/stator leakage inductance	Uint16	mH	0 ~ 655.35	0
29 h	Dn.40	The second motor q axis inductance/rotor leakage inductance	Uint16	mH	0 ~ 655.35	0
2Ah	Dn.41	The second motor excitation inductance	Uint16	mH	0 ~ 65535	0
2Bh	Dn.42	The second motor weak magnetic region q axis current limit coefficient	Uint16	-	0 ~ 100	10
2Ch	Dn.43	The second motor pre-excitation time	Uint16	ms	0 ~ 30000	0
2Dh	Dn.44	The second motor minimum excitation current	Uint16	A	0 ~ 300.00	0.01
2Eh	Dn.45	Second motor constant power maximum speed	Uint16	RPM	0 ~ 60000	1500
2Fh	Dn.46	The second motor slip compensation coefficient	Uint16	-	0 ~ 1000	10
30 h	Dn.47	Second motor peak torque	Uint16	nm	0 ~ 65535	40

31 h	Dn.48	Save			-	-	-
~	~						
33 h	Dn. 50						
34 h	Dn. 51	IPM control mode			-	0 ~ 1	0
35 h	Dn. 52	Identification of the motor	Uint16		-	0 ~ 4	0
36 h	Dn. 53	VF curve type selection	Uint16		-	0, 1	1
37 h	Dn. 54	N-square curve	Uint16		-	1.0 ~ 3.0	1
38 h	Dn. 55	Minimum output frequency	Uint16	Hz		0 ~ 2000.0	0.5
39 h	Dn. 56	Minimum output frequency voltage	Uint16	V		0 ~ 2000.0	5
3Ah	Dn. 57	Intermediate output frequency	Uint16	HZ		0 ~ 2000.0	25
3 Bh	Dn. 58	Intermediate output frequency voltage	Uint16	V		0 ~ 2000.0	200
3 Ch	Dn.59	Rated output frequency	Uint16	HZ		0 ~ 2000.0	50
3 Dh	Dn.60	Rated output frequency voltage	Uint16	V		0 ~ 2000.0	400
3 Eh	Dn. 61	Maximum output frequency	Uint16	HZ		0 ~ 2000.0	50
3 Fh	Dn. 62	Torque compensation	Uint16	%		0 ~ 50	0

4.2.8 2007h encoder parameters group

Index	Sub-index	Parameters No.	Name	Data type	unit	Data range	Default Value
2007 h	01 h	En. 00	Motor encoder type (T5)	Uint16	-	0 ~ 100	0
	02 h	En. 01	Pulse Number of encoder (T5)	Uint16	pulse	0 ~ 10000	2500
	03 h	En. 02	Number of poles of resolver (T5)	Uint16	-	1-100	1
	04 h	En. 03	Encoder counting direction (T5)	Uint16	-	0, 1	0
	05 h	En. 04	Encoder bits(T5)	Uint16	-	0 to 32	1
	06 h	En.05	Second encoder/pulse number (T4)	Uint16	pulse	100 ~ 16384	1024
	07 h	En. 06	Second encoder/pulse direction selection (T4)	Uint16	-	0, 1	0
	08 h	En.07	Output frequency of motor encoder (T4)	Uint16	-	0 ~ 1024	0
	09 h	En. 08	Motor encoder output direction	Uint16	-	0, 1	0
	0Ah	En. 09	Motor encoder output Z phase width	Uint16	-	0 ~ 2	0
	0Bh	En. 10	Self-learning time of magnetic pole position (T5)	Uint16	s	0 ~ 20.0	2
	0Ch	En. 11	Self-learning mode of magnetic pole position (T5)	Uint16	-	0 ~ 4	0
	0Dh	En. 12	Magnetic pole position manual self-learning instruction (T5)	Uint16	-	0 ~ 2	0
	0Eh	En. 13	Self-learning value of magnetic pole position is 16 bits lower (T5)	Uint16	-	0 ~ 65535	0
	0Fh	En. 14	Self-learning value of magnetic pole position 16 bits higher (T5)	Uint16	-	0 ~ 65535	0
	10 h	En. 15	Encoder learns duty cycle	Uint16	-	0 ~ 65535	0
	11 h	En. 16	Encoder learns record information	Uint16	-	0 ~ 65535	0
12 h	En. 17	Encoder learns z position record	Uint16	T	0 ~ 360.00	0	

13 h	En. 18	Encoder downgrade frequency	Uint16	-	0 to 32	0
14 h	En. 19	Encoder card selection	Uint16	-	0 ~ 3	0
15 h 16 h < < 16	En. 20	Encoder resolution (T5)	Uint32	pulse	0 ~ 4294967296	0
17 h	En. 22	Single-turn relative Angle (T5)	Uint16	T	0 ~ 360.00	0
18 h 19 h < < 16	En. 23	Single coil relative pulse position (T5)	Uint32	pulse	0 ~ 4294967296	0

1Ah 1Bh < < 16	En. 25	Single-turn custom zero offset value (T5)	Uint32	pulse	0 ~ 4294967296	0
	En. 26					
1Ch	En. 27	Encoder Z phase count value (T5)	Uint16	-	0 ~ 65535	0
1Dh	En. 28	Absolute value encoder multi-turns count value (T5)	Uint16	-	0-65535.	0
Eh 1Fh < < 16	En. 29	Multi-turns custom zero offset value (T5)	Uint32	pulse	0 ~ 4294967296	0
20 h	En. 31	First encoder speed sampling period (T5)	Uint16	m	1-1000	1
21 h	En. 32	Second encoder speed sampling cycle (T4)	Uint16	m	1-1000	1
22 h	En. 33	Second encoder Z phase meter (T4)	Uint16	-	0 ~ 65535	0
23 h	En. 34	Second encoder z-phase single-coil latch (T4)	Uint16	-	0 ~ 65535	0
24 h 25 h < < 16	En. 35	Resolution of the second encoder (T4)	Uint32	pulse	0 ~ 65535	0
26 h	En. 37	Save		-	-	-
~	~					
2Dh	En. 44					
2Eh	En. 45	Electrical Angle compensation coefficient	Uint16	-	0 ~ 150	0
2Fh	En. 46	Save		-	-	-
30 h	~					
31 h	En. 48					
32 h	En. 49	Sines and cosines encoder calibration	Uint16	-	0 ~ 2	0
33 h	En. 50	Diagnosis function of sines and cosines encoder	Uint16	-	0, 1	0
34 h	En. 51	Sines and cosines encoder A phase amplitude value	Uint16	V	0 ~ 3.3	0
35 h	En. 52	Sines and cosines encoder B phase amplitude value	Uint16	V	0 ~ 3.3	0
36 h	En. 53	Sines and cosines encoder ZA phase amplitude value	Uint16	V	0 ~ 3.3	0
37 h	En. 54	Sines and cosines encoder ZB phase amplitude value	Uint16	V	0 ~ 3.3	0
38 h	En. 55	Sines and cosines encoder A phase midpoint value	Uint16	V	0 ~ 3.3	0
39 h	En. 56	Sines and cosines encoder B phase midpoint value	Uint16	V	0 ~ 3.3	0
3Ah	En. 57	Sines and cosines encoder ZA phase midpoint value	Uint16	V	0 ~ 3.3	0
3Bh	En. 58	Sines and cosines encoder ZB phase midpoint value	Uint16	V	0 ~ 3.3	0
3Ch	En. 59	Save		-	-	-
~	~					
46 h	En. 69					
47 h	En. 70	Encoder reset	Uint16	-	0 ~ 5	0
48 h	En. 71	Encoder reset setting is 16 bits lower	Uint16	pulse	0 ~	0
49 h	En. 72	Encoder reset set value 16 bits higher	Uint16			

4.2.9 2008h function parameter group

Index	Sub-index	Parameters No.	Name	Data type	unit	Data range	Default Value
2008 h	01 h	Fn.00	Positioning mode selection	Uint16	-	0 ~	3
	02 h	Fn.01	Position the target position 16 bit lower	Uint16	pulse	0 ~ 65535	0
	03 h	Fn. 02	Position the target position 16 bits higher	Uint16	pulse	0 ~ 65535	0
	04 h	Fn.03	Position first gain	Uint16	-	0 ~ 60000	3
	05 h	Fn. 04	Positioning second gain	Uint16	-	0 ~ 60000	5
	06 h	Fn.05	Position gain switching distance threshold	Uint16	0.01 R	0 ~ 10.00	0
	07 h	Fn. 06	Maximum positioning speed	Uint16	RPM	0 ~ 30000	3
	08 h	Fn.07	Minimum positioning speed	Uint16	0.0001 r	0 ~ 60000	1
	09 h	Fn. 08	Save				
	0Ah	Fn. 09	Save				
	0Bh	Fn. 10	Positioning direction	Uint16	-	0, 1	0
	0Ch	Fn.11	Coarse range	Uint16	pulse	0 ~ 65535	2
	0Dh	Fn. 12	Fine positioning range	Uint16	pulse	0 ~ 65535	2
	0Eh	Fn. 13	Positioning resolution	Uint16	-	0 ~ 65535	1
	0Fh	Fn. 14	Locate the detection window time	Uint16	ms	0 ~ 65535	5
	10 h	Fn. 15	Forward range of swing	Uint16	degree	0 ~ 360.00	6
	11 h	Fn. 16	Swing reversal range	Uint16	degree	0 ~ 360.00	6
	12 h	Fn. 17	Swing speed limit	Uint16	RPM	0 ~ 60000	5
	13 h	Fn.18	Swing acceleration time	Uint16	S/KRPM	0 ~ 300.00	1
	14 h	Fn. 19	Swing deceleration time	Uint16	S/KRPM	0 ~ 300.00	1
	15 h	Fn.20	Swing electric current	Uint16	%	0 ~ 1000	1
	16 h	Fn. 21	Star Angle switch mode	Uint16	-	0 ~	0
	17 h	Fn. 22	Star-Delta switching speed	Uint16	RPM	0 ~ 30000	3000
	18 h	Fn.23	Star-Delta switching speed tolerance	Uint16	RPM	0 ~ 30000	1
	19 h	Fn. 24	Star-Delta switching time	Uint16	ms	0 ~ 3000	1000
	1Ah	Fn. 25	Open brake delay time	Uint16	ms	0 ~ 20000	2
	1Bh	Fn.26	Closing brake delay time	Uint16	ms	0 ~ 20000	2
	1Ch	Fn. 27	Emergency electrical braking time	Uint16	ms	0 ~ 30000	0
	1Dh	Fn.28	PID function selection	Uint16	-	0, 1	0
	1Eh	Fn.29	PID given mode	Uint16	-	0 ~	0
	1Fh	Fn. 30	PID feedback mode	Uint16	-	0 ~	0
	20 h	Fn.31	PID internal given register	Uint16	%	0 ~ 100.0	0
	21 h	Fn. 32	PID internal feedback register	Uint16	%	0 ~ 100.0	0
	22 h	Fn.33	PID given feedback range	Uint16	-	0 ~ 65535	0
	23 h	Fn. 34	PID action direction	Uint16	-	0, 1	0
	24 h	Fn. 35	PID proportional gain 1	Uint16	-	0 ~ 20000	1
25 h	Fn. 36	PID integral time 1	Uint16	-	0 ~ 20000	1	

26 h	Fn.37	PID differential coefficient 1	Uint16	-	0 ~ 20000	0
27 h	Fn.38	PID proportional gain 2	Uint16	-	0 ~ 20000	10
28 h	Fn. 39	PID integral time 2	Uint16	-	0 ~ 20000	100
29 h	Fn.40	PID differential coefficient 2	Uint16	-	0 ~ 20000	0
2Ah	Fn. 41	PID parameter switch source	Uint16	-	0 ~ 3	0
2Bh	Fn. 42	PID internal switch register	Uint16	-	0, 1	0
2Ch	Fn.43	PID output automatic switching threshold	Uint16	%	0 ~ 100.0	0
2Dh	Fn.44	PID output source selection	Uint16	-	0, 1	0
2Eh	Fn. 45	Upper limit of PID output	Uint16	%	0 ~ 100.0	0
2Fh	Fn. 46	PID reverse cut off output	Uint16	%	0 ~ 100.0	0
30 h	Fn.47	PID given acceleration and deceleration time	Uint16	s.	0 ~ 50.00	0
31 h	Fn.48	PID feedback filter coefficient	Uint16	-	0 ~ 512	0
32 h	Fn.49	PID output filter coefficient	Uint16	-	0 ~ 512	0
33 h	Fn. 50	PID feedback lost detection window	Uint16	%	0 ~ 100.0	0
34 h	Fn. 51	PID feedback lost detection window time	Uint16	s.	0 ~ 50.00	0
35 h	Fn. 52	PID given display	Uint16	-	0 ~ 65535	0
36 h.	Fn. 53	PID feedback display	Uint16	-	0 ~ 65535	0
37 h	Fn. 54	PID integral reset	Uint16	-	0 ~ 1	0
38 h	Fn. 55	External DI05 location count	Uint16	-	0 ~ 65535	0
39 h	Fn. 56	External DI05 positioning latch position low 16 bit	Uint16	pulse	0 ~ 4294967295	0
3Ah	Fn. 57	External DI05 positioning latch position high 16 bit	Uint16			0
3Bh	Fn. 58	Save				
3Ch	Fn.59	Save				
3Dh	Fn.60	Forward speed limit in torque mode	Uint16	RPM	0 ~ 60000	0
3Eh	Fn. 61	Negative speed limit in torque mode	Uint16	RPM	0 ~ 60000	0
3Fh	Fn. 66	Torque instruction acceleration time	Uint16	s	0 ~ 30.00	1
40 h	Fn. 63	Torque instruction deceleration time	Uint16	s	0 ~ 30.00	1
41 h	Fn. 64	Torque setting	Uint16	0.10%	- 5000 -	0
42 h	Fn. 65	Save				
43 h	Fn. 66	Save				
44 h	Fn. 67	Save				
45 h	Fn. 68	Save				
46 h	Fn. 69	Save				
47 h	Fn. 70	Save				
48 h	Fn. 71	Save				
49 h	Fn. 72	Save				
4Ah	Fn. 73	Save				
4Bh	Fn. 74	Save				
4Ch	Fn. 75	Save				

	4Dh	Fn. 76	Save				
	4Eh	Fn. 77	Save				
	4Fh	Fn. 78	Save				
	50 h	Fn. 79	Save				
	51 h	Fn. 80	DA1 output source selection	Uint16	-	0 ~ 4	0
	52 h	Fn. 81	DA2 output source selection	Uint16	-	0 ~ 4	0
	53 h	Fn. 82	DA1 zero bias	Uint16	%	- 100.00 ~	0
	54 h	Fn. 83	DA2 zero bias	Uint16	%	- 100.00 ~	0
	55 h	Fn. 84	DA1 outputs internal registers	Uint16	%	- 100.00 ~	0
	56 h	Fn. 85	DA2 outputs internal registers	Uint16	%	- 100.00 ~	0
	57 h	Fn. 86	DA1 output gain	Uint16	-	- 10.00 ~	1
	58 h	Fn. 87	DA2 output gain	Uint16	-	- 10.00 ~	1
	59 h	Fn. 88	Save				
	5Ah	Fn. 89	Save				
	5Bh	Fn. 90	Velocity arrival range	Uint16	RPM	0 ~ 30000	5
	5Ch	Fn. 91	Speed arrival window time	Uint16	ms	0 ~ 30000	100
	5Dh	Fn. 92	Zero speed reach range	Uint16	RPM	0 ~ 30000	5
	5Eh	Fn. 93	Zero speed arrival window time	Uint16	ms	0 ~ 30000	100
	5Fh	Fn. 94	Torque arrival range	Uint16	%	0 ~ 500.0	2
	60 h	Fn. 95	Torque arrival window time	Uint16	ms	0 ~ 30000	100
	61 h	Fn. 96	Zero torque reaching range	Uint16	%	0 ~ 500.0	2
	62 h	Fn. 97	Zero torque arrival window time	Uint16	ms	0 ~ 30000	100
	63 h	Fn. 98	Save				
	64 h	Fn. 99	Save				

4.2.10 2009h interface parameter group

Index	Sub-index	Parameters No.	Name	Data type	unit	Data range	Default Value
2009 h	01 h	Hn. 00	ST enable terminal	Uint16	-	0, 1	0
	02 h	Hn. 01	I1 multi-function input terminal function selection	Uint16	-	0 ~ 200	0
	03 h	Hn. 02	I2 multi-function input terminal function selection	Uint16			
	04 h	Hn. 03	I3 multi-function input terminal function selection	Uint16			
	05 h	Hn. 04	I4 multi-function input terminal function selection	Uint16			
	06 h	Hn. 05	I5 multi-function input terminal function selection	Uint16			
	07 h	Hn. 06	I6 multi-function input terminal function selection	Uint16			
	08 h	Hn. 07	I7 multi-function input terminal function selection	Uint16			
	09 h	Hn. 08	I8 multi-function input terminal function selection	Uint16			
	0Ah	Hn. 09	I9 multi-function input terminal function selection	Uint16			
	0Bh	Hn. 10	I10 multi-function input terminal function selection	Uint16			
	0Ch	Hn. 11	I11 multi-function input terminal function selection	Uint16			

0Dh	Hn. 12	I12 multi-function input terminal function selection	Uint16			
0Eh	Hn. 13	RES reset terminal	Uint16	-	0, 1	0
0Fh	Hn. 14	Multi-function input terminal filter time constant	Uint16	-	0 ~ 2000	0
10 h	Hn. 15	Terminal trigger mode	Uint16	-	0 ~ 65535	0
11 h	Hn. 16	Input terminal level selection	Uint16	-	0 ~ 1	0
12 h	Hn. 17	Q1 multi-function output terminal function selection	Uint16	.	0 ~ 19	0
13 h	Hn. 18	Q2 multi-function output terminal function selection	Uint16			
14 h	Hn. 19	Q3 multi-function output terminal function selection	Uint16			
15 h	Hn. 20	Q4 multi-function output terminal function selection	Uint16			
16 h	Hn. 21	Q5 multi-function output terminal function selection	Uint16			
17 h	Hn. 22	Q6 multi-function output terminal function selection	Uint16			
18 h	Hn. 23	M0 relay output function selection	Uint16			
19 h	Hn. 24	M1 relay output function selection	Uint16	.		
1Ah	Hn. 25	Drive internal control word 1	Uint16	-	0 ~	0
1Bh	Hn. 26	Drive internal control word 2	Uint16			
1Ch	Hn. 27	Speed command selection	Uint16	-	0 ~ 6	0
1Dh	Hn. 28	The jog speed given 16 bits lower	Uint16	RPM	0 ~	0
1Eh	Hn. 29	The jog speed given 16 bits higher	Uint16			
1Fh	Hn. 30	Position instruction selection	Uint16	-	0 ~ 4	0
20 h 21 h < 16	Hn. 31	Position following instruction	Int32	Pulse/m s	- 214748364. 7 ~ 2147483647	0
22 h	Hn. 33	Position feedback selection	Uint16	-	0 ~ 3	0
23 h	Hn. 34	Torque instruction selection	Uint16		0 ~ 3	0
24 h	Hn. 35	Selection of analog calibration function	Uint16	-	0, 1	0
25 h	Hn. 36	Analog calibration allows minimum threshold	Uint16	%	0 ~ 50	10
26 h	Hn. 37	The alarm range of analog fixed point error	Uint16	%	0 ~ 100	20
27 h	Hn. 38	Analog offset forward	Uint16	LSB	0 ~ 65520	0
28 h	Hn. 39	Analog offset in reverse	Uint16	LSB	0 ~ 65520	0
29 h	Hn. 40	FV analog fixed point speed	Uint16	RPM	0 ~ 65535	0
2Ah	Hn. 41	FI analog fixed point speed	Uint16	RPM	0 ~ 65535	0
2Bh	Hn. 42	Analog filter time	Uint16	us	0 ~ 1500	1500
2Ch	Hn. 43	Analog zero velocity dead zone	Uint16	LSB	0 ~ 65520	20
2Dh	Hn. 44	Maximum analog speed	Uint16	RPM	0 ~ 60000	8000
2Eh	Hn. 45	Analog midpoint automatic correction function	Uint16	-	0, 1	0
2Fh	Hn. 46	The analog FV corresponding speed low 16 bits	Uint16	RPM	- 900000000	0
30 h	Hn. 47	The analog FV corresponding speed high 16 bits	Uint16			
31 h	Hn. 48	Analog FI corresponding speed low 16 bits	Uint16	RPM	- 900000000	0
32 h	Hn. 49	Analog FI corresponding speed high 16 bits	Uint16			
33 h	Hn. 50	T0 port communication protocol selection	Uint16	-	0 ~ 1	1
34 h	Hn. 51	Type selection of T2 pulse input port	Uint16	-	0 ~ 2	0

35 h	Hn. 52	T2 pulse counting direction	Uint16	-	0, 1	0
36 h 37 h << 16	Hn. 53	T2 pulse position electron gear ratio numerator	Int32	-	- 214748364. 7~ 2147483647	1
38 h 39 h << 16	Hn. 55	T2 pulse position electron gear ratio denominator	Int32	-	- 214748364. 7~ 2147483647	1
3Ah 3Bh << 16	Hn. 57	T2 pulse velocity electron gear ratio numerator	Int32	-	- 214748364. 7~ 2147483647	1
3Ch 3Dh << 16	Hn. 59	T2 pulse velocity electron gear ratio denominator	Int32	-	- 214748364. 7~ 2147483647	1
3Eh	Hn. 61	T2 pulse velocity factor	Uint16	pulse	0 ~ 65535	1024
3Fh	Hn. 62	T2 pulse velocity feedback filter time	Uint16	ms	1-10000	4
40 h	Hn. 63	T3 pulse input port type selection	Uint16	-	0 ~ 2	0
41 h	Hn. 64	T3 pulse counting direction	Uint16	-	0, 1	0
42 h 43 h << 16	Hn. 65	T3 pulse position electron gear ratio numerator	Int32	-	- 214748364. 7~ 2147483647	1
44 h 45 h << 16	Hn. 67	T3 pulse position electron gear ratio denominator	Int32	-	- 214748364. 7~ 2147483647	1
46 h 47 h << 16	Hn. 69	T3 pulse velocity electron gear ratio numerator	Int32	-	- 214748364. 7~ 2147483647	1
48 h 49 h << 16	Hn. 71	T3 pulse velocity electron gear ratio denominator	Int32	-	- 214748364. 7~ 2147483647	1
4Ah	Hn. 73	T3 pulse velocity factor	Uint16	pulse	0 ~ 65535	1024
4Bh	Hn. 74	T3 pulse velocity feedback filter time	Uint16	ms	1-10000	4
4Ch	Hn. 75	T3 pulse filter selection	Uint16	-	0 ~ 15	6
4Dh	Hn. 76	Filter frequency of T3 pulse direction signal	Uint16	MHZ	0 ~ 600	60
4Eh	Hn. 77	Type selection of T4 pulse input port	Uint16	-	0 ~ 2	0
4Fh 50 h << 16	Hn. 78	T4 pulse position electron gear ratio numerator	Int32	-	- 214748364. 7~ 2147483647	1
51 h 52 h << 16	Hn. 80	T4 pulse position electronic gear ratio denominator	Int32	-	- 214748364. 7~ 2147483647	1
53 h 54 h << 16	Hn. 82	T4 pulse velocity electron gear ratio numerator	Int32	-	- 214748364. 7~ 2147483647	1
55 h 56 h << 16	Hn. 84	T4 pulse speed electronic gear ratio denominator	Int32	-	- 214748364. 7~ 2147483647	1

4.2.11 200Ah protection parameter group

Index	Sub-index	Parameters No.	Name	Data type	unit	Data range	Default Value
200Ah	01 h	Pn.00	Bus voltage over-voltage alarm value	Uint16	V	0 ~ 1000	800
	02 h	Pn. 01	Bus voltage under-voltage alarm window value	Uint16	V	0 ~ 1000	400
	03 h	Pn. 02	Bus voltage undervoltage alarm window time	Uint16	s	0 ~ 60.0	0
	04 h	Pn.03	Under-voltage braking function	Uint16	-	0 ~ 1	0
	05 h	Pn.04	Encoder z signal alarm shielding	Uint16	-	0 ~ 65535	1
	06 h	Pn.05	Encoder battery alarm shield	Uint16	-	0 ~ 65535	1
	07 h	Pn. 06	Bus encoder alarm code	Uint16	-	0 ~ 65535	0
	08 h	Pn.07	Bus encoder communication error value	Uint16	-	0 ~ 65535	0
	09 h	Pn. 08	Fault alarm time of resolver	Uint16	s	0 ~ 200.00	0.5
	0Ah	Pn. 09	Encoder self check error count	Uint16	-	0 ~ 65535	0
	0Bh	Pn.10	Motor temperature switch selection	Uint16	-	0 ~ 2	0
	0Ch	Pn.11	Motor temperature sensor selection	Uint16	-	0 ~ 3	0
	0Dh	Pn.12	Motor temperature sensor alarm value	Uint16	degree	0 ~ 200	0
	0Eh	Pn.13	Motor overspeed alarm value	Uint16	RPM	0 ~ 30000	8500
	0Fh	Pn.14	Motor stall alarm value	Uint16	%	0 ~ 100.0	40
	10 h	Pn. 15	Stall alarm detection time	Uint16	s	0 ~ 3000.0	4
	11 h	Pn.16	Position follow-up error overshoot threshold L	Uint16	pulse	0 ~ 4294967295	0
	12 h	Pn. 17	Position follow-up error overshoot threshold H	Uint16			
	13 h	Pn.18	Low speed overload alarm speed value	Uint16	RPM	0 ~ 6000.0	5
	14 h	Pn.19	Low speed overload alarm time threshold	Uint16	s	0 ~ 3000.0	2
	15 h.	Pn.20	Low speed overload alarm current multiple	Uint16	-	0 ~ 100.0	1.2
	16 h	Pn.21	Motor overload protection gain	Uint16	-	0.20 ~ 10.00	1
	17 h	Pn.22	PID feedback loss detection window	Uint16	%	0 ~ 100.0	0
18 h	Pn.23	PID feedback lost detection window time	Uint16	s	0 ~ 50.00	0	

4.2.12 200Bh system parameter group

Index	Sub-index	Parameters No.	Name	Data type	unit	Data range	Default Value
200 Bh	01 h	Sn.00	Senior password	Uint16	-	0 ~ 65535	0
	02 h	Sn. 01	Power code	Uint16	-	0 ~ 255	0
	03 h	Sn. 02	Hall unit value	Uint16	0.1 A	0 ~ 50000	0
	04 h	Sn.03	Driver rated power	Uint16	kw	0 ~ 6000.0	0
	05 h	Sn. 04	Driver input voltage	Uint16	V	0 ~ 65535	0
	06 h	Sn.05	Operating voltage of brake unit	Uint16	V	0 ~ 1000	7
	07 h	Sn. 06	Carrier frequency	Uint16	-	1 ~ 8	4
	08 h	Sn.07	Main program version number	Uint16	-	-	0
	09 h	Sn. 08	Motor control program version number	Uint16	-	-	0
	0Ah	Sn. 09	PLC program version number	Uint16	-	-	0
	0Bh	Sn. 10	Smart encoder card version number	Uint16	-	-	0
	0Ch	Sn.11	PLC scanning cycle	Uint16	u	0 ~ 65535	0
	0Dh	Sn. 12	PLC minimum execution cycle	Uint16	u	-	0
	0Eh	Sn. 13	PLC maximum execution cycle	Uint16	u	-	0
	0Fh	Sn. 14	Maximum current display	Uint16	A	0 ~ 6000.0	0
	10 h	Sn. 15	Torque current setting	Int16	A	- 3000.00 ~	0
	11 h	Sn. 16	Magnetization current setting	Int16	A	- 3000.00 ~	0
	12 h	Sn. 17	Torque current feedback	Int16	A	- 3000.00 ~	0
	13 h	Sn.18	Magnetization current feedback	Int16	A	- 3000.00 ~	0
	14 h	Sn. 19	U phase current sampling	Uint16	-	0 ~ 4095	0
	15 h	Sn.20	V phase current sampling	Uint16	-	0 ~ 4095	0
	16 h	Sn. 21	W phase current sampling	Uint16	-	0 ~ 4095	0
	17 h	Sn.22	Motor control program update	Uint16	-	0 ~ 200	0
	18 h	Sn.23	Use time limit setting	Uint16	h	0 ~ 65535	0
	19 h	Sn. 24	Control program execution time				
	1Ah	Sn. 25	Parameter backup id	Uint16	-	0 ~ 65535	0
	1Bh	Sn.26	Hall V phase current gain	Uint16	-	3000 ~ 5000	4096
	1Eh	Sn.29	Smart card parameter version	Uint16		0 ~ 65535	0
	1Fh	Sn. 30	Application hardware version	Uint16	-	0 ~ 65535	0
	20 h	Sn.31	Control hardware version	Uint16	-	0 ~ 65535	0
	28 h	Sn. 39	TD sampling curve selection	Uint16	-	0 ~ 65535	0
	29 h	Sn.40	CPU temperature simulates the sampling of raw data	Uint16	-	0 ~ 65535	0
	2Ah	Sn. 41	TD analog sampling raw data	Uint16	-	0 ~ 65535	0
	2Bh	Sn. 42	DBVD simulates the sampling of raw data	Uint16	-	0 ~ 65535	0

2Fh	Sn. 46	T2 pulse count raw data	Uint16	-	0 ~ 65535	0
30 h	Sn.47	T3 pulse count raw data	Uint16	-	0 ~ 65535	0
31 h	Sn.48	T4 pulse count raw data	Uint16	-	0 ~ 65535	0
32 h	Sn.49	Synchronous communication error count of big and small CPU	Uint16	-	0 ~ 65535	0
33 h	Sn. 50	Large CPU receives data 0 in real time	Uint16	-	0 ~ 65535	0
34 h	Sn. 51	Large CPU receives data in real time 1	Uint16	-	0 ~ 65535	0
35 h	Sn. 52	Large CPU receiving data in real time 2	Uint16	-	0 ~ 65535	0
36 h	Sn. 53	Large CPU receiving data in real time 3	Uint16	-	0 ~ 65535	0
37 h	Sn. 54	Large CPU receives data in real time 4	Uint16	-	0 ~ 65535	0
38 h	Sn. 55	Large CPU receives data in real time 5	Uint16	-	0 ~ 65535	0
39 h	Sn. 56	Large CPU receives data in real time 6	Uint16	-	0 ~ 65535	0
3Ah	Sn. 57	Large CPU receives data in real time 7	Uint16	-	0 ~ 65535	0
3Bh	Sn. 58	Large CPU receives data in real time 8	Uint16	-	0 ~ 65535	0
3Ch	Sn.59	Large CPU receives data in real time 9	Uint16	-	0 ~ 65535	0
3Dh	Sn.60	Large CPU receives data in real time 10	Uint16	-	0 ~ 65535	0
3Eh	Sn.61	Large CPU receives data in real time 11	Uint16	-	0 ~ 65535	0
3Fh	Sn.62	Large CPU receives data in real time 12	Uint16	-	0 ~ 65535	0
40 h	Sn.63	Large CPU receives data in real time 13	Uint16	-	0 ~ 65535	0
41 h	Sn.64	Large CPU receives data in real time 14	Uint16	-	0 ~ 65535	0
42 h	Sn.65	Large CPU receives data in real time 15	Uint16	-	0 ~ 65535	0
43 h	Sn.66	Large CPU receives data in real time 16	Uint16	-	0 ~ 65535	0
44 h	Sn.67	Large CPU receives data in real time 17	Uint16	-	0 ~ 65535	0
45 h	Sn.68	Large CPU receives data in real time 18	Uint16	-	0 ~ 65535	0
46 h	Sn.69	Large CPU receives data in real time 19	Uint16	-	0 ~ 65535	0
47 h	Sn.70	Large CPU receives data in real time 20	Uint16	-	0 ~ 65535	0
48 h	Sn.71	Large CPU receives data in real time 21	Uint16	-	0 ~ 65535	0
49 h	Sn.72	Large CPU receives data in real time 22	Uint16	-	0 ~ 65535	0
4Ah	Sn.73	Large CPU receives data in real time 23	Uint16	-	0 ~ 65535	0
4Bh	Sn.74	Large CPU receives data in real time 24	Uint16	-	0 ~ 65535	0
4Ch	Sn.75	Large CPU sends data 0 in real time	Uint16	-	0 ~ 65535	0
4Dh	Sn.76	Large CPU sends data in real time 1	Uint16	-	0 ~ 65535	0
4Eh	Sn.77	Large CPU sends data in real time 2	Uint16	-	0 ~ 65535	0
4Fh	Sn.78	Large CPU sends data in real time 3	Uint16	-	0 ~ 65535	0
50 h	Sn.79	Large CPU sends data in real time 4	Uint16	-	0 ~ 65535	0
51 h	Sn.80	Large CPU sends data in real time 5	Uint16	-	0 ~ 65535	0
52 h	Sn.81	Large CPU sends data in real time 6	Uint16	-	0 ~ 65535	0
53 h	Sn.82	Large CPU sends data in real time 7	Uint16	-	0 ~ 65535	0
54 h	Sn.83	Large CPU sends data in real time 8	Uint16	-	0 ~ 65535	0
55 h	Sn.84	Large CPU sends data in real time 9	Uint16	-	0 ~ 65535	0
56 h	Sn.85	Large CPU sends data in real time 10	Uint16	-	0 ~ 65535	0

	57 h	Sn.86	Large CPU sends data in real time 11	Uint16	-	0 ~ 65535	0
	58 h	Sn.87	Large CPU sends data in real time 12	Uint16	-	0 ~ 65535	0
	59 h	Sn.88	Large CPU sends data in real time 13	Uint16	-	0 ~ 65535	0
	5Ah	Sn.89	Large CPU sends data in real time 14	Uint16	-	0 ~ 65535	0
	5Bh	Sn.90	Large CPU sends data in real time 15	Uint16	-	0 ~ 65535	0
	5Ch	Sn.91	Large CPU sends data in real time 16	Uint16	-	0 ~ 65535	0
	5Dh	Sn.92	Large CPU sends data in real time 17	Uint16	-	0 ~ 65535	0
	5Eh	Sn.93	Large CPU sends data in real time 18	Uint16	-	0 ~ 65535	0
	5Fh	Sn.94	Large CPU sends data in real time 19	Uint16	-	0 ~ 65535	0
	60 h	Sn.95	Large CPU sends data in real time 20	Uint16	-	0 ~ 65535	0
	61 h	Sn.96	Large CPU sends data in real time 21	Uint16	-	0 ~ 65535	0
	62 h	Sn.97	Large CPU sends data in real time 22	Uint16	-	0 ~ 65535	0
	63 h	Sn.98	Large CPU sends data in real time 23	Uint16	-	0 ~ 65535	0
	64 h	Sn.99	Large CPU sends data in real time 24	Uint16	-	0 ~ 65535	0

4.3 Object group 6000h assignment list

Index	Sub-index	Parameters No.	Access ibility	PDO mapping	Data type	Unit	Data range	Default Value
603Fh		Error code						
6040 h		Control word						
6041 h		Status word						
605Ah		Quick stop mode selection						2
6060 h		Mode selection						
6061 h		Mode display						
6062 h		User location instruction				User unit		
6063 h		Second encoder /T4 position feedback						
6064 h		User location feedback				User unit		
6065 h		Too large deviation threshold of user location				User unit		30000
6066 h		User position deviation time window						10
6067 h		The position arrival threshold				User unit		1000
6068 h		Position arrival time window				ms		10
6069 h		Second encoder /T4 pulse speed				RPM		
606Bh		User actual speed instruction				RPM		
606Ch		Actual user speed feedback				RPM		
606Dh		Velocity arrival threshold				RPM		10
606Eh		Speed arrival time window				ms		10
606Fh		Zero velocity threshold				RPM		10
6070 h		Zero speed time window				ms		10
6071 h		The target torque						

6074 h		Torque requirements						
6077 h		The actual torque						
6078 h		Torque current value						
607Ah		The target location				User unit		
607Bh		Position range limit						
	1 h	Minimum range limit						
	2 h	Maximum range limit						
607Ch		The origin offset				User unit		
607Dh		Software location restriction						
	1 h	Minimum position limit				User unit		
	2 h	Maximum position limit				User unit		
607Eh		Instruction polarity					0	
607Fh		Maximum profile velocity				RPM	5000	
6080 h		Maximum motor speed				RPM	5000	
6081 h		Profile speed				RPM	5000	
6083 h		Profile acceleration				RPM/ms	80	
6084 h		Profile deceleration				RPM/ms	80	
6085 h		Fast stop deceleration				ms	80	
6087 h		Torque slope					100	
608Fh		Position encoder resolution						
	1 h	Numerator					1	
	2 h	Denominator					1	
6093 h		Location factors						
	1 h	Numerator					1	
	2 h	Denominator					1	
6094 h		Velocity encoder factor						
	1 h	Numerator						
	2 h	Denominator						
6095 h		Velocity factor 1						
	1 h	Numerator					1	
	2 h	Denominator					1	
6097 h		Acceleration factor						
	1 h	Numerator						
	2 h	Denominator						
6098 h		Back to zero mode					1	
6099 h		Back to zero velocity						
	1 h	Search for deceleration point signal speed				RPM	100	
	2 h	Search for zero signal speed				RPM	10	
609Ah		Back to zero acceleration				RPM/ms	80	
60B8h		Probe function						

60B9h		State of the probe						
60BAh		Probe 1 rising edge encoder value						
60 BBh		Probe 1 falling edge encoder value						
60 BCh		Probe 2 rising edge encoder value						
60 BDh		Probe 2 falling edge encoder value						
60C1h		Interpolation data record						
	1 h	Interpolation displacement						
60C2h		Interpolation time						
	1 h	Interpolation time unit						1
	2 h	Interpolation time index						
60C5h		Maximum profile acceleration				RPM/ms		1000
60C6h		Maximum profile deceleration				RPM/ms		1000
60F4h		User position deviation				User unit		
60 FCh		Motor position instruction						
60 FDh		Digital input						
60FEh		Digital output						
60 FFh		The target speed						
6502 h		Support servo operation mode						237

Note: Accessibility, PDO mapping, data type and data range are all implemented in accordance with CIA402 standard.

4.4 Custom object assignment list

Index	Sub-index	Parameters No.	Accessibility	PDO mapping	Data type	Unit	Data range
6100 h	0	The driver analog outputs DA1	RW	RPDO	Int16	0.01 v	- 1000 ~ 1000
6101 h	0	The driver analog outputs DA2	RW	RPDO	Int16	0.01 v	- 1000 ~ 1000
6200 h	0	FV analog input voltage monitoring	RO	TPDO	Int16	0.01 v	- 1000 ~ 1000
6201 h	0	FI analog input voltage monitoring	RO	TPDO	Int16	0.01 v	0 ~ 1000

5 Drive hardware description

5.1 Drive Probe Input

The probe sequence	Drive digital input channel	The rising edge captures object	The falling edge captures object
1	I11 (T3 port)	60BAh	60 BBh
2	I12 (T3 port)	60 BCh	60 BDh

5.2 Drive digital input (60FDh)

Bit	27	26	25	24	23	22	21	20	19	18	17	16	15 ~ 3	2	1	0
T3	I12	I11	I10	I9	I8	I7	I6	I5	I4	I3	I2	I1	Non	I3	I2	I1

5.3 Drive digital output (60FEh)

Bit	23	22	21	20	19	18	17	16	15 ~ 0
	DM2	DM1	Q6	Q5	Q4	Q3	Q2	Q1	Non

5.4 Drive analog output

Driver analog output signal	object
DA1 (T2 port)	6100 h
DA2 (port T2)	6101 h

5.5 Drive analog input

Driver analog input signal	object
FV (T2 port)	6200 h
FI (T2 port)	6201 h

6 standard PDO process data mapping

PDO mapping can be dynamically configured by the master station. The default mapping is shown in the following table:

	object	Name	unit		Data type
RPDO1	6040 h	Control word			
	6060 h	Mode selection			
	60 FFh	The target speed	RPM		
	607Ah	The target location			
	6071 h	The target torque			
	60FEh	Digital output			
	60B8h	The probe function			
	6100 h	The driver analog outputs DA1	0.01 v		
6101 h	The driver analog outputs DA2	0.01 v			
TPDO1	603Fh	Error code			
	6041 h	Status word			
	6061 h	Mode display			
	606Ch	Actual user speed feedback	RPM		

	6064 h	User location feedback			
	6077 h	User torque feedback			
	6078 h	Load current value			
	60F4h	Follow-up error			
	60 FDh	Digital input			
	60B9h	Probe state			
	60BAh	Probe 1 rising edge encoder value			
	60 BBh	Probe 1 falling edge encoder value			
	60 BCh	Probe 2 rising edge encoder value			
	60 BDh	Probe 2 falling edge encoder value			
	6200 h	FV analog input voltage monitoring	0.01 v		
	6201 h	FI analog input voltage monitoring	0.01 v		
	6069 h	Second encoder /T4 pulse speed	RPM		

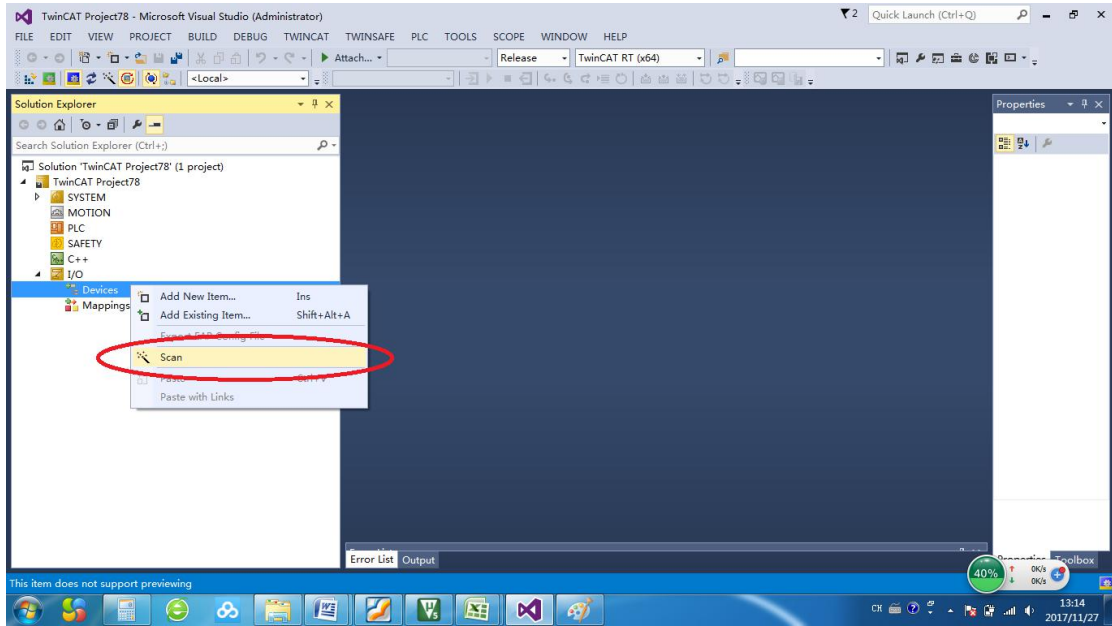
7 Application case

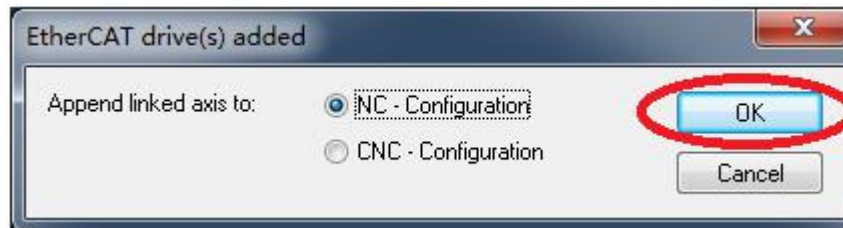
7.1 Drive access to Beckhoff TwinCAT master station

1) after ensuring the normal operation of the motor in the operator mode, configure the bus-related parameters according to the following table

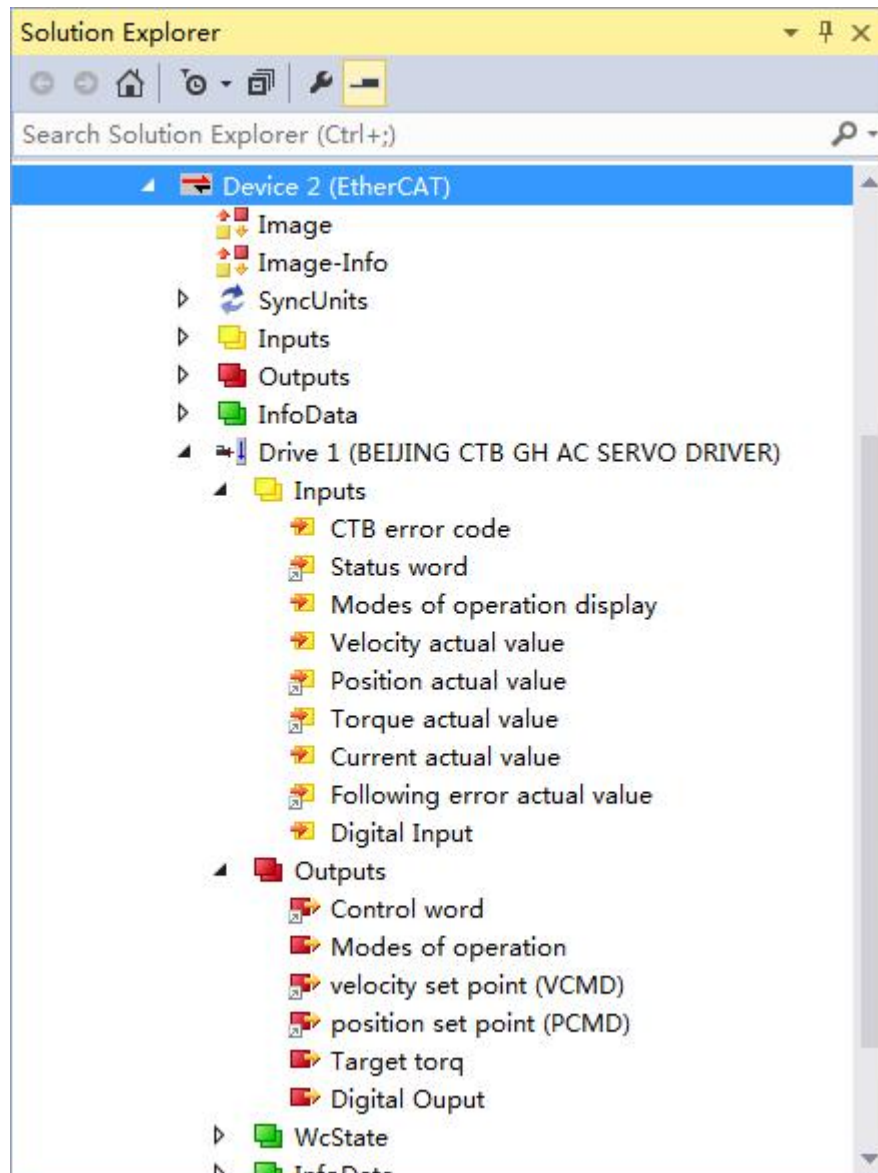
Parameter	Parameter name	Description	Setting value
An.02	Command mode selection	0: Terminal option mode 1: Panel operation mode 2: On-Site bus communication	2
Bn.06		0: EtherCAT 1: Profinet 2: Powerlink 3: Ethernet-IP 4: MetrolinkII 5: MetrolinkIII 6: CANOPEN	0
Bn.21	Ethercat bus master station selection	0: BECKHOFF controller 1: i5 CNC controller 2: CPTEC controller	0
Bn.13	Bus interpolation cycle setting	Bus cycle time (ms)	It is consistent with the actual communication cycle

- 1) Copy the device description(XML) file of the drive to BECKHOFF TwinCAT installation directory..3.1 \ \ TwinCAT \ Config \ Io \ EtherCAT.
- 2) connect the network port of the PC and the drive with the network cable.
- 3) open TwinCAT3 software and create a new project.
- 4) scan the equipment





1) Process data (PDO) speed mode running motor



Set the control word as 31, operation mode 3, target speed as 100, and observe whether the motor runs at 100rpm.