

1. If Yuyangxing controller didn't include bluetooth adapter, the parameters of controller cannot program. Because there is no software for computer type.
2. Pls. download the bluetooth app from your phone App store directly. Search "yuyangxing" or "Emotor", "Emotor" is newest one , then you will find this one , download it and operated according to " Bluetooth APP Manual"

connect password: 12345678




If more questions, pls. contact with us/sales:

sia@tzquanshun.com

本应用程序是需要配合宇扬科技的“宇扬星”系列控制器(蓝牙版)使用。

This APP matches with “YUYANGKING” controllers (Bluetooth version) of Yu Yang Tech.

在手机的应用程序列表中点击宇扬星 APP 助手图标 ，运行 APP 后出现下列页面：

Click YUYANGKING APP icon  in the APP list of iPhone. The following interface appears after running APP.



该页面是宇扬星系列控制器的工作状态页面，可显示工作中的控制器的多种状态。

This is working status interface of YUYANGKING controllers, which can display various working statuses of controllers.

- **当前速度:** 显示以车轮为计算单位的车辆当前运行速度, 单位是公里/每小时 (注 1)
- **Speed:** Display real-time running speed (Km/m) calculating as per wheel.(Note 1)
- **运行模式:** 显示控制器当前的运行模式如: 重载模式, 普通模式, 省电模式。
- **Running Mode:** Display the driving mode of controllers, like overload mode, normal mode and ECO mode.
- **工作状态:** 显示控制器当前运行于有霍尔或是无霍尔状态。
- **Working Status:** With or without sensor.
- **故障指示:** 显示控制器自身运行过程中有无不正常状态, 比如有霍尔变为无霍尔, 欠压, 过流, 堵转, 缺相, 过温, 刹车, 转把故障等
- **Error Indicator:** Display abnormal status, such as with hall changes into without hall, undervoltage, overcurrent, stall, phase loss, over-temp, brake and throttle errors.
- **电瓶电压:** 显示当前控制器工作电压 (电瓶电压)。(注 2)
- **Battery Voltage:** Display real-time controller working voltage(battery voltage).(Note 2)
- **当前电流:** 显示当前控制器母线工作电流 (电瓶电流)。(注 2)
- **Battery Current:** Display real-time controller busbar working current(battery current) (Note 2)
- **控制器内部温度:** 显示当前控制器内部电路的工作温度。(注 2)
- **Controller temperature:** Display working temp of inside circuit.(Note 2)
- **单次行驶里程:** 显示车辆从电门锁打开到关闭这段时间车辆行驶的距离, 以公里为单位。(注 1)
- **Single Trip Distance:** Driving distance from power switch turning on to turning off(Km).(Note 1)
- **控制器型号:** 显示通过蓝牙连接到 APP 的宇扬控制器的内部型号。进入状态页面时, 首先看此控制器是否为用户正在进行蓝牙链接的宇扬控制器, 如果该项目为空白则说明与宇扬星控制器的链接有问题, 需要重新进行连接。
- **Contoller Model:** The inside model of YUYNAG controller connecting to APP through Bluetooth. First watch if it is YUYANG controller which user is connecting through Bluetooth from the status interface. If blank page, there must be something wrong with connection. Pls reconnect.

注 1: 需要进行车轮的标定, 以适应不同轮径的车辆。

Note 1: Pls calibrate the wheel to adapt to vehicles with different wheel diameters.

注 2: 可能有少量误差。

Note 2: Little tolerance is allowed.

位于工作状态页面右上角的“设置”按钮是用于进行宇扬星无刷电机控制器内部运行参数的设定, 该设定必须在**控制器完全停止电机驱动工作时才能进行**。由于 APP 是适用于所有宇扬星系列无刷电机控制器的, 所以在设置页面的项目并不是每个型号的控制器的支持, 虽然在 APP 的设置页面对当前已经连接的控制器进行了某个项目的设置并发送成功, 但控制器如果不接受该项目设置, 就会返回设置前的参数, 即该参数没有变化未被设置。进入“设置”页面后, 显示如下页面, 用户进行设置后, 点击下方的**发送指令**键即可完成对控制器的内部参数设置:

The “Configuration” button on the top right corner is used to set inside parameters of YUYANGKING brushless motor controller. **The motor must stop driving controller when setting.** APP is suitable for all YUYANGKING brushless motor controllers, but not all controllers include all the programs in the setting interface. Sometimes in APP setting interface, set some programs of the connecting controller and submit successfully. But if the controller doesn't accept this setting, the parameters can be changed. After entering the following interface, begin to set. Click **Save Changes** to finish setting.

返回

Back

YYSoft

TX

0

硬启动

Fast Start

5 >

软启动

Soft Start

关闭 >

On / Off

超速开关

Overdrive On/Off

关闭 >

On / Off

旋转方向

Forward / Reverse

反向 >

Fwd 正 / Rev 反

手动巡航

Manual Cruise



自动巡航

Auto Cruise



限速

Speed Limit

关闭 >

Close

倒车速度

Reverse Speed Limit

50% >

断开设备

Disconnect

发送指令

Save Changes

标定

Calibrate Speedometer

关于

About



- **硬启动:** 显示控制器启动时的启动模式及幅度调节, 快速启动调节级数为 10 级, 越大越快。进入硬启动调节项目后, 显示如下子页面, 可以进行硬启动功能的开关和硬启动功能的幅度调节。
- **Fast Start:** Display the start mode and range adjustment of controller while starting. The range is

divided into 10 grades. The higher, the faster. Entering the following interface, fast start can be set, turn on or off and turn up or down.

注意：软硬启动同时打开，硬启动优先。

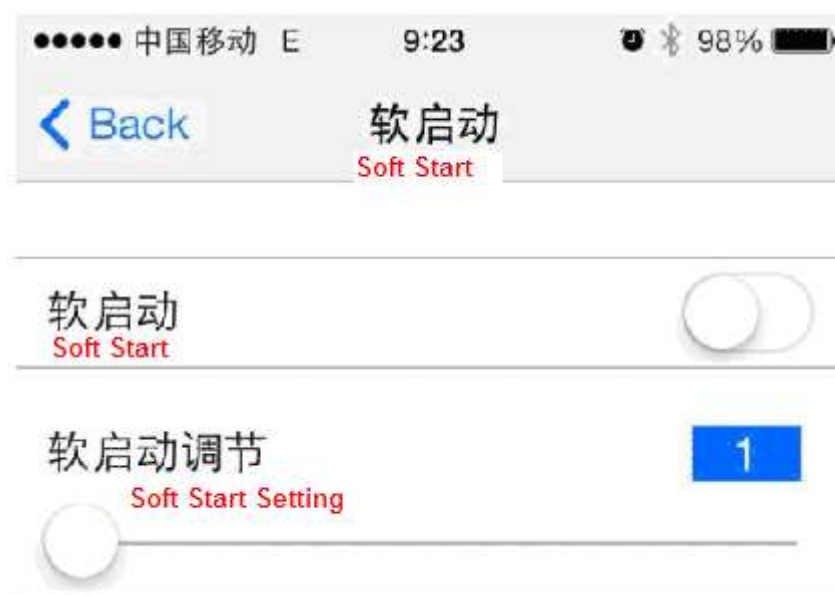
Note: Fast start has priority while opening at the same time as soft start.



- **软启动:** 显示控制器启动时的启动模式及幅度调节，缓启动调节级数为 10 级，越大越慢。
- **Soft Start:** Display the start mode and range adjustment of controller while starting. The range is divided into 10 grades. The higher, the slower.

进入软启动调节项目后，可以进行软启动功能的开关和软启动功能的幅度调节。

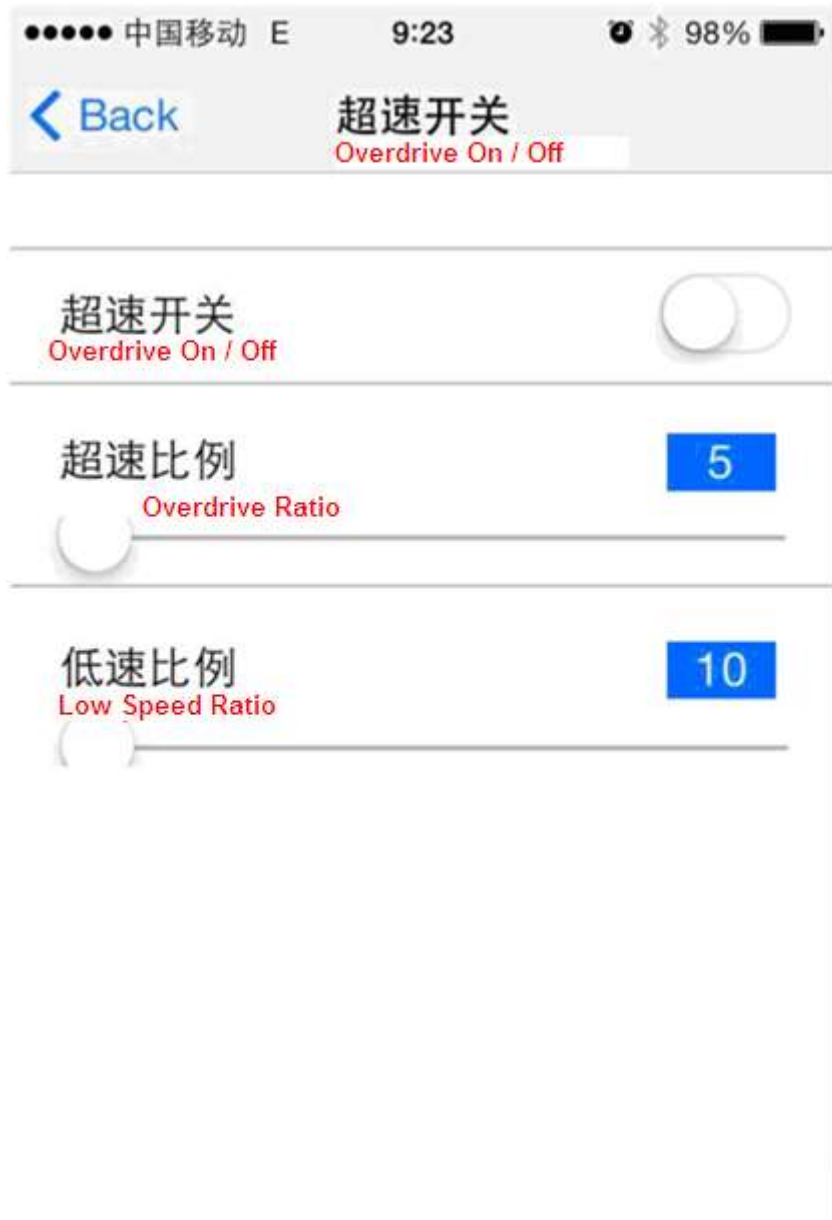
Entering the following interface, soft start can be set, turn on or off and turn up or down.



- **超速开关:** 弱磁超速级别（10 级），越大越快，即直接提速 120%~130%。低速比例，一档的速度比例（10%~80%），需要配合低速开关使。
- **Overdrive ON/OFF:** Weak magnetic overdrive grades (10 grades). The higher, the faster. That's to say,

speed up to 120%~130%. Low speed ratio, speed ratio of first gear (10%~80%) ,matching with low speed switch.

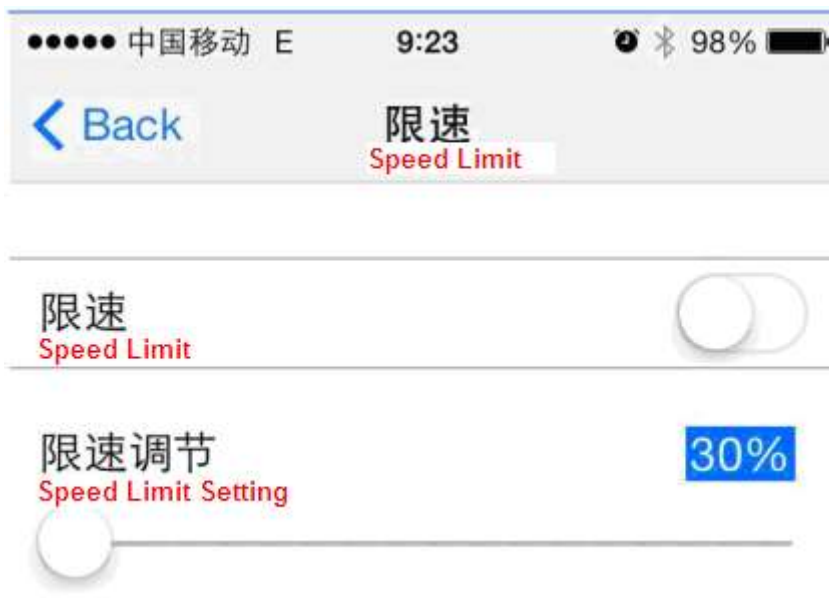
Entering the following interface, Overdrive ON/OFF, Overdrive ratio and Low Speed Ratio can all be set, turn on or off and turn up or down.



- **旋转方向:** 电机正向旋转和反向旋转选择，行驶中请勿切换。
Rolling direction: Shift the motor rolling direction to clockwise or anticlockwise. Shift operation isn't allowed when running

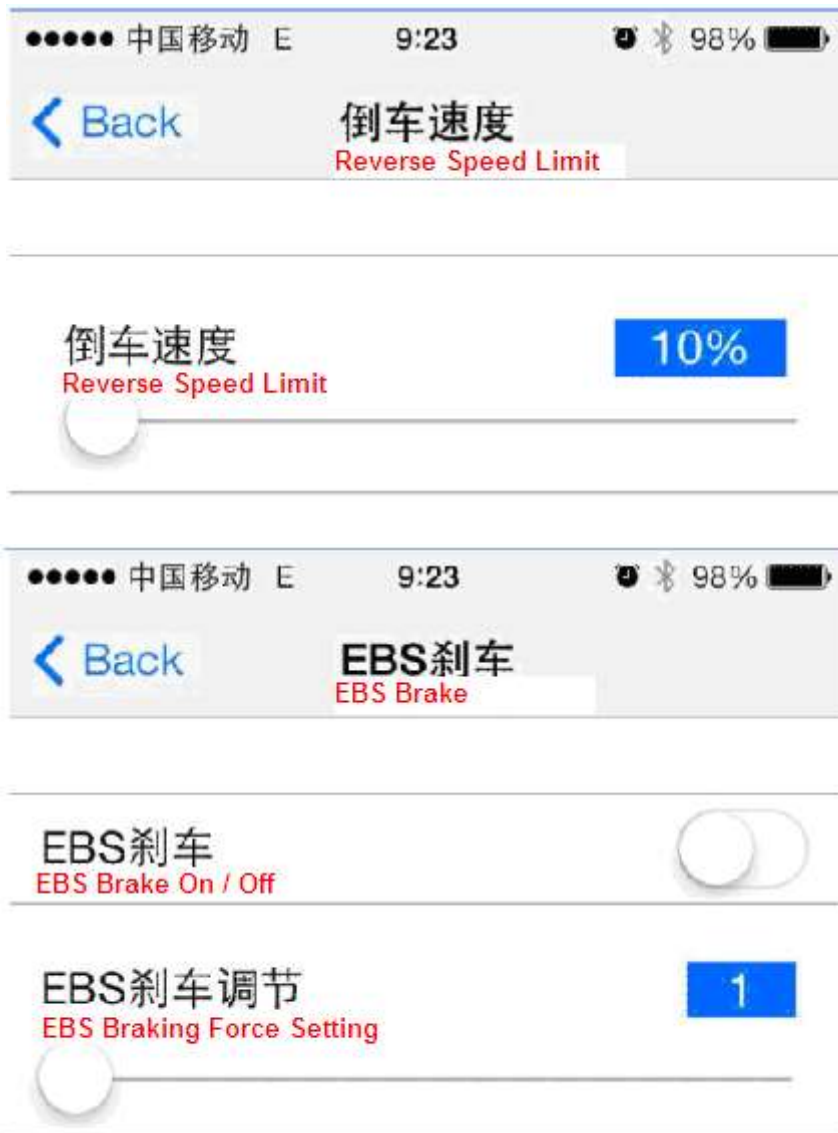


- **手动巡航:** 打开关闭手动巡航按键，控制器保持当前速度运行，需要配合手动按键。
- **Manual Cruise:** Turn on or off the button of manual cruise. The controller keeps the real-time speed, matching with manual button.
- **自动巡航:** 打开自动巡航键或保持转把 8 秒后进入控制器自动巡航状态，若手动巡航打开则自动巡航无效。
- **Auto Cruise:** Turn on the button of auto cruise or keep hold of the throttle for 8 seconds, auto cruise begins. If manual cruise turns on, auto cruise will be invalid.
- **限速:** 调节车辆的最高速度（30%~60%），限速太低会影响启动力矩。
- **Speed Limit:** Adjust the highest speed（30%~60%）of vehicle. Too low speed limit affects starting torque.

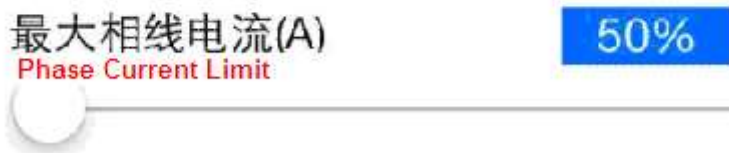
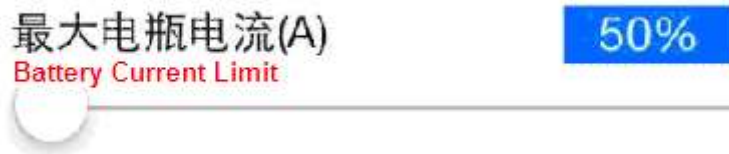


- **倒车速度:** 调节倒车状态下的最高车速（10%~100%），速度太低会影响倒车启动力矩。
- **Reverse Speed Limit:** Adjust the highest speed（10%~100%）of reverse. Much too low speed affects reverse torque.
- **EBS 刹车:** 电子刹车强弱范围（10 级），越大越强，需要配合刹车功能。
- **EBS Braking Force:** Intensity range of electronic braking(10 grades). The higher, the stronger, matching

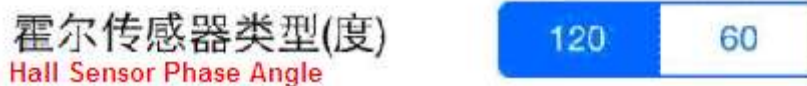
with braking function.



- 最大电瓶电流 (A): 调节电瓶最大输出电流 (50%~100%), 过小会影响启动力矩。
- **Battery Current Limit(A):** Adjust the max output current of battery (50%~100%) . Too small output current affects starting torque.
- 最大相线电流 (A): 调节电机相线最大电流 (50%~100%), 过小会影响启动力矩。
- **Phase Current Limit(A):** Adjust the max phase current of motor (50%~100%) . Too small phase current affects starting torque.



- **霍尔传感器类型 (度):** 电机霍尔的安装角度选择 (120 度或 60 度), 若选错配相会不成功。
- **Hall Sensor Phase Angle(Degree):** Motor hall installation angle(120° or 60°). Phase can't be matched if choose wrong angle.



- **省电模式:** 启动时电流均会变小, 适合小容量电瓶使用, 节能增加里程。
- **ECO Mode:** After starting, all current becomes weak. It is suitable for small battery to increase mileage.
- **S 曲线调速:** 启动线性控制和非线性控制选择, 增加低速的操控性。
- **Adjust Throttle Curve:** Start linear control and nonlinear control shift, increasing controllability of low speed.

- **BOOST 开关:** 强力模式输出，扭矩增大 20%，控制器温度超过 80 度会自动关闭。
- **Power BOOST:** High power mode output, torque increases by 20%. Auto shut off while controller temp exceeds 80°C.
- **欠压调节:** 调整控制器的欠压保护电压，电瓶达到此电压，控制器进入停机保护状态，调节范围由控制器自身设定决定。
- **Low Voltage Cutoff:** Adjust cut-off voltage of controllers. When the battery reaches this voltage, controller stops working and protects itself. Adjusting range depends on the controller setting.



- **防盗:** 手动开启锁电机模式，此模式下车辆无法被推走，断电会记忆此状态，下次上电仍旧处于防盗模式，除非在 APP 中关闭此功能，必须在电门锁打开状态下使用。
- **Anti-theft:** Manual start **Lock the motor** mode so that the vehicle can't be moved. This mode is kept even power off until power on next time, unless shut down by APP, being used when the power switch turns on.
- **恢复初始设置:** 恢复控制器出厂设置。
使用该选项将把控制器内部参数恢复到出厂配置，所有用户调好的参数将被工作设置参数覆盖。点击后会要求再次确认，确认后直接发送，无需再点击发送键
- **Restore Factory Settings:** Restore controller's original factory settings.
Controller's inside parameters will be restored to original factory settings. All adjusting parameters will be substituted with factory setting parameters. Double confirm after clicking and send directly without clicking send button.

返回



TX

0

最大相线电流(A)

50% >

Max phase current

霍尔传感器类型(度)

120 >

Hall sensor type(degree)

省电模式 ECO mode

你确定恢复初始设置吗?
Do you want to restore factory settings?

取消

No

确定

Yes

欠压调节

42 >

Under voltage rates setting

防盗

Anti-theft

恢复初始设置

Restore initial setting

连接设备

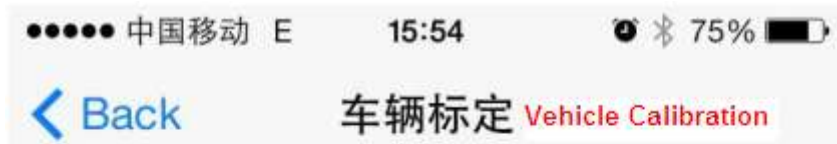
发送指令

标定

关于



- **标定:** 在相同的转速下，由于车辆轮径不同，其速度也不同，本设置用于适配车轮的大小以便达到计算车辆的行驶速度和行驶里程。
- **Calibrate Speedometer:** At the same rotary speed, the speed is different as per different vehicle wheel diameter. The setting is used to adapt the size of vehicle wheel to calculate the driving speed and driving distance.



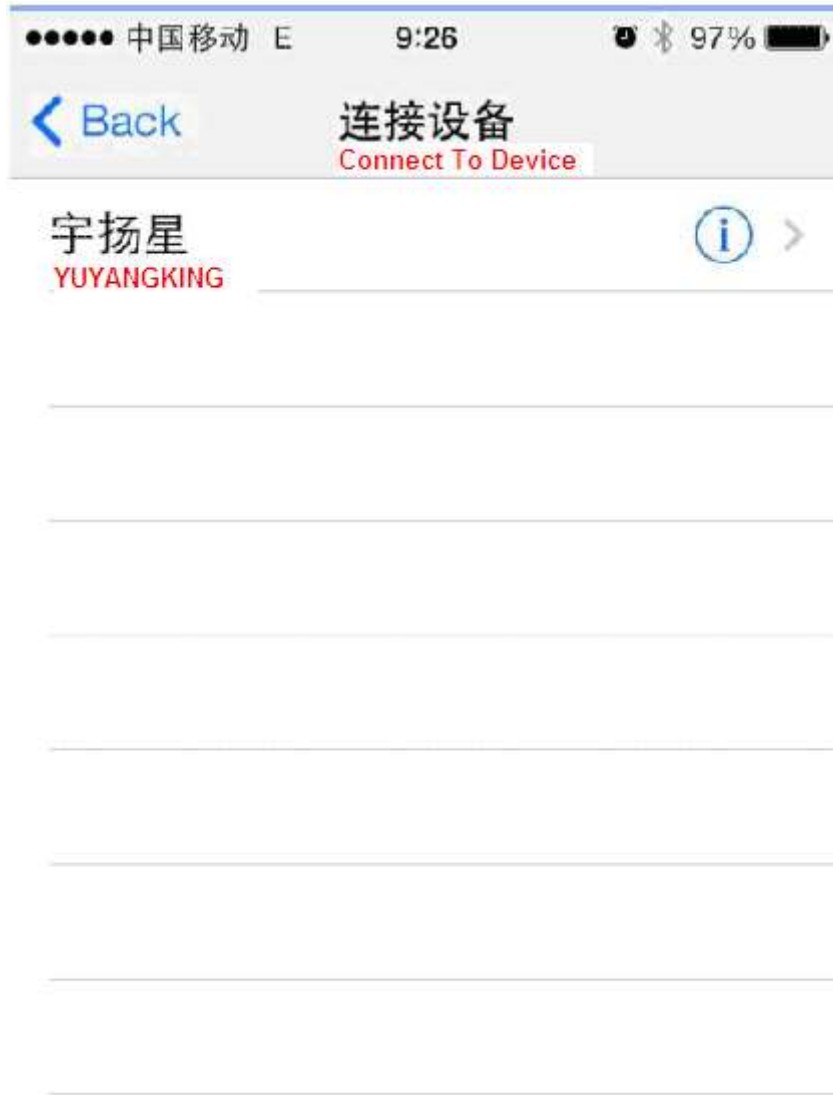
车轮系数标定说明:

1. 在平整的地面标记5米距离，将车辆推至起始线，打开电门锁给控制器上电。
2. 进入APP，确定已连接，状态显示正常。进入标定菜单，点击标定开始，然后点击起始距离获取。
3. 将车辆平稳的推行至终点线，确保车辆移动了5米的距离，点击截止距离获取，再点击使用。若无异常，系统提示标记成功。
4. 标定出来的系数范围在1-1000之内，超出无效。



- 连接设备
- Connect to Device

1. Mark a 5 meters of distance on the flat land, park the vehicle right at starting line then power on the controller
2. Start APP and make sure the connection is successful and status indicates normal, then enter the Calibration menu and activate the Vehicle calibration by moving the button
3. Click the Obtain button against the Start distance menu and pull the vehicle for 5 meters straightly, then click the Obtain button against the End distance menu and Apply it, later system will prompt calibration is succeed if there is no abnormal occurred
4. Only a conversion ratio in 1 – 1000 is valid, otherwise user have to carry out the calibration once again



- **版本信息:** 显示 APP 的版本号及技术支持信息。
- **Version Information:** Display APP version and technical support information.

中国移动 E

15:54

75%

< Back

关于系统
On system

版本: V1.0正式版

Version: V1.0 Formal

版本更新

Version update

已是最新版本

Your device is up to date

发布时间

Publish date

2014-08-01

技术支持

Technical support

宇扬科技 0571-81061582
Yu Yang Tech

宇扬星™

YUYANG KING YKZ Series

high-power brushless DC motor controller

Manual



YUYANG KING™

TABLES

1. OVERVIEW

2. Specifications & features

2.1. Specifications

2.2. Features

2.3. Basic functions

2.4. Nomenclature

3. Installation

3.1. Mounting controllers

3.2. Controller dimension

3.3. Controller wire

4. Maintenance

1. OVERVIEW

This manual is mainly introducing the features of YUYANG KING series high-power BLDC motor controller, as well as how to install, operate and maintain the controllers. Customers are requested to read this manual very carefully before using, for any problem , please find our contacting information in the last page and contact us by any time you are convenient.

YUYANG KING series high-power BLDC motor controller provides a efficient, stable and easy to mounting of motor control solution to various of big& medium size of electric vehicles, including hybrid vehicles, electric forklift, electric boat and industrial speed governing motors, etc. YUYANG KING controllers could makes a energy transfer rates of 99% by taking the high-power MOSFETS design, besides, the powerful intelligence MPU inside the controller offering a complete and accurate controlling to the applications. Users are easy to configure, test and diagnose their controllers by connecting to the computer via a data wire provided by our company.

2. Specifications and features

2.1 Specifications:

- Working frequency: 15.6KHz
- STDBY energy consumption: < 3W
- 5V hall sensor current: $\leq 30\text{mA}$
- Working voltage rates: 24V to 144V (DC)
- Input current of electric lock: $\leq 200\text{mA}$
- Standard pedal input: 0-5V (3 wire resistive), 0.8-3.6V (hall sensing)
- Brake simulation signal & pedal signal input: 0-5V
- Working temperature range in full power: 0°C to 80 °C (shell temperature)
- Working temperature range: -30°C to 120 °C , halt at 120°C (shell temperature)
- Constant motor running current: 120A - 700A,subject to the models
- Max battery current limit: 50A - 250A,subject to the models
- Max supported speed: ≥ 50000 rpm (with hall sensor)

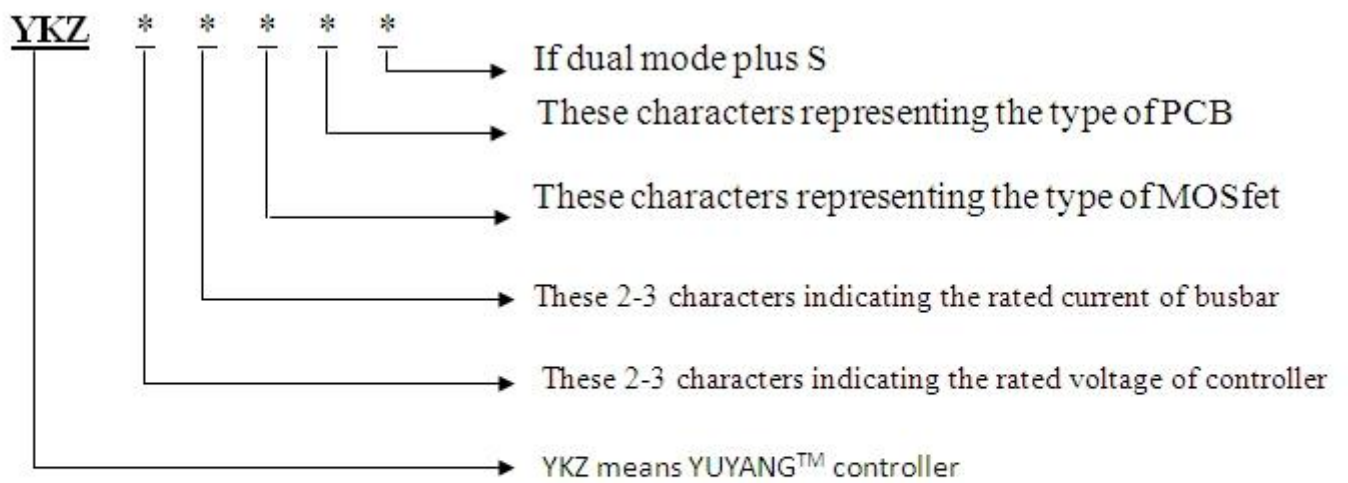
2.2 Features:

- Using the intelligent MPU
- Low energy consumption in High-speed, with synchronous rectification PWM circuit
- Battery current limit function can prolong the lifespan of battery sets
- Big starting current provide high starting speed
- Superior anti-interference and anti-shock performance
- Status LED indicates different fault information, it help the users to diagnostics & maintain the controller conveniently
- With battery protection function ,it protect against the low voltage &over voltage by reducing or cutting off the battery current output
- With thermal protection function, this thermal protection &compensation circuit provides constant current limit during under/over temperature condition ,so it can protect the controller and battery well
- Compatible with the 60°/120°hall sensor in both
- Throttle protection function disable the controller if throttle wires become open, also can prevent the controller operation if the electricity key is turned on while throttle is applied (For optional)
- Manual cruise/auto cruise function are available(For optional)
- Auto-matching with all kinds of motors
- Configurable soft/quick start mode
- Online/offline updating function available

2.3 Regular functions

- Configurable over/under voltage protection function offers real-time battery current monitoring (For optional)
- Single periodic current adjustment provide over voltage protecting in microsecond rates
- With thermal sensor to detecting any thermal information
- Configurable EABS brake system effect by strong/weak braking signal (For optional)
- Safety reversing function, reversing speed can be set by 30% to 50% of the forwarding speed
- Providing +5V powering to hall sensor with over current protecting
- Configurable Forwarding, Neutral and Reversing operations(For optional)
- Configurable Energy saving mode, Acceleration mode and Climbing mode (For optional)
- 3 wires access of speed governing, additional supplying +5V power source
- 5 wires access of hall sensor connector, no hall sensor application is available for optional
- Real-time battery current monitoring system make sure the output current will not excess the maximum battery working current

2.4 Nomenclature:



e.g. 1: YKZ6070AA: means 60V,70A,and use the STP75NF75 MOSfet, small 24pcs MOSfet PCB

e.g. 2: YKZ96100EC: means 96V,100A,and use IRFB4115GPbF MOSfet, small 36pcs MOSfet PCB

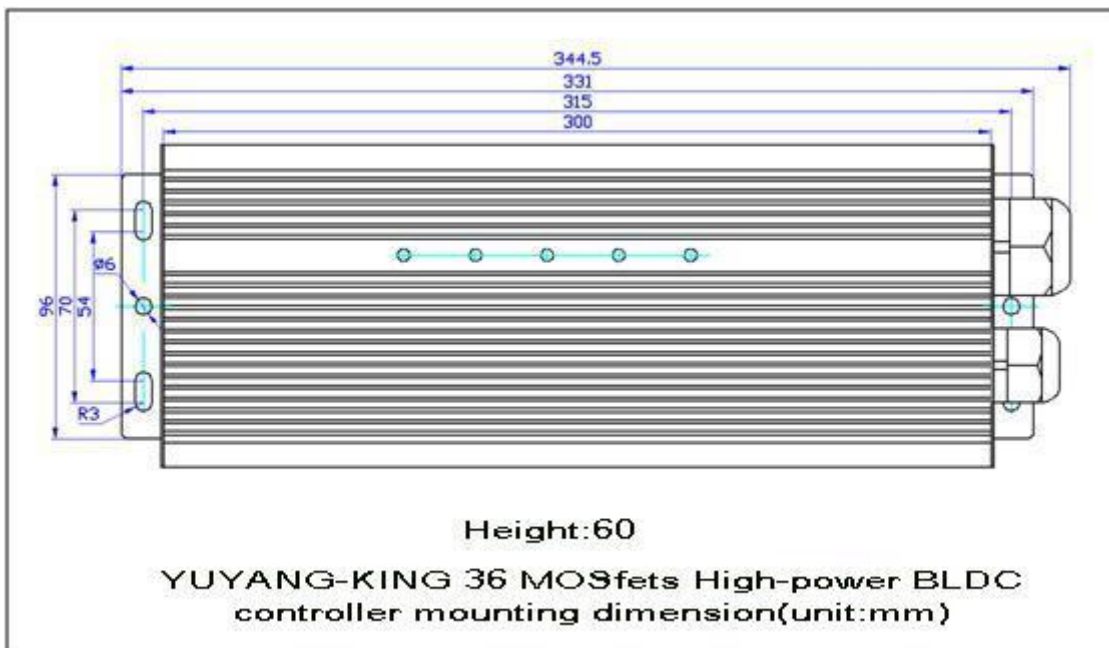
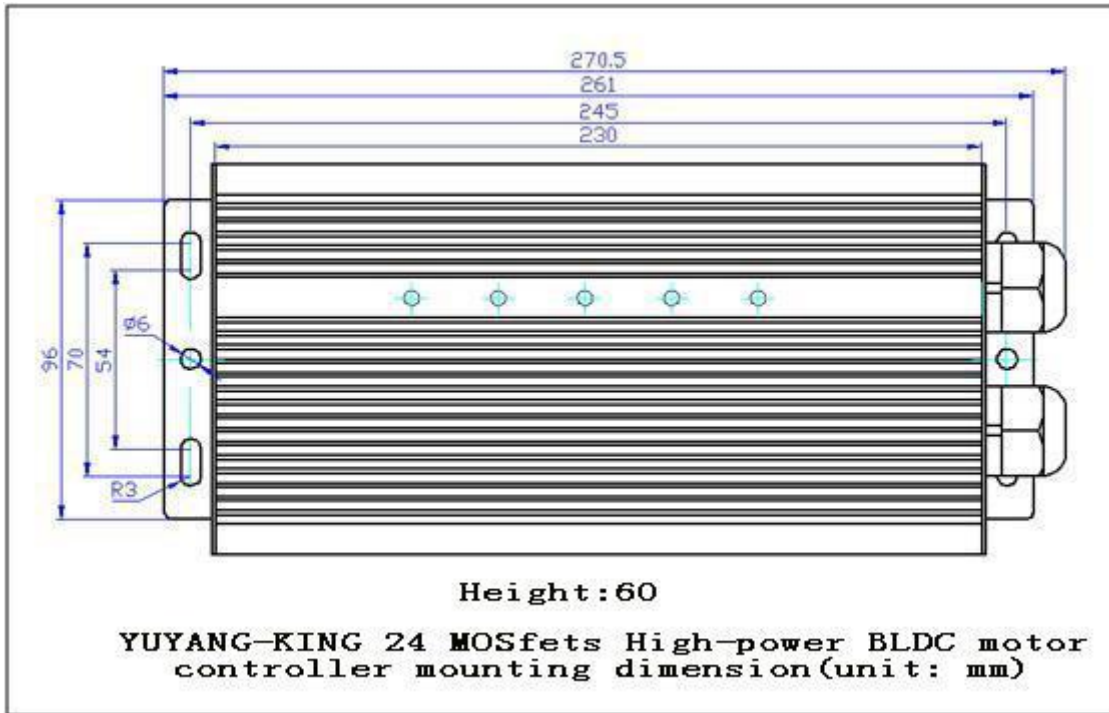
3. Mounting instruction

3.1 Mounting the controller:

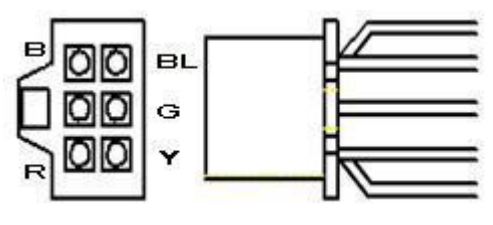
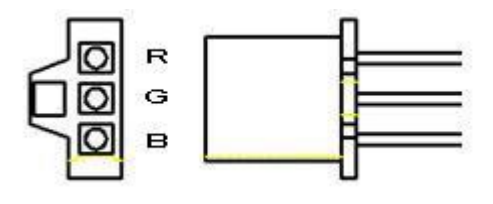
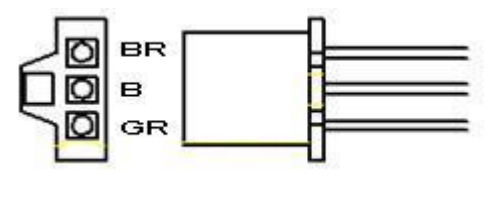
Please cut off the main power source before mounting the controller, and recover the main powering again only in terms every connection is right. Some conditions could cause the motor to run out of control, operator should disconnect the motor or jack up the vehicle and get the drive wheels off the ground before working on the control circuit of vehicle.

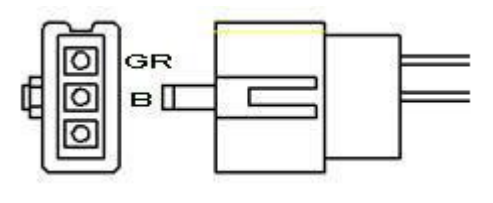
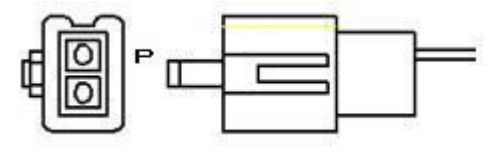
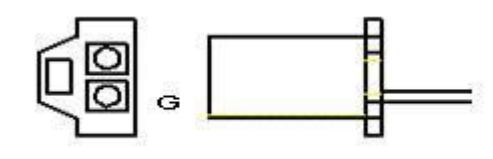
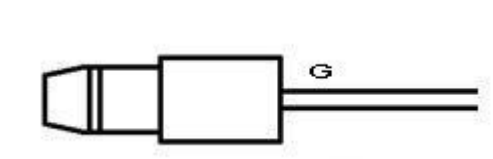
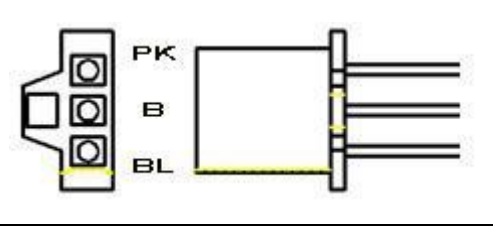
The mounting location should be chosen in a ventilate space in order to gains a full output of powering, mounting the controller in a airtight condition may decrease the working time of full power running ,or even cause a thermal protection abnormally. This controller totally including 5pcs of high-current busbars, they are 2pcs of main power cables (in red and black color), 3pcs of output cables (in blue, green and yellow color),all these cables should fastened by bolts and tightened with nuts. Since the temperature of these cables is very high, so the operator need pay attention to the cables if the insulation is broken.

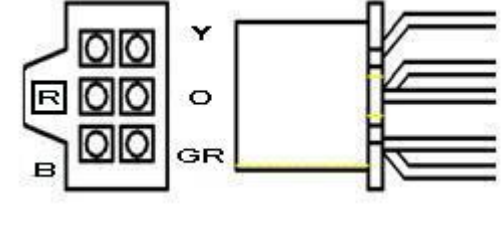
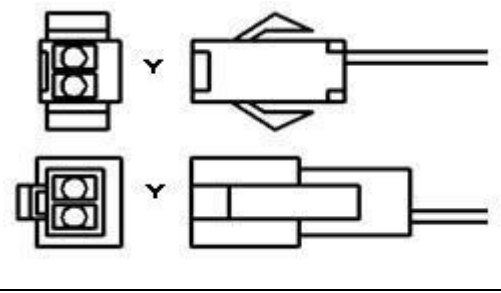
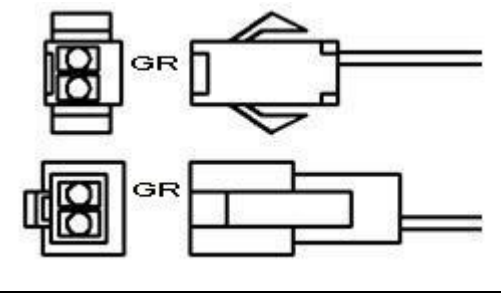
3.2 Mounting dimension:

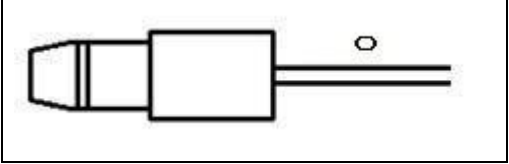
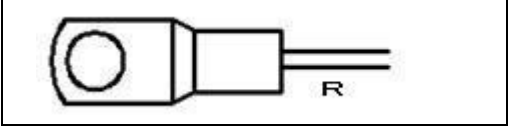
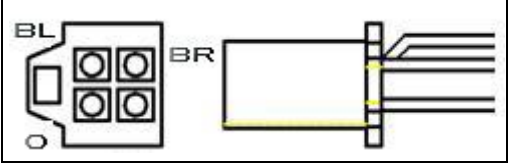
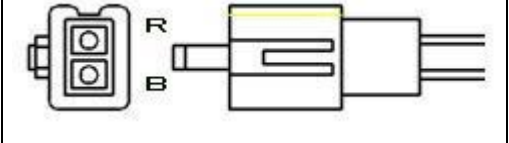
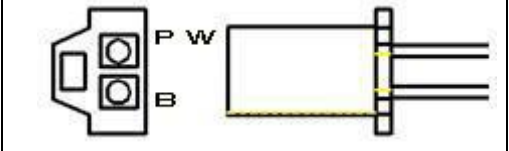


3.3 Controller wire :

No	Name	Connector	Connector color	Connector define	Wire Spec	Connector description
1	Motor hall wire	6 cores socket (2.8-6Y)	white	hall signal /yellow	wire (AVR-90) 0.3mm ² (16/0.15) 300/300V Yellow	
				hall signal /green	Wire (AVR-90) 0.3mm ² (16/0.15) 300/300V Green	
				hall signal /blue	wire (AVR-90) 0.3mm ² (16/0.15) 300/300V Blue	
				earth wire/black	wire (AVR-90) 0.3mm ² (16/0.15) 300/300V Black	
				Power/red	wire (AVR-90) 0.3mm ² (16/0.15) 300/300V Red	
2	Throttle wire	3 cores socket (2.8-6Y)	white	Power/red	wire (AVR-90) 0.3mm ² (16/0.15) 300/300V Black	
				throttle signal/green	wire (AVR-90) 0.3mm ² (16/0.15) 300/300V Yellow	
				earth wrie/black	wire (AVR-90) 0.3mm ² (16/0.15) 300/300V Red	
3	Neutral reversing wire	3 cores socket (2.8-6Y)	white	reversing/ bronze	wire (AVR-90) 0.3mm ² (16/0.15) 300/300V Bronze	
				earth wire/black	wire (AVR-90) 0.3mm ² (16/0.15) 300/300V Black	

				neutral/gray	wire (AVR-90) 0.3mm ² (16/0.15) 300/300V Gray	
4	Low voltage brake	3 cores socket (2.8-6A)	white	Low-V brake/gray	wire (AVR-90) 0.3mm ² (16/0.15) 300/300V Gray	
				earth wire/black	wire (AVR-90) 0.3mm ² (16/0.15) 300/300V Black	
5	High voltage brake	2 cores socket (2.8-4A)	white	high-V brake/purple	wire (AVR-90) 0.3mm ² (16/0.15) 300/300V Purple	
6	Hall meter	2 cores socket (2.8-4Y)	white	speedometer wire/green	Wire (AVR-90) 0.3mm ² (16/0.15) 300/300V Green	
7	Phase line meter	1 core socket (∅ 4 BulletHead shape terminal)	with green sleeve	speedometer wire/green	wire (AVR-90) 0.3mm ² (16/0.15) 300/300V Green	
8	3 speed	3 cores socket(2.8-6Y)	red	high speed/pink	wire (AVR-90) 0.3mm ² (16/0.15) 300/300V Purple	
				earth wire/black	wire (AVR-90) 0.3mm ² (16/0.15) 300/300V Black	
				low speed/blue	wire (AVR-90) 0.3mm ² (16/0.15) 300/300V Blue	
9	Anti-thief	6 cores	red			

		socket(2.8-6Y)		<p>sensor wire/gray 0.3mm² (16/0.15) 300/300V Gray</p> <p>anti-thief signal/yellow 0.3mm² (16/0.15) 300/300V Yellow</p> <p>main earth wire/black 0.3mm² (16/0.15) 300/300V Black</p> <p>main power/red 0.3mm² (16/0.15) 300/300V Red</p> <p>electric switch lock/orange 0.3mm² (16/0.15) 300/300V Orange</p>	<p>wire (AVR-90) 0.3mm² (16/0.15) 300/300V Gray</p> <p>wire (AVR-90) 0.3mm² (16/0.15) 300/300V Yellow</p> <p>wire (AVR-90) 0.3mm² (16/0.15) 300/300V Black</p> <p>wire (AVR-90) 0.3mm² (16/0.15) 300/300V Red</p> <p>wire (AVR-90) 0.3mm² (16/0.15) 300/300V Orange</p>	
10	Self learning	<p>2 cores relaying socket SM-2Y</p> <p>2 cores relaying socket SM-2A</p>	black	<p>self-learning/yellow 0.3mm² (16/0.15) 300/300V Yellow</p> <p>earth wire/yellow 0.3mm² (16/0.15) 300/300V Yellow</p>	<p>wire (AVR-90) 0.3mm² (16/0.15) 300/300V Yellow</p> <p>wire (AVR-90) 0.3mm² (16/0.15) 300/300V Yellow</p>	
11	Speed limit	<p>2 cores relaying socket SM-2Y</p> <p>2 cores relaying socket SM-2A</p>	black	<p>speed limit/gray 0.3mm² (16/0.15) 300/300V Gray</p> <p>earth wire/gray 0.3mm² (16/0.15) 300/300V Gray</p>	<p>wire (AVR-90) 0.3mm² (16/0.15) 300/300V Gray</p> <p>wire (AVR-90) 0.3mm² (16/0.15) 300/300V Gray</p>	
12		1 core				

	Electric switch lock-1	plug(∅ 4 bullethead shape terminal)		electric switch lock/orange	wire (AVR-90) 0.3mm2 (16/0.15) 300/300V Orange	
13	Electric switch lock-2	1 core plug(circular ring)		electric switch lock/orange	wire (AVR-90) 0.3mm2 (16/0.15) 300/300V Orange	
14	Anti-thief 3+2	4 cores socket(2.8-4Y)	red	electric switch lock/orange	wire (AVR-90) 0.3mm2 (16/0.15) 300/300V Orange	
				sensor wire/bronze	wire (AVR-90) 0.3mm2 (16/0.15) 300/300V Bronze	
				anti-thief signal/blue	wire (AVR-90) 0.3mm2 (16/0.15) 300/300V Blue	
		2 cores plug(2.8-4A)		main earth wire/red	wire (AVR-90) 0.3mm2 (16/0.15) 300/300V Red	
				main power/black	wire (AVR-90) 0.3mm2 (16/0.15) 300/300V Black	
15	Cruise	2 cores socket(2.8-4Y)	white	cruise/purple white	wire (AVR-90) 0.3mm2 (16/0.15) 300/300V Purple/White	
				earth wire/black	wire (AVR-90) 0.3mm2 (16/0.15) 300/300V Black	

4. Maintenance

There are no user serviceable parts & components in YUYANG KING controllers, unauthorized opening, repairing activities may caused the controllers not working and will void the warranty. However, we recommend to clean the controller shell and connection cables periodically with proper operation. Please disconnect controller busbars from the battery for at least 1 minute, then start the maintenance processing.

1. Check every connection and if there are loose, corrosion and broken were found, then remove the corrosion with a abrasive paper ,covering the broken area with electrical tape and tight the bolt in the end.
2. Remove the water on the controller wires before reconnecting with the battery.
3. Wipe the dust&dirt on the controller shell with a clean rag.

Reconnect the controller with the battery after the maintenance was completed. Since arcing can occur in case the battery was full charged, so please use the insulated tools and take care of personal safety when connecting the controllers again.