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MQCON Sine-Wave Controller

HCI User Manual

V1.0

Catalogue

1   Soft Installation and Debugging

1.1 Installation

The soft installation consist of two steps: one is the MQCON interface software installation and the other is usb-485 commutator driver installation.

1-MQCON   installation

Double click *setup*   icon under the directory of "MQCON->volume" ，and finish the installation according to the default set.

Figure 1

2- USB installation

Double Click   *setup.exe* icon under the   "ch431ser" document and finish the installation according to the default set .

Figure 2

1.2   Debugging

(1)   Use the usb-485 commutator to connect the controller with computer

(2)   Power on the controller。

Caution：to be sure all connection is right before power on.

（3）   Double click the icon *MQCON* on the desktop.

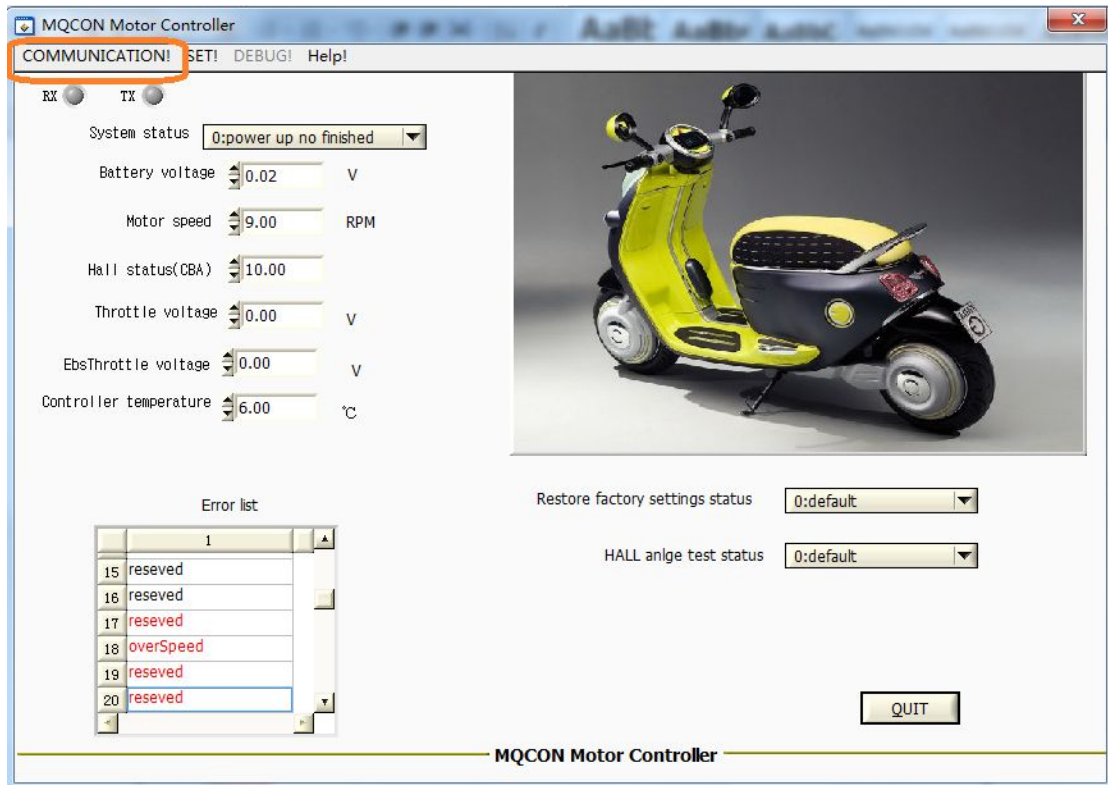（4）   The MQCON setting dialog box open.

Figure 3

Click *COMMUNACATION* icon， the *com configure* dialog box open :
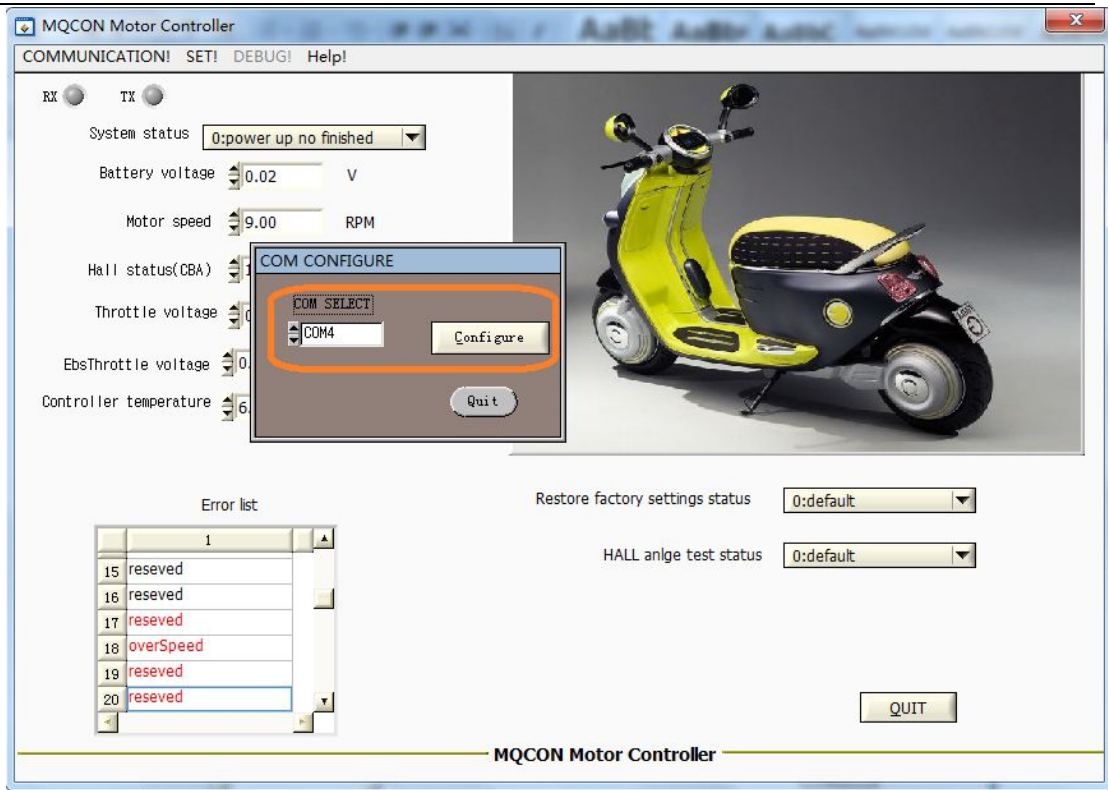
Firgue 4

（5） Select the right com number,If you don't know the current com number of current USB-485
commutator， you should enter the "system manager" from the control panel of your computer ，
then you will find the right com number under the *COM and LPT* icon :
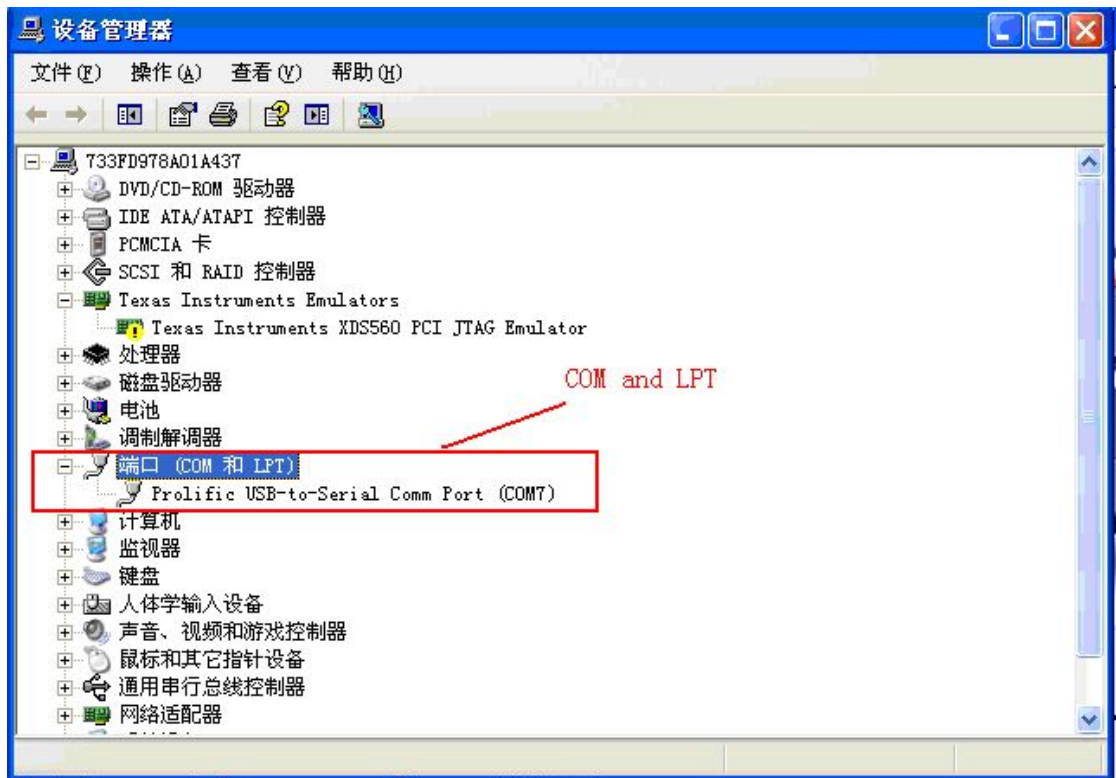
Figure 5

（6）　　Return to the figure 4,when you select the right com number, then click *Configure*, the RX,TX leds on the main interface will twinkle, which mean the communication between the controller and computer succeed,and the *system status* show　*system running* ,the click the *SET!* Menu,the *parameter setting* dialog box open :
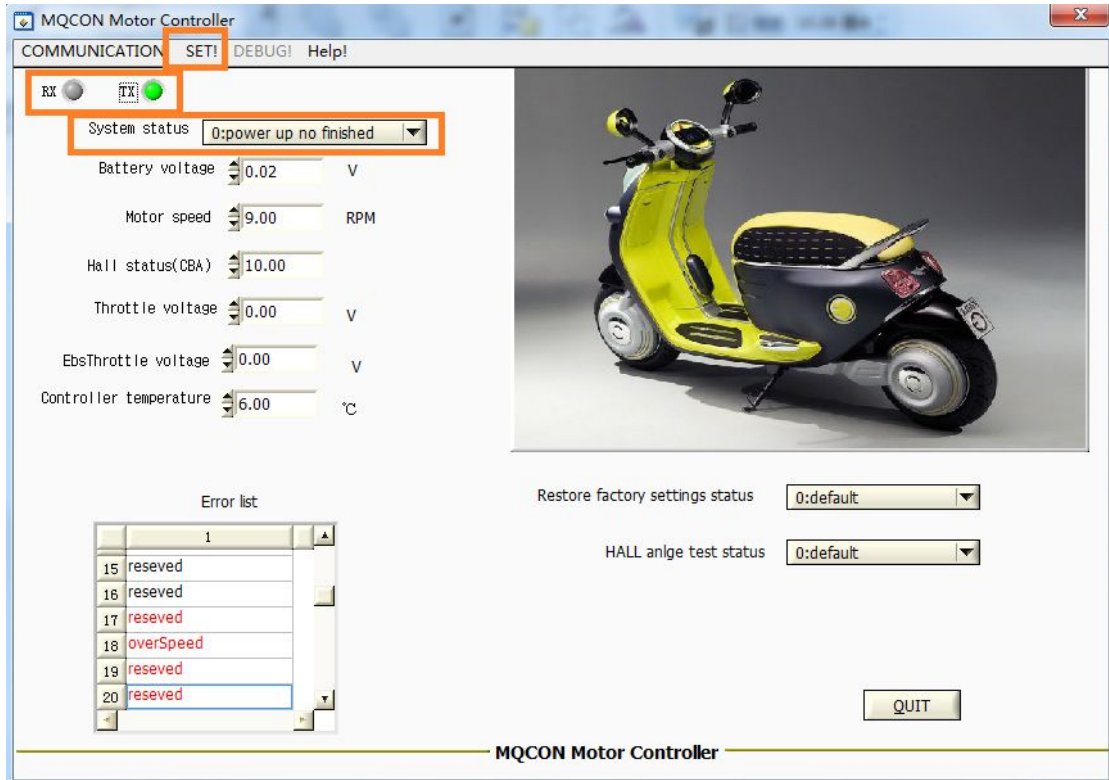

Figure 6

（7）　　Select the *DEBUG* page :

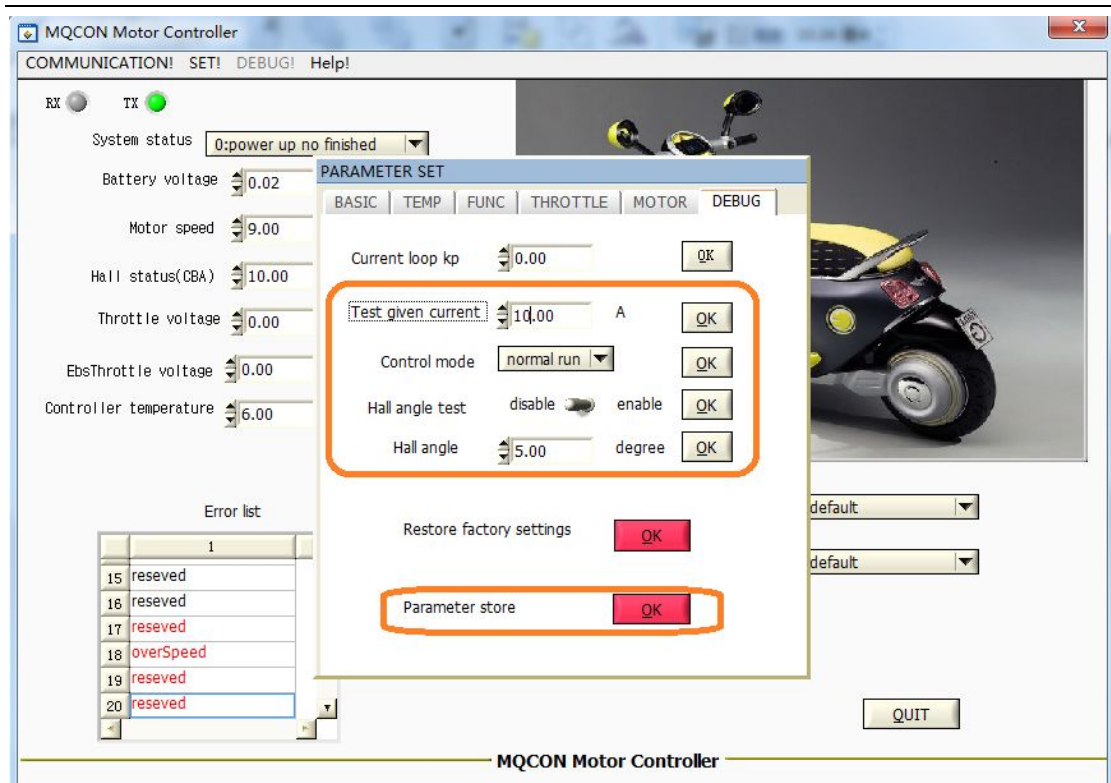Before angle matching ，the motor must be without any load .

Figure 7

Type 10 at the input field of *ID cmd*, and Click *OK* on the right .

Select *HALL angle test* , and Click *OK* on the right.

Enable *hall angle test*, and click *OK* on the right.

Then you will find the motor spin very slowly ,when the matching finish ,the main interface will display the matching result . if matching succeed ,it will indicate:*2: test ok*. On the *BEBUG* page ,*hall angle* will update the latest matching angle. Click *OK*, *parameter store* , click *OK.* Then the parameters modified will be save after power off.

After matching , shut off the controller and then power on it again , then check the matching angle .if the angle is updated ,change the throttle input slowly to run the motor . otherwise ,the angle should be matched once more.

Caution:

1： the value of "*ID cmd*" should be under 25.

2： when angle test failed,you can exchange any two phase wires and match again.

3： if the motor reverse ,you can exchange any two phase wires and match again. Or you can just set as following :

Type 1 at *motor direction* input field. and click *ok.* it will change the spin direction.
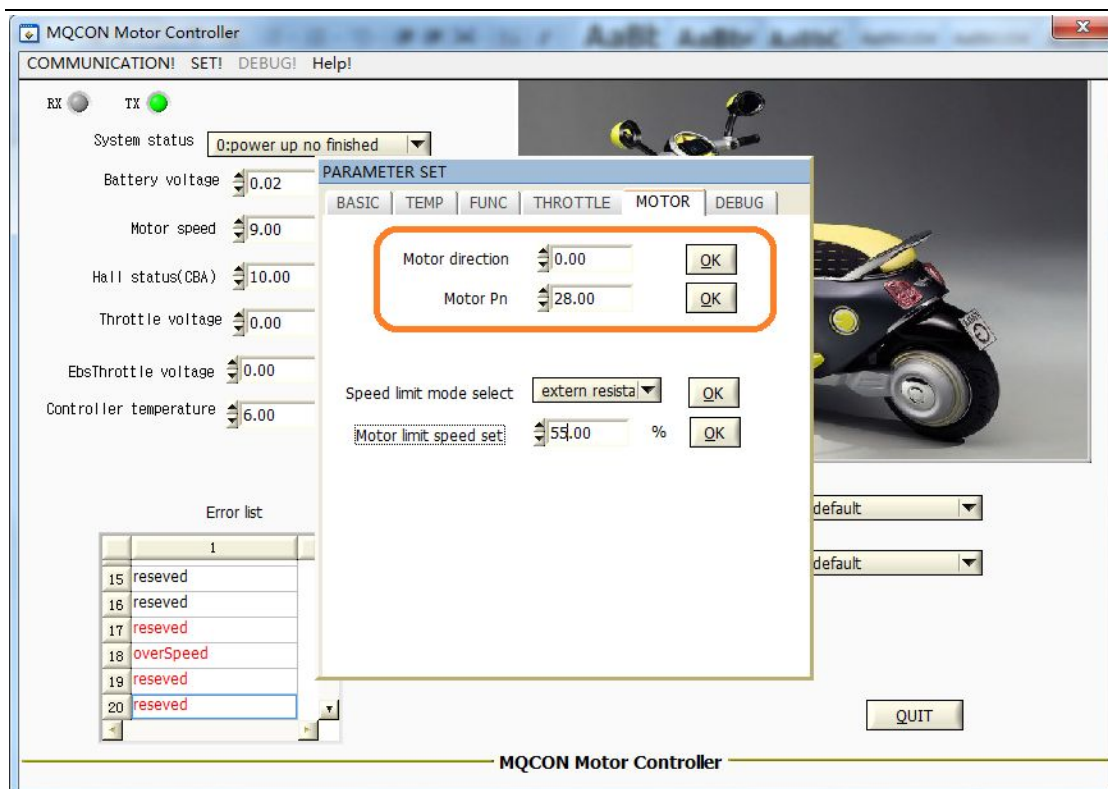
Figure 8

4：type the right Pole pair number at the *motor Pn*"， and click *OK.*

5： Parameters which are modified must be click *OK* and the *parameter store* must be click *OK* ,otherwise ,the parameter will not be updated at next time when power on.

1.3 parameters setting

Category	Parameter	Remark	Unit	Range
	lack volt	when battery volt is lower than the value, the controller enter lack volt fault status	V	According the controller type
	over volt	when battery volt is higher than the value, the controller enter over volt fault status	V	According the controller type
	Dc limit current	Max dc limit current in nomal mode	A	According the controller type
	Boost dc current	Max dc limit current in boost mode	A	According the controller type
	max phase current	it is corresponding to the max throttle value	A	According the controller type
	protected phase current	When phase current is higher than the value, the controller enter over current fault status	A	According the controller type
	rated phase current	Continuance run phase current	A	According the controller type
TEMP	unwork	Controller stop work when controller the	℃	90~120

	temperature	temperature is higher than the value		
	rework temperature	Controller rework when controller the temperature is under the value	℃	80~100
	limited current temperature	Controller begin to limit the output current when the controller temperature reach the value	℃	70~90
FUNC	electric brake	If it is enabled ,the controller enter electric brake status when the brake signal is valid	0：disable 1：enable	0,1
	electric brake phase current	When controller enter electric brake status, the battery is recharged , the value indicate the max charged current	A	0~150
	Boost/ 3 spd	Select the run mode: boost or 3pd and so on		0,3
	cruise	If it is enabled, controller enter cruise status when the cruise key is pressed longer than 3 seconds. Controller exit cruise when the brake signal is valid or the throttle restart. If it is disabled ,the cruise key is invalid	0：disable 1：enable	0,1
	reverse speed limit	When motor reverse , the max reverse spedd is limited to the value	A	0~100
	flux weakening	If it is enable , the flux weakening function is valid	0：disable 1：enable	0,1
	flux weaken current	Max flux weaken current	A	0~150
	regenerative recharge	If it is enable ,the slide recharge function is valid	0：disable 1：enable	0,1
	regenerative charge current	When controller enter slide recharge status, the battery is recharged , the value indicate the max charged current	A	0~60
	regenerative charge speed	Only when the motor speed is higher than the speed value ,the controller can enter the slide recharge status if the throttle is zero longer than 1 second	RPM	0~500
THROTTLE	throttle min volt	Throttle min valid volt	0.1V	0.0~5

	throttle max volt	Throttle max valid volt	0.1V	0.0~5
	accelerate time	It adjust the output current accelerate rate	0.1s	1~500
	decelerate time	It adjust the output current decelerate rate	0.1s	1~500

Tips:

1- "throttle min volt" correspond 0 phase current, and "throttle max volt" correspond max phase current.

2- "the max phase current" determine the max output torque ,

3- "the rate phase current" determine the continuous load endurance

4- "accelerate time" determine the response time for the controller to response the throttle output during the accelerate process

5- "decelerate time"determine the response time for the controller to response the throttle release during the decelerate process

2 Fault Information

You can get the fault information from the interface, after the controller connected with computer,the fault information will display as following:
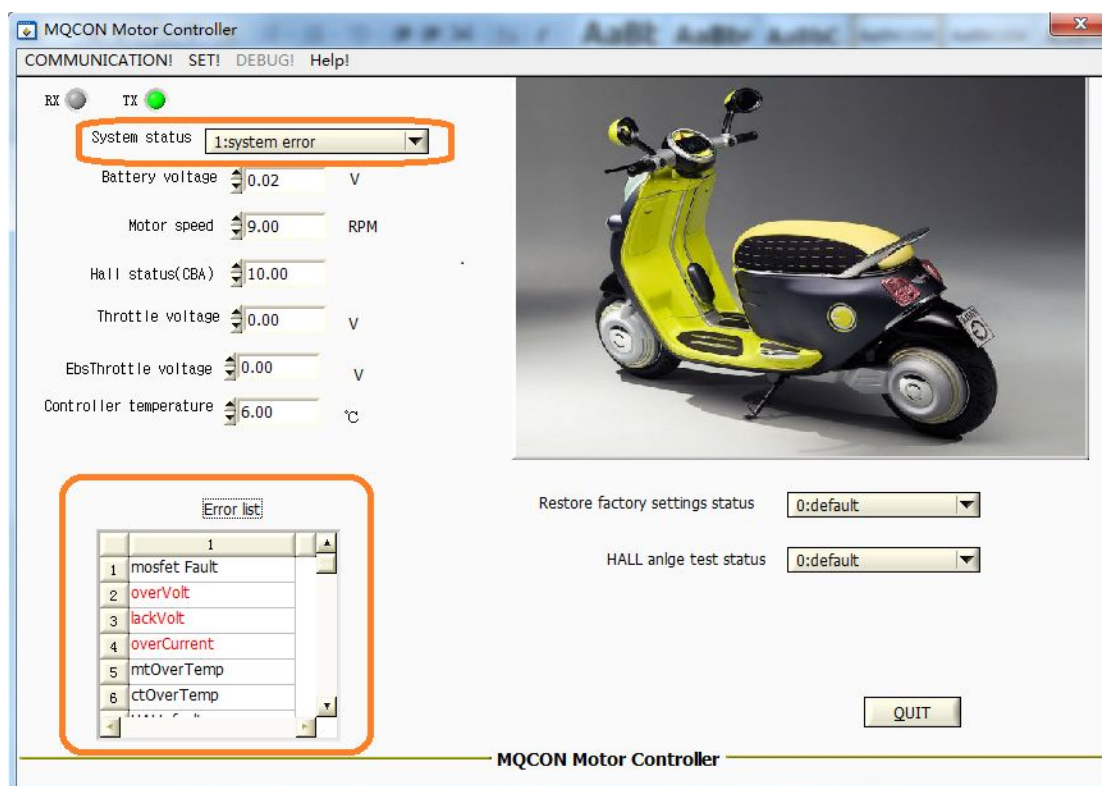

Figure 9

Some of faults remark are as following ：

Num	Fault Name	Remark
1	Mosfet fault	Hardware fault
2	overVolt	Battery over volt fault
3	lackVolt	Battery lack volt fault
4	resvd	reserved
5	mtOverTemp	Motor temperature is higher than set temperature
6	ctOverTemp	controller temperature is higher than set temperature
8	overCurrent	phase current is higher than over protected ph current
9	overLoad	The timer that phase current is higher than rated phase current exceed the　set time
11	Store error	The setting parameter store failed fault
12	HALL test fault	Motor hall fault when matching
13	HALL fault	Motor hall fault
18	overSpeed	The tasks of controller are too many to calculate.
20	Block protect	The block current
21	unInitEeprom	The eeprom of controller is not initialized