

DriveManager Installation And Use Instructions

Tip: Please read this manual carefully before getting started . Please make sure that the connection is correct, otherwise the controller may be damaged.

1、Installation Preparation

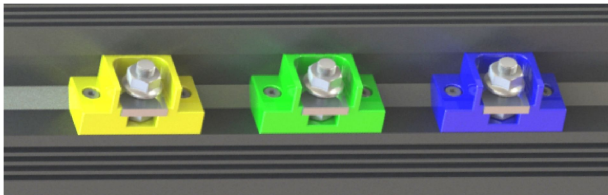
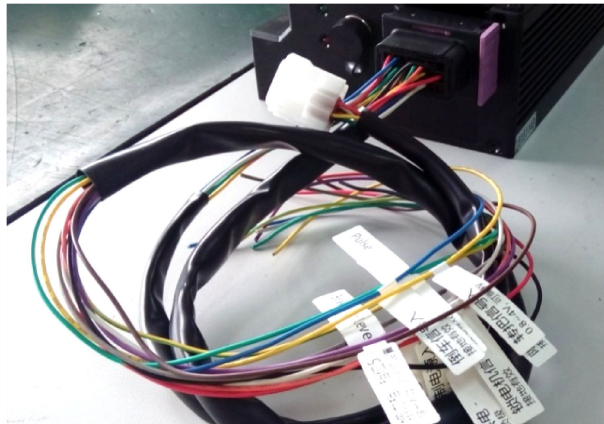


If it is the first installation, please confirm the software operating environment, see the document "APT1001.A2.01E.V1.0 - Preparation for Debug Kit Setup" .

2、PC Software Installation

Please contact the relevant technical supporter to obtain the last version software, download to your computer and double-click to start installation. As shown, EV DriveManager is the software's name, follow the prompts to complete the installation.

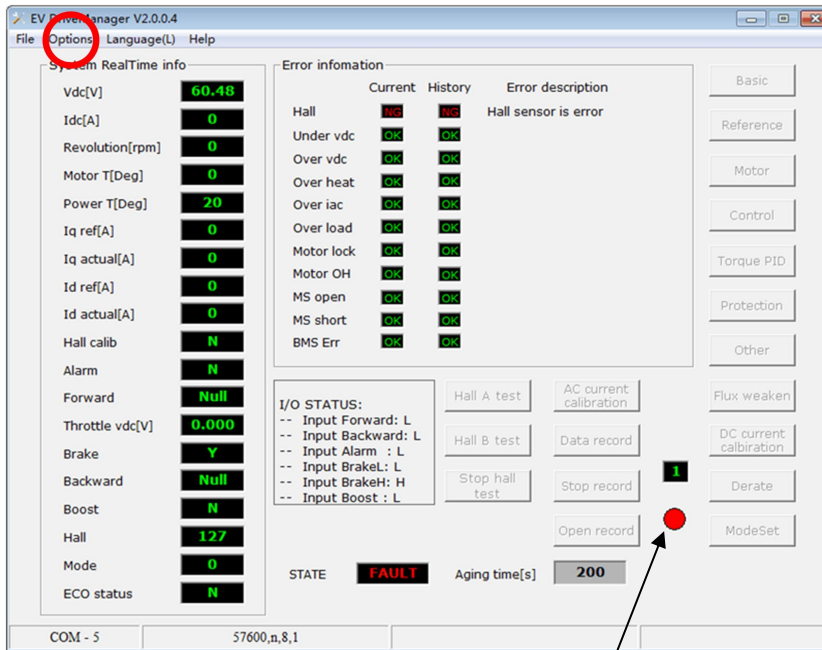
		
<p>① Click "Next"</p>	<p>② Select "I agree to the terms of the license agreement" and click "Next"</p>	<p>③ Click "Next"</p>
		
<p>④ Select the installation path and click "Next"</p>	<p>⑤ Click "Next"</p>	<p>⑥ Click "Next"</p>
	<p>The installation information has been set up. Click "Finish" to install the computer automatically. Now the PC Software has been installed, click "Done" to exit.</p>	

3、Wiring Ready

Step	Legend	Remarks
Motor phases connecting		<ul style="list-style-type: none"> • Color to color connection • Screw diameter: 8mm • Nut sleeve size:13 • Recommended fastening torque $\geq 10N \cdot m$
Control wire connecting		<p>Basic connects for motor running,</p> <ol style="list-style-type: none"> 1. Motor hall 2. Power key input 3. Throttle <p>More functions if you need</p> <ol style="list-style-type: none"> 4. Brake Function Line 5. Gear switch 6. Backward control
Battery positive and negative connecting		<ul style="list-style-type: none"> • Connect to the battery positive, the red wire should be more than 10mm² • Connect to the battery negative, the black wire should be more than 10mm² • Wire capability for 300A. • Fuse connected to the positive electrode. <p>Attention: Confirm over that the positive and negative are connected correctly. They must not be reversed or loosen, or it will cause arc strikes and other serious injury cases.</p>
Communication cable connecting		<p>Connect the GX16-10 to RS232 cable to the controller and PC. If the PC does not have the RS232 socket, use a USB to RS232 kit to exchange.</p>
Open the battery switch → Open the electric key → power on and green led on, red led on or spark.		

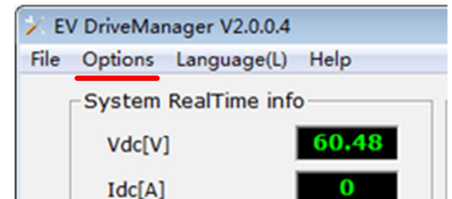
4、Start EV DriveManager

Find out the software, double click and start

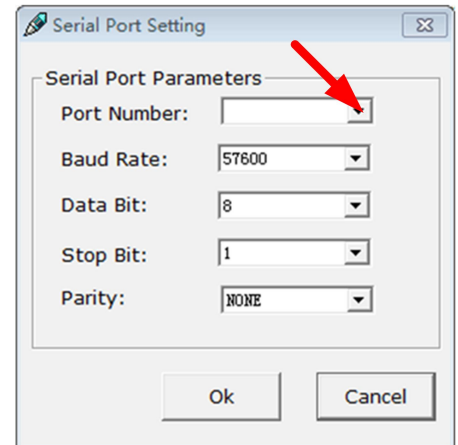


RED: Offline

Green: Online

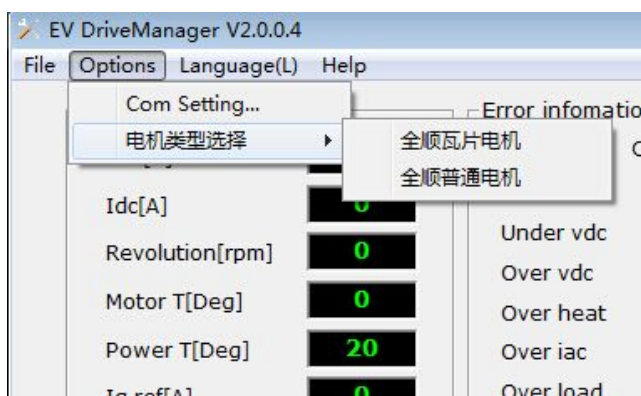


“Options” → “Communicate”

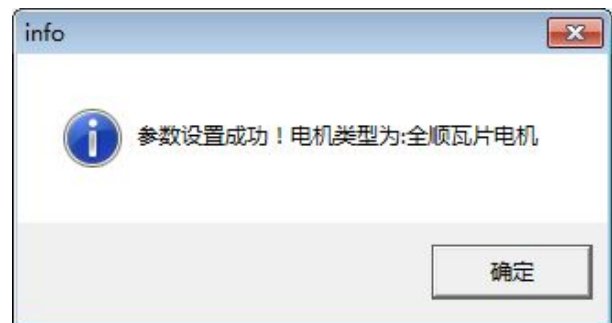


choice port ID

Set motor type

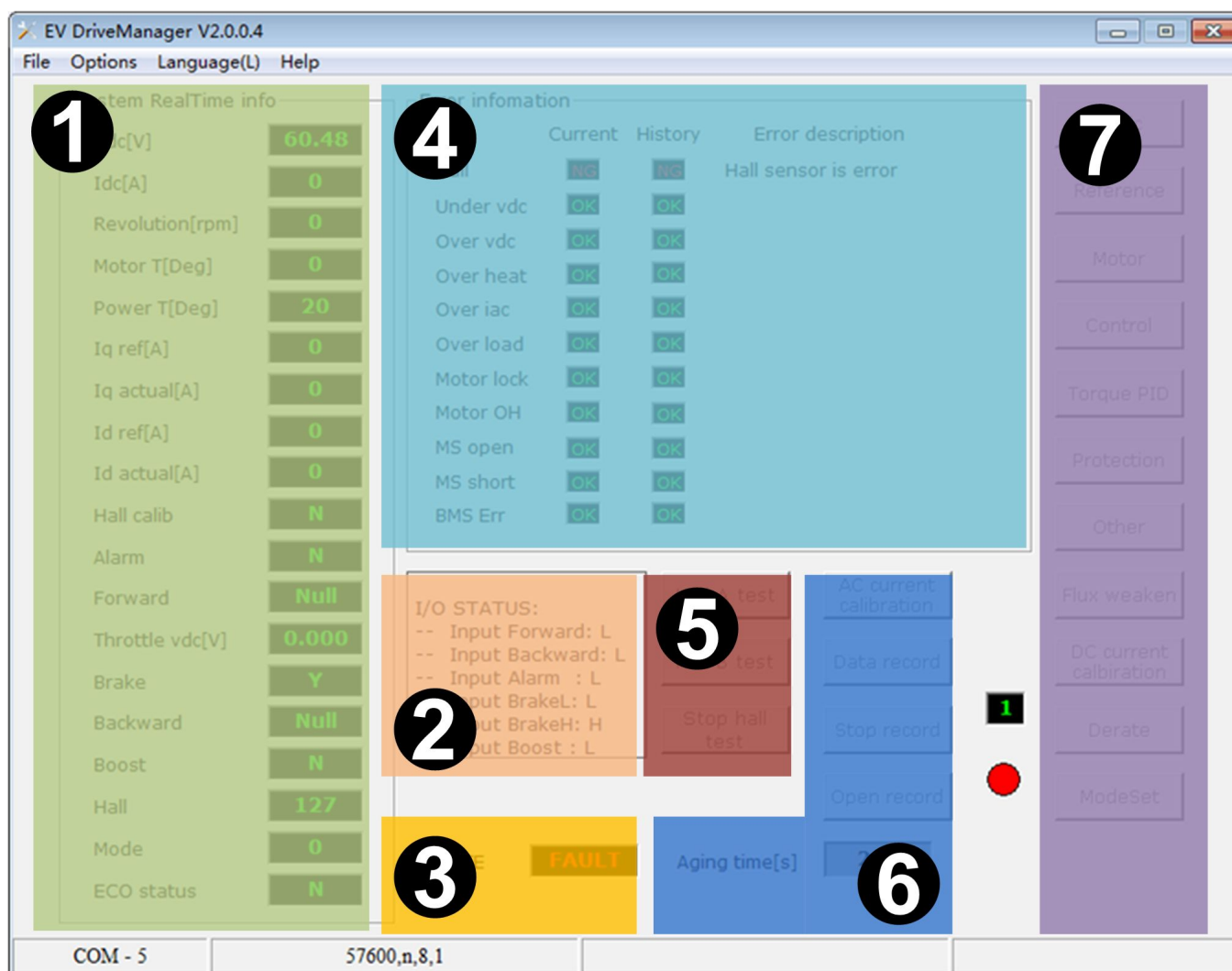


Select the motor type



Motor settings success
Click "OK" and exit the motor settings

5、Interface Description



1

REAL-TIME INFORMATION

By observing the operation of the controller, it will provide you with real-time dynamic data. And it's convenient to analysis system status and verify the rationality of the set parameters.

2

INPUT PORT STATUS

Input port may prompt for real-time input status of each external port of the controller. When the vehicle breaks down, it will easy to investigate the cause of the problem.

3

SYSTEM STATUS

The controller provides four states: run, wait, fault, Idle, which instructs the system status.

4

ERROR INDICATION

Current	<p>Real-time information of the system</p> <p>Solve the problem by investigating the real-time status.</p> <p>Attention: Only when all the states of the controller are OK will the motor operate.</p>
History	<p>Drive system errors occurred</p> <p>For analyzing and finding the problem during operation.</p> <p>Attention: Power reboot will clear all historical status.</p>

Error infomation

	Current	History	Error description
Hall	NG	NG	Hall sensor is error
Under vdc	OK	OK	
Over vdc	OK	OK	
Over heat	OK	OK	
Over iac	OK	OK	
Over load	OK	OK	
Motor lock	OK	OK	
Motor OH	OK	OK	
MS open	OK	OK	
MS short	OK	OK	
BMS Err	OK	OK	

- Hall——Hall signal of the motor error
- Under vdc——The battery voltage is below the under-voltage values that have been set
- Over vdc——The battery voltage is over the over-voltage values that have been set
- Over heat——Controller is overheated
- Over iac——Controller is over-current
- Over load——Controller is long-running under heavy load conditions
- Motor lock——Motor locked means when the controller detects the signal of throttle but the motor cannot rotate due to external strong resistance, which may cause over-heat of controller and motor. To prevent such a disaster, the controller will stop outputting current. Default stall time is 2 seconds
- Motor OH——Motor temperature is overheated
- MS open——Unable to contact with the thermistor in the motor
- MS short——Thermistor in the motor is short circuit
- BMS Err——Batter communication failure

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5

HALL SENSOR CALIBRATION

By calibrating, the bias position of each Hall sensor will be revised, which make users to match controller with motor accurately.

6


DRIVE SYSTEM EVALUATION MODULE

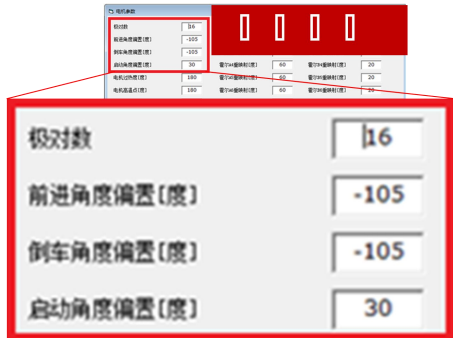
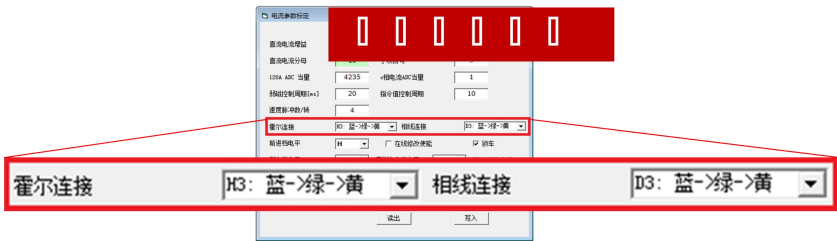
By aging, data logging and other functions, you can test the electronic control system and motor system at the level of Research & Development. **(Developers use only)**


7

DETAILED PARAMETERS SETTING

On your demand, you can set detail parameters.
Basic parameters setting as the table below

设定类别 Setting Types	设定内容 Setting Content	全顺瓦片 Quanshun WP Motors	全顺普通 Quanshun GER Motors
	Acc of Iq 前进的加速度	1500	1500

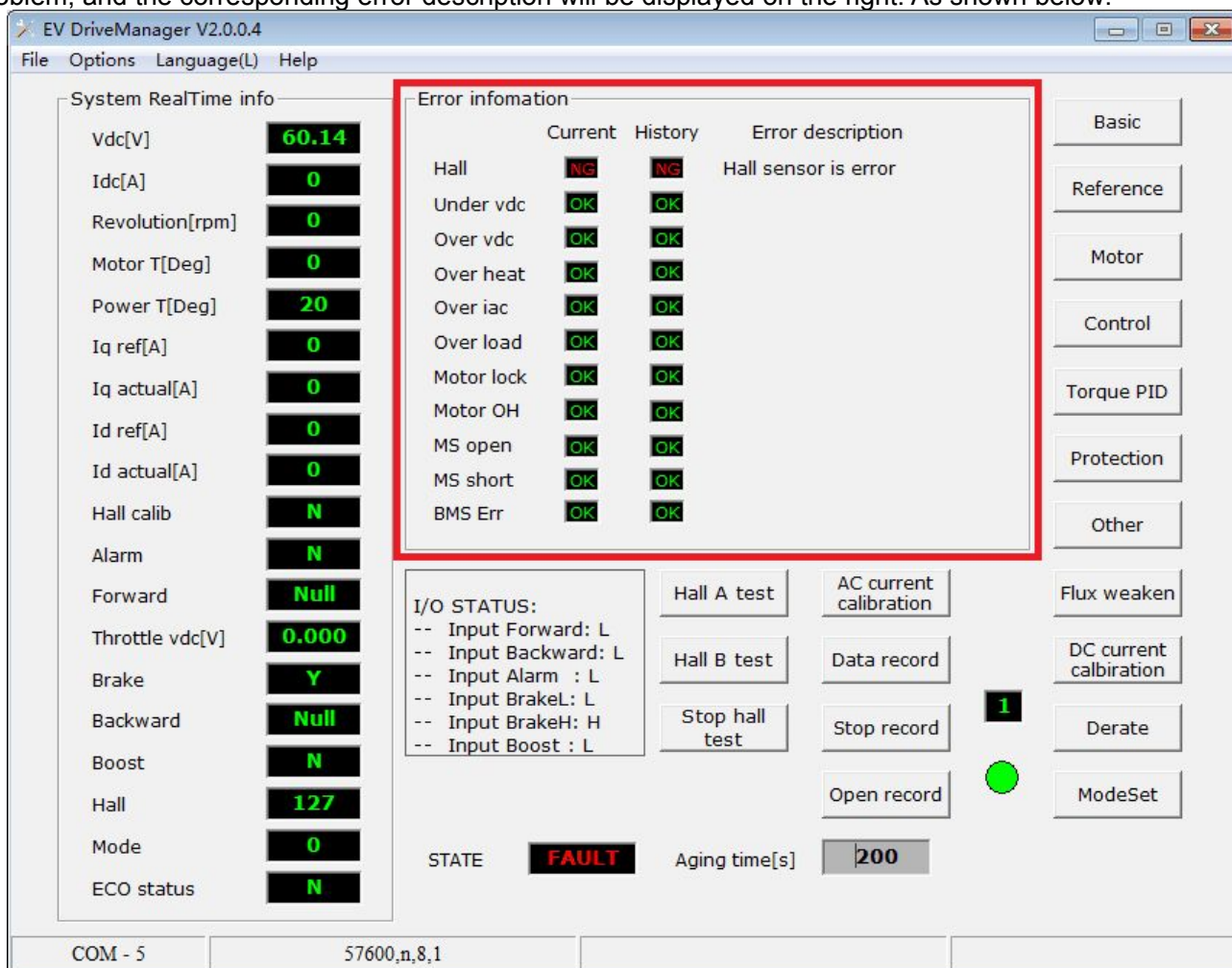
	Forward acceleration			
	Dec of Iq 前进的减速度 Forward deceleration	750	750	
	Acc of iq at reg 倒车的加速度 Reversing acceleration	450	450	
	Dec of iq at reg 倒车的减速度 Reversing deceleration	750	750	
	Pole pairs num 电机内部的磁钢对数 The number of motor magnets pairs	16	28	
	Forward angle offset 前进时霍尔与相线的偏置角度 The angle offset about the hall with phase when advancing	-105	-50	
	Backward angle offset 倒车时霍尔与相线的偏置角度 The angle offset about the hall with phase when reversing	-105	-50	
	Starting angle offset 启动时霍尔与相线的偏置角度 The angle offset about the hall with phase when starting	30	30	
相序软调节 adjust the phase sequence 		Hall connection H3: B->G->Y	Hall connection H1: Y->G->B	
		Phase connection D3: B->G->Y	Phase connection D1: Y->G->B	
	Reference value	60V	72V	96V
	Basic parameter			
Over vdc 过压保护值 The value of over-voltage protection		90	90	140
Over vdc recover 解除过压保护的电压值 The value of relieving over-voltage protection		89	89	139
Under vdc 欠压保护值, 停止输出 The value of under-voltage protection, stop outputting		50.5	63	84

	Under vdc recover 解除欠压保护的电压值 The value of relieve under-voltage protection	52	64.8	86.4
	Vdc of idc limit 低于此电压，电流减弱 The current starts to reduce when the voltage is less than this value	58	70	93.3
	Vdc of idc min 低于此电压，电流降至一定比例 The current will reduce to a certain percentage when the voltage is lower than this value	52	63	84

5、PC Software Main Parameters Instructions

5.1 PC Software Fault Information Instructions

The major working conditions of the controller and motor will be displayed in the Error information bar of the PC Software. The green "OK" means the working environment is normal. The red "NG" means there is a problem, and the corresponding error description will be displayed on the right. As shown below:



The screenshot shows the EV DriveManager V2.0.0.4 software interface. On the left, the 'System RealTime info' panel displays various parameters: Vdc[V] (60.14), Idc[A] (0), Revolution[rpm] (0), Motor T[Deg] (0), Power T[Deg] (20), Iq ref[A] (0), Iq actual[A] (0), Id ref[A] (0), Id actual[A] (0), Hall calib (N), Alarm (N), Forward (Null), Throttle vdc[V] (0.000), Brake (Y), Backward (Null), Boost (N), Hall (127), Mode (0), and ECO status (N). The 'Error information' panel on the right shows a table of error status:

	Current	History	Error description
Hall	NG	NG	Hall sensor is error
Under vdc	OK	OK	
Over vdc	OK	OK	
Over heat	OK	OK	
Over iac	OK	OK	
Over load	OK	OK	
Motor lock	OK	OK	
Motor OH	OK	OK	
MS open	OK	OK	
MS short	OK	OK	
BMS Err	OK	OK	

Below the error table, the 'I/O STATUS' section shows input states: Input Forward: L, Input Backward: L, Input Alarm: L, Input BrakeL: L, Input BrakeH: H, and Input Boost: L. The 'STATE' is indicated as 'FAULT' in red. The 'Aging time[s]' is set to 200. On the right, there are buttons for 'Basic', 'Reference', 'Motor', 'Control', 'Torque PID', 'Protection', 'Other', 'Flux weaken', 'DC current calibration', 'Derate', and 'ModeSet'. A green light indicator is shown next to the '1' in the 'Derate' section.

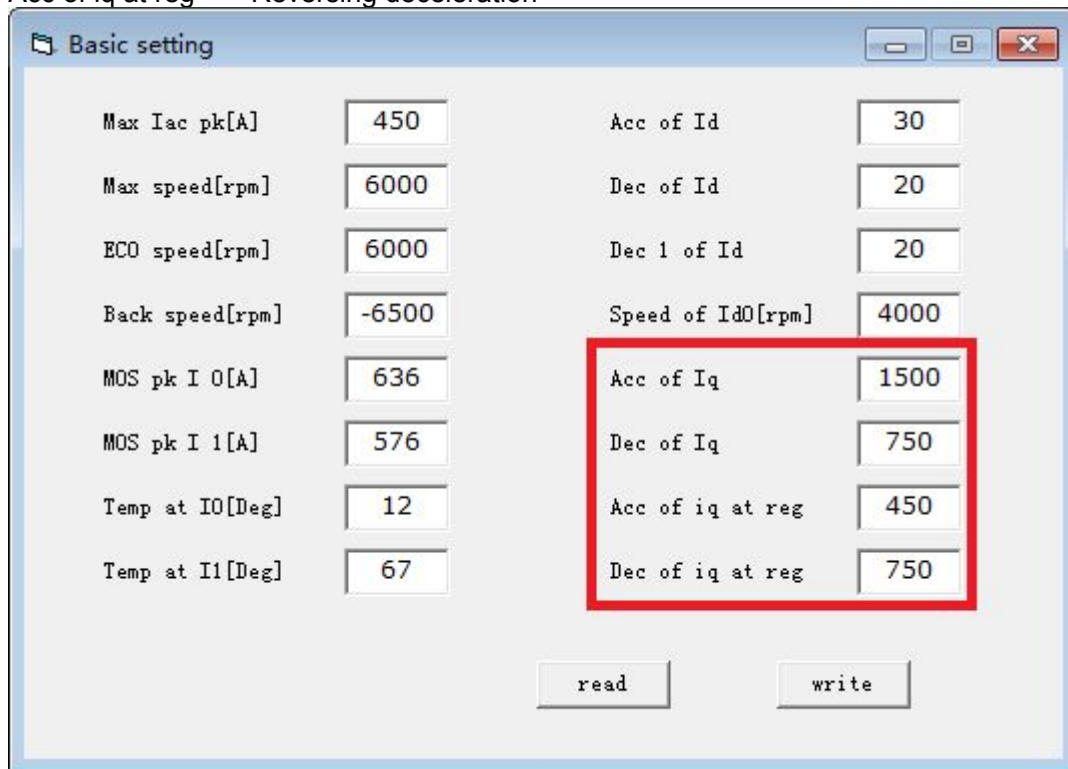
5.2 PC Software Main Parameters Instructions

The following four figure red boxes are the main parameters of the PC Software. Instructions are as follow:

① Basic

Acc of Iq—Forward accelerations

Dec of Iq——Forward deceleration
 Acc of iq at reg——Reversing accelerations
 Acc of iq at reg——Reversing deceleration



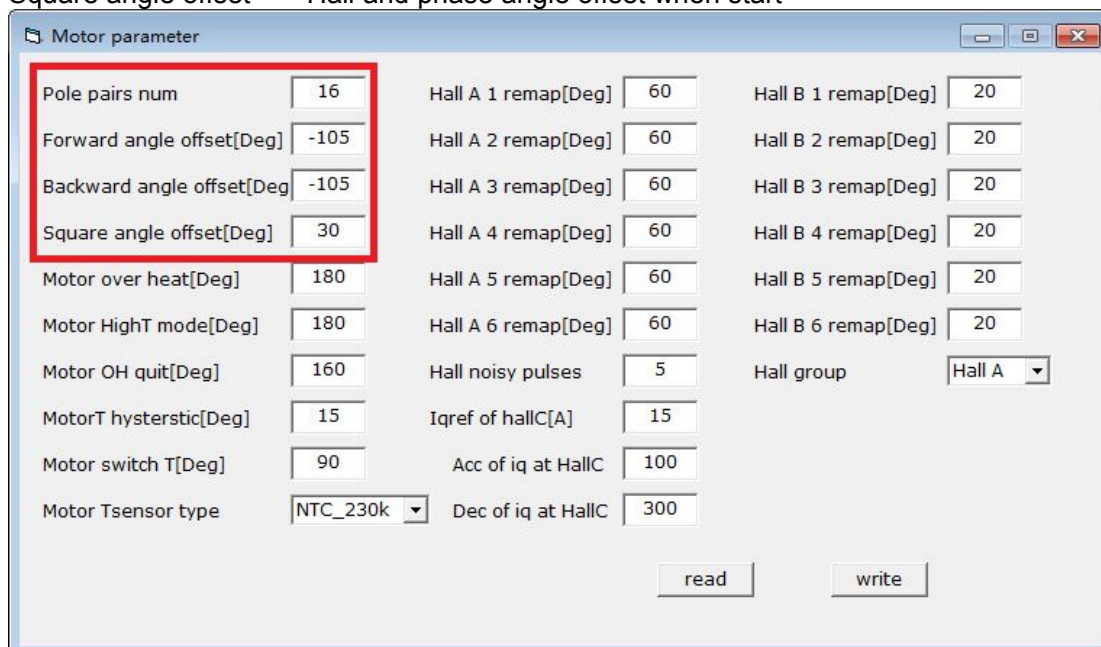
Basic setting

Max Iac pk[A]	450	Acc of Id	30
Max speed[rpm]	6000	Dec of Id	20
ECO speed[rpm]	6000	Dec 1 of Id	20
Back speed[rpm]	-6500	Speed of Id0[rpm]	4000
MOS pk I 0[A]	636	Acc of Iq	1500
MOS pk I 1[A]	576	Dec of Iq	750
Temp at I0[Deg]	12	Acc of iq at reg	450
Temp at I1[Deg]	67	Dec of iq at reg	750

read write

② Motor

Pole pairs num——Number of pole pairs of motor magnets
 Forward angle offset——Hall and phase angle offset when advance
 Backward angle offset——Hall and phase angle offset when reversing
 Square angle offset——Hall and phase angle offset when start



Motor parameter

Pole pairs num	16	Hall A 1 remap[Deg]	60	Hall B 1 remap[Deg]	20
Forward angle offset[Deg]	-105	Hall A 2 remap[Deg]	60	Hall B 2 remap[Deg]	20
Backward angle offset[Deg]	-105	Hall A 3 remap[Deg]	60	Hall B 3 remap[Deg]	20
Square angle offset[Deg]	30	Hall A 4 remap[Deg]	60	Hall B 4 remap[Deg]	20
Motor over heat[Deg]	180	Hall A 5 remap[Deg]	60	Hall B 5 remap[Deg]	20
Motor HighT mode[Deg]	180	Hall A 6 remap[Deg]	60	Hall B 6 remap[Deg]	20
Motor OH quit[Deg]	160	Hall noisy pulses	5	Hall group	Hall A
MotorT hysteric[Deg]	15	Iqref of hallC[A]	15		
Motor switch T[Deg]	90	Acc of iq at HallC	100		
Motor Tsensor type	NTC_230k	Dec of iq at HallC	300		

read write

③ DC current calibration

Hall connection——Hall line connection order
 Phase connection——Phase line connection order

Idc calibration

Idc gain

1547

Idc ave factor

1

Idc D2 power

10

Subproject num

0

Iac ADC value 128A

4235

Ic ADC value 128A

1

Flux period[ms]

20

Reference period[ms]

10

Speed pulses/cycle

4

Hall connection

H3: B->G->Y

Phase connection

D3: B->G->Y

Forward level

H

☐ PC Online

☒ Unlock

Backward level

H

Brake high level

L

☐ B H A

Reserve level

H

Brake low level

L

☒ B L A

Serial Num

1405

15

0

1143

26

read

write

④ Reference

Over vdc——Overvoltage protection value

Over vdc recover——Lift overvoltage protection voltage value

Under vdc——Undervoltage protection value

Under vdc recover——Lift undervoltage protection voltage value

Reference

Over vdc[V]	90	Vdc of idc limit[V]	58
Over vdc recover[V]	89	Vdc of idc min[V]	52
Under vdc[V]	50.5	Idc min percent[%]	20
Under vdc recover[V]	52	Hall steps for 60 switch t	10
Highest vdc for reg[V]	68.75	Start speed forecast	100
vdc of full reg[V]	62.5	Square start step	10
Reg comp to vdc[%]	128	Square step DDP	5
BW iqref step 0[A]	450	ECO iqref step12[A]	40
BW iqref step 12[A]	40	ECO iqref step13[A]	40
BW iqref step 13[A]	40		

5.3 The PC Software Main Parameter Configuration

PC Software Parameter Configuration Table

Motor Types			QuanShun WP Motor	QuanShun GER Motor
Parameter Types	Basic	Acc of Iq	1500	1500
		Dec of Iq	750	750
		Acc of iq at reg	450	450
		Acc of iq at reg	750	750
	Motor	Pole pairs num	16	28
		Forward angle offset	-105	-50
		Backward angle offset	-105	-50
		Square angle offset	30	30
	DC current calbiration	Hall connection	H3: B->G->Y	H1: Y->G->B
		Phase connection	D3: B->G->Y	D1: Y->G->B
	Reference	Over vdc	90	90
		Over vdc recover	89	89
		Under vdc	50.5	50.5
		Under vdc recover	52	52

revision history

Revision date	version	Revision contents
2015-05-10	1.0	File created