XIAOR GEEK
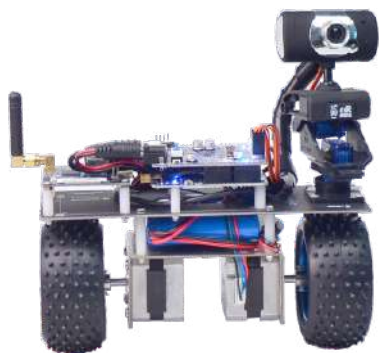
STM32 Roly Robot
WiFi Video Smart Self-Balance Robot
Instruction manual

Shenzhen · China

Home: www.xiaorgeek.com
Email: service@xiaorgeek.com

About Us

Shen zhen,XIAO R GEEKS Technology Co.,Ltd was founded in 2014 .Which is mainly engaged in the first person video control of the robot, it is based on WiFi wireless technology and MCU technology, research and development of smart car and robot teaching kit of solutions. And it is training create electronic laboratory enthusiasts to providing system of robot, hardware and software equipment and training course for domestic colleges and universities

The products include 51duino (8051), Arduino (AVR), STMduino (STM32), FPGA, Raspberry Pi, five hardware platforms, 40 kinds of morphology of the robot secondary development training package , while providing massive robot application tutorial, teaching case , sourcecode demo, to provide customers with a depth of learning, escalating teaching system.

We have a "XIAO R ecosystem", combined with XIAO R Robots-Store, online robot mall, technical forums, and offline distributors to build a sustainable, in-depth study, It can be continuously upgraded, gaining the return of the robot education ecological system. Which is quietly different from the traditional "just once trading" form of robotic products.

We have WiFi Robot Forum BBS "www.wifi-robots.com",a huge user base with more than 40 thousand members, 17 QQ exchange group.

The team "Heart to Perfection, Born for maker" is for the purpose of the content close to the fans and college electronics professional courses.The products are exported to overseas markets and innovating education, Zhejiang University, Wuhan University,Tongji University and other well-known institutions have long-term cooperation.Arduino DS Robot WiFi Video Car Robot is an educational and teaching robot kit based on the UNO R3 main controller and Robot-Link WiFi wireless video transmission module.

Product Introduction

● STM32 Roly Robot two wheels self-balance WiFi Video Car Robot is an education and teaching robot kit based on the STM32 main controller and Robot-Link WiFi wireless video transmission module.

The main function:
1.Use the phone, computer and other terminals, controlled by wireless WiFi
2.The robot can capture video data, and real-time transmission to control software.
3.Provided with the source code, you can carry out secondary development learning.
4.IO interface of the robot is completely open and can be easily extended to the sensor.
5.The compiler environment is IAR, which is a very effective integrated development environment.

● XIAO R Technology Robots-Store "www.robots-store.com" provides a large number of robot application source code and tutorials, you can learn more robot programming and development knowledge..

● XIAO R Technology Robot Forum: www.wifi-robots.com provides a technical discussion place for maker.

Product Parameters

Product Name	STM32 Self-balance Robot (Roly Robot)		
Body Materials	Stainless steel	Chassis	PCB
Wheel materials	Rubber tyres	Motor Type	Hybird Stepping,HS
MCU	STM32	Working Voltage	12V Lithium battery pack
Chargering Type	Direct plug	Signal range	≤ 40m
Climbing Angle	30 º	Compiler Environment	IAR
Size	202*850*200mm(L*W*H)	Weight	1.15Kg
Camera	HD camera with manual adjustment of focus	Remote control	1、iOS app 2、Android app 3、PC 4、Web

Steps for usage

First, open the power of the robot car
 1: Put the self-balance car in standing position.
 2: Open the power supply of the self-balance car.
 3: After slightly shaking around the balance point, the car will find a balance and stand up.
 4: After opening the power supply of the balance car, the car makes a "hum". it means the car is finging the balance point.
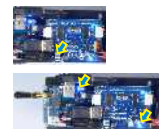
Second, PWR motherboard blue light is on, STM32 motherboard blue light is on, WiFi module blue light flashes 20 seconds

Third, the use of mobile phones or computer for control

1. PC control software

1, the computer connected to the wireless signal hotpot named 'wifi-robots.com'

2, double-click the blue R icon to run the program.

3, select the type of language, the default is Chinese.
4, then you can see the software shows the robot camera to capture the video screen.
5, select the software above the menu "control mode-WiFi / network cable mode", you can use the keyboard WASD to control the movement of the robot.
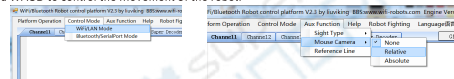
6, choose the software above the menu "Aux function -> Mouse Camera" in the video screen can use the mouse to drag the motion control camera rotation.
7, more features described in more details: www.wifi-robots.om

2. mobile phone control software

1, download the XIAO R technology APK installation package and install to the phone (Android system); or scan QR code to install iOS APP (iOS System).

2, Put the robot power on and wait for 20 seconds. Use the WiFi function of the mobile phone, searching the name of wifi-robots.com wireless signal and connect.

3, enter the control interface, then the screen background is the video captured by the robot
4, use the virtual joystick or button to control the direction of the robot action.
5, slide the screen to control the PTZ rotation
6, Use to lock current servos' angle,double click screen to make the servos turn to the angle which is locked.
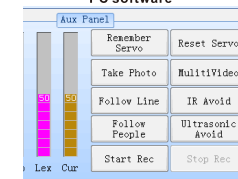7, more features described in: www.wifi-robots.com

Fourth, the software switch follow line / ultrasonic obstacle avoidance mode tutorial

mobile phone software

Click on the button on the screen can call up the shortcut menu, click the button in the menu to bring up the expansion function mode interface.

PC software

Aux-function mode command:
Follow the master: FF130100FF
Follow line: FF130200FF
Infrared obstruction: FF130300FF
Ultrasonic obstacle avoidance: FF130400FF
Manual control: FF130000FF

Note:When the car has stoped completely, the right and left turns are the way to rotate at original place.If the car is running or is not stoped, then two-wheel differential cornering. If the car crashes against the wall and falls to the ground, the wheel will stop turning, the car need to be raised and wait for a few seconds before it can be controlled again.
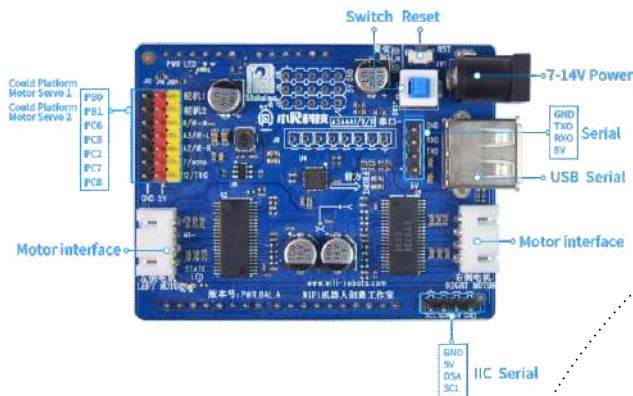
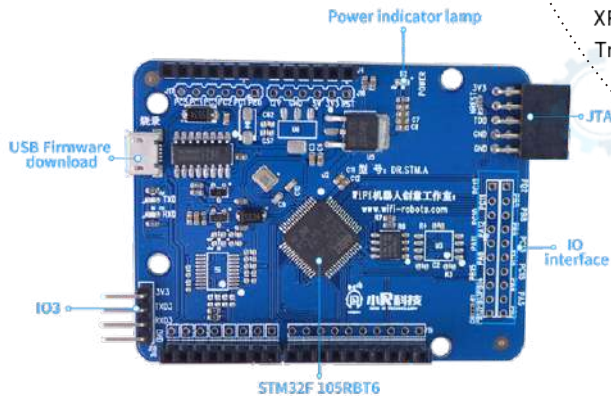## Frequently Asked Questions and Troubleshooting Methods

❶ ：Turn on the switch, you can search for the robot's wireless signal, but can not be connected or can not be a stable connection.
Solution：Please get the robot fully charged before trying to control.

❷ ：Turn on the switch, the robot's WiFi module LED lights have been flashing non-stop.
Solution: 1) Electrifying moment, fast continuous press Reset WiFi module.until the module's LED lights flash quickly. Use RJ45 cable to connect the WiFi module and PC, thePC's local IP is set to 192.168.1.3 play Open the PC command prompt window, execute the command telnet 192.168.1.1; and then execute the command firstboot; and power-off restart.
Solution: 2) If the first step does not work, please contact customer service assistance toresolve

❸ :Open the PC control client software, prompted the need to install, Net framework components
Solution:Baidu or Google keyword · Net framework download· to find the system prompts framework version, download and install it.

❹ :PC client software can not control the robot, mobile phone or Pad client can be controled.
Solution: 1, Turn off the PC firewall
Solution: 2, Remove the PC's RJ45 cable, and restart the computer.
Solution: 3, Using another computer for comparison.

❺ :Search the robot's signal, it can display the robot's video, but the PC client software and the mobile phone Client software are unable to control the robot.
Solution: 1) Check the rear of the MICRO USB (non-side serial pins) jumper cap pin position to ensure that two jumper caps are installed.
Solution: 2), Replace the USB data cable.
Solution: 3), The above steps do not work with the browser login 192.168.1.1 WIFI module management interface (password admin), find the system classification, in the classification of a factory reset button (perform reset), the implementation of a recovery Factory settings.
Solution: 4), If you can not control, please observe the switch on the main board, the blue LED lights flashing about 30 seconds, if not flashing, please re-burn the main control program.

❻ :You can control the robot, but the directions are disorder.
Solution: In the setting page of the control software, replace the opposite action instructions,and save.

❼ :There is no problem with the video, option WiFi mode selection of PC control software, the software pop-up error warning prompt box .
Solution: 1), Turn off the computer firewall, restart the car and software, waiting for about 30 seconds, , the WiFi module system initialization completed after the connection
Solution: 2), Use the browser login 192.168.1.1WiFi module management interface, the WiFi module to restore a factory settings (see question 5).

❽ :PC client select WiFi mode, there is no warning tips, but can not control the car, mobile client can control.
Solution: 1), Use the browser login 192.168.1.1WIFI module management interface, the WIFI module to restore a factory settings (see question 5).
Solution: 2), If the first step is still not working, it may be the MicroUSB interface loose, resulting in data can not be transmitted through the USB data wire to the main control board, then the TTL serial port pin with the DuPont line in the WiFi module on the other side,the WiFi module RXD and the main control board TX is connected, TXD and the main control board RX Connected, GND connected to the main control board GND. If still can not be controlled, Exchange the connection position of the TX and RX (two DuPont line).

❾ : Electricity or mechanical arm to head stuck in the position, the abnormal noises.
Solution: Disconnect all servos or camera cradle(PTZ), then refer to the tutorial: one by one to access the servos, adjust the appropriate angle of each servo in turn, and lock the current appropriate angle.

❿ : The camera back to the video is not clear enough: manually rotate the camera lens, adjust the focal length

⓫ : Camera without image, the robot can control
Solution: 1), Check if the camera's USB interface is connected
Solution:2), The camera connected to the computer, try QQ video chat, verify the camera is intact, such as the computer can not be used, please contact customer service replacement camera.

⓬ : The effective control of the robot is very close (less than 2 meters)
Solution: 1), Check if the antenna is loose, please tighten.
Solution: 2), Avoid the use of many wireless routers in the surrounding environment.
Solution: 3), Use the browser to log in the management interface of the 192.168.1.1 WiFi module, in the "Wifi" classification, the default channel 11 switch to 1 or 3, and save settings

⓭ : Manual control mode is normal, patrol escape or other automatic mode robot motion disorder.
Solution: 1), According to the tutorial, check carefully if the sensor wiring is correct, and if the sensitivity adjustment is correct.
Solution:2), In the line vault or other automatic mode, the robot should be the overall performance of the forward state, respectively, to observe the left and right side of the motor rotation direction, and the side of the motor on the side of the line change position, so that the vehicle was forward state, And then refer to "Problem 6" to adjust the robot direction in manual mode.

⓮ : After making contact , the robot move around regularly, out of control.
Solution: Let the car run 15S, it will automatically exit the test mode; if not, please contact customer service.

⓯ : Secondary development, the robot can not be controlled to download the master program.
Solution: 1), Remove the USB data wire connected to the main control board.
Solution: 2), Reduce the baud rate of the burning software. 3), replace the burning tool hardware or computer.

⓰ : USB connection is correct, turn on the switch,the WiFi module LED light does not bright, and the wireless signal cannot be found.
Solution: Check the WiFi module R68 silk screen at the resistance of the external force is knocked off, if you have to touch please contact customer service.

Module Distribution

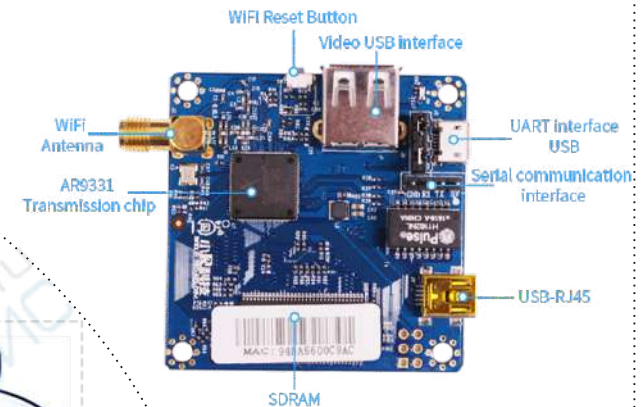Switch Reset

Cowld Platform Motor Servo 1
Cowld Platform Motor Servo 2

P90
P81
PC6
PC3
PC7
PC8

7-14V Power

GND
TXO
RXO
5V
Serial

USB Serial

Motor interface

Motor interface

STATE

RIGHT MOTOR

www.wifi-robots.com

版本号：PWR.BAL.A

GND
5V
DSA
SCL
IIC Serial

Main board interface define: Yellow-IO Red-VCC Black-GND

WIFI Reset Button
Video USB interface

WiFi Antenna

AR9331 Transmission chip

UART interface USB

Serial communication interface

SDRAM

USB-RJ45

MAC: 940A5600C9AC

Note: The Jump cap needs to be removed, when the external power supply is supplied.

STMduino Robot Master Module + High Precision 6 Axis Gyroscope +Roly BAL PWR Power Supply and Motor Drive Module,Support Common Sensors and Peripherals.

Robot-Eyes HD Camera, Manual Adjustable Focus Length Dedicated to WIFI Video Car Robot.

5DBi External WiFi Antenna Gain High Signal Intensity.

2 DOF Cloud Platform Motor Servo.

XRbot-Link WIFI Video Transmission module.

High Precision and Large Torque Stepper Motor.

Built-in 2200mAh 8A 12V Battery Pack with Protection Circuit.

Rubber Tires with Nail

Power indicator lamp

POWER

3V3
NRST
TDI
TDO
GND
GND
JTAG

USB Firmware download

WIFI机器人创意工作室
www.wifi-robots.com

型号：DR.STM.A

IO interface

IO3

STM32F 105RBT6

PCB chassis

Rubber tyres with nail   Motor   Stainless steel car body
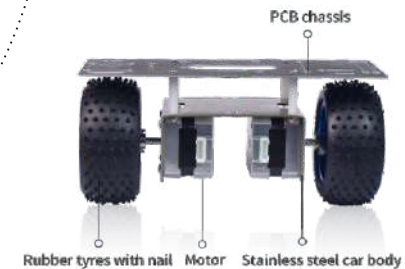
Motor Parameters	
Type	Hybrid Stepping,HS
Product certification	ce
Rated Voltage	12V
Rated current	1.3A
Rated power	6.6W
Rated speed	500rpm
Rated torque	320NM
Size	42x42x34mm