

# ZLAC8030D Servo Driver

## CANopen Communication Quick Start Guide

Version	Description	Date
V1.00	First edition	2024/3/22

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## 1. Outline

This manual only gives a brief introduction to the most commonly used related concepts and precautions in the use of ZLAC8030D, so that users can understand the normal use of ZLAC8030D series products in the shortest time.

### Communication Standard followed by ZLAC8030D

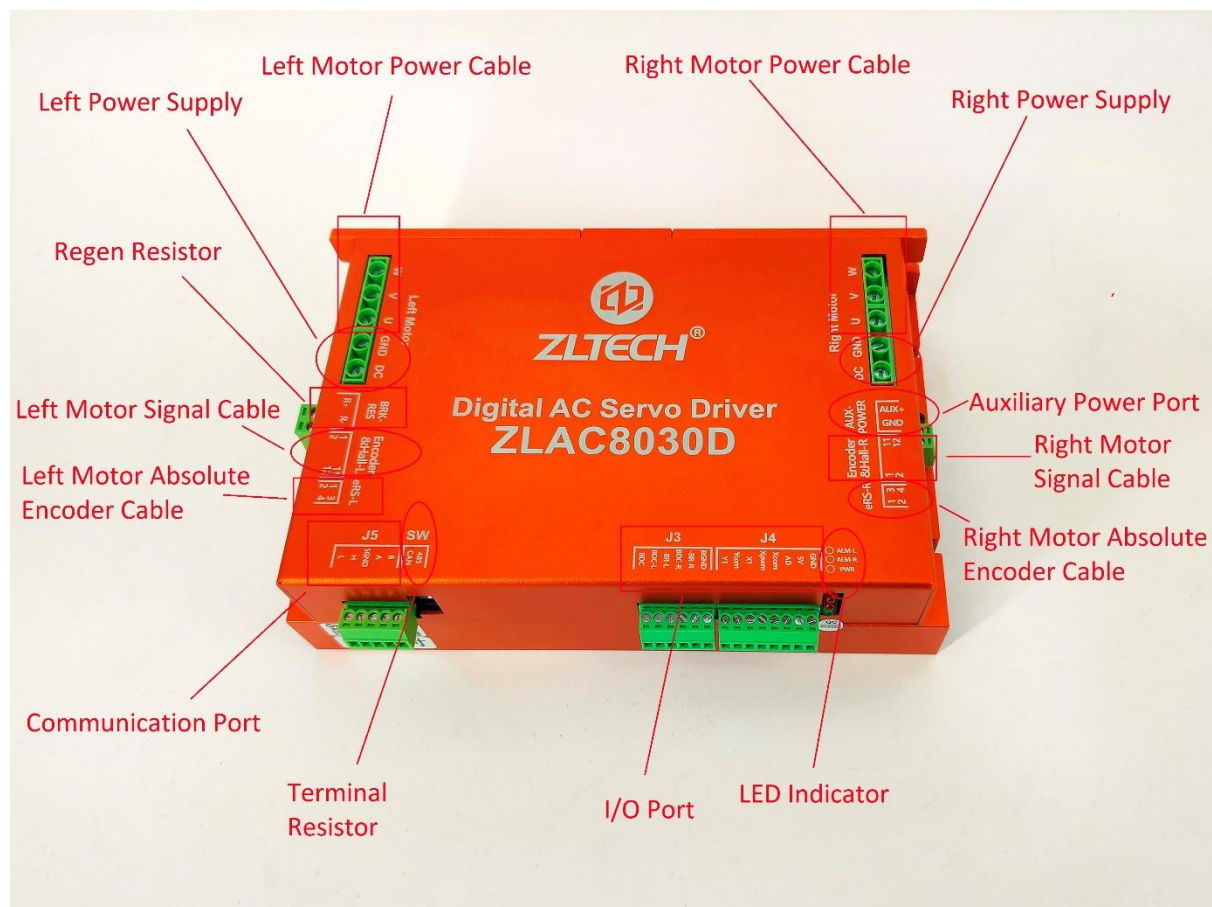
- CAN 2.0A Standard
- CANopen Standard protocol DS 301 V4.02
- CANopen Standard protocol DS 402 V2.01

### Services supported by ZLAC8030D

- Support SDO service
- Support PDO service: each slave station can be configured with up to 4 TxPDOs and 4 RxPDOs
- Support NMT Slave service
- Device monitor: support heartbeat message

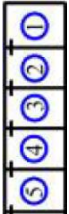
## 2. Wiring Connection

### 2.1 Basic Wiring Diagram



## 2.2 CANopen Port

Note: There is only one set CAN interface. If users need to connect multiple drivers, please connect them in parallel to CANL (pin1), CANH (pin2), and SGND (pin3). This driver communication is isolated, and users need to connect the ground signal SGND

Port	Pin	Mark	Name	Function
	1	CANL	CANOPEN	
	2	CANH		
	3	SGND	Communication GND	
	4	A	RS485	
	5	B		

## 3. Protocol Format

### 3.1 Communication Setting

Baud rate: 500K, ID: 1 (default)

### 3.2 Communication Power On Message

Note: ZLAC8030D will send a 700+ID NMT message when it is powered on. Receiving this message indicates successful communication. If this message is not received, please check the wiring connection and baud rate to ensure consistency, or power on again.

No.	Transfer Direction	Time	Status	Name	Frame ID	Format	Type	DLC	Data
1	Receive	15:05:36.526			0x00000704	Data Frame	Standard	0x01	00

### 3.3 SDO Basic Format

COB-ID	Byte0	Byte1:2	Byte3	Byte4:7
Frame ID	SDO Command Word	Object Index	Object Sub-Index	Data

COB-ID	Byte0	Byte1	Byte2	Byte3	Byte4	Byte5	Byte6	Byte7
Master → Slave (Driver)								
0x601	23	FF	60	03	32	00	32	00
Slave (Driver) → Master								
0x581	60	FF	60	03	00	00	00	00

### 3.3.1 COB-ID Format

Send frame ID: 0x600 + Node address

Return frame ID: 0x580 + Node address

### 3.3.2 Command word

Command	Function	Type	Data Length
2F	Set	M->S Request	1 Byte
2B	Set	M->S Request	2 Byte
23	Set	M->S Request	4 Byte
60	Set Feedback	S->M Confirm	
40	Read	M->S Request	0 Byte
80	Read Fault	S->M Answer	4 Byte

### 3.3.3 Index and Data Form

23    **FF 60**    00    **64 00 64 00**  
          INDEX                      DATA

Eg: The target speed index **FF 60**, so the actual value is: 60 FF. The left and right target speed data in the same format as the index.

※Byte Order: Little Endian (Low bit in front, high bit in back).

## 3.4 Heartbeat Message

Setting instruction: Frame ID: 601 Data: 2B 17 10 00 E8 03 00 00 (time is 1000ms)

Heartbeat message format is shown as follows:

Heartbeat Producer → Consumer	
COB-ID	Byte 0
0x700+Node-ID	Status

The status description is shown as follows:

Status	Description
0x00	Boot-up
0x04	Stop Status
0x05	Operation Status
0x7F	Pre-operation Status

※Note: ZLAC8030D is producer of heartbeat message.

## 4. Control Mode

### 4.1 Profile Velocity Mode

Note: Generally, users are required to use synchronous mode (asynchronous functions can also be achieved in synchronous mode). The default shipping mode is synchronous mode.

Master Station (COB-ID:0x601)	Slave Station (COB-ID:0x581)	Function Description
2F 60 60 00 03 00 00 00	60 60 60 00 00 00 00 00	Set velocity mode
2B 40 60 00 06 00 00 00	60 40 60 00 00 00 00 00	Enable
2B 40 60 00 07 00 00 00	60 40 60 00 00 00 00 00	
2B 40 60 00 0F 00 00 00	60 40 60 00 00 00 00 00	
23 FF 60 03 64 00 64 00	60 FF 60 03 00 00 00 00	Set synchronization Set target speed 100rpm
23 FF 60 03 9C FF 9C FF	60 FF 60 03 00 00 00 00	Set synchronization Set target speed -100rpm
23 FF 60 03 64 00 32 00	60 FF 60 03 00 00 00 00	Set synchronization left speed 100rpm right speed 50rpm
23 FF 60 03 32 00 9C FF	60 FF 60 03 00 00 00 00	Set synchronization left speed 50rpm right speed -100rpm

### 4.2 Profile Relative Position Mode

Master Station (COB-ID:0x601)	Slave Station (COB-ID:0x581)	Function Description
2F 60 60 00 01 00 00 00	60 60 60 00 00 00 00 00	Set position mode
23 81 60 01 3C 00 00 00	60 81 60 01 00 00 00 00	Set left motor max speed 60RPM
23 81 60 02 3C 00 00 00	60 81 60 01 00 00 00 00	Set right motor max speed 60RPM
2B 40 60 00 06 00 00 00	60 40 60 00 00 00 00 00	Enable
2B 40 60 00 07 00 00 00	60 40 60 00 00 00 00 00	
2B 40 60 00 0F 00 00 00	60 7A 60 01 00 00 00 00	
23 7A 60 01 00 7D 00 00	60 7A 60 02 00 00 00 00	Set left motor Target position 32000
23 7A 60 02 00 83 FF FF	60 7A 60 02 00 00 00 00	Set right motor Target position -32000
2B 40 60 00 4F 00 00 00	60 40 60 00 00 00 00 00	Start relative motion
2B 40 60 00 5F 00 00 00	60 40 60 00 00 00 00 00	

### 4.3 Profile Absolute Position Mode

Master Station (COB-ID:0x601)	Slave Station (COB-ID:0x581)	Function Description
2F 60 60 00 01 00 00 00	60 60 60 00 00 00 00 00	Set position mode
23 81 60 01 3C 00 00 00	60 81 60 01 00 00 00 00	Set left motor max speed 60 RPM
23 81 60 02 3C 00 00 00	60 81 60 01 00 00 00 00	Set right motor max speed 60 RPM
2B 40 60 00 06 00 00 00	60 40 60 00 00 00 00 00	Enable
2B 40 60 00 07 00 00 00	60 40 60 00 00 00 00 00	
2B 40 60 00 0F 00 00 00	60 40 60 00 00 00 00 00	
23 7A 60 01 00 7D 00 00	60 7A 60 01 00 00 00 00	Set left motor Target position 32000
23 7A 60 02 00 83 FF FF	60 7A 60 02 00 00 00 00	Set right motor Target position -32000
2B 40 60 00 0F 00 00 00	60 40 60 00 00 00 00 00	Start absolute motion
2B 40 60 00 1F 00 00 00	60 40 60 00 00 00 00 00	
23 7A 60 01 00 83 FF FF	60 7A 60 01 00 00 00 00	Set left motor Target position -32000
23 7A 60 02 00 7D 00 00	60 7A 60 02 00 00 00 00	Set right motor Target position 32000
2B 40 60 00 0F 00 00 00	60 40 60 00 00 00 00 00	Start absolute motion
2B 40 60 00 1F 00 00 00	60 40 60 00 00 00 00 00	

※ Note: When controlling the position, the switching of the control word will simultaneously control 2 motors. Therefore, when controlling a single motor, the target position of the other motor should be set to 0.

### 4.4 Profile Torque Mode

Master Station (COB-ID:0x601)	Slave Station (COB-ID:0x581)	Function Description
2F 60 60 00 04 00 00 00	60 60 60 00 00 00 00 00	Set torque mode
2B 40 60 00 06 00 00 00	60 40 60 00 00 00 00 00	Enable
2B 40 60 00 07 00 00 00	60 40 60 00 00 00 00 00	
2B 40 60 00 0F 00 00 00	60 40 60 00 00 00 00 00	
23 71 60 03 E8 03 E8 03	60 71 60 03 00 00 00 00	Set synchronization target torque 1000mA/s
23 71 60 03 18 FC 18 FC	60 71 60 03 00 00 00 00	Set synchronization target torque -1000mA/s
23 71 60 03 E8 03 18 FC	60 71 60 03 00 00 00 00	Set synchronization left torque 1000mA/s

		right torque -1000mA/s
23 71 60 03 18 FC E8 03	60 71 60 03 00 00 00 00	Set synchronization left torque -1000mA/s right torque 1000mA/s

## 4.5 General Command

Master Station (COB-ID:0x601)	Function Description
2B 40 60 00 00 00 00 00	Stop
2B 40 60 00 80 00 00 00	Clear Fault
40 64 60 01 00 00 00 00	Read left motor encoder
40 64 60 02 00 00 00 00	Read right motor encoder
40 6C 60 03 00 00 00 00	Read right and left motor speed (Unit: 0.1RPM)
40 77 60 03 00 00 00 00	Read right and left motor current (Unit: 0.1A)
40 3F 60 00 00 00 00 00	Read fault code High 16 bits: left Low 16 bits: right
40 31 20 00 00 00 00 00	Read software version
40 32 20 01 00 00 00 00	Read left motor temperature (Unit: 0.1℃)
40 32 20 02 00 00 00 00	Read right motor temperature (Unit: 0.1℃)

## 4.6 Emergency Stop Command

Master Station (COB-ID:0x604)	Slave Station (COB-ID:0x584)	Function Description
2B 40 60 00 02 00 00 00	60 40 60 00 00 00 00 00	Motor stops and keep enabled status
2B 40 60 00 0F 00 00 00	60 40 60 00 00 00 00 00	Motor Enable (Release Emergency Stop)

※ Note: After sending emergency stop command, user needs to send enable command to release the emergency stop status.

## 5. Function Setting

### 5.1 Alarm PWM Processing Method

**Open Command:** Frame ID: 601 Data: 2B 26 20 01 01 00 00 00

**Close Command:** Frame ID: 601 Data: 2B 26 20 01 00 00 00 00

**Save To EEPROM:** Frame ID: 601 Data: 2B 10 20 00 01 00 00 00

**Trigger Mechanism:** When enabling this function, driver will enter an alarm and short-circuit the motor's power UVW (after the motor power cable UVW short-circuit, it



will generate resistance during motor' s rotation)

**Function:** To prevent the robot from sliding instantly after motor alarms

## 5.2 Parking Mode

**Open Command:** Frame ID: 601 Data: 2B 26 20 04 01 00 00 00

**Close Command:** Frame ID: 601 Data: 2B 26 20 04 00 00 00 00

**Trigger Mechanism:** When enabling this function, the motor output current will not exceed 3A

**Function:** When the robot is charging or standby, enter this function to prevent the motor from over temperature problem

## 5.3 Speed Resolution

**Setting Instruction:** Frame ID: 601 Data: 2B 26 20 05 0A 00 00 00 (setting range: 0-10) 10 is hexadecimal A

**Save To EEPROM:** Frame ID: 601 Data: 2B 10 20 00 01 00 00 00

**Rule:** Set to A, output speed unit:  $1/10=0.1$  RPM. Eg: target speed is 100 RPM, and the actual output is 10 RPM

Set to 5, output speed units:  $1/5=0.2$  RPM. Eg: target speed is 100 RPM, and the actual output is 20 RPM

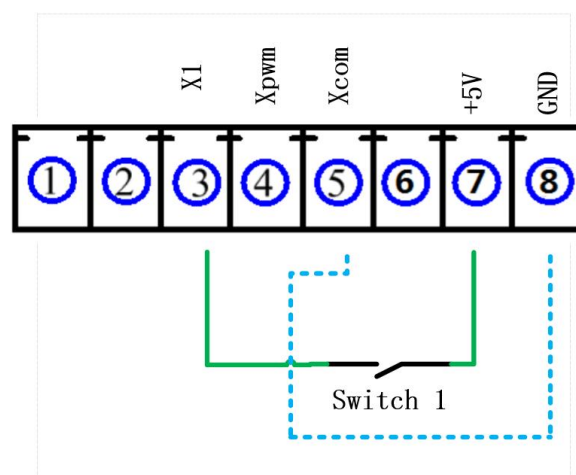
Set to 1, output speed unit:  $1/1=1$  RPM. Eg: target speed is 100 RPM, and the actual output is 100 RPM

**Trigger Mechanism:** After enabling the testing function, it must be saved and restarted to be effective

**Function:** User could use more precise target speed control

## 5.4 I/O Emergency Stop Processing Method

### 5.4.1 Wiring Diagram J4



I/O emergency stop processing method (CAN address; 2026h 03)

0: Lock shaft (Motor stops with holding force)

1: Release shaft (Turning off PWM output signal, motor is under free running status)

Method a. Set value of object 605Ah to 5: When pressing the emergency stop button, the motor will stop according to the deceleration time and turn cut off the PWM control signal, to cut off the current supply to the motor.

Method b. Set value of object 605Ah to 6: When pressing the emergency stop button, the motor will stop according to the emergency stop deceleration time and then turn off the PWM control signal, to cut off the current supply to the motor.

Method c. Set value of object 605Ah to 7: When pressing the emergency stop button, the PWM control signal will be immediately turned off, and the motor will continue to run under inertia and gradually stop.

#### 5.4.2 CANopen Command Setting

**Enable input interface INPUT1 emergency stop function:** Frame ID: 601 Data: 2B 30 20 02 09 00 00 00

**Enable input interface INPUT2 emergency stop function:** Frame ID: 601 Data: 2B 30 20 03 09 00 00 00 (This function is only for emergency stop. If PWM function is need, please contact technical support)

**Command to open IO emergency stop shaft release function:** Frame ID: 601 Data: 2B 26 20 03 01 00 00 00

**Command to close IO emergency stop shaft release function:** Frame ID: 601 Data: 2B 26 20 03 00 00 00 00

**Save To EEPROM:** Frame ID: 604 Data: 2B 10 20 00 01 00 00 00

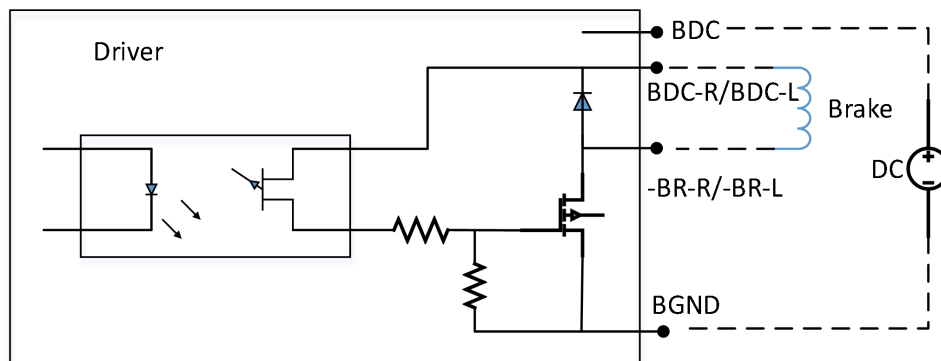
**Trigger mechanism:** When this function is enabled, after the driver triggers an external emergency stop, the motor will be in a disabled state (if not enabled, after triggering an external emergency stop, the motor will be in an enabled state)

**Function:** When the robot malfunctions, it can be pushed forward

### 5.5 Brake Function

#### 5.5.1 Wiring Diagram

Note: 20V-24V DC, brake doesn't have positive or negative poles, and could be wired freely.



#### 5.5.2 Brake command set

**Command to activate left and right brake:** Frame ID: 601 Data: 2B 30 20 07 00 00 00 00

Frame ID: 601 Data: 2B 30 20 08 00 00 00 00

**Command to close left and right brake:** Frame ID: 601 Data: 2B 30 20 07 01 00 00 00

Frame ID: 601 Data: 2B 30 20 08 01 00 00 00

**Function:** If the user's motor is equipped with an external brake, this command can be used to open and close the brake.

## 5.6 Regen circuit function (users only need to connect the regen circuit themselves)

**Enable regen function command:** Frame ID: 601 Data: 2B 27 20 05 01 00 00 00 (default enabled)

**Command to close regen function:** Frame ID: 601 Data: 2B 27 20 05 00 00 00 00

Other parameters can also be set through the 0x2027 address

**Function:** To prevent users from damaging the driver or other equipment due to the back electromotive force generated by excessive speed and emergency stop

## 6. PDO Mapping Steps

### 6.1 TPD0 Mapping

Configure 0x606C as TPD00, for transmission methods, use event trigger (254) or timer trigger (255) respectively

Mater Station(COB-ID:0x601)	Slave Station(COB-ID:0x581)	Function Description
2F 00 1A 00 00 00 00 00	60 00 1A 00 00 00 00 00	Clear TPD00 mapping
23 00 1A 01 20 03 6C 60	60 00 1A 01 00 00 00 00	Map 0x606C 03 to 0x1A00 01
2F 00 18 02 FE 00 00 00	60 00 18 02 00 00 00 00	Set TPD00 transmission method to event trigger
2F 00 1A 00 01 00 00 00	60 00 1A 00 00 00 00 00	Enable 1 TPD00 mapping
2B 10 20 00 01 00 00 00	60 10 20 00 00 00 00 00	Save parameters to EEPROM

Mater Station(COB-ID:0x601)	Slave Station (COB-ID:0x581)	Function Description
2F 00 1A 00 00 00 00 00	60 00 1A 00 00 00 00 00	Clear TPD00 mapping
23 00 1A 01 20 03 6C 60	60 00 1A 01 00 00 00 00	Mapping 0x606C 03 to 0x1A00 01
2F 00 18 02 FF 00 00 00	60 00 18 02 00 00 00 00	Set TPD00 transmission method to timer trigger
2B 00 18 05 E8 03 00 00	60 00 18 05 00 00 00 00	Set inhibit time 500ms (unit: 0.5ms)
2F 00 1A 00 01 00 00 00	60 00 1A 00 00 00 00 00	Enable 1 TPD00 mapping
2B 10 20 00 01 00 00 00	60 10 20 00 00 00 00 00	Save parameters to EEPROM

After the mapping is completed, send the NMT start command.

The format of the NMT enable command is as follows (take ID 1 as an example):

COB-ID: 000 Data: 01+ID (00 represents enabling PDO of all addresses)

Enabling address 1: Frame ID: 000 Data: 01 01

Enabling all addresses: Frame ID: 000 Data: 01 00

The TPDO upload format is shown in the table below:

Slave Station(COB-ID:0x181)	Function Description
01 02 03 04	The data uploaded to 606C 03 is 01 02 03 04 (Low in front and high in back)

The format of the NMT close command is as follows:

COB-ID: 000 Data: 80+ID (00 represents closing PDO of all addresses)

Closing address 1: Frame ID: 000 Data: 80 01

Closing all addresses: Frame ID: 000 Data: 80 00

※ Note: After closing, TPDO will stop uploading.

## 6.2 RPDO Mapping

### 6.2.1 Brake command set

Configure 0x60FF 01 and 0x60FF 02 as TPDO1, transmission method is event trigger (254).

Mater Station(COB-ID:0x601)	Slave Station(COB-ID:0x581)	Function Description
2F 01 16 00 00 00 00 00	60 01 16 00 00 00 00 00	Clear RPDO1 mapping
23 01 16 01 20 01 FF 60	60 01 16 01 00 00 00 00	Map 0x60FF 01 to 0x1601 01
23 01 16 02 20 02 FF 60	60 01 16 02 00 00 00 00	Map 0x60FF 02 to 0x1601 02
2F 01 16 00 02 00 00 00	60 01 16 00 00 00 00 00	Enable RPDO1 mapping
2B 10 20 00 01 00 00 00	60 10 20 00 00 00 00 00	Save parameters to EEPROM

After the mapping is completed, send the NMT start command.

The format of the NMT enable command is as follows (take ID 1 as an example):

COB-ID: 000 Data: 01+ID (00 represents enabling PDO of all addresses)

Enabling address 1: Frame ID: 000 Data: 01 01

Enabling all addresses: Frame ID: 000 Data: 01 00

The RPDO upload format is shown in the table below:

Slave Station (COB-ID:0x304)	Function Description
01 02 03 04 05 06 07 08	Right 01 02 03 04 to 60FF 01 Right 05 06 07 08 to 60FF 02

The format of the NMT close command is as follows:

COB-ID: 000 Data: 80+ID (00 represents closing PDO of all addresses)

Closing address 1: Frame ID: 000 Data: 80 01

Closing all addresses: Frame ID: 000 Data: 80 00


※Note: After closing, sending RPDO will be invalid.

## 6.3 Mapping Description

6.3.1 The meaning of "20" in the mapping instruction:

23	00	1A	01	20	03	6C	60
----	----	----	----	----	----	----	----

Note: 20 represents the number of digits of the mapped index data type (converting hexadecimal "20" to decimal means "32")

606Ch <sup>①</sup>	00 <sup>②</sup>	Number of sub-indexes <sup>③</sup>	Number of sub-indexes <sup>④</sup>	U16 <sup>⑤</sup>	RO <sup>⑥</sup>	NO <sup>⑦</sup>	3 <sup>⑧</sup>
	01 <sup>②</sup>	Velocity actual value (left) <sup>③</sup>	Current motor speed, <sup>④</sup> Unit: 0.1 r / min <sup>④</sup>	I32 <sup>⑤</sup>	RO <sup>⑥</sup>	YES <sup>⑦</sup>	0 <sup>⑧</sup>
	02 <sup>②</sup>	Velocity actual value (right) <sup>③</sup>	Current motor speed, <sup>④</sup> Unit: 0.1 r / min <sup>④</sup>	I32 <sup>⑤</sup>	RO <sup>⑥</sup>	YES <sup>⑦</sup>	0 <sup>⑧</sup>
	03 <sup>②</sup>	Left motor and right	Current motor speed, <sup>④</sup>	U32(I1 <sup>⑤</sup> )	RO <sup>⑥</sup>	YES <sup>⑦</sup>	0 <sup>⑧</sup>
40 Shenzhen Zhongling Technology Co., Ltd TEL: 0755-29799302 FAX: 0755-2912 4283 <a href="http://www.zlingki.com">www.zlingki.com</a> <sup>①</sup>  ZLAC8020D SERVO DRIVER CANopen COMMUNICATION INSTRUCTION Version 1.07 <sup>①</sup>							
		motor speed actual value combination ↓ High 16 is left motor, ↓ Low 16 is right motor. <sup>③</sup>	Unit: 0.1 r / min <sup>④</sup>	6+16 <sup>⑤</sup>			

## 7. CANopen Status Word

### 7.1 Profile Velocity Mode Status Word

Status	Byte Definition	Function Description
6041h	Bit0~Bit3	6040=0: xxxx xxxx xxxx 0000 6040=6: xxxx xxxx xxxx 0001 6040=7: xxxx xxxx xxxx 0011 6040=F: xxxx xxxx xxxx 0111
	Bit5	0: Driver is in emergency stop status; 1: Driver is not in emergency stop state; (Command Emergency Stop)
	Bit10	0: Speed is not in place; 1: Speed is in place;
	Bit12	0: Speed is not ORPM; 1: The speed is ORPM;

	Bit14	0: The motor is stopping; 1: The motor is running;
	Bit15	0: Not in external emergency stop state; 1: In external emergency stop state;

## 7.2 Profile Position Mode Status Word

Status	Byte Definition	Function Description
6041h	Bit0~Bit3	6040=0: xxxx xxxx xxxx 0000 6040=6: xxxx xxxx xxxx 0001 6040=7: xxxx xxxx xxxx 0011 6040=F: xxxx xxxx xxxx 0111
	Bit5	0: Driver is in emergency stop status; 1: Driver is not in emergency stop state; (Command Emergency Stop)
	Bit10	0: Target position is not reached; 1: Target location is reached;
	Bit12	0: The target location is not valid; 1: The target location is valid;
	Bit13	0: The motor is not running in place; 1: The motor is running in place; (It' s judged based on the threshold of driver deviation)
	Bit14	0: The motor is stopping; 1: The motor is running;
	Bit15	0: Not in external emergency stop state; 1: In external emergency stop state;

## 7.3 Profile Torque Mode Status Word

Status	Byte Definition	Function Description
6041h	Bit0~Bit3	6040=0: xxxx xxxx xxxx 0000 6040=6: xxxx xxxx xxxx 0001 6040=7: xxxx xxxx xxxx 0011 6040=F: xxxx xxxx xxxx 0111
	Bit5	0: Driver is in emergency stop status; 1: Driver is not in emergency stop state; (Command Emergency Stop)
	Bit10	0: The target torque is not reached; 1: Target torque is reached;

	Bit14	0: The motor is stopping; 1: The motor is running;
	Bit15	0: Not in external emergency stop state; 1: In external emergency stop state;

Note: Low 16 represents left motor, high 16 represents right motor.

## 8. Fault Code

Index	Fault code	Description	Troubleshooting
603Fh	0x0000h	No error	Driver is normal.
	0x0001h	Over-voltage	1. Power supply voltage is too high 2. Excessive back electromotive force (it is recommended to add a bleeder circuit)
	0x0002h	Under-voltage	1. Power supply voltage is too low 2. Check if the wiring connector is correct 3. Check if the motor parameters are correct
	0x0100h	EEPROM read and write error	1. After updating the new program (factory settings need to be restored) 2. EEPROM circuit damage
	0x0004h	Left/right motor overcurrent	1. Instantaneous current too high 2. Loose power cable
	0x0008h	Left/right motor overload	1. Check if the motor cable is loose 2. Check if the wiring and motor parameters are correct 3. Motor is stall 4. Motor or driver's problem
	0x0020h	Left/right motor encoder out of tolerance	1. Motor is stall 2. Encoder's problem
	0x0080h	Left/right motor reference voltage error	Reference voltage circuit issue
	0x0200h	Left/right motor hall error	1. Check if the motor cable is loose 2. Motor's problem 3. Driver's problem
	0x0400h	Left/right motor temperature is too high	1. The motor current is too high (it is recommended to monitor motor's actual current and temperature, and reduce the current in real-time control) 2. Motor's thermistor is damaged 3. Driver's circuit is damaged
	0x0800h	Left/right encoder error	1. Check if the motor encoder cable is loose 2. Check if the motor encoder cable is disconnected
	0x1000h	Driver temperature is high	1. The driver current is too high (it is

			recommended to monitor the temperature of the driver in real time and control the current in real time to reduce it) 2. Driver thermistor is damaged 3. Driver thermistor circuit is damaged
	0x2000h	Left/right motor given speed error	Given speed exceeds rated speed set

## 9. Object Dictionary

Index	Sub-Index	Name	Description	Type	Attribute	PDO mapping	Default value
<b>CiA301 Basic Communication Parameter Group</b>							
1000h	00	Device Type	This device supports the CiA301 and CiA402 protocols	U32	RO	NO	0X00040192
1001h	00	Error register	Current error status of the drive	U8	RO	NO	0
1005h	00	Synchronous message COB identifier	Synchronous message COB identifier	U32	RW	NO	0x80
1009h	00	Hardware version	Hardware version	U16	RO	NO	—
100Ah	00	Software version	Software version	U16	RO	NO	—
1014h	00	EMNC emergency message COB	EMNC emergency message COB	U32	RW	NO	0x80
1017h	00	Producer heartbeat interval	Producer heartbeat time interval, unit ms	U16	RW	NO	0
1018h	00	Manufacturer information	Sub-Index	U8	RO	NO	2
	01	Vendor ID	Vendor ID	U32	RO	NO	0x0100
	02	Product Code	Supplier Product Number	U32	RO	NO	0x0001
1200h	00	Number of sub indexes	Number of sub indexes	U8	RO	NO	2
	01	COB-ID (slave station receives)	COB-ID (slave station receives)	U32	RO	NO	600h+Node-ID
	02	COB-ID (slave station sends)	COB-ID (slave station sends)	U32	RO	NO	580h+Node-ID
1400h	00	Number of sub indexes	Number of sub indexes	U8	RO	NO	5
	01	RPD00-COB-ID	Identifier COB-ID	U32	RW/S	NO	200+Node-ID



	02	Transport type	Transport type	U8	RW/S	NO	FFh
	03	Prohibited time	Prohibited time	U16	RW/S	NO	0
	04	Save	Save	U8	RW	NO	0
	05	Event Timer	Event Timer	U16	RW/S	NO	0
	06	Event Timer	Event Timer	U16	RW/S	NO	0
1401h	00	Number of sub indexes	Number of sub indexes	U8	RO	NO	5
	01	RPD01-COB-ID	Identifier COB-ID	U32	RW/S	NO	300+Node-ID
	02	Transport type	Transport type	U8	RW/S	NO	FFh
	03	Prohibited time	Prohibited time	U16	RW/S	NO	0
	04	Save	Save	U8	RW	NO	0
	05	Event Timer	Event Timer	U16	RW/S	NO	0
1402h	00	Number of sub indexes	Number of sub indexes	U8	RO	NO	5
	01	RPD02-COB-ID	标识符 COB-ID	U32	RW/S	NO	400+Node-ID
	02	Transport type	Transport type	U8	RW/S	NO	FFh
	03	Prohibited time	Prohibited time	U16	RW/S	NO	0
	04	Save	Save	U8	RW	NO	0
	05	Event Timer	Event Timer	U16	RW/S	NO	0
1403h	00	Number of sub indexes	Number of sub indexes	U8	RO	NO	5
	01	RPD03-COB-ID	COB-ID	U32	RW/S	NO	500+Node-ID
	02	Transport type	Transport type	U8	RW/S	NO	FFh
	03	Prohibited time	Prohibited time	U16	RW/S	NO	0
	04	Save	Save	U8	RW	NO	0
	05	Event Timer	Event Timer	U16	RW/S	NO	0
1600h	00	Number of sub indexes	Number of sub indexes	U8	RW/S	NO	1
	01	RPD00-Mapping 1	Map to 6040h register	U32	RW/S	NO	60400010h
	02	RPD00-Mapping 2	No Mapping	U32	RW/S	NO	-
	03	RPD00-Mapping 3	No Mapping	U32	RW/S	NO	-
	04	RPD00-Mapping 4	No Mapping	U32	RW/S	NO	-
1601h	00	Number of sub indexes	Number of sub indexes	U8	RW/S	NO	0
	01	RPD01-Mapping 1	No Mapping	U32	RW/S	NO	-
	02	RPD01-Mapping 2	No Mapping	U32	RW/S	NO	-
	03	RPD01-Mapping 3	No Mapping	U32	RW/S	NO	-
	04	RPD01-Mapping 4	No Mapping	U32	RW/S	NO	-
1602h	00	Number of sub indexes	Number of sub indexes	U8	RW/S	NO	0

	01	RPD02- Mapping 1	No Mapping	U32	RW/S	NO	–
	02	RPD02- Mapping 2	No Mapping	U32	RW/S	NO	–
	03	RPD02- Mapping 3	No Mapping	U32	RW/S	NO	–
	04	RPD02- Mapping 4	No Mapping	U32	RW/S	NO	–
1603h	00	Number of sub indexes	Number of sub indexes	U8	RW/S	NO	0
	01	RPD03- Mapping 1	No Mapping	U32	RW/S	NO	–
	02	RPD03- Mapping 2	No Mapping	U32	RW/S	NO	–
	03	RPD03- Mapping 3	No Mapping	U32	RW/S	NO	–
	04	RPD03- Mapping 4	No Mapping	U32	RW/S	NO	–
1800h	00	Number of sub indexes	Number of sub indexes	U8	RO	NO	5
	01	TPD00-COB-ID	标识符 COB-ID	U32	RW/S	NO	180+Node-ID
	02	Transport type	Transport type	U8	RW/S	NO	FFh
	03	Prohibited time	Prohibited time	U16	RW/S	NO	0
	04	Save	Save	U8	RW	NO	0
	05	Event Timer	Event Timer	U16	RW/S	NO	0
1801h	00	Number of sub indexes	Number of sub indexes	U8	RO	NO	5
	01	TPD01-COB-ID	标识符 COB-ID	U32	RW/S	NO	280+Node-ID
	02	Transport type	Transport type	U8	RW/S	NO	FFh
	03	Prohibited time	Prohibited time	U16	RW/S	NO	0
	04	Save	Save	U8	RW	NO	0
	05	Event Timer	Event Timer	U16	RW/S	NO	0
1802h	00	Number of sub indexes	Number of sub indexes	U8	RO	NO	5
	01	TPD02-COB-ID	标识符 COB-ID	U32	RW/S	NO	380+Node-ID
	02	Transport type	Transport type	U8	RW/S	NO	FFh
	03	Prohibited time	Prohibited time	U16	RW/S	NO	0
	04	Save	Save	U8	RW	NO	0
	05	Event Timer	Event Timer	U16	RW/S	NO	0
1803h	00	Number of sub indexes	Number of sub indexes	U8	RO	NO	5
	01	TPD03-COB-ID	标识符 COB-ID	U32	RW/S	NO	480+Node-ID
	02	Transport type	Transport type	U8	RW/S	NO	FFh
	03	Prohibited time	Prohibited time	U16	RW/S	NO	0
	04	Save	Save	U8	RW	NO	0
	05	Event Timer	Event Timer	U16	RW/S	NO	0
1A00h	00	Number of sub indexes	Number of sub indexes	U8	RW/S	NO	0

		indexes					
	01	TPD00-Mapping 1	No Mapping	U32	RW/S	NO	–
	02	TPD00-Mapping 2	No Mapping	U32	RW/S	NO	–
	03	TPD00-Mapping 3	No Mapping	U32	RW/S	NO	–
	04	TPD00-Mapping 4	No Mapping	U32	RW/S	NO	–
1A01h	00	Number of sub indexes	Number of sub indexes	U8	RW/S	NO	0
	01	TPD01-Mapping 1	No Mapping	U32	RW/S	NO	–
	02	TPD01-Mapping 2	No Mapping	U32	RW/S	NO	–
	03	TPD01-Mapping 3	No Mapping	U32	RW/S	NO	–
	04	TPD01-Mapping 4	No Mapping	U32	RW/S	NO	–
1A02h	00	Number of sub indexes	Number of sub indexes	U8	RW/S	NO	0
	01	TPD02-Mapping 1	No Mapping	U32	RW/S	NO	–
	02	TPD02-Mapping 2	No Mapping	U32	RW/S	NO	–
	03	TPD02-Mapping 3	No Mapping	U32	RW/S	NO	–
	04	TPD02-Mapping 4	No Mapping	U32	RW/S	NO	–
1A03h	00	Number of sub indexes	Number of sub indexes	U8	RW/S	NO	0
	01	TPD03-Mapping 1	No Mapping	U32	RW/S	NO	–
	02	TPD03-Mapping 2	No Mapping	U32	RW/S	NO	–
	03	TPD03-Mapping 3	No Mapping	U32	RW/S	NO	–
	04	TPD03-Mapping 4	No Mapping	U32	RW/S	NO	–
<b>Factory custom parameters</b>							
2000h	00	Communication power-down protection time	Driver and host communication power-down time setting Unit: ms Range: 0-32767;	U16	RW	YES	0
2001h	00	RS485 custom driver node number	Range:0 – 127.	U16	RW	YES	1
2002h	00	RS485 custom communication baudrate	1: 128000bps 2: 115200bps 3: 57600bps 4: 38400bps 5: 19200bps 6: 9600bps	U16	RW	YES	2
2003h	00	Input signal status	2 input signal level status; Bit0 – Bit1: X0 ~ X1 input level status;	U16	RO	YES	0

2004h	00	Output signal status	2 output signal level status; Bit0: Y1 output status; Bit1 ~ Bit2: B0 ~ B1 output status;	U16	RO	YES	0
2005h	00	Clear position feedback	Used to clear feedback position 0: Invalid; 1: Clear the feedback position of the left motor 2: Clear the feedback position of the right motor 3: Clear the synchronization feedback position	U16	RW	YES	0
2006h	00	Set original position(absolute position move)	Set current position as original position for absolute position move. 0: Invalid; 1: Set original position (left) 2: Set original position (right) 3: Set original position synchronously	U16	RW	YES	0
2007h	00	Shaft lock method	0: Not enable, not lock the shaft; 1: Not enable, lock the shaft;	U16	RW	YES	0
2008h	00	Motor max speed	Motor max working speed Unit: r/min; Range: 1-1000r/min;	U16	RW	YES	300
2009h	00	Register parameter setting	0: Invalid; 1: Restore factory settings;	U16	RW	YES	0
200Ah	00	CAN custom driver node number	Range: 1-127;	U16	RW	YES	1
200Bh	00	CAN custom	0: 1000 Kbit/s	U16	RW	YES	1

		communication baudrate	1: 500 Kbit/s 2: 250 Kbit/s 3: 125 Kbit/s 4: 100 Kbit/s				
200Ch	00	Number of sub-indexes	Number of sub-indexes	U16	RO	NO	2
	01	Motor pole pair (Left)	4-64	U16	RW	YES	20
	02	Motor pole pair (Right)	4-64	U16	RW	YES	20
200Dh	00	Number of sub-indexes	Number of sub-indexes	U16	RO	NO	2
	01	Starting speed (left)	The initial speed at which the movement started; Unit The initial speed at which the movement started; Unit: r/min; Range: 1-256r/ min;	U16	RW	YES	1r/min
	02	Starting speed (right)	The initial speed at which the movement started; Unit The initial speed at which the movement started; Unit: r/min; Range: 1-256r/ min;	U16	RW	YES	1r/min
200Eh	00	Number of sub-indexes	Number of sub-indexes	U16	RO	NO	2
	01	Encoder wire number setting (left)	0-4096	U16	RW	YES	4096
	02	Encoder wire number setting (right)	0-4096	U16	RW	YES	4096
200Fh	00	Synchronous/asynchronous control flag	0: Asynchronous control 1: Synchronous control	U16	RO	YES	1
2010h	00	Whether the parameter are updated to EEPROM	Whether the communication write function code value is updated to EEPROM	U16	RW	YES	0

			0: Invalid; 1: Parameters with attribute RW / S are updated to EEPROM synchronously;				
2011h	00	Number of sub-indexes	Number of sub-indexes	U16	RO	NO	2
	01	Offset angle of motor and Hall (left)	Unit: 1° ; Range: -360--+360	I16	RW	YES	0
	02	Offset angle of motor and Hall (right)	Unit: 1° ; Range: -360--+360	I16	RW	YES	0
2012h	00	Number of sub-indexes	Number of sub-indexes	U16	RO	NO	2
	01	Overload factor (left)	Range: 0-300, Unit: %	U16	RW	YES	200
	02	Overload factor (right)	Range: 0-300, Unit: %	U16	RW	YES	200
2013h	00	Number of sub-indexes	Number of sub-indexes	U16	RO	NO	2
	01	Motor temperature protection threshold (left)	Unit: 0.1° C; Range: 0-1200	U16	RW	YES	800
	02	Motor temperature protection threshold (right)	Unit: 0.1° C; Range: 0-1200	U16	RW	YES	800
	03	Driver temperature protection threshold	Unit: 0.1° C; Range: 0-1200	U16	RW	YES	800
2014h	00	Number of sub-indexes	Number of sub-indexes	U16	RW	YES	2
	01	Rated current (left)	Driver rated output current Unit: 0.1A; Range: 0-300	U16	RO	NO	200
	02	Rated current (right)	Driver rated output current Unit: 0.1A; Range: 0-300	U16	RW	YES	200
2015h	00	Number of sub-indexes	Number of sub-indexes	U16	RW	YES	2
	01	Maximum current	Maximum driver output	U16	RO	NO	600

		(left)	current Unit: 0.1A; Range: 0-600				
	02	Maximum current (right)	Maximum driver output current Unit: 0.1A; Range: 0-600	U16	RW	YES	600
2016h	00	Number of sub-indexes	Number of sub-indexes	U16	RW	YES	2
	01	Overload protection time (left)	Driver overload protection time Unit: 10ms; Range: 0-6553	U16	RO	NO	300
	02	Overload protection time (right)	Driver overload protection time Unit: 10ms; Range: 0-6553	U16	RW	YES	300
2017h	00	Number of sub-indexes	Number of sub-indexes	U16	RW	YES	2
	01	Out of tolerance alarm threshold (left)	Encoder tolerance threshold Unit: *10counts; Range: 1-6553	U16	RO	NO	1638
	02	Out of tolerance alarm threshold (right)	Encoder tolerance threshold Unit: *10counts; Range: 1-6553	U16	RW	YES	1638
2018h	00	Number of sub-indexes	Number of sub-indexes	U16	RW	YES	2
	01	L speed smoothing coefficient	0-30000	U16	RO	NO	50
	02	R speed smoothing coefficient	0-30000	U16	RW	YES	50
2019h	00	Number of sub-indexes	Number of sub-indexes	U16	RW	YES	2
	01	L current loop proportional coefficient	0-30000	U16	RO	NO	3000
	02	R current loop proportional coefficient	0-30000	U16	RW	YES	3000
201Ah	00	Number of sub-indexes	Number of sub-indexes	U16	RW	YES	2
	01	L current loop	0-30000	U16	RO	NO	300

		integral gain					
	02	R current loop integral gain	0-30000	U16	RW	YES	300
201Bh	00	Number of sub-indexes	Number of sub-indexes	U16	RW	YES	2
	01	L feedforward output smoothing coefficient	0-30000	U16	RO	NO	100
	02	R feedforward output smoothing coefficient	0-30000	U16	RW	YES	100
201Ch	00	Number of sub-indexes	Number of sub-indexes	U16	RW	YES	2
	01	L torque output smooth coefficient	0-30000	U16	RO	NO	100
	02	R torque output smooth coefficient	0-30000	U16	RW	YES	100
201Dh	00	Number of sub-indexes	Number of sub-indexes	U16	RW	YES	2
	01	L speed proportional gain Kp	0-30000	U16	RO	NO	80
	02	R speed proportional gain Kp	0-30000	U16	RW	YES	80
201Eh	00	Number of sub-indexes	Number of sub-indexes	U16	RW	YES	2
	01	L speed integral gain Ki	0-30000	U16	RO	NO	3000
	02	R speed integral gain Ki	0-30000	U16	RW	YES	3000
201Fh	00	Number of sub-indexes	Number of sub-indexes	U16	RW	YES	2
	01	L speed feedforward gain Kf	0-30000	U16	RO	NO	1000
	02	R speed feedforward gain Kf	0-30000	U16	RW	YES	1000
2020h	00	Number of sub-indexes	Number of sub-indexes	U16	RW	YES	2
	01	L position	0-30000	U16	RO	NO	200



		proportional gain Kp					
	02	R position proportional gain Kp	0-30000	U16	RW	YES	200
2021h	00	Number of sub-indexes	Number of sub-indexes	U16	RW	YES	2
	01	L position feedforward gain Kf	0-30000	U16	RO	NO	200
	02	R position feedforward gain Kf	0-30000	U16	RW	YES	200
2022h	00	Number of sub-indexes	Number of sub-indexes	U16	RW	YES	2
	01	L speed observer coefficient 1	0-30000	U16	RO	NO	1000
	02	R speed observer coefficient 2	0-30000	U16	RW	YES	1000
2023h	00	Number of sub-indexes	Number of sub-indexes	U16	RW	YES	2
	01	L speed observer coefficient 2	0-30000	U16	RO	NO	750
	02	R speed observer coefficient 2	0-30000	U16	RW	YES	750
2024h	00	Number of sub-indexes	Number of sub-indexes	U16	RW	YES	2
	01	L speed observer coefficient 3	0-30000	U16	RO	NO	350
	02	R speed observer coefficient 3	0-30000	U16	RW	YES	350
2025h	00	Number of sub-indexes	Number of sub-indexes	U16	RW	YES	2
	01	L speed observer coefficient 4	0-30000	U16	RO	NO	1000
	02	R speed observer coefficient 4	0-30000	U16	RW	YES	1000
2026h	00	Number of sub-indexes	Number of sub-indexes	U16	RO	NO	2
	01	Alarm PWM processing method	0: close; 1: open	U16	RW	YES	0
	02	Overload processing method	0: close; 1: open	U16	RW	YES	0

	03	I/O emergency stop processing mode	0: Lock shaft (Motor stops with holding force) 1: Release shaft (Turning off PWM output signal, motor is under free running status)  <b>Method a.</b> Set value of object 605Ah to 5: When pressing the emergency stop button, the motor will stop according to the deceleration time and turn cut off the PWM control signal, to cut off the current supply to the motor.  <b>Method b.</b> Set value of object 605Ah to 6: When pressing the emergency stop button, the motor will stop according to the emergency stop deceleration time and then turn off the PWM control signal, to cut off the current supply to the motor.  <b>Method c.</b> Set value of object 605Ah to 7: When pressing the emergency stop button, the PWM control signal will be immediately turned off, and the motor will continue to run under inertia and gradually stop.	U16	RW	YES	0
	04	Parking mode	0: Lock shaft 1: Release shaft	U16	RW	YES	0
	05	Send speed resolution	Set value range: 1-A 1: Speed resolution 1RPM 2: Speed resolution 0.5RPM 3: Speed resolution 1/3 RPM	U16	RW	YES	1

			4: Speed resolution 0.25RPM 5: Speed resolution 0.2RPM 6: Speed resolution 1/6RPM 7: Speed resolution 1/7RPM 8: Speed resolution 0.125RPM 9: Speed resolution 1/9RPM A: Speed resolution 0.1RPM				
	06	Speed out of tolerance	0: close; 1: open	U16	RW/S	YES	1
	07	Default rotate direction	0: CW 1: CCW	U16	RW/S	YES	0
2027h	00	Number of sub-indexes	Number of sub-indexes	U16	RO	NO	4
	01	Regen resistance value	Unit 0.1Ω; Range 0-1000 (*0.1)	U16	RW/S	YES	50
	02	Regen resistance power	Unit W; Range 0-1000	U16	RW/S	YES	100
	03	Regen opening voltage	Unit 0.1V; Range 360-750 (*0.1)	U16	RW/S	YES	700
	04	Regen close voltage	Unit 0.1V; Range 310-700 (*0.1)	U16	RW/S	YES	620
	05	Regen function control	Holding brake on/off 0: Close 1: Open	U16	RW/S	YES	1
2030h	00	Number of sub-indexes	Number of sub-indexes	U16	RO	NO	8
	01	Effective level of input terminal	Bit0: Input terminal X0 control position; Bit1: Input terminal X1 control position; Bit2: AD input control bit Bit3~Bit15: reserved; 0: Default; 1: Level reversal; The default input; terminal level rising	U16	RW	YES	0

			edge or high level of the driver is valid				
	02	Input terminal X0 terminal function selection	0: Undefined; 1-6: NC; 9: Emergency stop signal	U16	RW	YES	9
	03	Input terminal X1 terminal function selection		U16	RW	YES	0
	04	Effective level of output terminal	Bit0: output terminal Y0 control position; Bit1: Output terminal B0 control position; Bit2: Output terminal B1 control position; 0: Default; 1: Level reversal; The default input terminal level rising edge or high level of the driver is valid	U16	RW	YES	0
	05	Output terminal Y0 terminal function selection	0: Undefined 1: Alarm signal; 2: Driver status signal; 3: In place signal (reserved)	U16	RW	YES	0
	06	NC	NC	U16	RW	YES	0
	07	Output port B0 function selection	Brake state 0: Open 1: Close	U16	RW	YES	0
	08	Output port B1 function selection	Brake state 0: Open 1: Close	U16	RW	YES	0
2031h	00	Software version	Factory default	U16	RO	NO	—
2032h	00	Number of sub-indexes	Number of sub-indexes	U16	RO	NO	3
	01	Motor temperature	Unit: 0.1° C;	U16	RO	YES	—

		(left)	Range: -500~1200° C				
	02	Motor temperature (right)	Unit: 0.1° C; Range: -500~1200° C	U16	RO	YES	—
	03	Driver temperature	Unit: 0.1° C; Range: -500~1200° C				—
2033h	00	Number of sub-indexes	Number of sub-indexes	U16	RO	NO	2
	01	Motor status register (left)	The driver controls the motor motion state 0: The motor is stationary; 1: Motor is running;	U16	RO	YES	0
	02	Motor status register (right)	The driver controls the motor motion state 0: The motor is stationary; 1: Motor is running;	U16	RO	YES	0
2034h	00	Number of sub-indexes	Number of sub-indexes	U16	RO	NO	2
	01	Hall input state (left)	0-7; If 0 or 7 appears, it is a Hall error	U16	RO	YES	0
	02	Hall input state (right)	0-7; If 0 or 7 appears, it is a Hall error	U16	RO	YES	0
2035h	00	Bus voltage	Unit: 0.01V	U16	RO	YES	0
<b>CiA 402 参数组</b>							
603Fh	00	Error_code	Factory-defined drive error conditions. High 16 bit: right motor, Low 16 bit:left motor. 0x0000 0000h: no error; 0x0000 0001h: over-voltage; 0x0000 0002h: under-voltage; 0x0000 0100h: EEPROM read and write error; Left motor: 0x0000 0004h: over-current; 0x0000 0008h:	U16	RO	YES	0

			overload; 0x0000 0010h: current out of tolerance; (Reserved) 0x0000 0020h: encoder out of tolerance; 0x0000 0040h: velocity out of tolerance; (Reserved) 0x0000 0080h: reference voltage error; 0x0000 0200h: hall error; 0x0000 0400h: high motor temperature. 0x0000 0800h: Encoder error 0x0000 1000h: high driver temperature. 0x0000 2000h: Speed setting error (the given speed cannot exceed the rated speed). Right Motor: 0x0004 0000h: over-current 0x0008 0000h: overload 0x0010 0000h: current out of tolerance; (Reserved) 0x0020 0000h: encoder out of tolerance; 0x0040 0000h: velocity out of tolerance; (Reserved) 0x0080 0000h: reference voltage error; 0x0200 0000h: hall error; 0x0400 0000h: high				
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			motor temperature. 0x0800 0000h: Encoder error 0x1000 0000h: high driver temperature. 0x2000 0000h: Speed setting error (the given speed cannot exceed the rated speed).				
6040h	00	Controlword	Control word	U16	RW	YES	0
6041h	00	Statusword	Status word; High 16 bit: left motor; Low 16 bit: right motor.	U32	RO	YES	0
605Ah	00	Quick_stop_option_code	Driver processing method after quick stop command. 0x00 05: Stop normally , maintain quick stop status; 0x00 06: Decelerate to stop emergencely and maintain quick stop state; 0x00 07: Emergency stop, maintain quick stop state;	I16	RW	NO	5
605Bh	00	Shutdown_option_code	Driver processing method after the close command 0x00 00: invalid; 0x00 01: Stop normally, go to ready to switch on state;	I16	RW	NO	1
605Ch	00	Disable_operation_option_code	Driver processing mode after the disable operation command 0x00 00: Invalid; 0x00 01: Stop normally , switch to switched on state;	I16	RW	NO	1
605Dh	00	Disable_operati	Driver processing	I16	RW	NO	1

		on_option_code	mode after the disable operation command 0x00 01: Stop normally , switch to Operation Enabled state; 0x00 02: Decelerate to stop emergencely and maintain Operation Enabled state; 0x00 03: Emergency stop, maintain Operation Enabled state;				
6060h	00	Modes_of_operation	0: undefined; 1: position mode; 3: velocity mode; 4: torque mode;	I8	RW	YES	0
6061h	00	Modes_of_operation_display	0: undefined; 1: position mode; 3: velocity mode; 4: torque mode;	I8	RO	YES	0
6064h	00	Number of sub-indexes	Number of sub-indexes	U16	RO	NO	2
	01	Position_actual_value (left)	Actual position feedback, unit: count;	I32	RO	YES	0
	02	Position_actual_value (right)	Actual position feedback, unit: count;	I32	RO	YES	0
606Ch	00	Number of sub-indexes	Number of sub-indexes	U16	RO	NO	3
	01	Velocity_actual_value (left)	Current motor speed, Unit: 0.1 r / min	I32	RO	YES	0
	02	Velocity_actual_value (right)	Current motor speed, Unit: 0.1 r / min	I32	RO	YES	0
	03	Left motor and right motor speed actual value combination High 16 is left motor, Low 16 is right motor.	Current motor speed, Unit: 0.1 r / min	U32(I16+I16)	RO	YES	0



6071h	00	Number of sub-indexes	Number of sub-indexes	U16	RW	NO	3
	01	Target torque (left)	Unit: mA Range: -30000~30000;	I16	RW	YES	0
	02	Target torque (right)	Unit: mA Range: -30000~30000;;	I16	RW	YES	0
	03	Left moroe and right motor target torque combination Low 16 is the left motor, High 16 is the right motor	Unit: mA Range: -30000~30000;	U32 (I16+ I16)	RW	YES	0
6077h	00	Number of sub-indexes	Number of sub-indexes	U16	RO	NO	3
	01	Torque actual value (left)	Unit: 0.1A Range: -600~600;	I16	RO	YES	0
	02	Torque actual value (right)	Unit: 0.1A Range: -600~600;	I16	RO	YES	0
	03	Left motor and right motor torque actual value combination Low 16 is the left motor, High 16 is the right motor	Unit: 0.1A Range: -600~600;	U32 (I16+ I16)	RW	YES	0
607Ah	00	Number of sub-indexes	Number of sub-indexes	U16	RO	NO	2
	01	Target_position (left)	Total number of pulses in profile position mode; Range: Relative: -0x7FFFFFFF~0x7FFFFFFF Absolute: -0x3FFFFFFF~0x3FFFFFFF	I32	RW	YES	0
	02	Target_position (right)	Total number of pulses in profile position mode; Range:	I32	RW	YES	0

			Relative: -0x7FFFFFFF~0x7FFFFFFF Absolute: -0x3FFFFFFF~0x3FFFFFFF				
6081h	00	Number of sub-indexes	Number of sub-indexes	U16	RO	NO	2
	01	Profile_velocity (left)	Max speed in profile position mode; Range: 1-1000r/min;	U32	RW	YES	120r/min
	02	Profile_velocity (right)	Max speed in profile position mode; Range: 1-1000r/min;	U32	RW	YES	120r/min
6082h	00	Number of sub-indexes	Number of sub-indexes	U16	RO	NO	2
	01	End_velocity (left)	Start / stop speed in profile position mode; Range: 1-250r/min;	U32	RW	YES	1r/min
	02	End_velocity (right)	Start / stop speed in profile position mode; Range: 1-250r/min;	U32	RW	YES	1r/min
6083h	00	Number of sub-indexes	Number of sub-indexes	U16	RO	NO	2
	01	S-shape acceleration (left)	Acceleration time; Range: 0-32767ms;	U32	RW	YES	10ms
	02	S-shape acceleration (right)	Acceleration time; Range: 0-32767ms;	U32	RW	YES	10ms
6084h	00	Number of sub-indexes	Number of sub-indexes	U16	RO	NO	2
	01	S-shape deceleration (left)	Deceleration time; Range: 32767ms;	U32	RW	YES	10ms
	02	S-shape deceleration (right)	Deceleration time; Range: 32767ms;	U32	RW	YES	10ms
6085h	00	Number of sub-indexes	Number of sub-indexes	U16	RO	NO	2
	01	Quick_stop_deceleration (left)	Deceleration time; Range: 0-32767ms;	U32	RW	YES	10ms

	02	Quick_stop_deceleration (right)	Deceleration time; Range: 0-32767ms;	U32	RW	YES	10ms
6087h	00	Number of sub-indexes	Number of sub-indexes	U16	RO	NO	2
	01	Torque Slope (left)	Current/1000/second; Unit: mA/s;	U32	RW	YES	300ms
	02	Torque Slope (right)	Current/1000/second; Unit: mA/s;	U32	RW	YES	300ms
60FFh	00	Number of sub-indexes	Number of sub-indexes	U16	RO	NO	2
	01	Target_velocity (left)	Target speed in profile velocity mode; Range: -1000-1000r/min;	I32	RW	YES	0
	02	Target_velocity (right)	Target speed in profile velocity mode; Range: -1000-1000r/min;	I32	RW	YES	0
	03	Left and right target speed combination Low 16 is the left motor High 16 is the right moto	Target speed in profile velocity mode; Range: -1000~1000r/min;	U32 (I16+ I16)	RO	YES	0

Note:

- U16 means unsigned 16 bits; I16 means signed 16 bits; U32 means unsigned 32 bits; I32 means signed 32 bits.