Free your innovation

Freenove is an open-source electronics platform.
www.freenove.com

Warning

When you purchase or use this product, please note the following:

- This product contains small parts. Swallowing or improper operation them can cause serious infections and death. Seek immediate medical attention when the accident happened.
- Do not allow children under 3 years old to play with or near this product. Please place this product in where children under 3 years of age cannot reach.
- Do not allow children lack of ability of safe to use this product alone without parental care.
- Never use this product and its parts near any AC electrical outlet or other circuits to avoid the potential risk of electric shock.
- Never use this product near any liquid and fire.
- Keep conductive materials away from this product.
- Never store or use this product in any extreme environments such as extreme hot or cold, high humidity and etc.
- Remember to turn off circuits when not in use this product or when left.
- Do not touch any moving and rotating parts of this product while they are operating.
- Some parts of this product may become warm to touch when used in certain circuit designs. This is normal. Improper operation may cause excessively overheating.
- Using this product not in accordance with the specification may cause damage to the product.

About

Freenove is an open-source electronics platform. Freenove is committed to helping customer quickly realize the creative idea and product prototypes, making it easy to get started for those enthusiasts of programing and electronics and launching innovative open source products. Our services include:

- Electronic components and modules
- Learning kits for Arduino
- Learning kits for Raspberry Pi
- Learning kits for Technology
- Robot kits
- Auxiliary tools for creations

Our code and circuit are open source. You can obtain the details and the latest information through visiting the following web sites:
http://www.freenove.com
https://github.com/freenove

Your comments and suggestions are warmly welcomed, please send them to the following email address:
support@freenove.com

References

You can download the sketches and references used in this product in the following websites:
http://www.freenove.com
https://github.com/freenove
If you have any difficulties, you can send email to technical support for help.

The references for this product is named Freenove Remote Control Kit, which includes the following folders and files:

- Libraries Library files for Arduino software
- Sketches Sketches for Arduino projects
- Readme.txt Instructions
- Tutorial.pdf Tutorial

Support

Freenove provides free and quick technical support, including but not limited to:

- Quality problems of products
- Problems in using products
- Questions for learning and technology
- Opinions and suggestions
- Ideas and thoughts

Please send email to:
support@freenove.com
On working day, we usually reply to you within 24 hours.

Copyright

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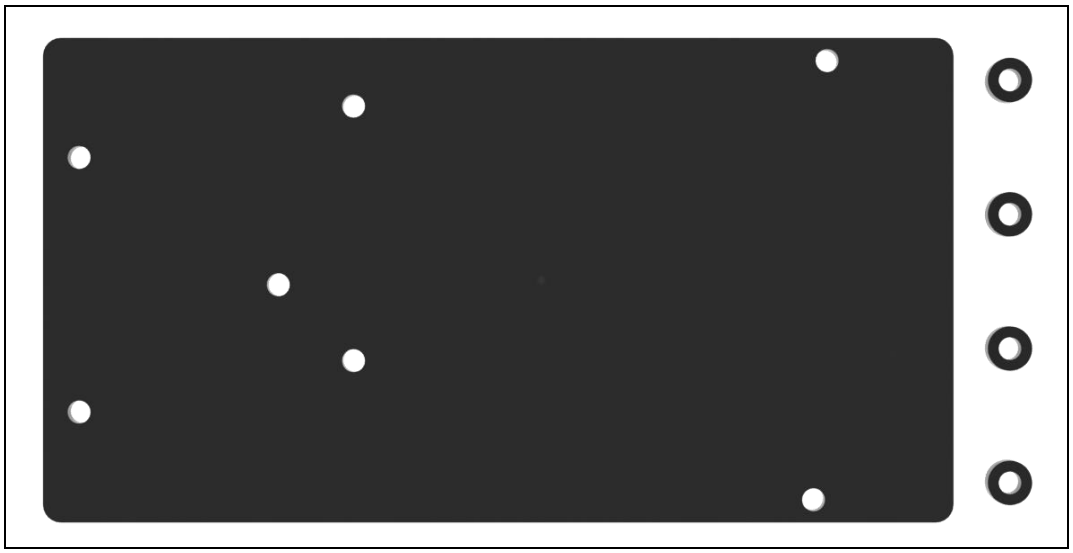
Acrylic Parts

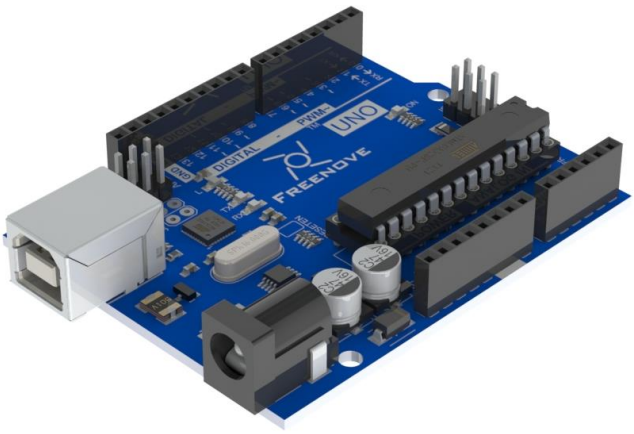
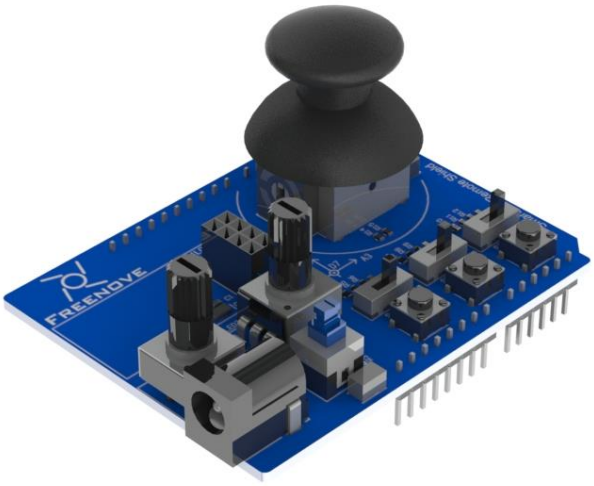
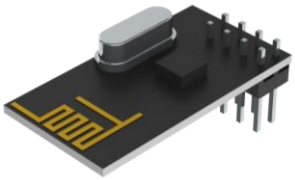


The surface of the acrylic parts is covered with a layer of protective film, you need to remove it first. Some holes in the acrylic parts may have residues, you also need to clean them before using.

Machinery Parts

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

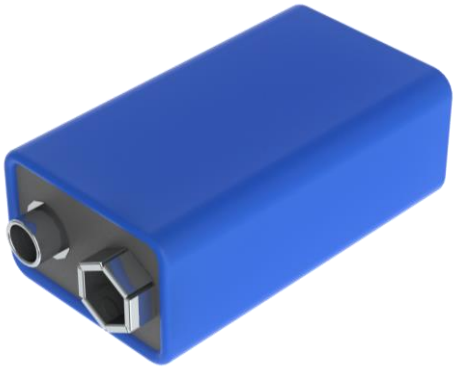
Electronic Parts

Freenove UNO 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

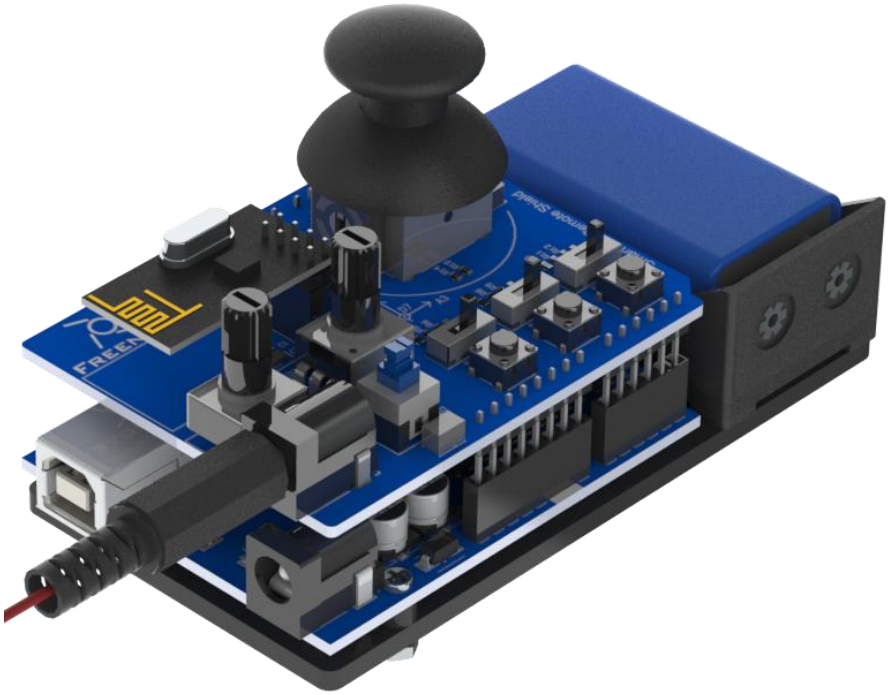
9V Batteriey x1


Preface

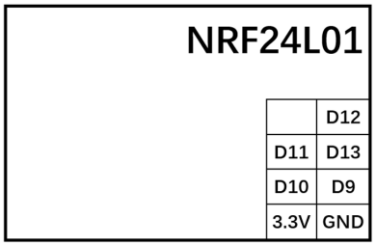
This is a remote control kit based on Arduino. With this kit, you can assemble a remote control to control your smart car, robot, or other projects. It contains two NRF24L01 modules. One is assembled on the remote control, and the other is assembled on the devices needed to be controlled.

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).



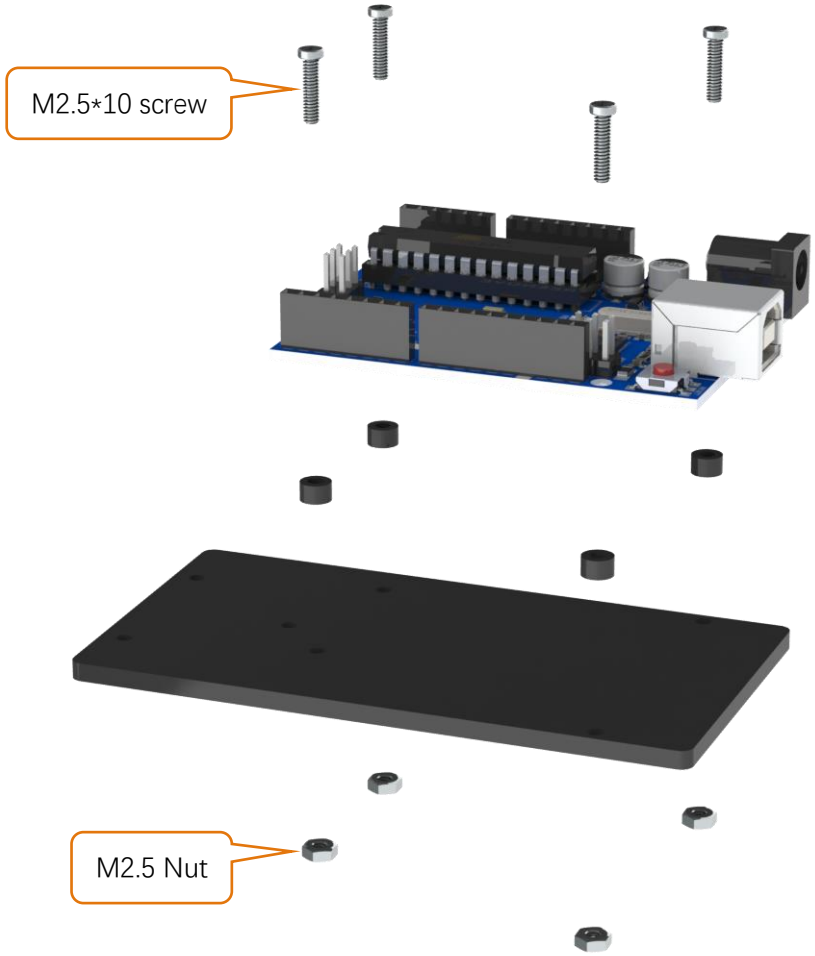
The ports of the NRF24L01 module's socket are as follows:



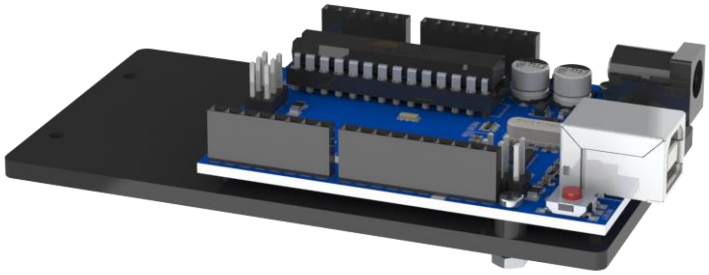
Assembly

Now let us start to assemble.

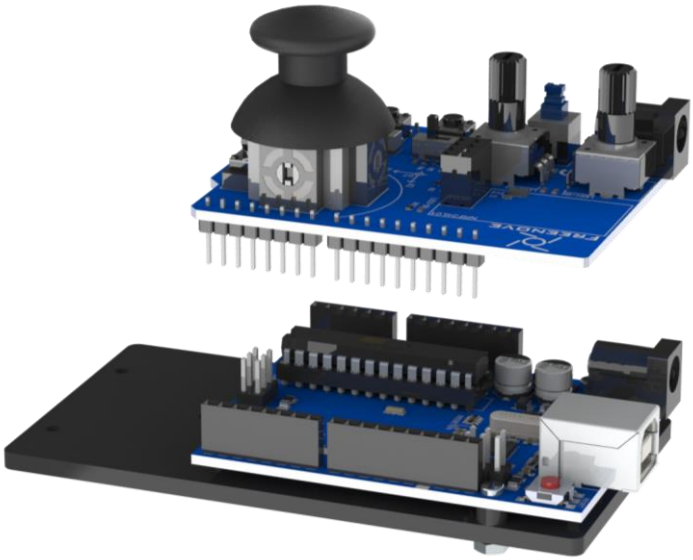
Assemble Freenove UNO onto the acrylic sheet.



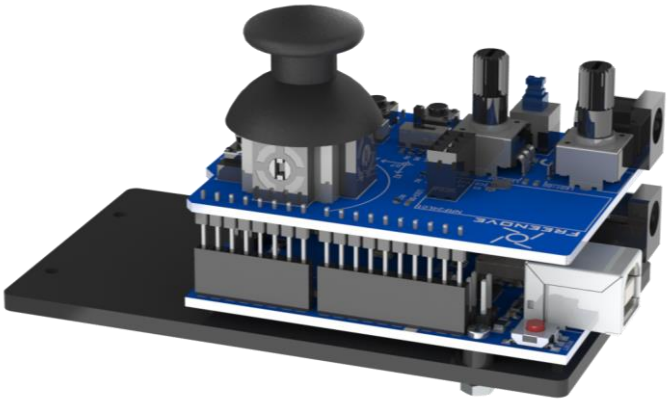
Effect diagram after assembling.



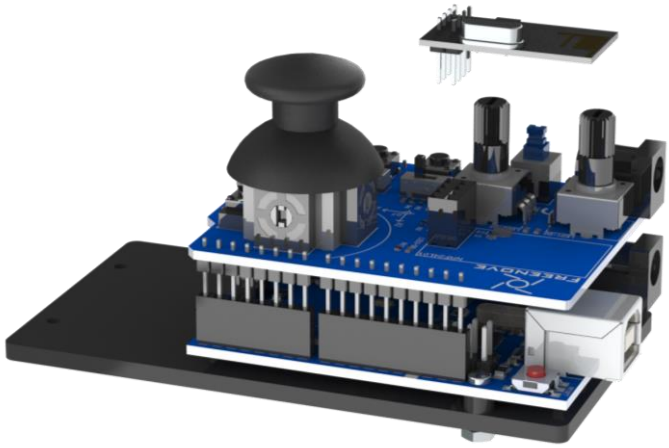
Assemble Freenove Smart Car Remote Shield onto Freenove UNO.



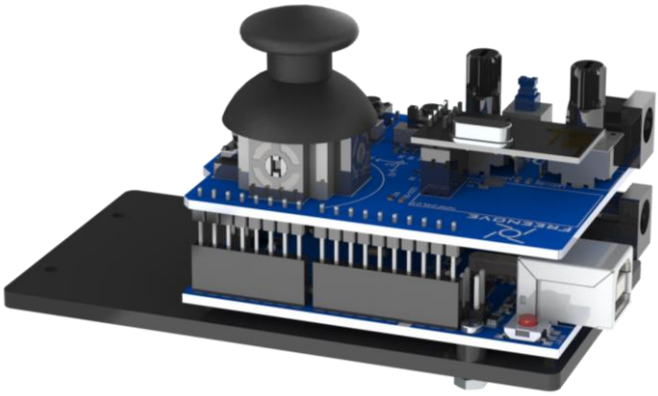
Effect diagram after assembling



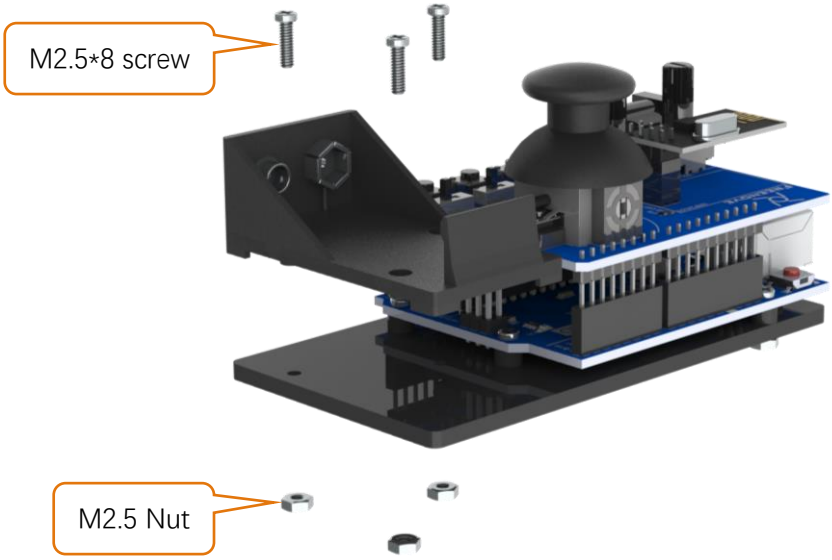
Assemble NRF24L01 Module onto Freenove Smart Car Remote Shield.



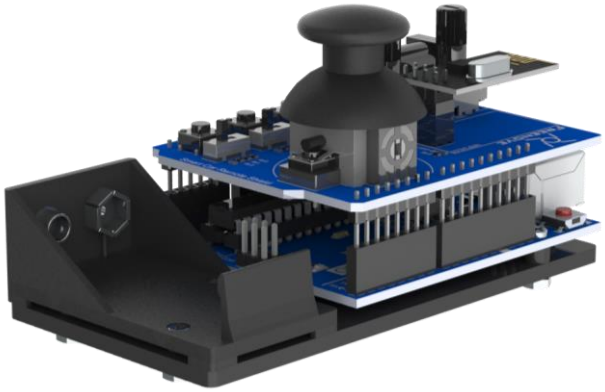
Effect diagram after assembling



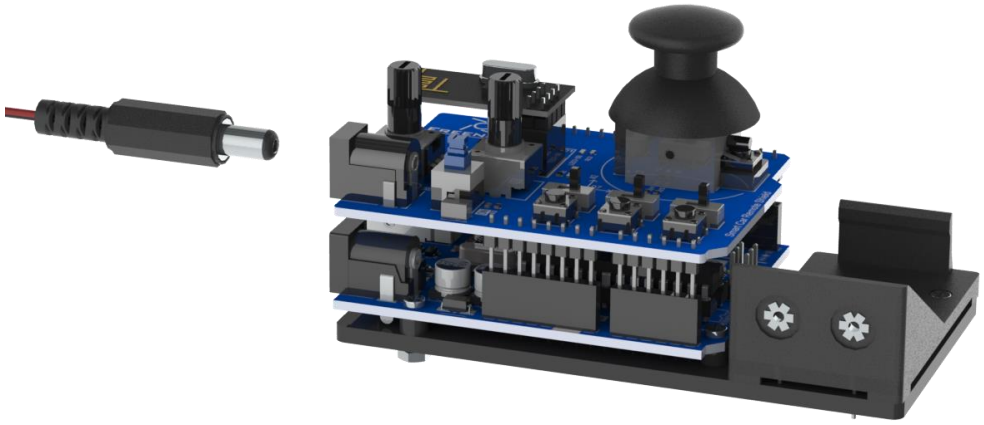
Assemble 9V Battery Holder onto the acrylic sheet.



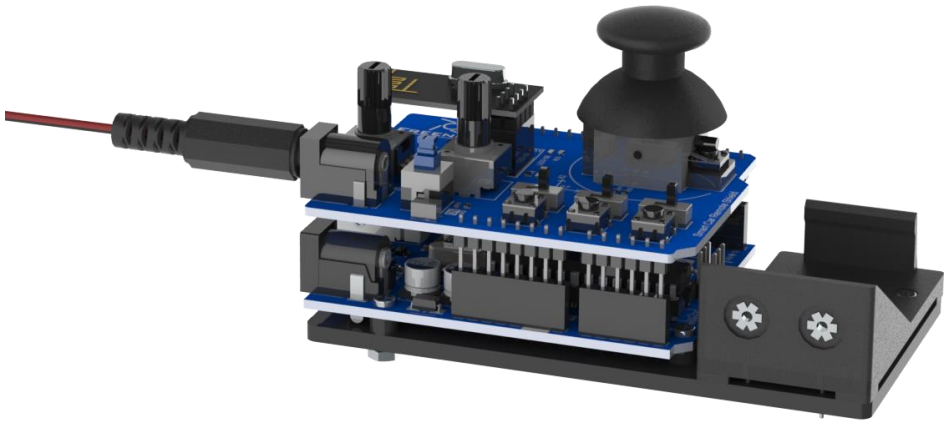
Effect diagram after assembling



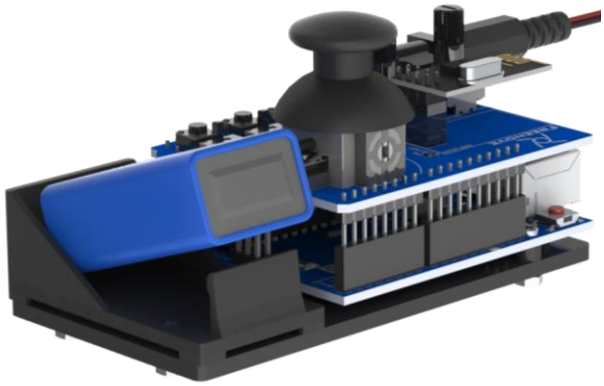
Plug the 9V Battery Holder's DC plug into the Freenove Smart Car Remote Shield.
(Wires between 9V Battery Holder and DC plug are not fully shown in the figure)



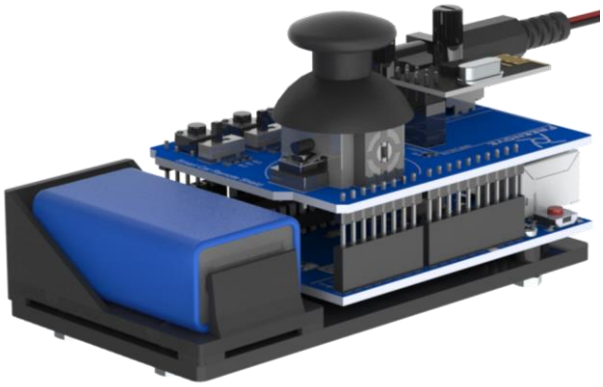
Effect diagram after assembling



Assemble 9V Battery into the Battery Holder.

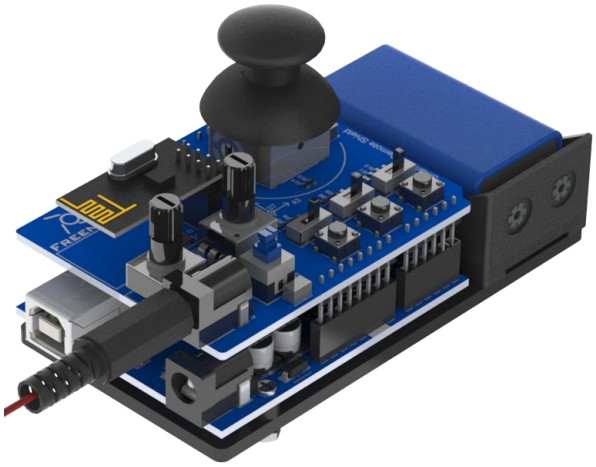


Effect diagram after assembling



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

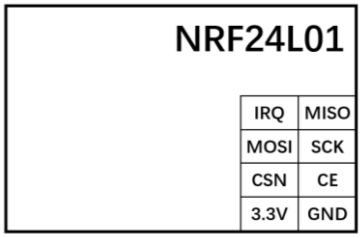
You can easily use this remote control to control Products/Projects based on Arduino. Meanwhile, we provide the test circuit and code for that.

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

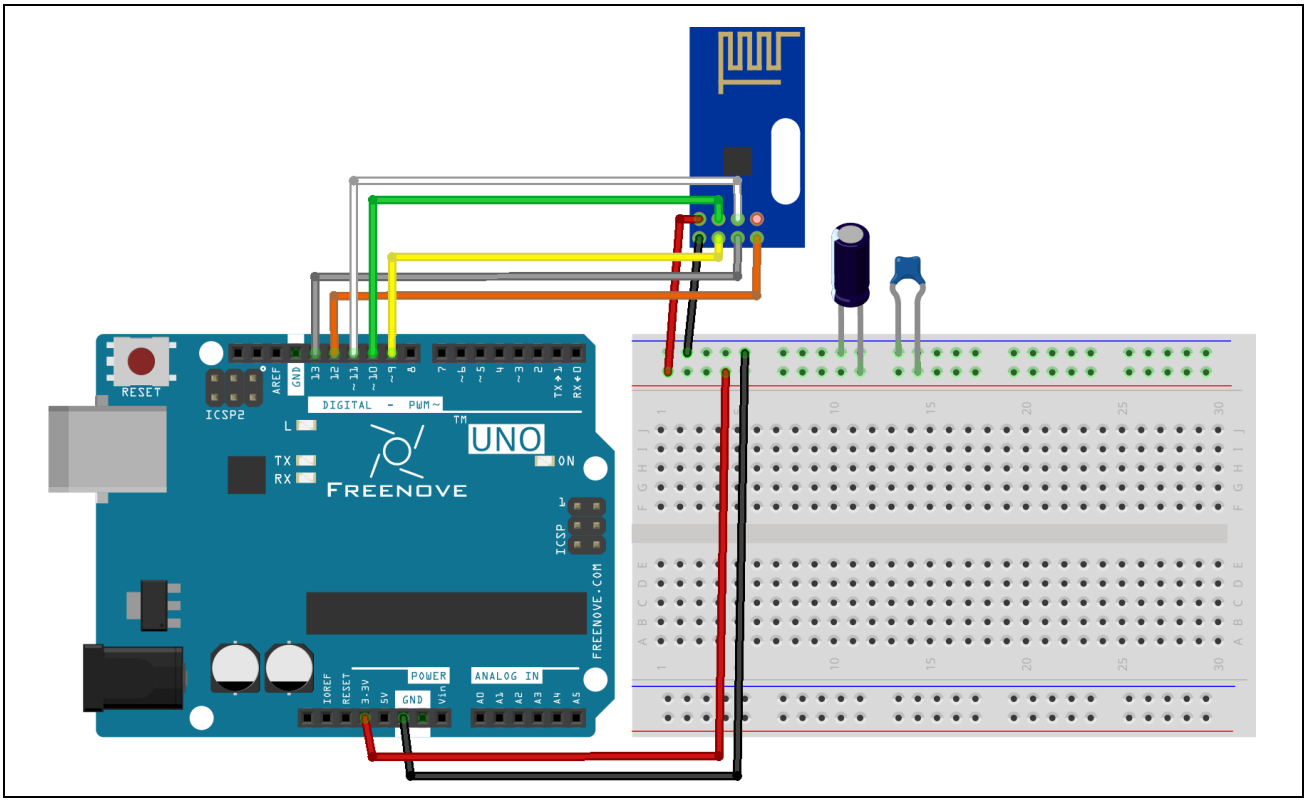
NRF24L01	Arduino
GND	GND
3.3V	3.3V
CE	D9
CSN	D10
SCK	SCK
MOSI	MOSI
MISO	MISO
IRQ	

For different Arduino 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 UNO (Arduino UNO), and then the wiring is shown below.



Then we need upload the sketch to the Arduino board of your project.

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 Arduino board of your project.

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.