Welcome

Thank you for choosing Freenove products!

How to Start

If you are reading this, you should have downloaded the ZIP file for this product.

Unzip it and you will get a folder contains tutorials and related files. Please start with this PDF tutorial first.

! Please unzip the ZIP file instead of opening the file in the ZIP file directly.
! Please do not move, delete or rename files in the folder just unzipped.

Get Support

Encountered problems? Don't panic!

Whether it is packaging damage, quality problems, or questions encountered in use. Just send us an email. We will reply to you within one working day and provide a solution.

support@freenove.com

Safety

Pay attention to safety when using and storing this product:

- Do not expose children under 6 years of age to this product. Put it out of their reach.
- Children lack safety ability should use this product under the guardianship of adults.
- This product contains small and sharp parts. Do not swallow, prick and scratch to avoid injury.
- This product contains conductive parts. Do not hold them to touch power supply and other circuits.
- Some parts will rotate or move when it works. Do not touch them to avoid being bruised or scratched.
- The wrong operation may cause overheat. Do not touch and disconnect the power supply immediately.
- Operate in accordance with the requirements of the tutorial. Otherwise, the parts may be damaged.
- Store the product in a dry place and avoid direct sunlight.
- Turn off the power of the circuit before leaving.

About

Freenove provides open source electronic products and services.

Freenove is committed to helping customers learn programming and electronic knowledge, quickly realize their creative ideas and product prototypes and launching innovative products. Our services include:

- Kits of robots, smart cars and drones
- Kits for learning Arduino, Raspberry Pi and micro:bit
- Electronic components and modules, tools
- Product customization service

You can learn more about us or get our latest information through our website:

http://www.freenove.com

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FREE YOUR INNOVATION

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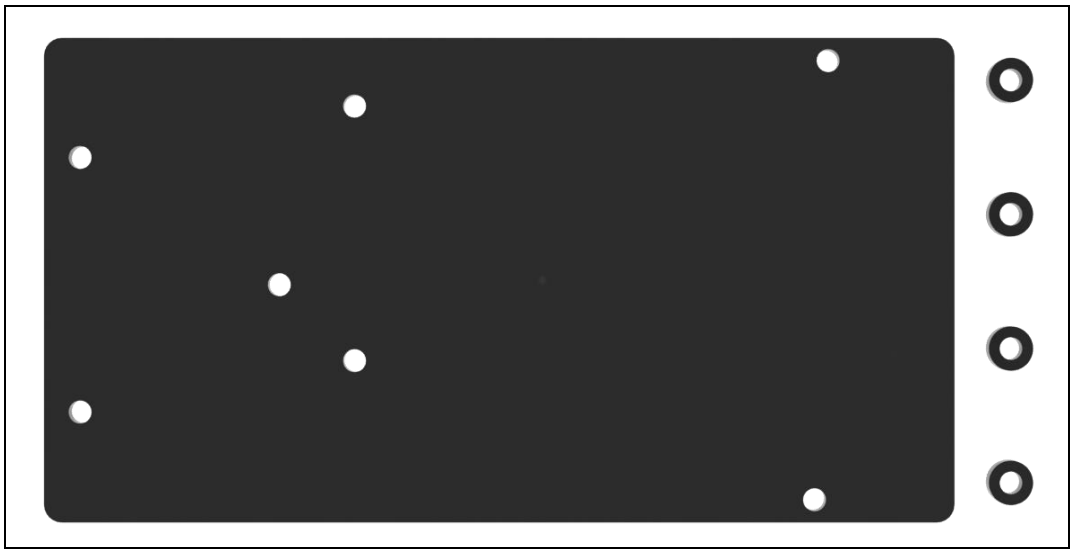
Acrylic Parts

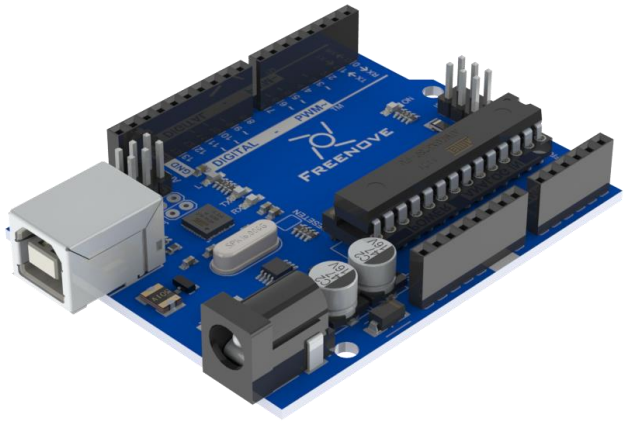
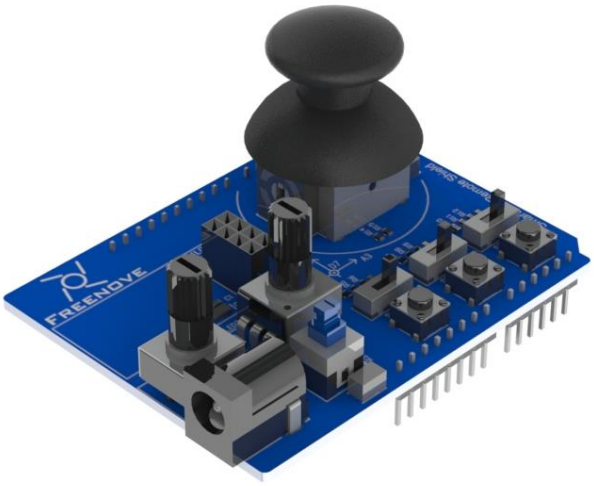
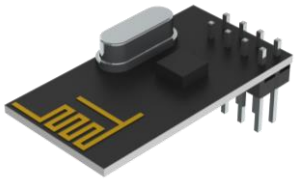


The surface of the acrylic parts is covered with a layer of protective film, you need to remove it first. Some holes in the acrylic parts may have residues, you also need to clean them before using.

Machinery Parts

M2.5*8 Screw	M2.5*10 Screw	M2.5 Nut
		
x5 Freenove	x6 Freenove	x9 Freenove

Electronic Parts

Freenove Control Board x1 	Freenove Smart Car Remote Shield x1 
9V Battery Holder x1 	NRF24L01 Module x2 
USB Cable x1 	

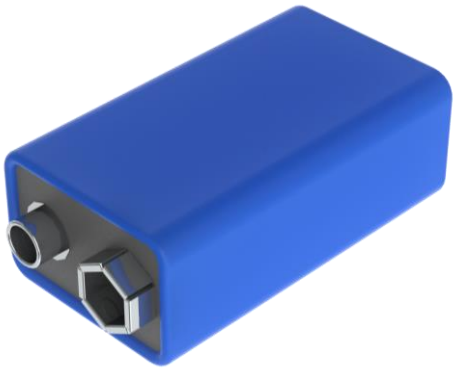
Tools

Cross Screwdriver x1 	Multifunctional Spanner x1 

Self-prepared Parts

9V Batteriey x1

You can also use a USB port from your computer or a power bank instead.

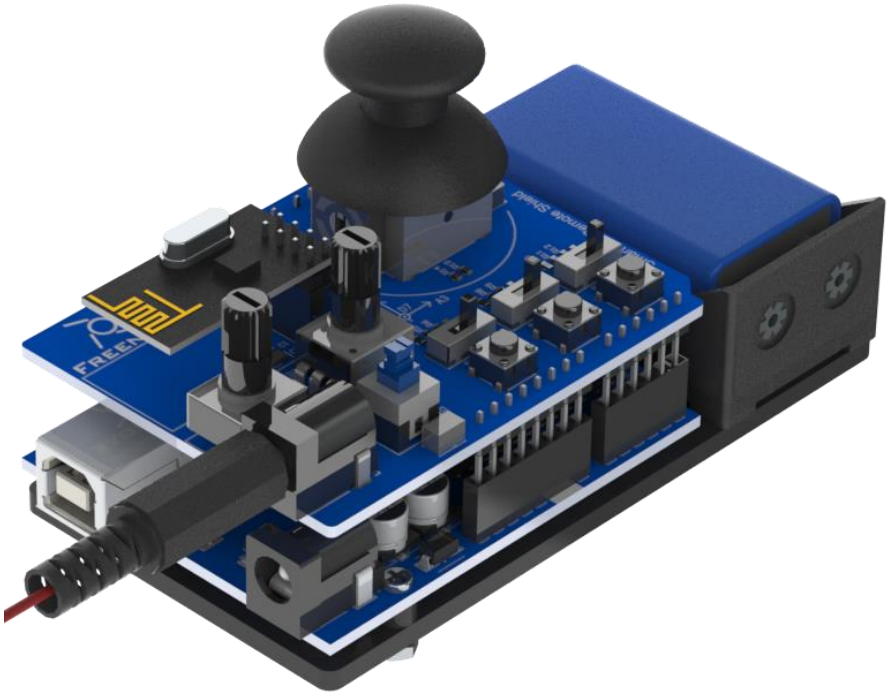


Preface

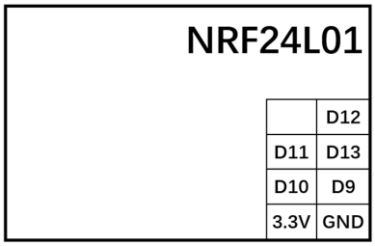
This is a remote control kit compatible with Arduino. With this kit, you can assemble a remote to control your smart car, robot, or other projects. It contains two NRF24L01 modules. One will be assembled on the remote, and the other will be assembled on the devices needed to be controlled.

This remote control is integrated with switches, potentiometers and joysticks. The ports they are connected to are all marked nearby.

The assembled remote control is shown below (the wires are not fully shown in the figure).



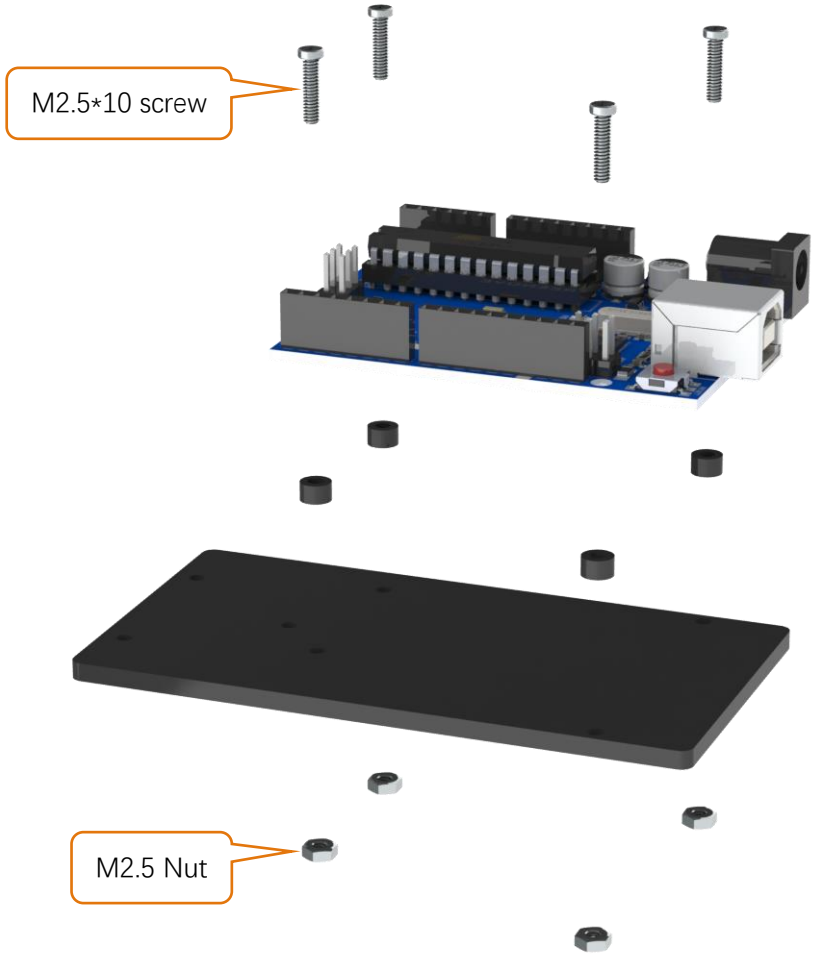
The ports of the NRF24L01 module's socket are as follows:



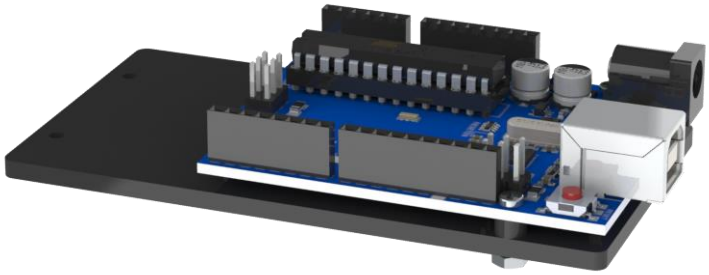
Assembly

Now let us start to assemble.

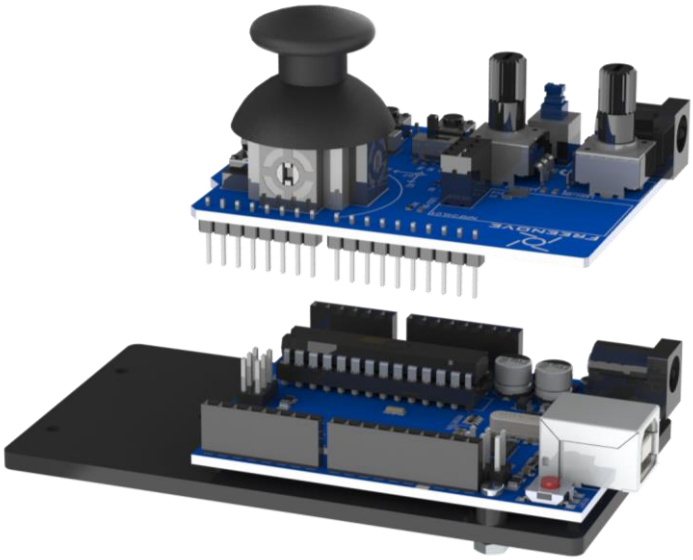
Assemble Freenove Control Board onto the acrylic board.



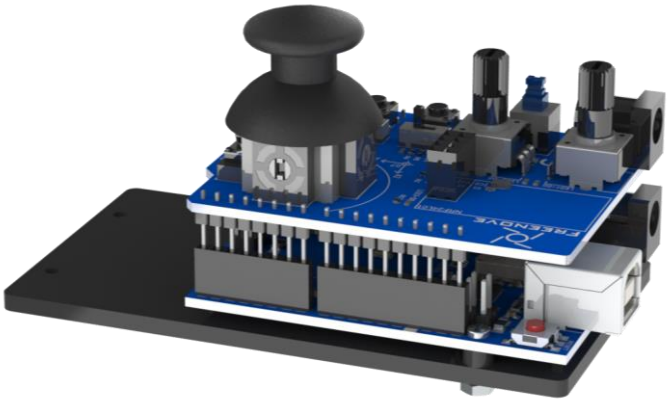
Effect diagram after assembling.



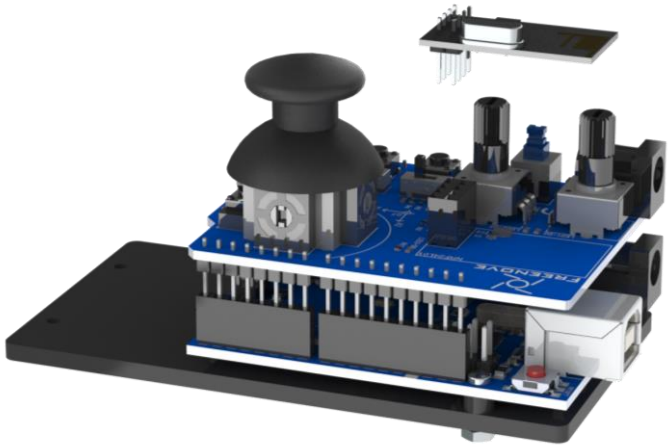
Assemble Freenove Smart Car Remote Shield onto Freenove Control Board.



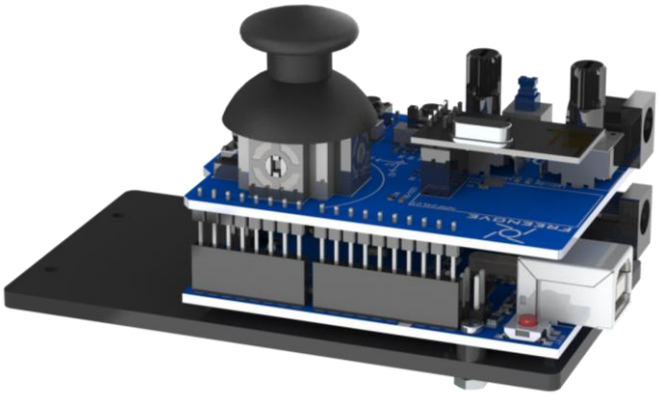
Effect diagram after assembling



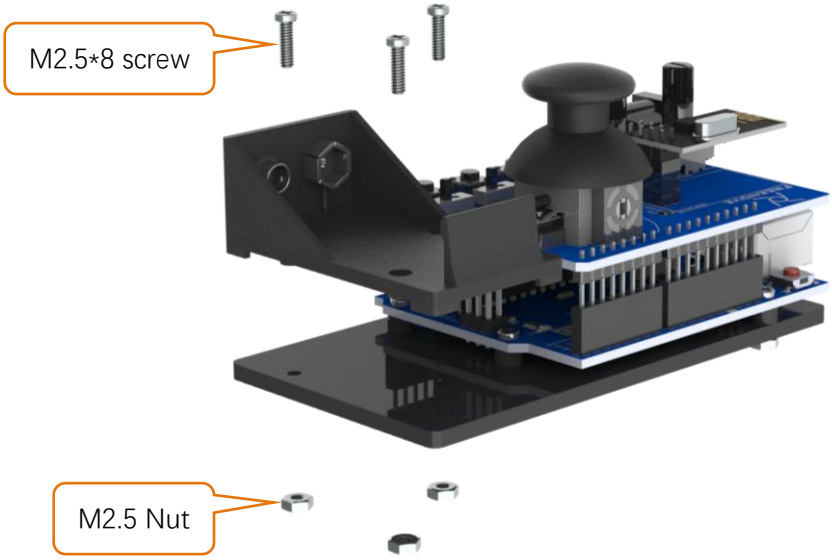
Assemble NRF24L01 Module onto Freenove Smart Car Remote Shield.



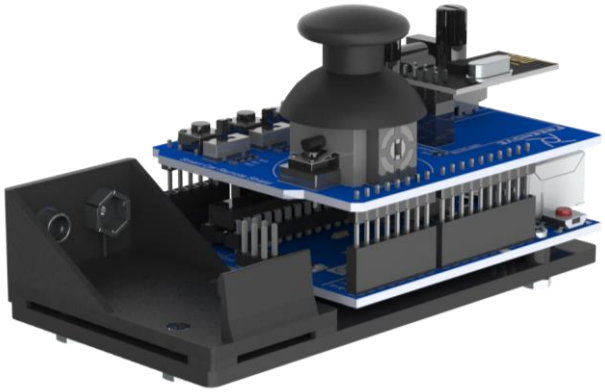
Effect diagram after assembling



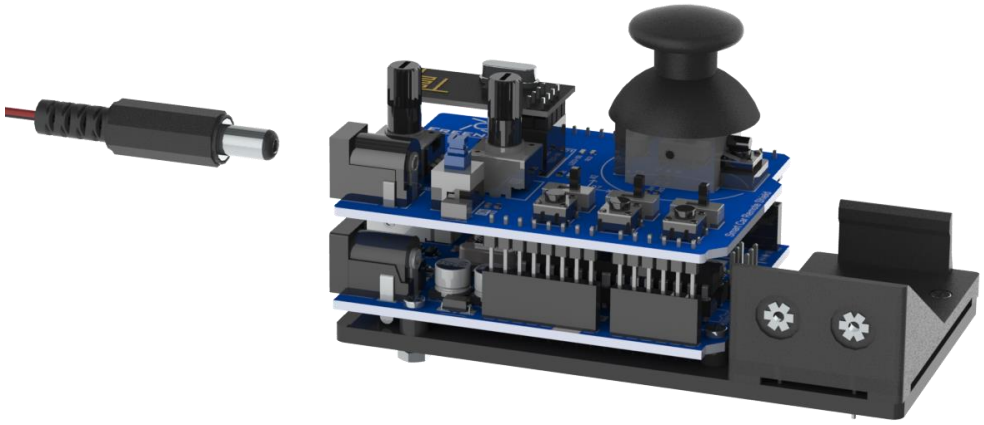
Assemble 9V Battery Holder onto the acrylic board.



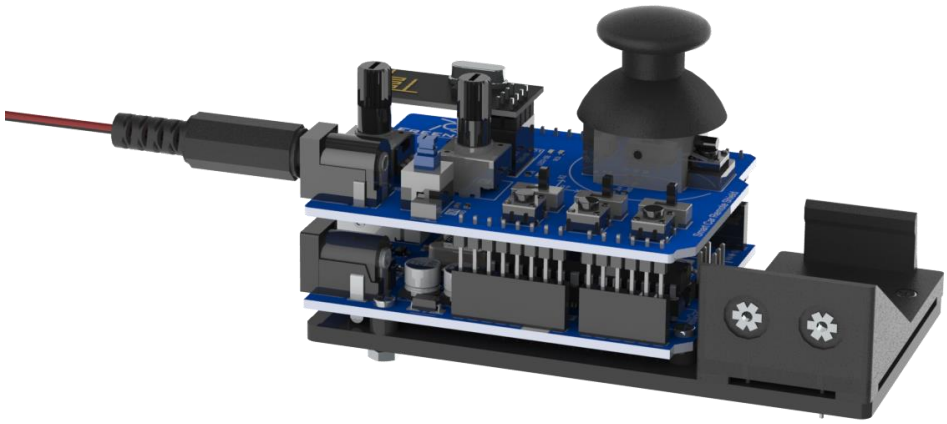
Effect diagram after assembling



Plug the 9V Battery Holder's DC plug into the Freenove Smart Car Remote Shield.
(Wires between 9V Battery Holder and DC plug are not fully shown in the figure)

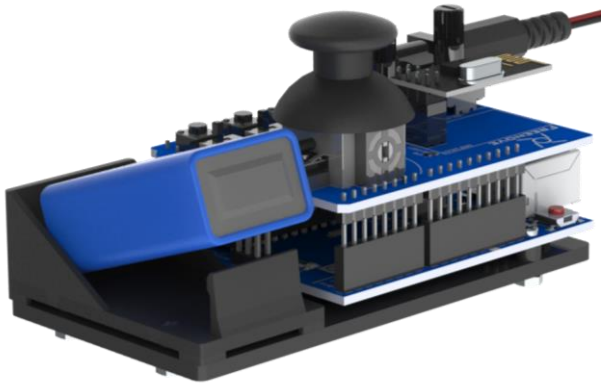


Effect diagram after assembling

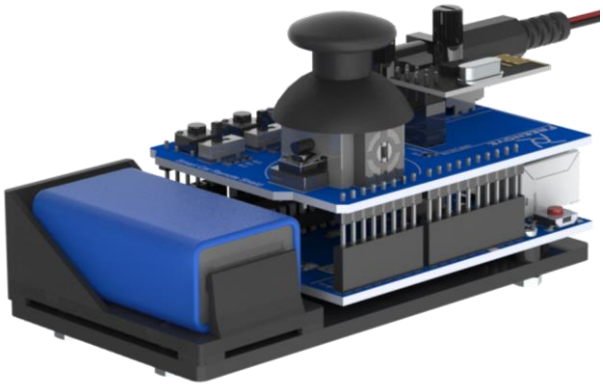


Assemble 9V Battery into the Battery Holder.

If you do not have a 9V battery, use USB cable to connect the remote to a USB port of your computer or a power bank.

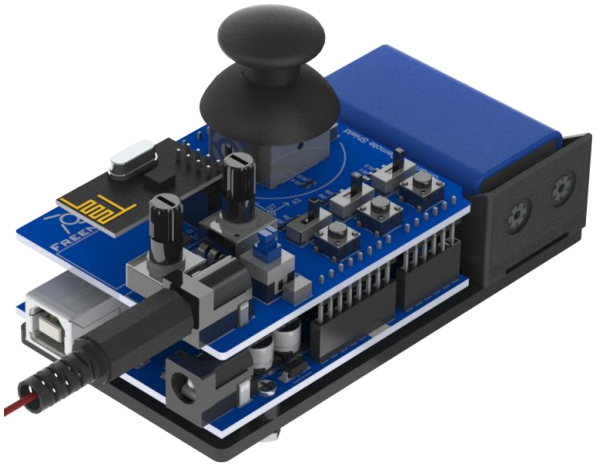


Effect diagram after assembling



Now, we have already finished the assembly.

After finishing the assembly, turn on the power switch, and LED "ON" will light up.



How to use

First, you need to connect NRF24L01 module to other circuit, and write code before using this remote to control it.

Freenove Products

Some Fenove products support this remote control, for the specific usage method, please refer to the tutorials of relevant products.

Arduino Based Products/Projects

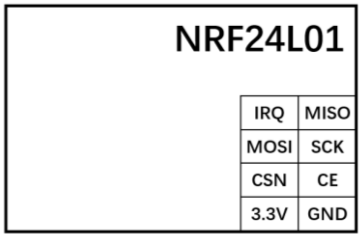
You can easily use this remote control to control Products/Projects based on Arduino. Meanwhile, we provide the test circuit and code for that.

First, connect NRF24L01 module to the Arduino based board according to the following table, and connect a 10uF electrolytic capacitor and 0.1uF nonpolarized capacitor between the 3.3V and the GND.

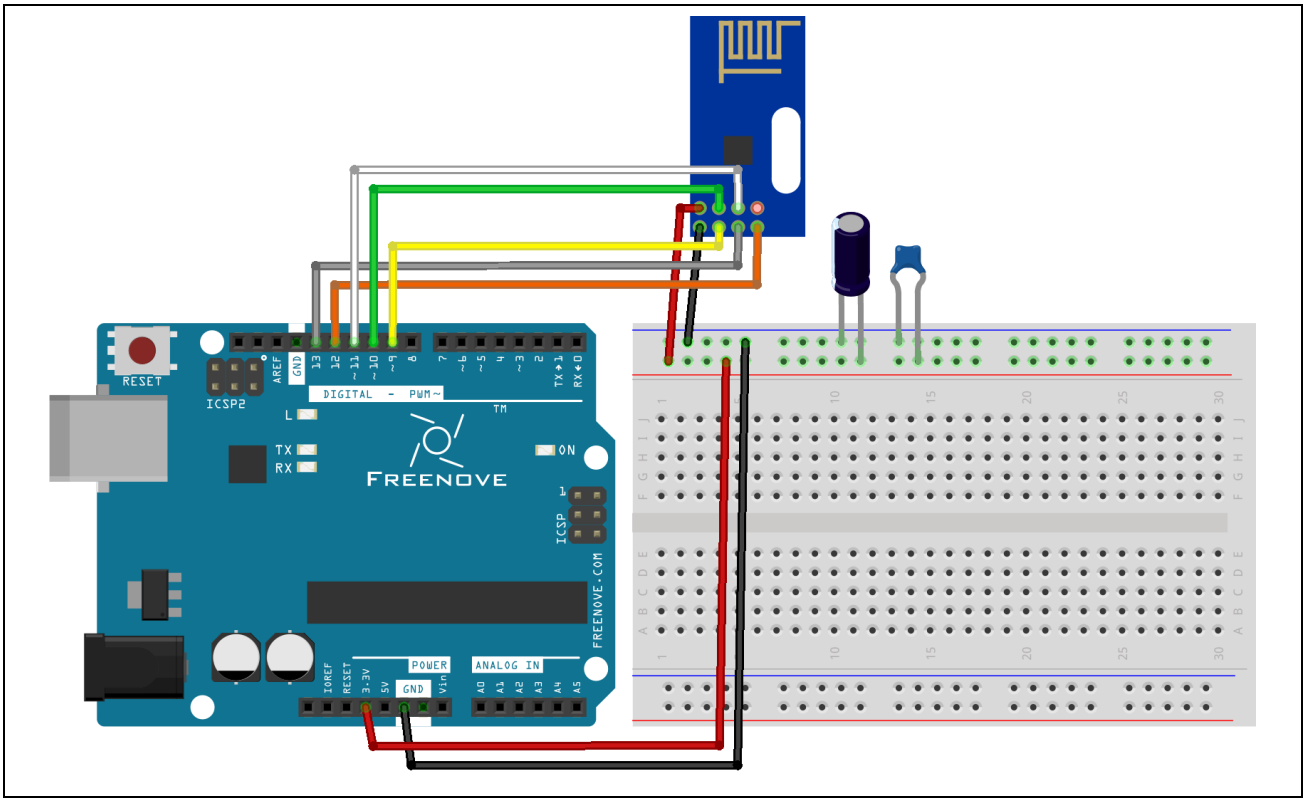
NRF24L01	Board
GND	GND
3.3V	3.3V
CE	D9
CSN	D10
SCK	SCK
MOSI	MOSI
MISO	MISO
IRQ	

For different Arduino based boards, the SPI port (MOSI, MISO, SCK) are not the same.
For more detailes, please refer to https://www.arduino.cc/en/Reference/SPI.

The port of NRF24L01 module is as follows:



Assume that your project is based on Freenove Control Board (or Arduino UNO), and then the wiring is shown below.



Then we need upload the sketch to the board.

First, import "RF24" library file for Arduino software. Open Arduino software, then click "Sketch" > "Include Library" > "Add .ZIP Library..." to add “Libraries\RF24.zip”.

Then, upload "Sketches\Project\Project.ino" to the board.

Keep the connection of USB, open the Serial Monitor, and set baud rate to 115200.

Then, upload "Sketches\Remote\Remote.ino" to the remote control.

Turn on the remote control. If you see "LED3-D8" brightening or flashing, it indicates the data has been successfully sent. You can push the joystick of remote control, then you can see the data changing in Serial Monitor. You can use these data to improve your project.

Other Products/Projects

You can also use this remote control to control Products/Projects based on other control board or microcontroller. It’s not specified here.

What's next?

Thanks for your reading.

This tutorial is all over here. If you find any mistakes, missions or you have other ideas and questions about contents of this tutorial or the kit and ect, please feel free to contact us, and we will check and correct it as soon as possible.

After completing this project, you can try other Freenove projects.

If you want to learn more about Arduino, Raspberry Pi, smart cars, robots and orther interesting products in science and technology, please continue to focus on our website. We will continue to launch cost-effective, innovative and exciting products.

Thank you again for choosing Freenove products.