MQCON SVMC Controller Manual

1. SVMC Series

Mini SVMC

Type	Voltage range	Max dc current	Max phase current	Applicative motor
SVMC7245	48-72V	45A	135A	1KW
SIZE：164*120*62mm				

Mid SVMC

Type	Voltage range	Max dc current	Max phase current	Applicative motor
SVMC7260	48-72V	60A	175A	1.5KW
SVMC9650	48-96V	50A	150A	1.5KW
size：215*147*62mm				

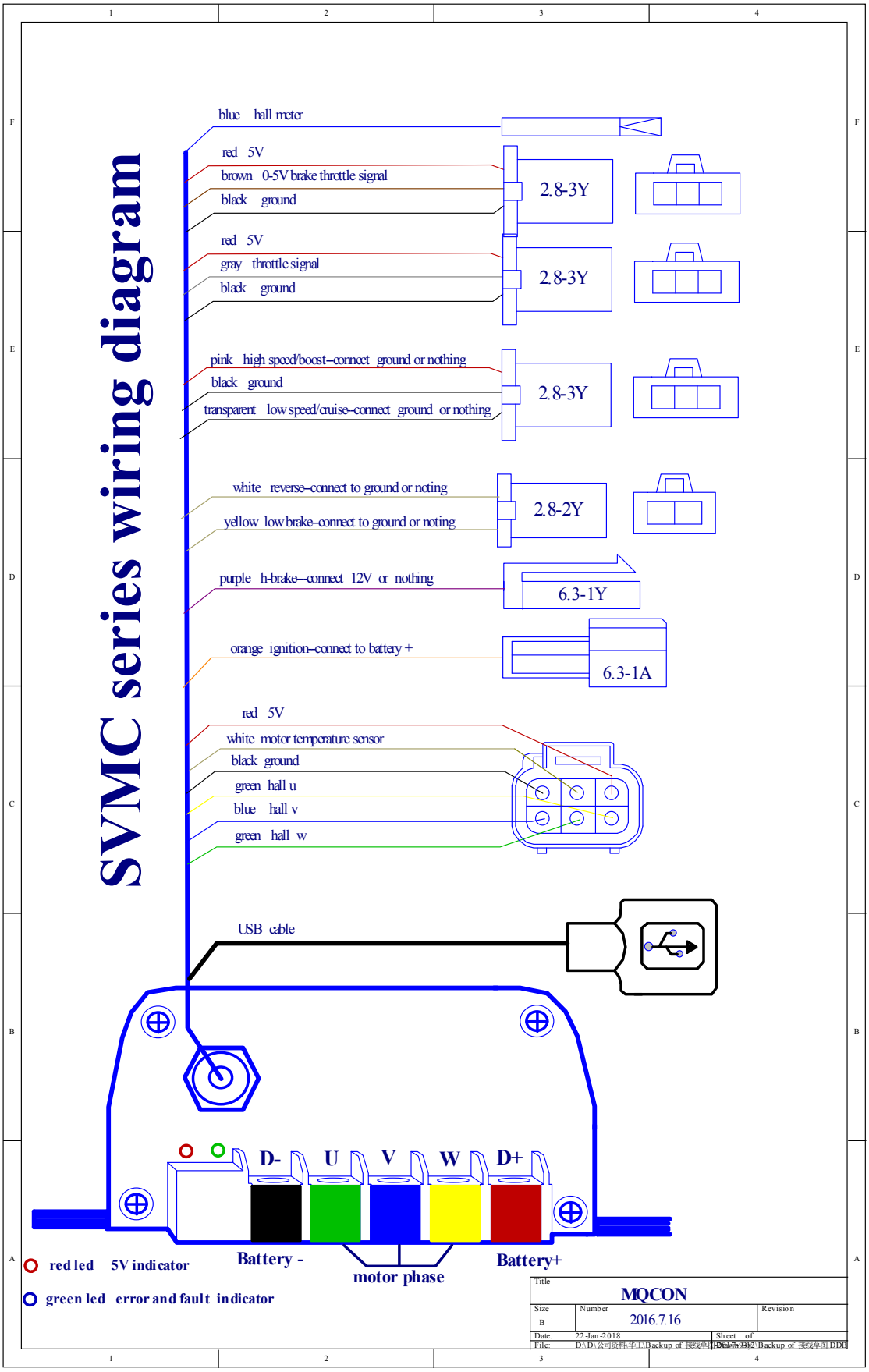
SVMC

Type	Voltage range	Max dc current	Max phase current	Applicative motor
SVMC7280	48-72V	80A	200A	2KW
SVMC72100	48-72V	100A	250A	3KW
SVMC72150	48-72V	150A	350A	3KW~4KW
SVMC96100	48-96V	100A	250A	2KW~3KW
size：249*147*62mm				

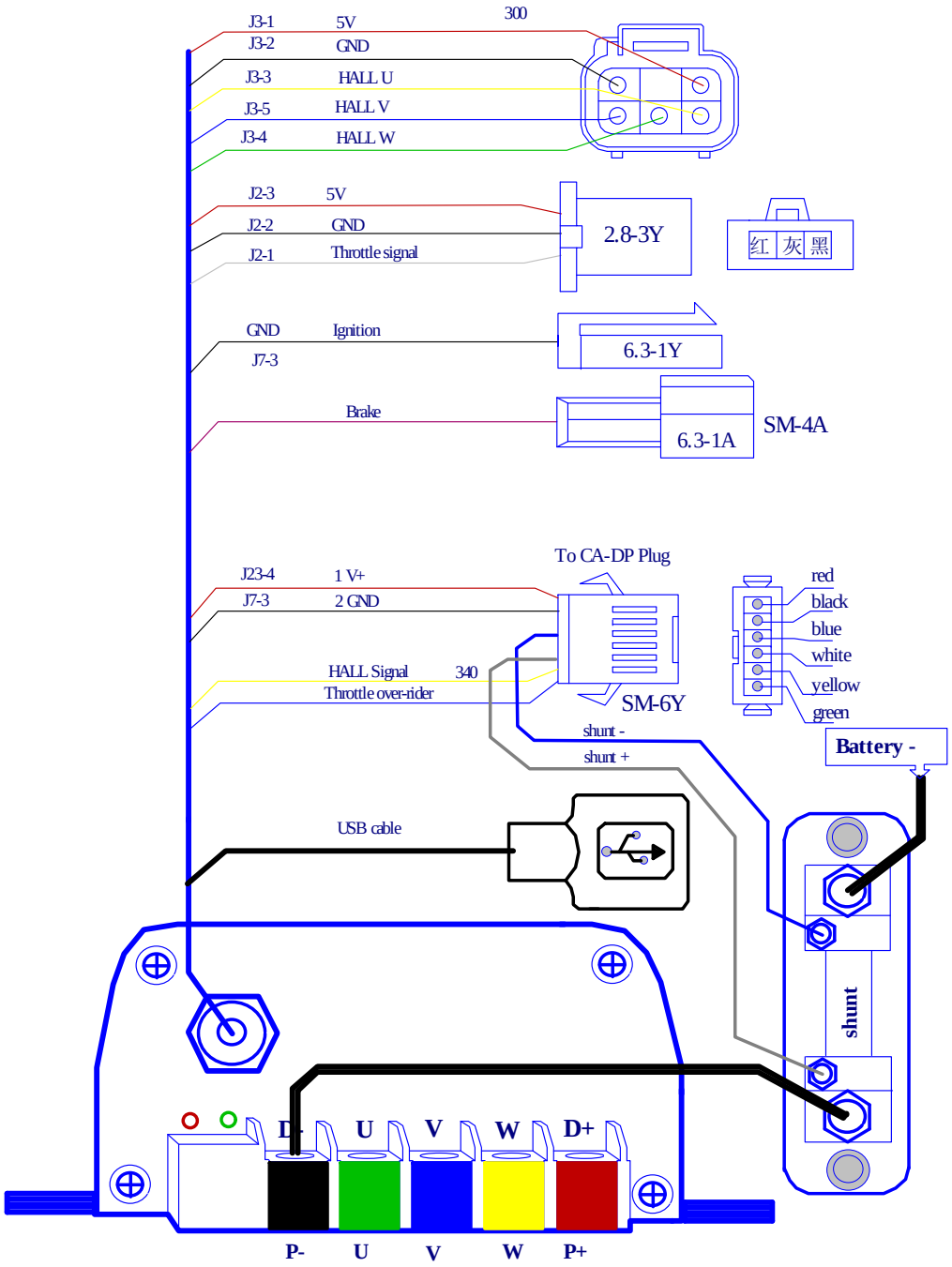
Super SVMC

Type	Voltage range	Max dc current	Max phase current	Applicative motor
SVMC72200	48-72V	200A	450	5KW
SVMC96120	48-96V	120A	300	5KW
size：283*147*62mm				

2. Svmc series wiring diagram :



Gerneral Wring For MQCON Controller and CA

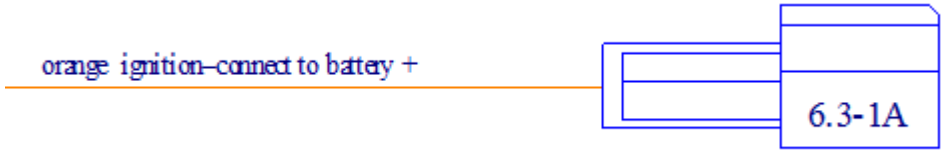


Title	MQCON(Sabvoton)	
Size: B	Number: 2016.5.24	Revision:
Date: 5-Aug-2016	Sheet of	
File: G:\公司资料\相关\华门\Backup of 接线图.DDB	Drawn By:	

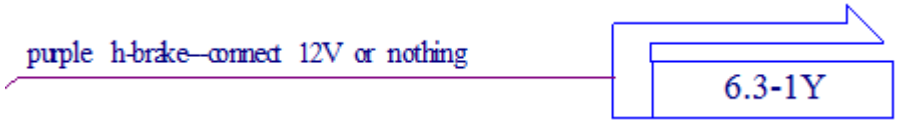
Remark: all black wire is the same point with battery negtive and all ground is the same with battery negtive.

2.1 Wiring description:

2.1.1 Orange ignition. : the wire should be connectted to battery positive.

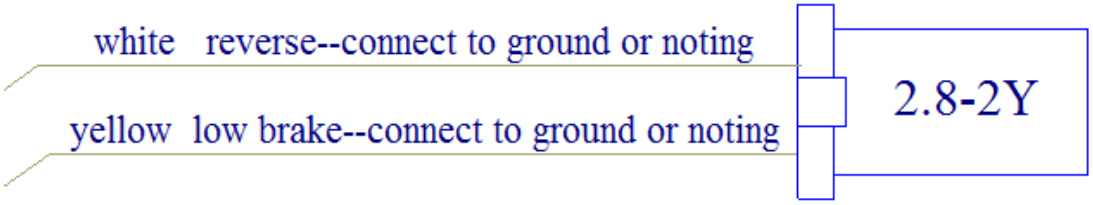


2.1.2 h-brake： if the purple wire connect to 12V，the controller enter brake status， when it disconnect with 12V，the controller quit the brake status

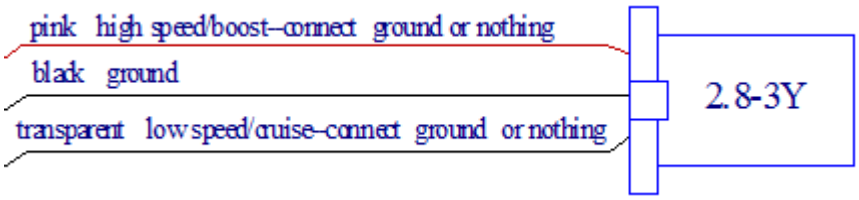


2.1.3 reverse：if the white wire connect to 0V(battery negtive)，the controller enter reverse status，twist the throttle,the motor will spin in back direction. when the white wire disconnect with 0V，the controller quit the reverse status

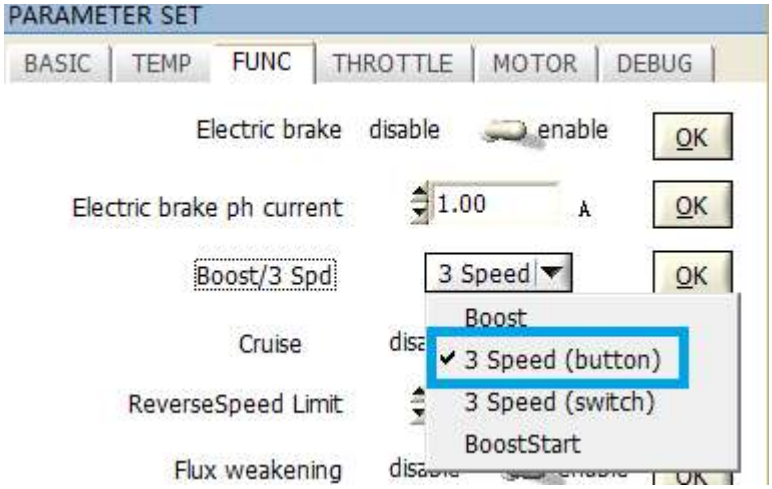
2.1.4 low brake: if the white wire connect to 0V(battery negtive)，the motor stop running



2.1.5 3 speed function



3- speed mode(Botton):



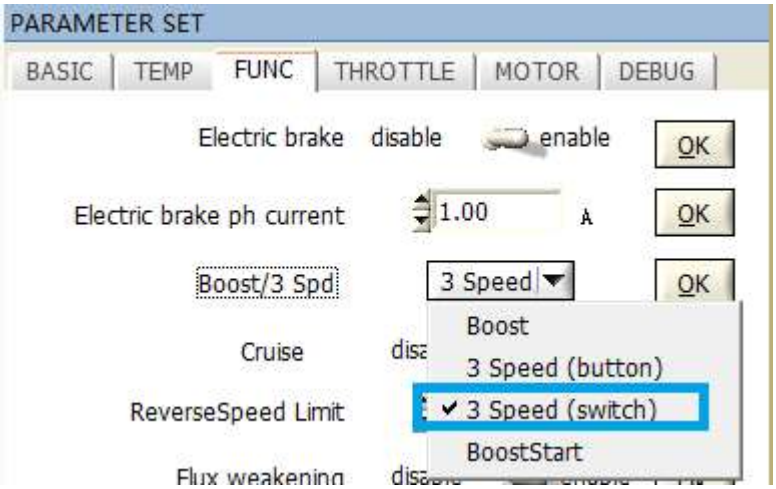
When select the 3 speed(button)in the software. use a button(which can be reset by itself) to connect the pink wire and ground wire.

push it and release ,the speed gear will change according as follows:：

3-2-1-2-3-2-1-2-3-……

When power on ,the controller is in 3 gear mode (high speed mode)

3 speed (switch)：



When select the 3 speed(switch)in the software. Use such switch to realize the 3 speed(switch) mode.

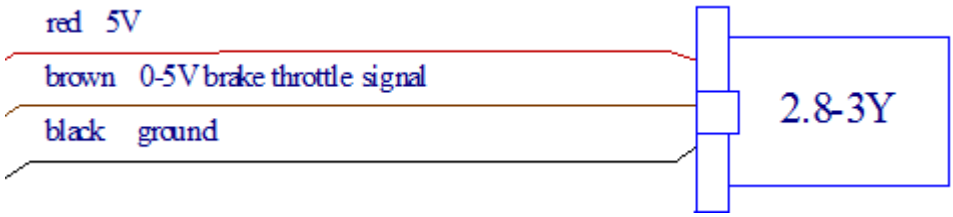
if 3 speed (switch) mode selected,

Connect the pink and ground wire. Enter high speed mode

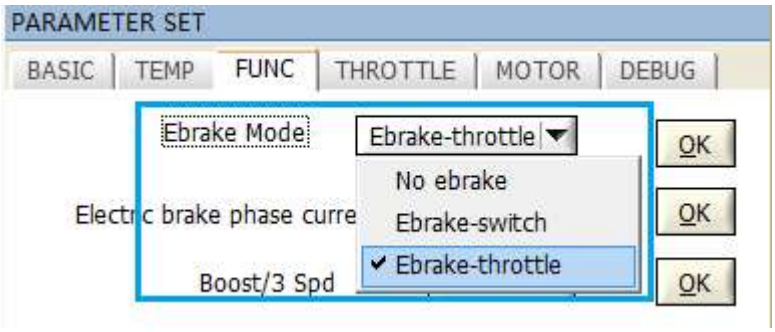
Connect the transparent and ground wire. Enter low speed mode

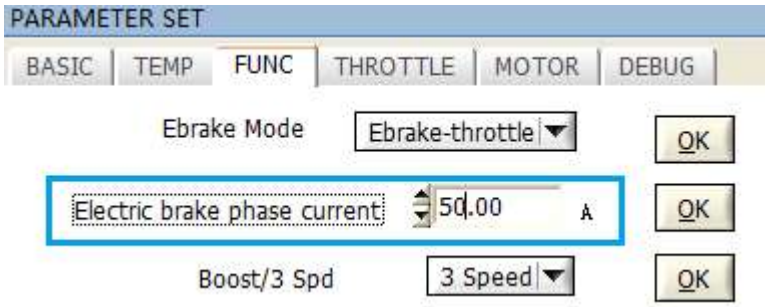
Disconnect pink ,transparent wire and ground ,enter middle speed mode

2.1.6 0-5v e-brake throttle:

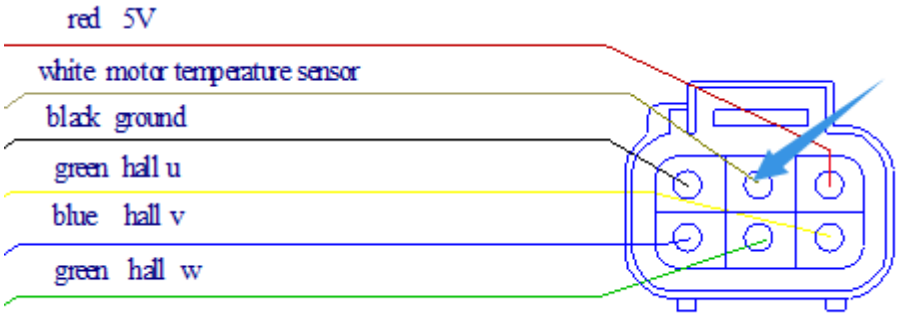


Use a seperate throttle to connect to the teminal above. Please select the “Ebrake-throttle”mode, When spin the throttle ,the controller will enter the e-brake mode , the brake strength will follow the the throttle positon. the max streng can be set from”Electric brake phase current” as following:

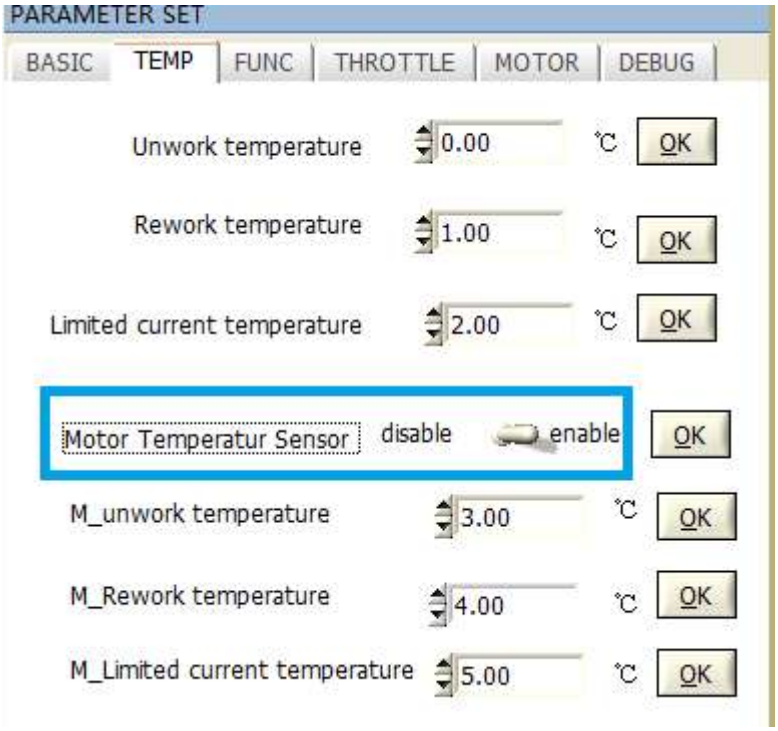




2.1.7 Motor termperature function.



The controller support kty83-121 termperature sensor from motor inside. The function can be enabled or disabled from the software.

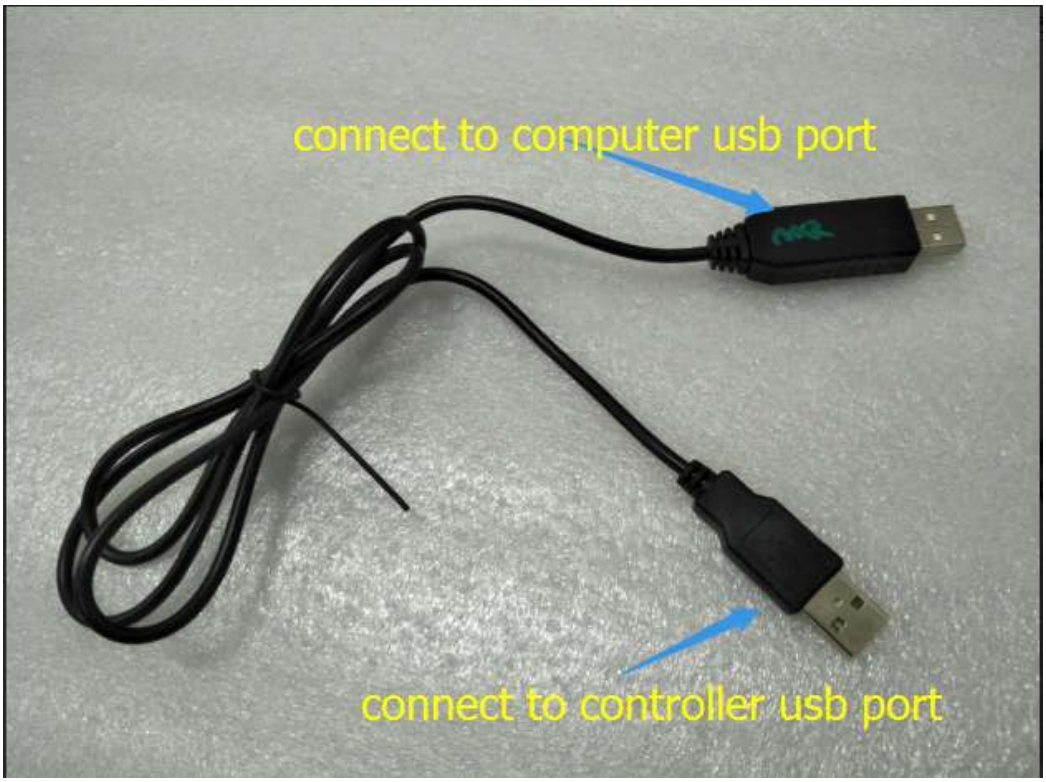


3. MQCON controller can be connected with computer by usb cable or conneted with phone by bluetooth,the computer interface is just same with the phone app interface.

3.1.1Connect with computer

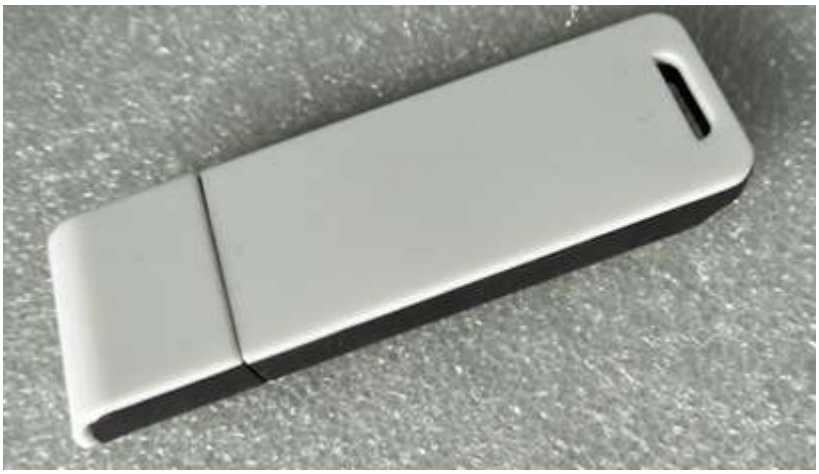
Before connected with computer ,please install usbdrive and volume software provided by the controller manufacturer

The usb cable should be connected in right way as the following picture showed:



For information about "how to use computer to set the parameters" ,pls reference the document" MQCON controller application user manual" and "MQCON(Sabvoton) FOC Controller Parameter Manual-EN"

The parameters can also be set by phone through bluethooth adapter as following.. after install the app on the phone. The controller can communicate with the phone app.

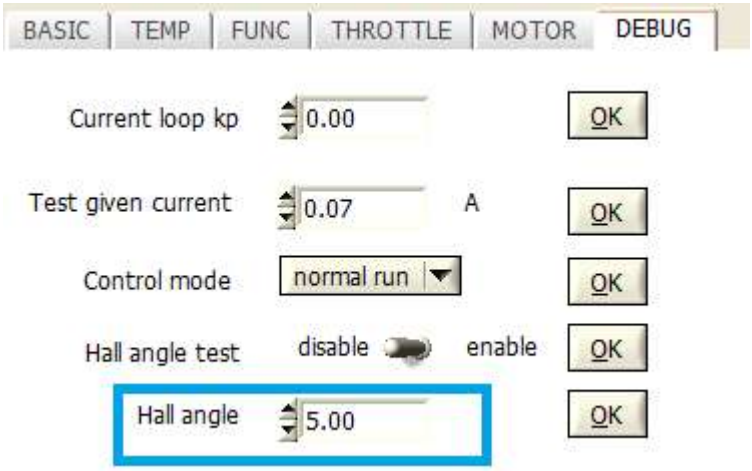


For information about "how to use phone bluethooth to set the parameters" ,pls reference the document" MQCON controller application user manual" ," MQCON bluetooth manual"and "MQCON(Sabvoton) FOC Controller Parameter Manual-EN"

4． Hall angle ---the most important parameter for MQCON controller

Different type motor should use different angle in controller. If use improper angle ,the motor may not run in best status.

When the user does not know the “hall angle ”in advance , the user should get the paramenter by using automatic testing function in the software . if the user know the parameter in advance ,just enter the right angle. ***For svmc series controller ,if used QS V1 or V2 type motor ,the hall angle is about 65. If use QS V3 type ,the angle is about 250***



More information about automatic test can be got from “MQCON Sine-wave controller HCI user manual”.

MQCON Sine-Wave Controller

HCI User Manual(For Bluetooth)

V1.0

Catalogue

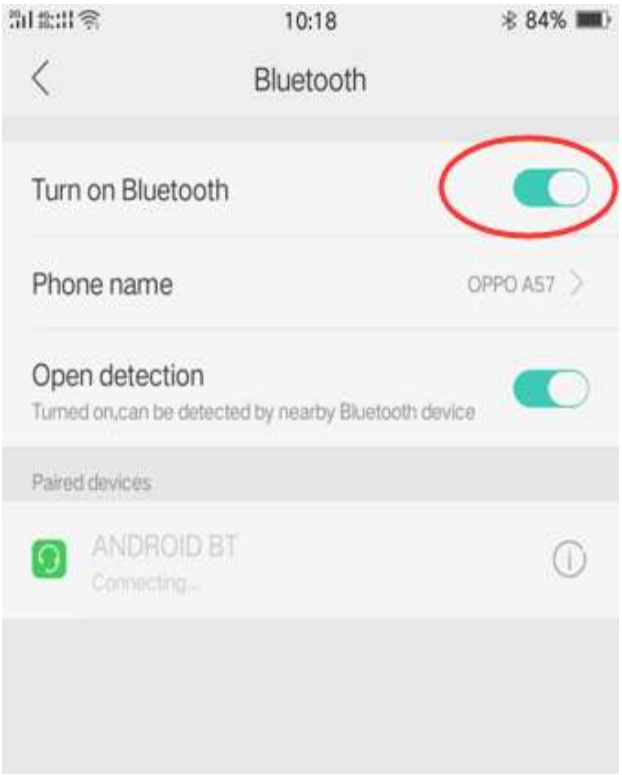
1 Soft Installation and Debugging

1.1 App Installation

If the phone system is IOS, pls download the MQCON app from apple store while search"MQCON"

If the phone system is ANDRIOD, pls download the MQCON app from http://www.mqcon.com/menu/downloads.html while search" app for Andriod phone" or ask your sales to send you the app.

2- enable bluethooth on your phone



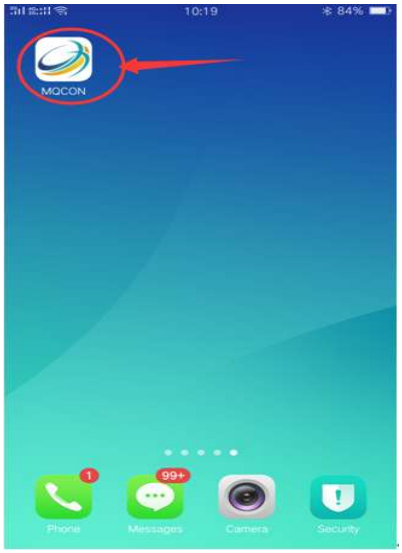
Firgure 1

(1) connect bluethooth adapter to the controller usb port.

(2) Power on the controller。

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

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



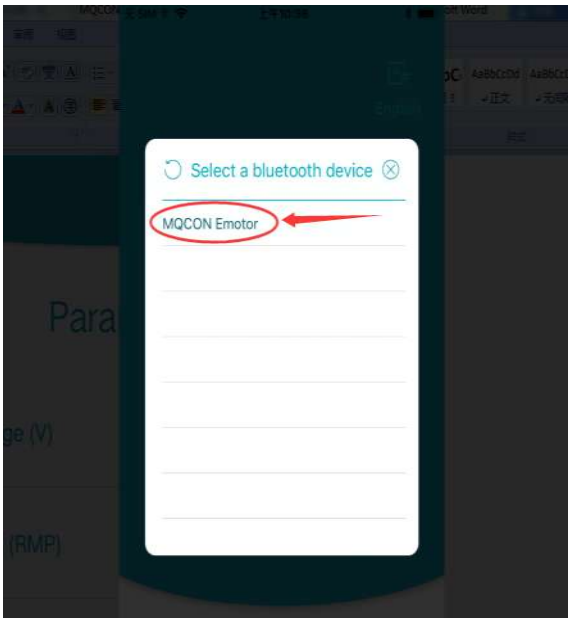
Firgure 2

（4） The **MQCON app will** open.

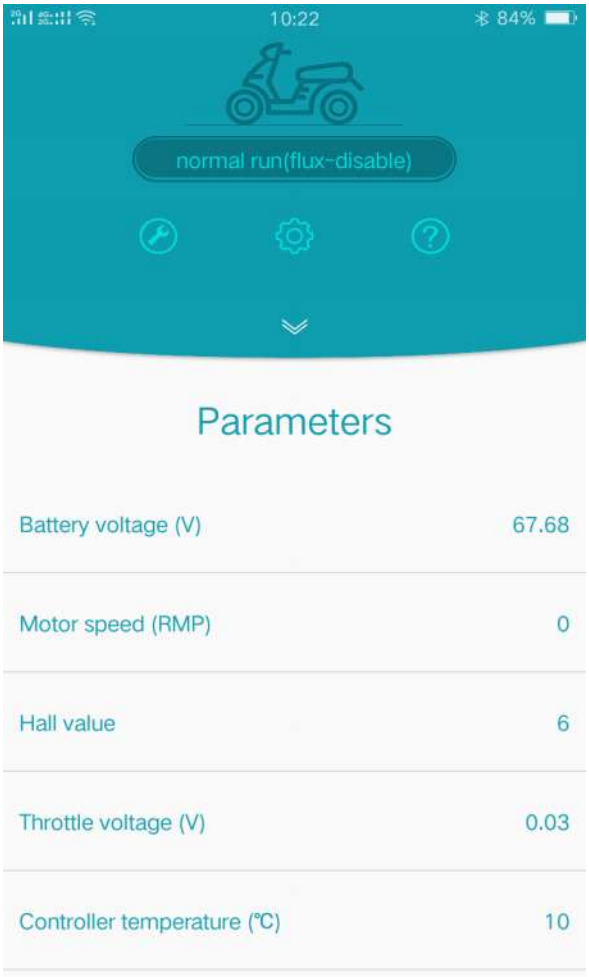
Figure 3

Click "Not connected" icon, the bluethooth adapter will be searched, select the right bluethooth as firgure 4 showed.

Waiting for about 5 seconds ,the controller will connect the phone sccessfuly



Firgue 4



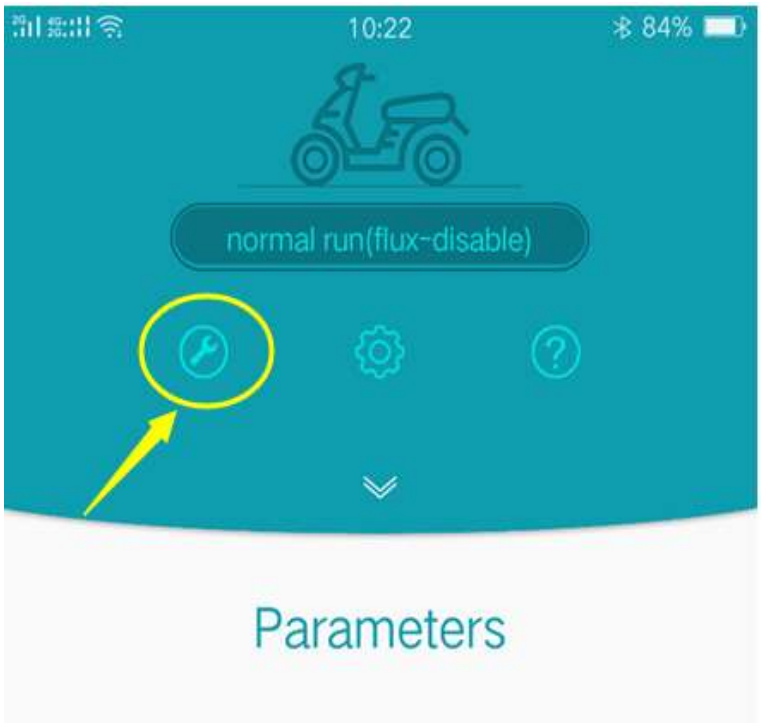
1.2 offset angle test

For MQCON controller ,the most important parameter is"offset angle" .

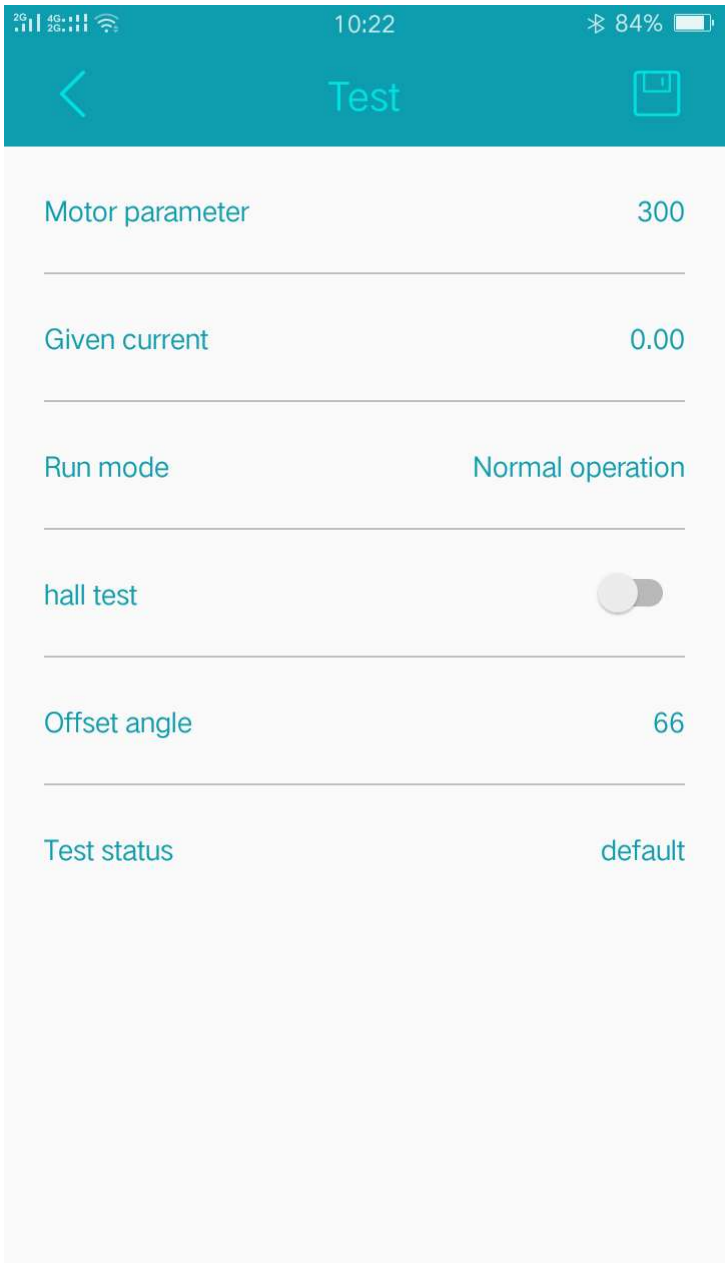
The parameter is different because hall sensor position is different. same type motors can share same parameter in controller , in the following 2 cases, the offset angle test should be done before driving.

1. The user don't know the right angle in advance.
2. When use the controller to drive a new motor firstly ,

   please test the "hall offset angle" .As the firguer 5 showed,click the debugger icon on the interface .



Firgure 5

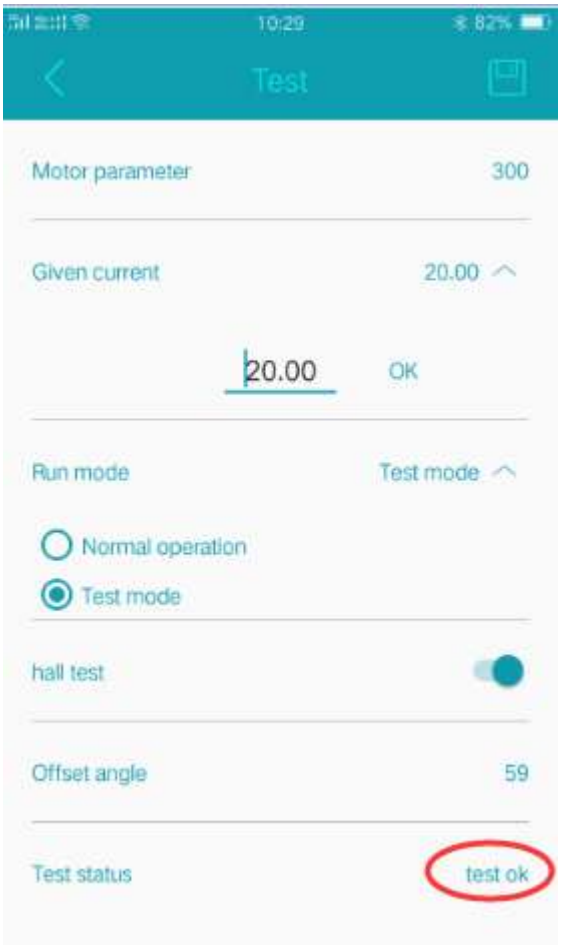


Firgure 6

Before doing the offset angle test ,make sure the motor without any load, then follow the steps as firgure 7 showed:

Firgure 7

1- Set the" Given current " about 10 A to 35A
2- Click ok
3- Click run mode
4- Select "test mode"
5- Enable "hall test"
   Then you will find the motor spin very slowly
6- The controller enter "in progress" status
7- After test finish , the motor stop spinning. if test ok, the "offset angle "will be refreshed automaticly



8- Save the final succesful "offset angle"

After the step 8 finished , rotate the throttle slowly to run the motor .

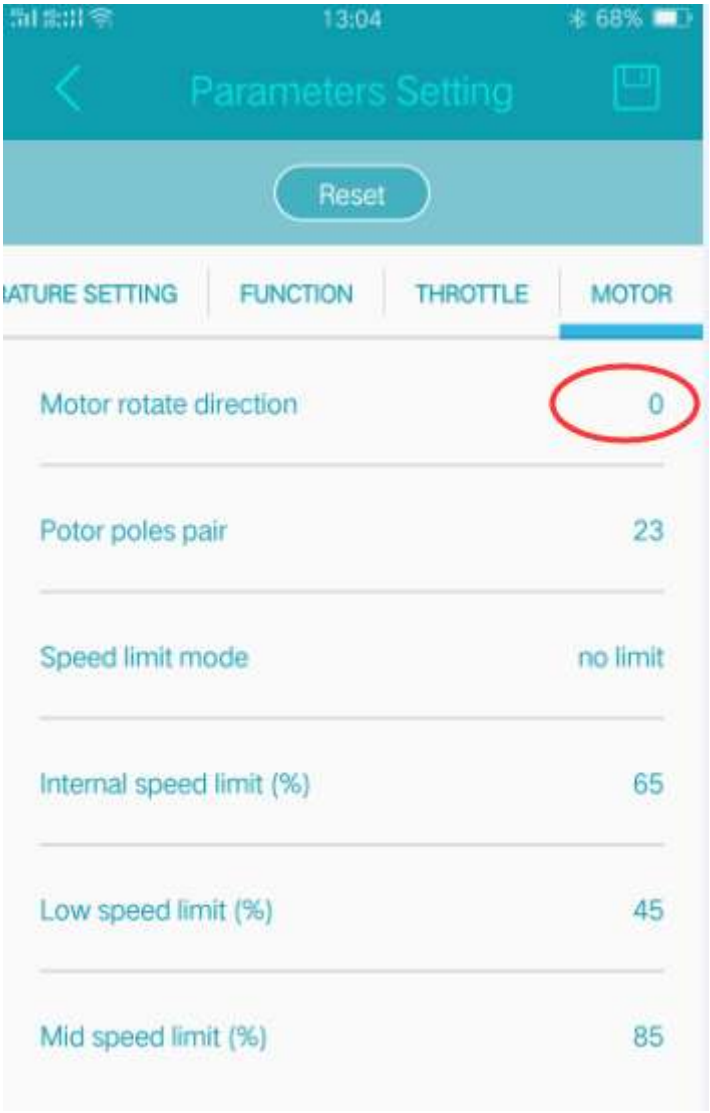
Caution:

1： the value of "***Given current***" should be under 35A. normally 15A is ok,if test failed ,please add the given current and test again.

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

3： after test , if the motor spin reverse ,just change the "motor dirction" on the app interface as following :

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



Firgure 8

4： type the right Pole pair number at the ***"motor poles pair"***， 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.

6: ***if you know the motor offset angle in advance ,just enter the right hall angel ,no need to do hall test.***

1.3 parameters setting

Category	Parameter	Remark	Unit	Range
	lack voltage	when battery volt is lower than the value, the controller enter lack volt fault status	V	According the controller type
	Current limit voltage	When the battery volt is lower than the value ,the controller will limit output current	A	It is about 2V higher than the lack voltage

	over voltage	when battery volt is higher than the value, the controller enter over volt fault status	V	According the controller type
	Dc current	Max dc limit current in nomal mode	A	According the controller type
	Boost 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
FUNC	E-brake	If it is enabled ,the controller enter electric brake status when the brake signal is valid	0：disable 1：enable	0,1
	E- brake 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
	reverse speed limit	When motor reverse , the max reverse sped is limited to the value	A	0~100
	flux weaken enable	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
	Regenen enable	If it is enable ,the slide recharge function is valid	0：disable 1：enable	0,1
	regenen current	When controller enter slide recharge status, the battery is recharged , the value indicate the max charged current	A	0~60
	regen start 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
	Throttle mid voltage	It set the mid voltage for the throttle mid positon	v	Normally about 2.5V
	Throttle mid current	It set the output phase current for the mid position of the throttle	A	Nomally about half of the max phase current
Motor	Motor rotation direction	It adjust the motor spin direction		0,1
	Motor pair poles	It is accoroding the motor		
	Speed limit mode	Select speed limit mode		
	Internal speed limit	While select internal speed mode ,this value will decide the max motor speed		0~100
	Low speed limit	It is valid in 3 speed mode		0~100
	Mid speed limit	It is valid in 3 speed mode		0~100

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- if motor direction is 0, "accelerate time" determine the response time for the controller to response the throttle output during the ***accelerate*** process

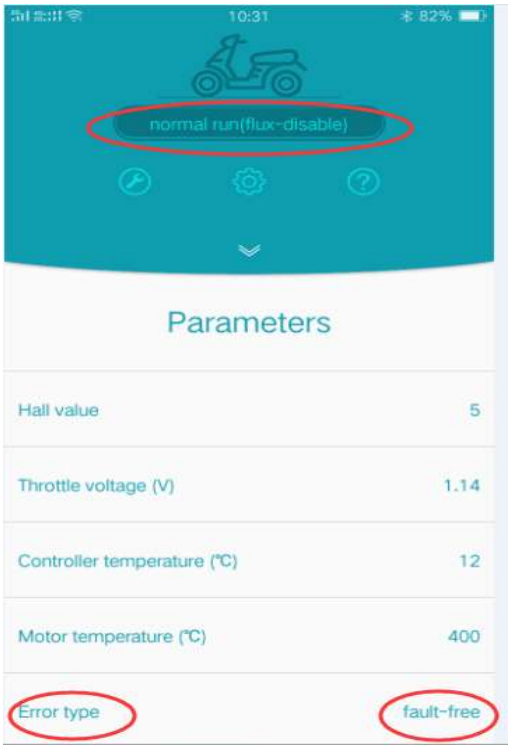
if motor direction is 1, "accelerate time" determine the response time for the controller to response the throttle output during the ***decelerate*** process

5- if motor direction is 0, "decelerate time"determine the response time for the controller to response the throttle release during the ***decelerate*** process

if motor direction is 1, "decelerate time"determine the response time for the controller to response the throttle release during the ***accelerate*** process

2 Fault Information

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



NO error information

hall error information

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

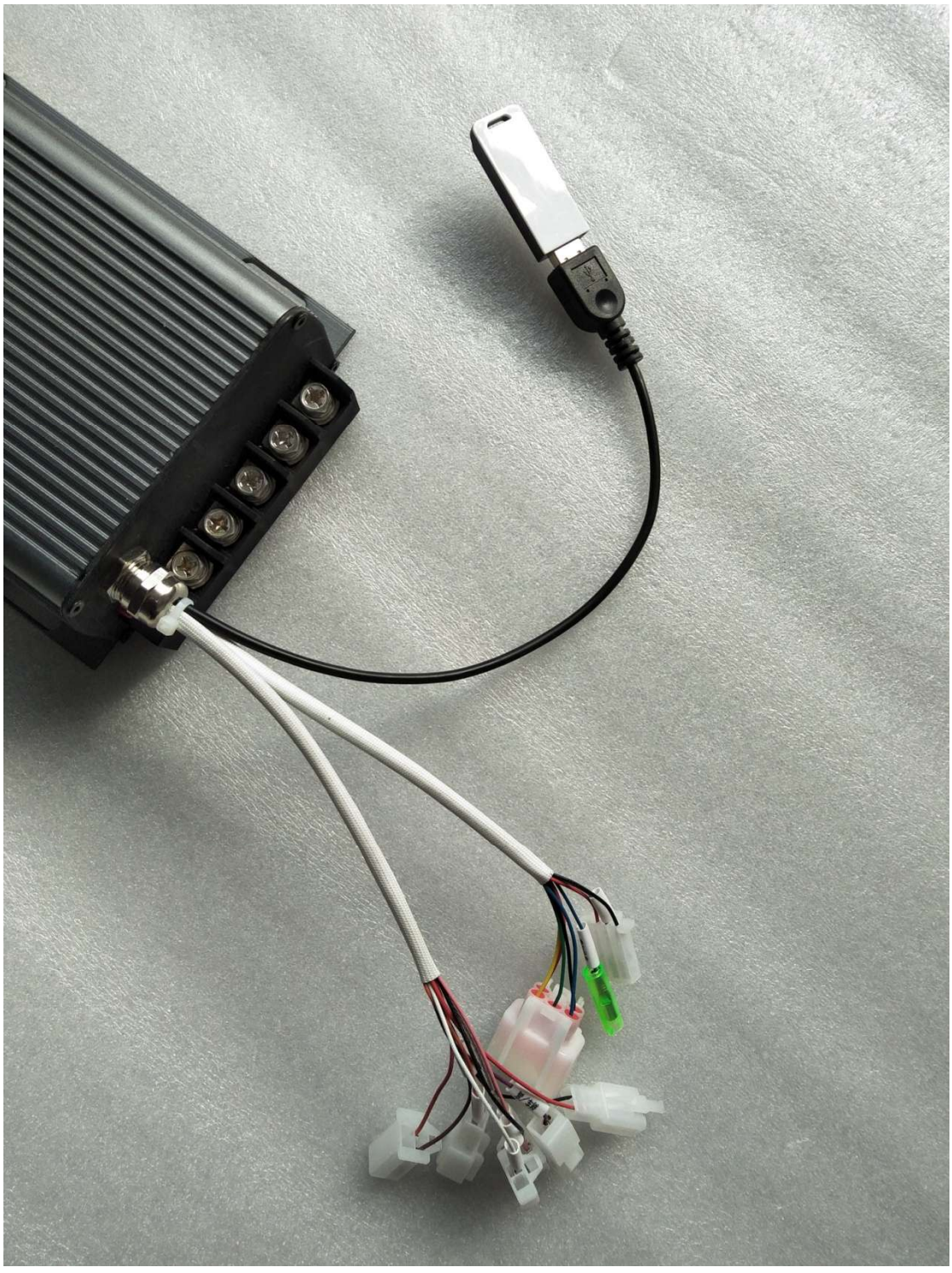
MQCON bluetooth manual

一、 Install MQCON app on your phone

For ios ,please download the app from apple store while search”MQCON”

For andriod ,please download from www.sabvoton.com or send email to your sales to get the app.

二、Connect the bluetooth with the controller usb port:

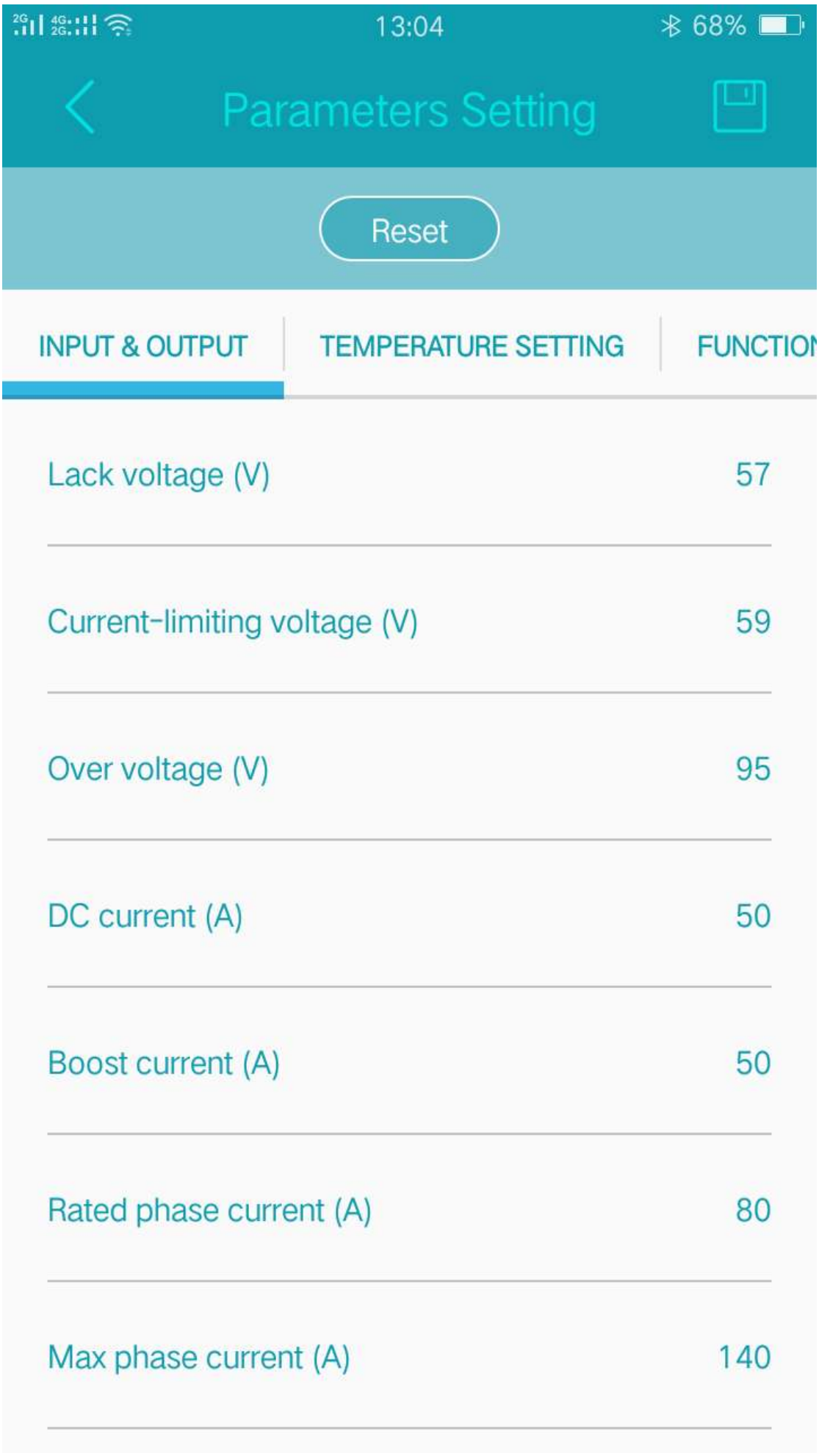


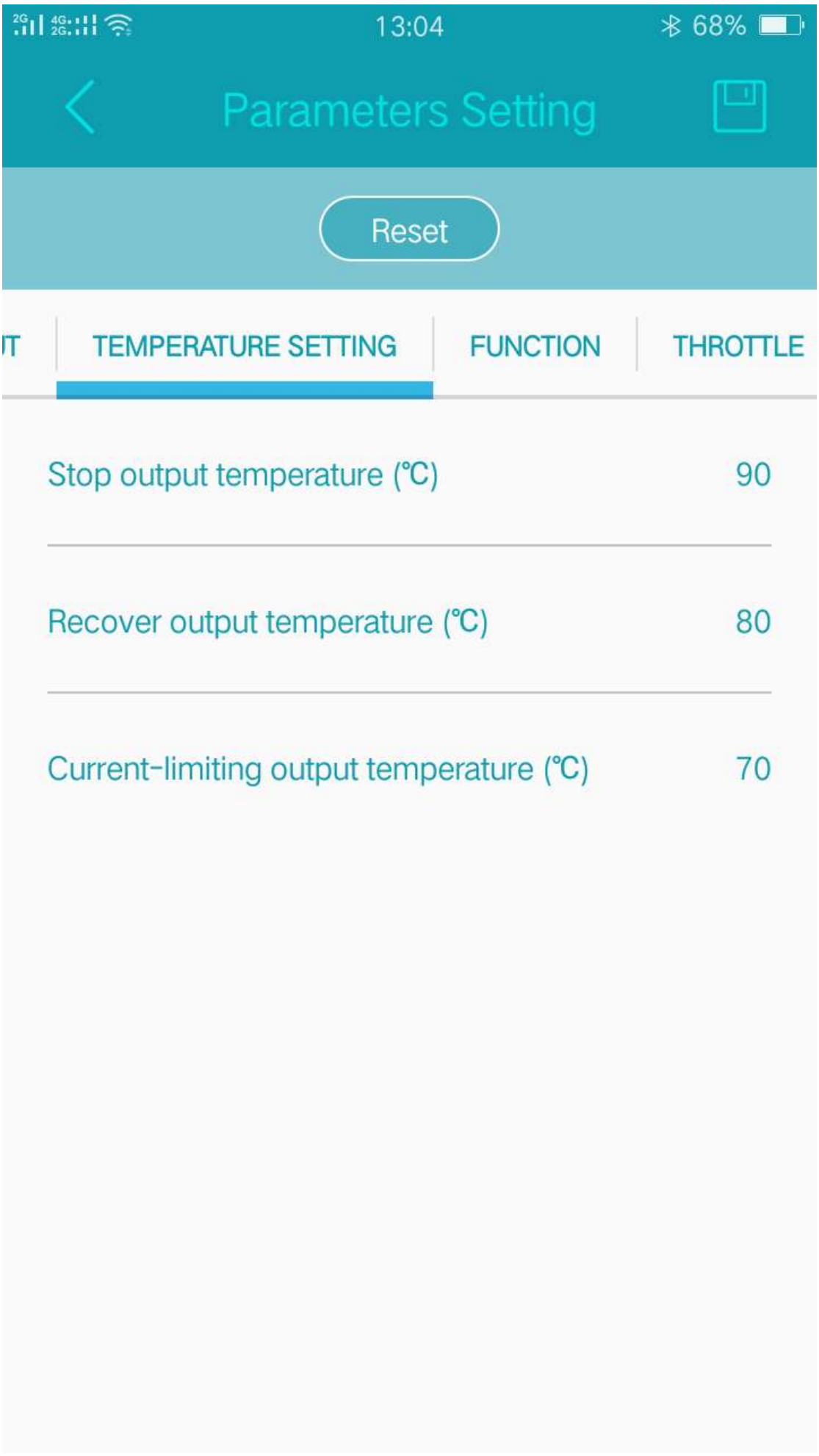
三、Power on the controller, open the bluetooth on your phone and seach the instrument.
Open the MQCON app ,then you can set the parameter of the controller

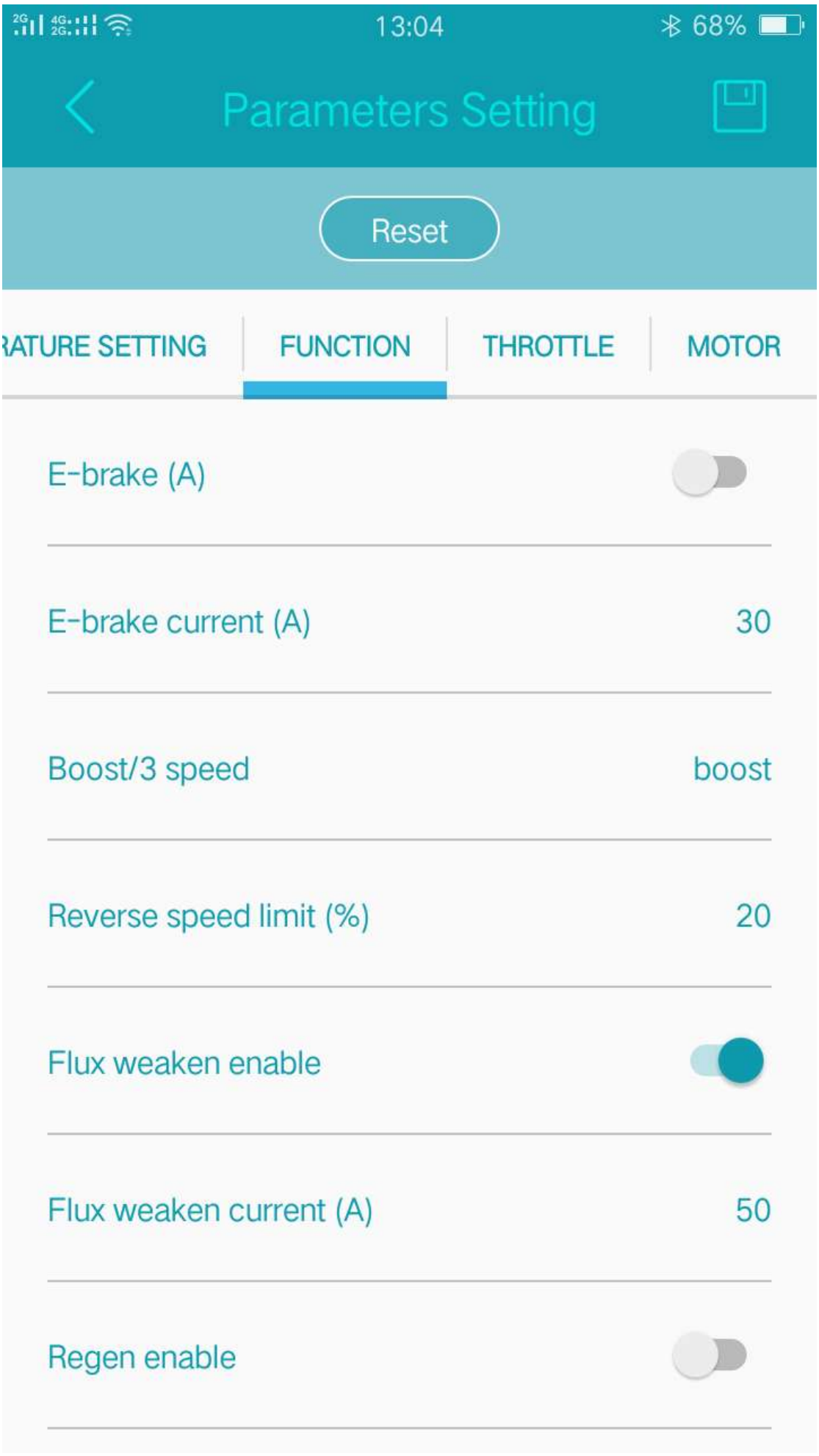
四、The following is the pictures for the interface of the app：

Parameters

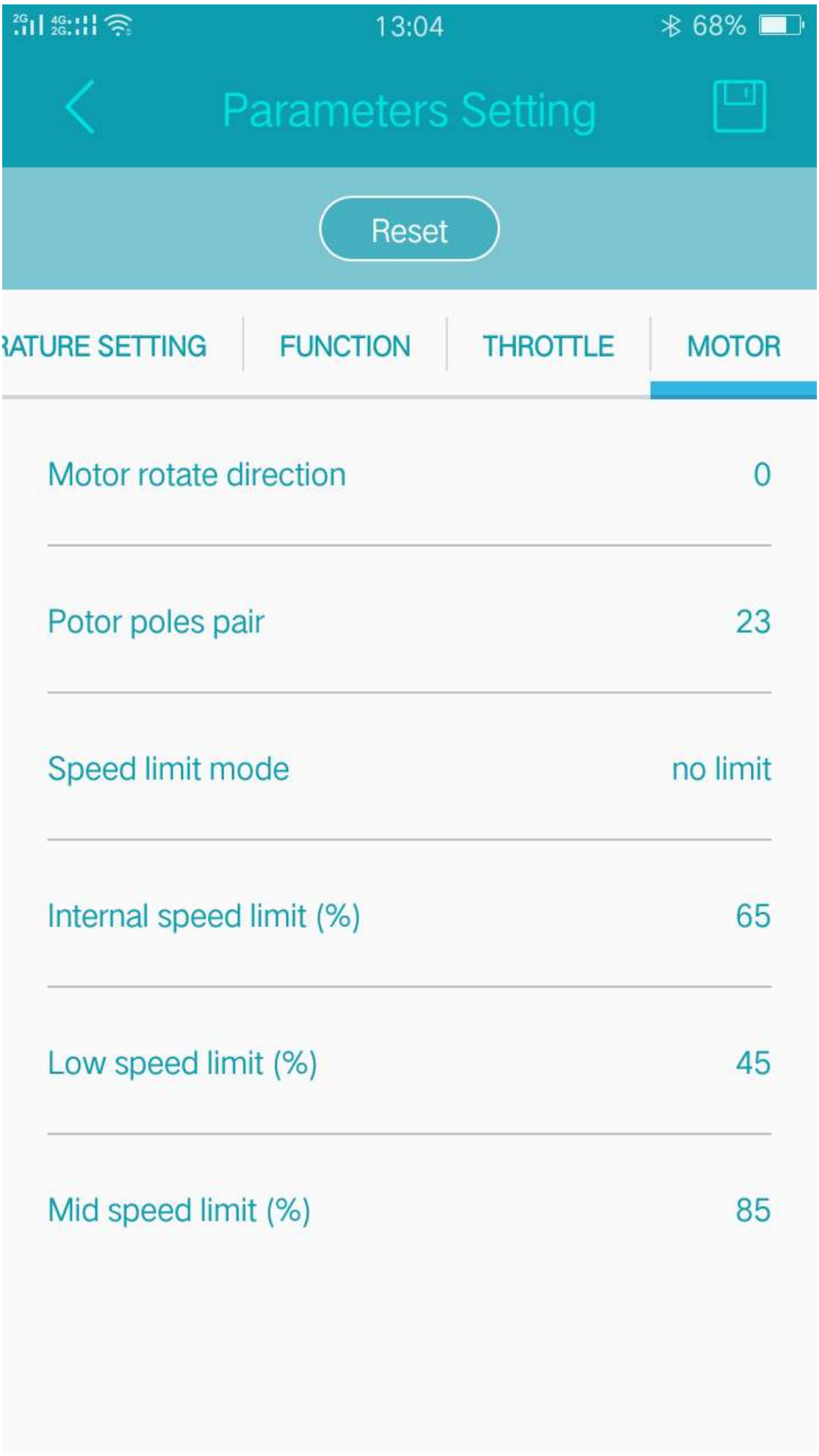
Battery voltage (V)	62.61
Motor speed (RMP)	0
Hall value	1
Throttle voltage (V)	0.02
Controller temperature (℃)	6

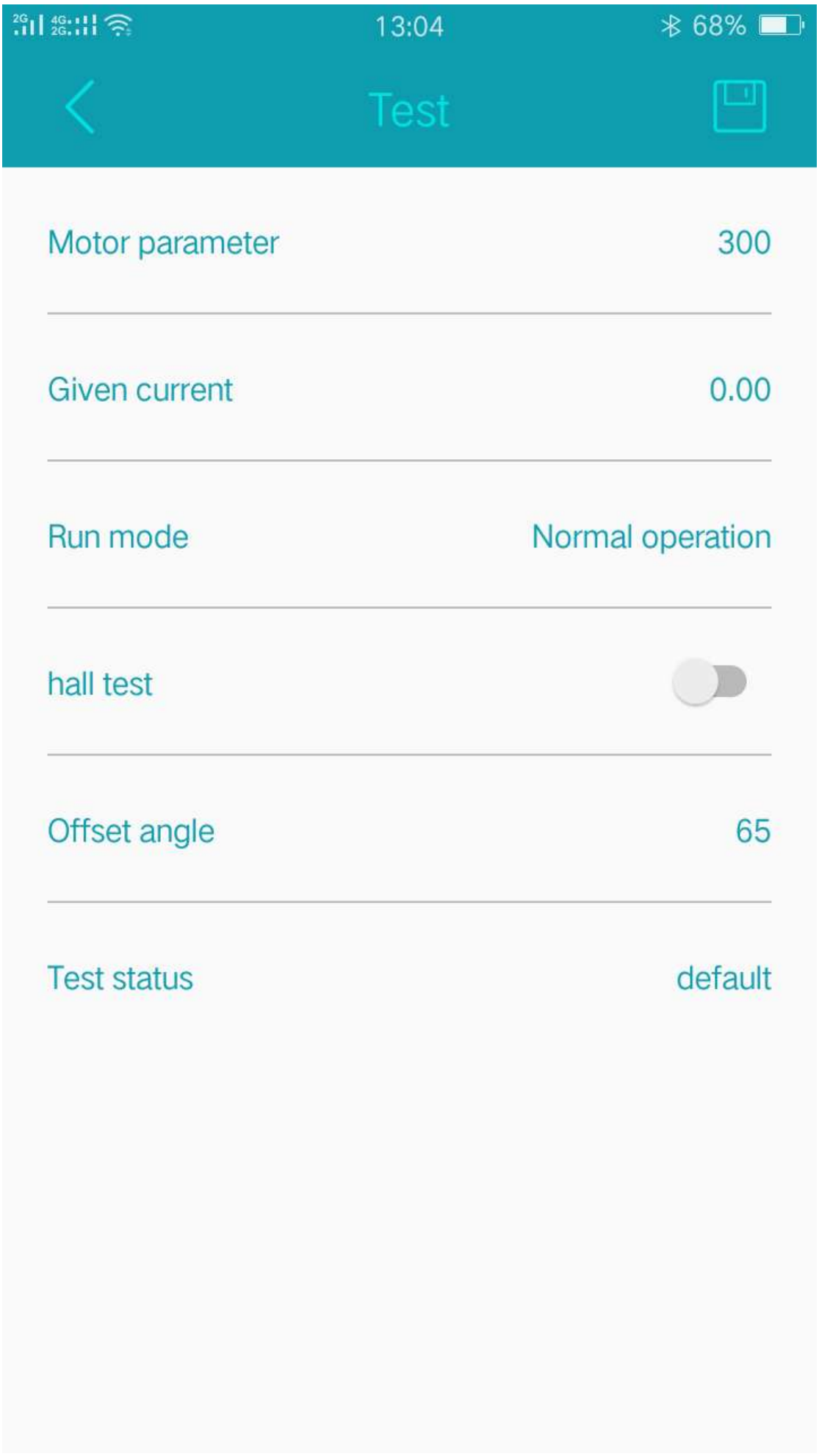

13:04
68%
Parameters Setting
Reset
INPUT & OUTPUT
TEMPERATURE SETTING
FUNCTION
Lack voltage (V) 57
Current-limiting voltage (V) 59
Over voltage (V) 95
DC current (A) 50
Boost current (A) 50
Rated phase current (A) 80
Max phase current (A) 140


13:04
68%
Parameters Setting
Reset
IT
TEMPERATURE SETTING
FUNCTION
THROTTLE
Stop output temperature (℃)
90
Recover output temperature (℃)
80
Current-limiting output temperature (℃)
70


13:04
68%
Parameters Setting
Reset
RATURE SETTING
FUNCTION
THROTTLE
MOTOR
E-brake (A)
E-brake current (A)
30
Boost/3 speed
boost
Reverse speed limit (%)
20
Flux weaken enable
Flux weaken current (A)
50
Regen enable


13:04
68%
Parameters Setting
Reset
RATURE SETTING
FUNCTION
THROTTLE
MOTOR
Throttle min voltage (V)
2.50
Throttle max voltage (V)
4.40
Accelerate (ms)
200
Decelerate (ms)
300
Throttle mid voltage (V)
2.30
Throttle mid current (A)
70


13:04
68%
Parameters Setting
Reset
RATURE SETTING
FUNCTION
THROTTLE
MOTOR
Motor rotate direction
0
Potor poles pair
23
Speed limit mode
no limit
Internal speed limit (%)
65
Low speed limit (%)
45
Mid speed limit (%)
85


13:04
68%
Test
Motor parameter
300
Given current
0.00
Run mode
Normal operation
hall test
Offset angle
65
Test status
default