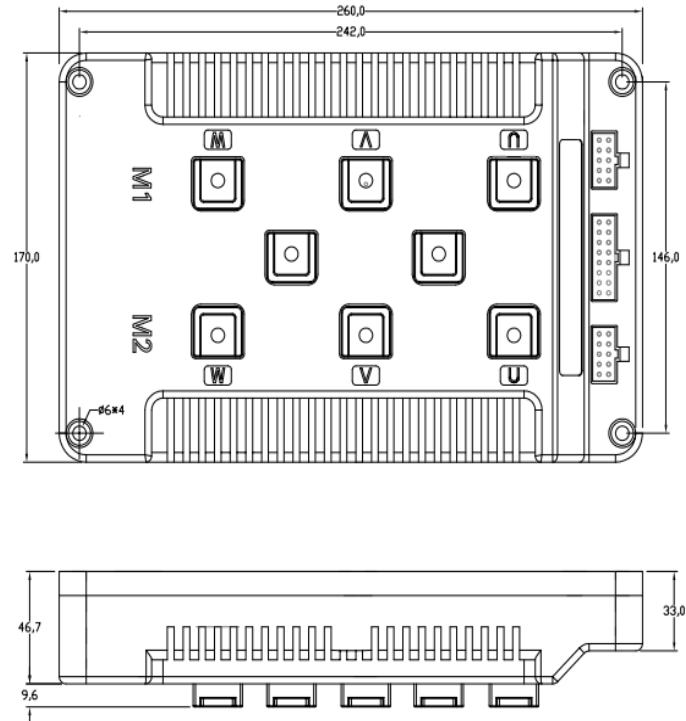


1.MXES-2000W Specifications

1.1 Controller Dimensions

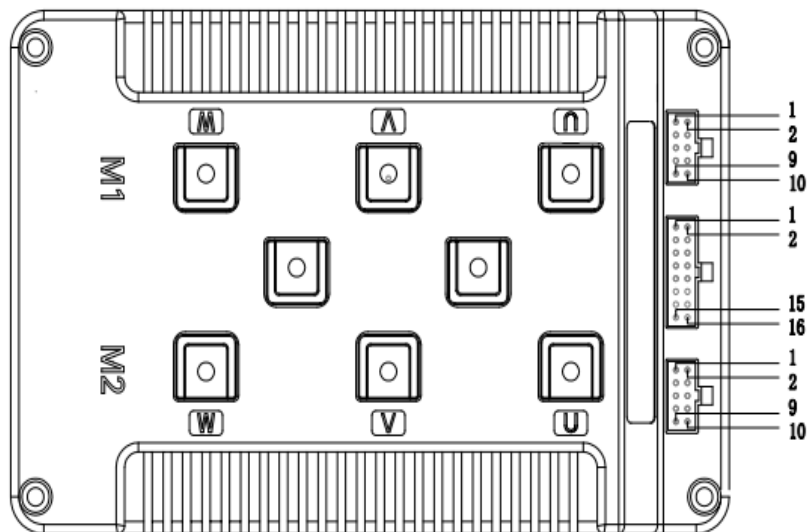


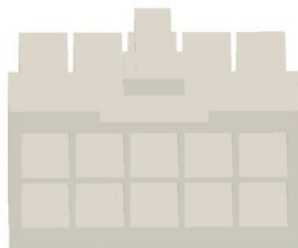
1.2 Controller Specifications

Model Number			MXES-2000W
Rated Values	Continuous Output Current		M1:150A
			M2:150A
	Main Circuit	Input Voltage Range (V)	20~60V
		Maximum Output Current (A)	150A
Specification	Control Method		SVPWM sinusoidal current control
	Feedback		Hall sensor, Incremental Encoder
	Operating Conditions	Controller Protection Temperature	-25~+90℃
		Storage Temperature	-25~+55℃
		Operating/Storage Humidity	<90% RH (non-condensing)
		Vibration / Shock Resistance	4.9m/s ² / 19.6m/s ²
		Protection Level	IP67
	Protection Functions		Over-current, Over-load, Under-voltage, Over-voltage, Over-temperature
	Throttle Input	Voltage Range:	0~5 V

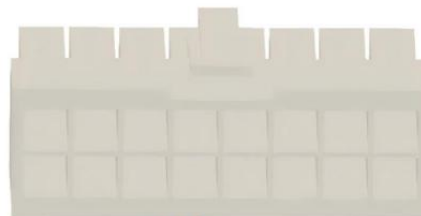
2.Signals and Wiring

2.1Wiring Instructions





5557-10R



5557-16R



5556-01RT



SC10-6

Part number and quantity: 557-10R $\times$ 2, 5557-16R $\times$ 1, 5556-01RT $\times$ 36, SC10-6 $\times$ 8

2.2 Signal Definitions

M1 (Motor 1)					
Pin	Signal	Description	Pin	Signal	Description
1	Y1	Reserved	2	+5V	+5V Power Supply
3	X1	Reserved	4	A1	Encoder A Channel
5	HC1	Motor Hall Sensor	6	B1	Encoder B Channel
7	HB1	Motor Hall Sensor	8	Z1	Encoder Z Channel
9	HA1	Motor Hall Sensor	10	GND	Power Ground

M2 (Motor 2)					
Pin	Signal	Description	Pin	Signal	Description
1	Y2	Reserved	2	+5V	+5V Power Supply
3	X2	Reserved	4	A2	Encoder A Channel
5	HC2	Motor Hall Sensor	6	B2	Encoder B Channel
7	HB2	Motor Hall Sensor	8	Z2	Encoder Z Channel
9	HA2	Motor Hall Sensor	10	GND	Power Ground

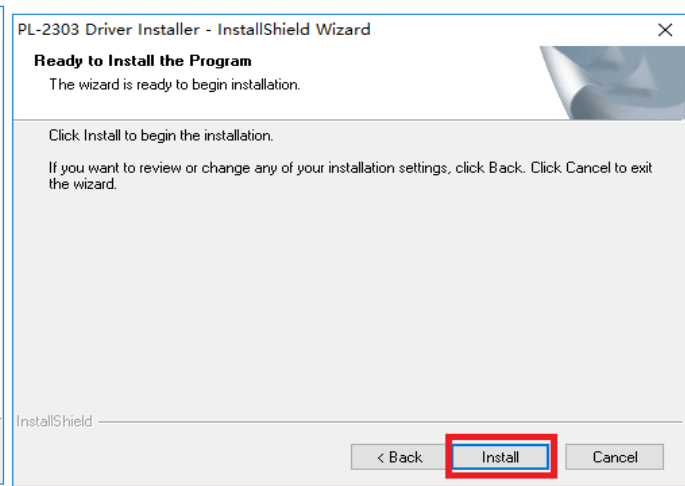
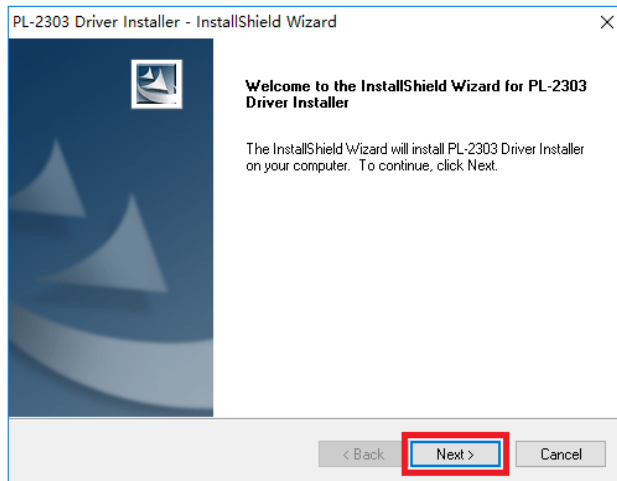
Function wires					
Pin	Signal	Description	Pin	Signal	Description
1	TH1	Analog Input	2	485B	485 通讯接口
3	TH2		4	485A	
5	ST	Low-Level Ignition(Key Switch)	6	RX	PC Programming Interface
7	EN	High-Level Enable(Key Switch)	8	TX	
9	BR	Brake Input (Active Low)	10	CANH	CAN-Bus Interface
11	RW	Forward (High) Reverse (Low)	12	CANL	
13	+12	+12V Power Input	14	+5V	+5V Power Output
15	B+	Main Power Input (+)	16	GND	Power Ground

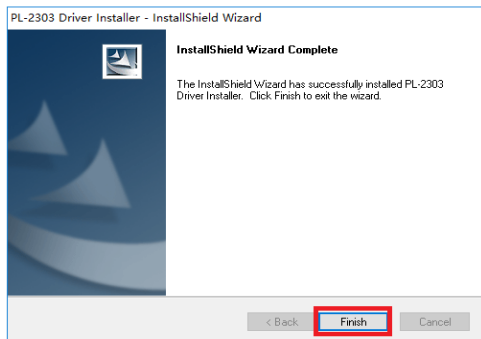
M1 (Motor 1)			M2 (Motor 2)		
Pin	Signal	Description	Pin	Signal	Description
	U	Motor Phase U V W		U	Motor Phase U V W
	V			V	
	W			W	

3. PC Programming & Testing

3.1 Programmer Driver Installation

Open the “Driver Files” folder and select the appropriate driver version (example: Windows 10). Double-click  **USB-to-Serial Comm Port.exe** the installer to complete driver installation.



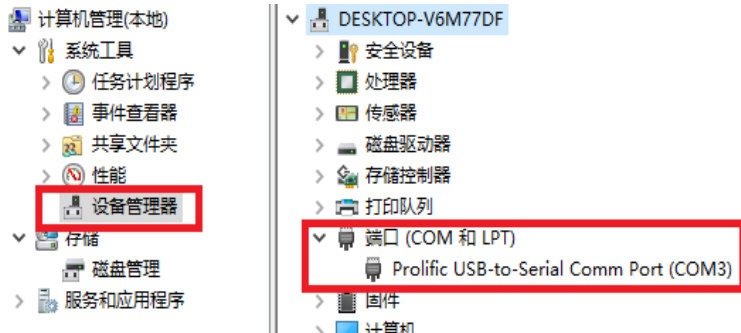


PC



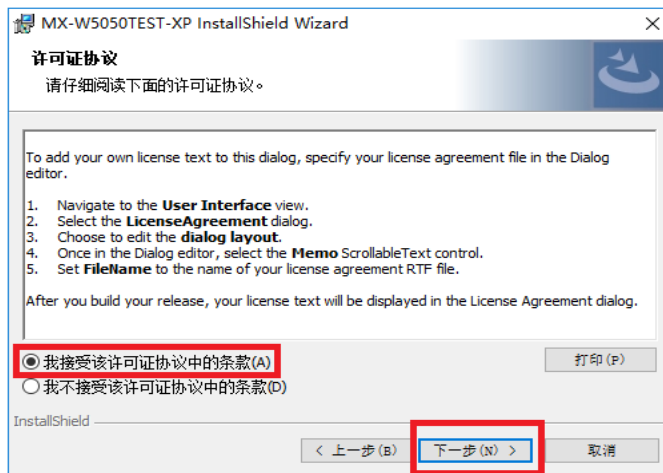
Programming USB cable

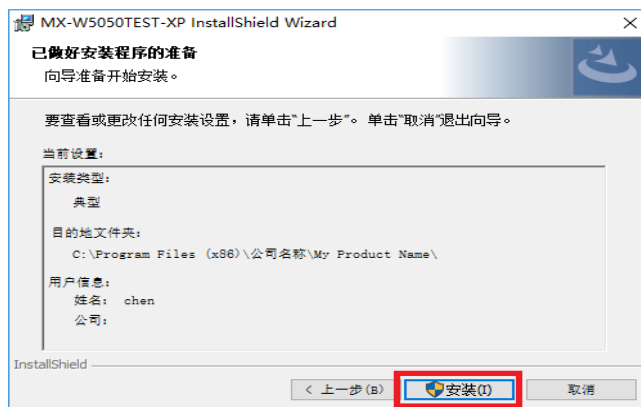
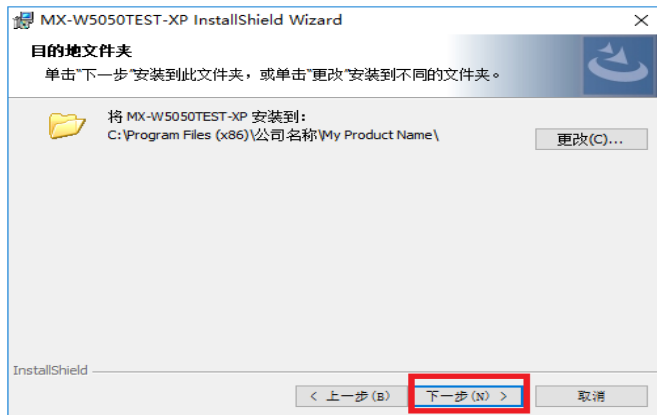
After installation, connect the programmer to the PC via USB and check in Device Manager to confirm the COM port is recognized. (Note: COM port number varies depending on PC.)



3.2 Programming Software Installation

Open the “Programming Files” folder and double-click “setup.exe” to install the software.



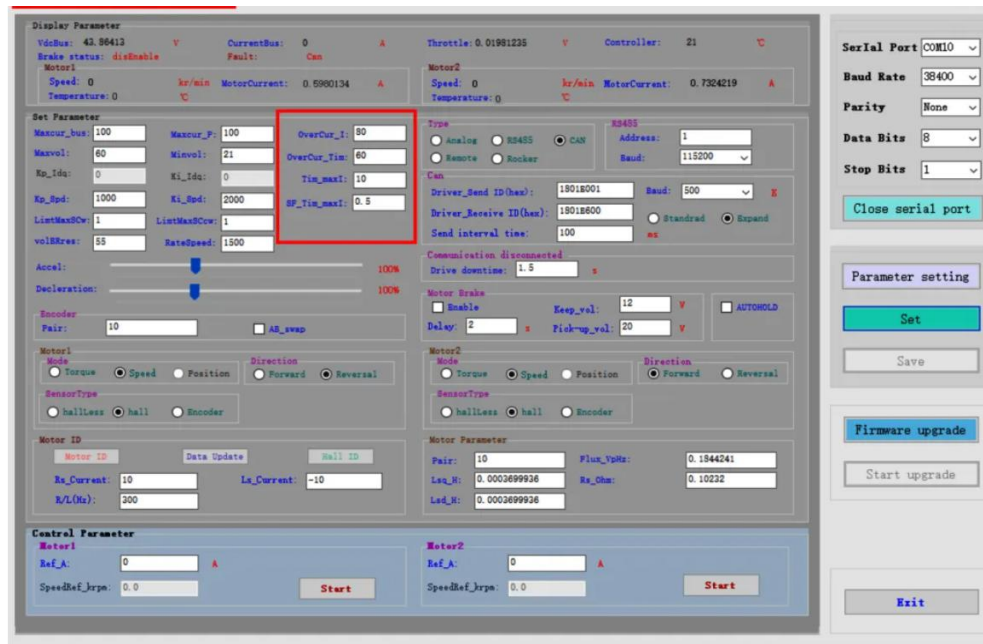


3.3 Software Description

Operation Steps

1. Connect the PC, programmer, controller, motor, and power supply, then power on the controller.

2. On the desktop,  double-click the shortcut to open the programming interface.



3. Serial Port Settings (notes: the COM number may be different)

Serial Port	COM1
Baud Rate	38400
Parity	None
Data Bits	8
Stop Bits	1
Open serial port	

3. Click “Open serial port” to establish communication.



Connect the PC,
programmer

● Display Parameter

Display Parameter									
VdcBus: 0	V	CurrentBus: 0	A	Throttle: 0	V	Controller: 0	℃		
Brake status: 0		Fault: 0							
Motor1					Motor2				
Speed: 0	kr/min	MotorCurrent: 0	A	Speed: 0	kr/min	MotorCurrent: 0	A		
Temperature: 0	℃			Temperature: 0	℃				

Parameter	Description
VdcBus	Power Supply Voltage
CurrentBus	Bus Current
Throttle	Throttle Voltage
Controller	Controller Temperature
Brake status	Brake Status
Fault	Refer to “Controller Fault Information Table 1-1”
Speed	Motor 1 Speed (rpm)
MotorCurrent	Motor 1 Phase Current
Temperature	Motor 1 Temperature (Reserved)
Speed	Motor 2 Speed (rpm)
MotorCurrent	Motor 2 Phase Current
Temperature	Motor 2 Temperature (Reserved)

● Set Parameter

Type

☒ Analog

☐ RS485

☐ CAN

☐ Remote

☐ Rocker

RS485

Address: 1

Baud: 115200

Can

Driver_Send ID(hex): 1801E001

Baud: 500

K

Driver_Receive ID(hex): 1801E600

☐ Standrad

☒ Expand

Send interval time: 100

ms

Communication disconnected

Drive downtime: 1.5

S

Type	
Analog	Analog Control
RS485	RS485 Control
CAN	CAN Control
Remote	Remote Controller
Rocker	Joystick Control

RS485	
Address:485 address	Baud: 485 Baud rate

CAN	
Baud	CAN Baud Rate
DriverSend ID	Driver Send ID
DriverSend ID	DriverSend ID
Send interval time	Data Sending Interval (ms)
Standrad	Standard Frame
Expand	Extended Frame
Communication disconnected	
Drive downtime	Motor Delay Shutdown Time on Communication Error (s)

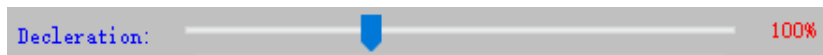
Set Parameter

Maxcur_bus: 100	Maxcur_P: 100	OverCur_I: 80
Maxvol: 60	Minvol: 21	OverCur_Tim: 60
Kp_Idq: 0	Ki_Idq: 0	Tim_maxI: 10
Kp_Spd: 1000	Ki_Spd: 2000	SF_Tim_maxI: 0.5
LimtMaxSCw: 1	LimtMaxSCw: 1	
volBRres: 55	RateSpeed: 1500	

Maxcur_bus	Maximum Bus Current
Maxcur_P	Maximum Phase Current
Maxvol	Maximum Input Voltage
Minvol	Minimum Input Voltage
Kp_Idq	Kp of Id/Iq Loop (Reserved)
Ki_Idq	Ki of Id/Iq Loop (Reserved)
Kp_Spd	Speed Loop Kp
Ki_Spd	Speed Loop Ki
LimtMaxSCw	Forward Speed Limit
LimtMaxSCcw	Reverse Speed Limit
volBRres	Brake Voltage
RateSpeed	Maximum Speed
OverCur_I	Overcurrent Threshold
OverCur_Tim	Overcurrent Duration
Tim_maxI	Maximum Current Duration
SF_Tim_maxI	Current Reduction Ratio After Maximum Current Duration
OverCur_I	Over current value(phase current)
OverCur_Tim	The time period for over current running(seconds)
Tim_maxI	The time period for max phase current (Maxcur_P)
SF_Tim_maxI	Limit low phase current ratio after Tim_maxI



Accel : adjust acceleration



Decleration: adjust deceleration

A configuration panel for 'Motor1'. It contains three sections: 'Mode' with radio buttons for 'Torque', 'Speed' (selected), and 'Position'; 'Direction' with radio buttons for 'Forward' (selected) and 'Reversal'; and 'SensorType' with radio buttons for 'hallLess', 'hall' (selected), and 'Encoder'.

Motor1			
Parameter	Description	Parameter	Description
Mode	Working Mode	Reversal	Reverse Rotation
Torque	Torque Mode	SensorType	Sensor Type
Speed	Speed Mode	hallLess	Sensorless (No Hall)
Position	Position Mode (Reserved)	hall	Hall Sensor
Direction	Motor Rotation Direction	Encoder	Encoder
Forward	Forward Rotation		

Motor2

Mode

☐ Torque

☒ Speed

☐ Position

Direction

☒ Forward

☐ Reversal

SensorType

☐ hallLess

☒ hall

☐ Encoder

Motor2			
Parameter	Description	Parameter	Description
Mode	Working Mode	Reversal	Reverse Rotation
Torque	Torque Mode	SensorType	Sensor Type
Speed	Speed Mode	hallLess	Sensorless (No Hall)
Position	Position Mode (Reserved)	hall	Hall Sensor
Direction	Motor Rotation Direction	Encoder	Encoder
Forward	Forward Rotation		

Encoder

Pair:10

☐ AB_swap

Encoder	
Pair	Encoder Pole Pairs
AB_swap	Encoder A/B Phase Swap

Motor Brake

☐ Enable Keep_vol: V

Delay: s Pick-up_vol: V

☐ AUTOHOLD

Motor Brake: EMB brake setting	
Enable	Brake Enable
Delay	Brake Release Delay Time
Keep_vol	Brake Holding Voltage
Pick-up_vol	Brake Pickup Voltage
AUTOHOLD	Auto Hold Function (Enable for Hill Hold Assist)

Motor Parameter

Pair: 10

Flux_VpHz: 0.03595352

Lsq_H: 7.558933E-05

Rs_Ohm: 0.04665003

Lsd_H: 7.558933E-05

Motor Parameter	
Pair	Motor Pole Pairs
Flux_VpHz	Back EMF Constant (V/Hz)
Lsq_H	Motor Inductance Lsq (H)
Lsd_H	Motor Inductance Lsd (H)
Rs_Ohm	Motor Phase Resistance (Ω)

Motor ID

Motor ID

Data Update

Hall ID

Rs_Current: 10

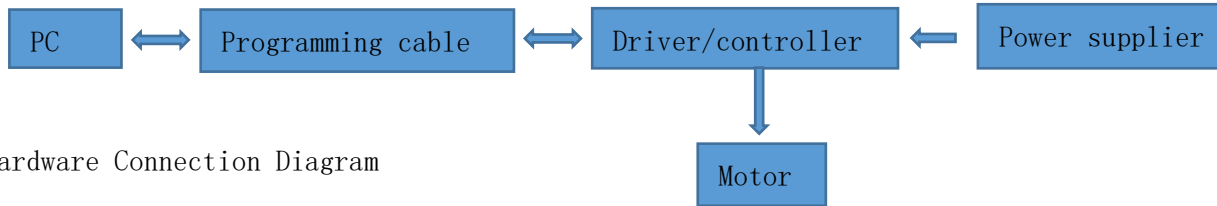
Ls_Current: -10

R/L(Hz): 300

Motor ID	Data Upate	Hall ID
Data Updata	click to save motor data	click to get hall sensor data

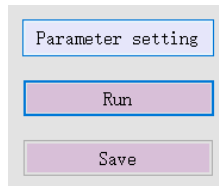
3.4 Example Operation of PC programming software

1. Hardware connection



Hardware Connection Diagram

3.4.1 Parameter Settings



Operating Steps:

- ◆ Connect PC, programmer, controller, motor, and power; power on controller.
- ◆ Locate the shortcut icon on the desktop  and double-click it to open the programming interface as shown above.
- ◆ Select the COM port (the COM number may differ on different computers).
- ◆ Click “Open serial port” to open the communication port.
- ◆ under “Parameter setting, click “Set” to modify parameters.

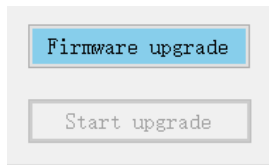
- ◆ click “Save” to save parameters.
- ◆ Click “Run” to exit parameter mode.

3.4.2 Motor & Controller Matching

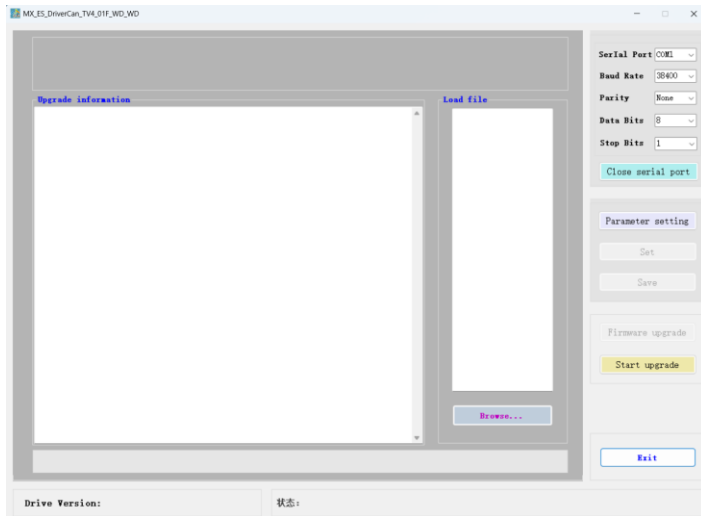


- ◆ When the controller and the PC are communicating correctly (both motors must be connected to the controller), Click “Motor ID” to perform motor identification. After a short moment, the M2 motor will rotate (only one motor will rotate. If severe vibration or abnormal rotation occurs, switch off the power immediately). Wait for the motor to stop automatically.
- ◆ Then click “Data Update” to write the identified motor parameters into the controller.
- ◆ Click “Hall ID” to perform Hall angle identification

3.4.3 Firmware upgrade/changing



◆ Click “Parameter setting”, it will show firmware upgrade window.



◆ Click “browse” and select the firmware xxx.bin file.

◆ Click “Start upgrade” to upload the new firmware.

image 4-4-4

Appendix — Fault Code Table 1-1

Code	Description	Code	Description
0	Normal	16	Motor 1 Phase Loss
1	Controller Fault	17	Motor 2 Brake Fault
2		18	Motor 1 Brake Fault
3		19	Motor 2 Encoder Fault
4		20	Motor 1 Encoder Fault
5	Over-current	21	Motor 2 Over-temperature
6	Over-voltage	22	Motor 1 Over-temperature
7	Under-voltage	23	Motor 2 Hall Sensor Fault
8	Over-temperature	24	Motor 1 Hall Sensor Fault
9	—	25	Motor 2 Stall
10	—	26	Motor 1 Stall
11	Motor 2 Overspeed	27	UART Communication Fault
12	Motor 1 Overspeed	28	RS485 Communication Fault
13	Motor 2 Overload	29	CAN Communication Fault
14	Motor 1 Overload	30	Joystick Fault
15	Motor 2 Phase Loss	31	Throttle Fault