Welcome

Thank you for choosing Freenove products!

How to Start

When reading this, you should have downloaded the ZIP file for this product.
Unzip it and you will get a folder containing tutorials and related files. Please start with this PDF tutorial.

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

Get Support

Encounter problems? Don't worry!

When there are packaging damage, quality problems, questions encountering in use, etc., just send us an email. We will reply to you within one working day and provide a solution.

support@freenove.com

Attention

Pay attention to safety when using and storing this product:

- This product is not suitable for children under 12 years of age because of small parts and sharp parts.
- Minors should use this product under the supervision and guidance 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.
- To avoid personal injury, do not touch parts rotating or moving while working.
- The wrong operation may cause overheat. Do not touch and disconnect the power supply immediately.
- Operate in accordance with the requirements of the tutorial. Fail to do so may damage the parts.
- Store this product in a dry and dark environment. Keep away from children.
- 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 implement product prototypes, realize their creativity and launch innovative products. Our services include:

- Kits for learning programming and electronics
- Kits compatible with Arduino®, Raspberry Pi®, micro:bit®, etc.
- Kits for robots, smart cars, drones, etc.
- Components, modules and tools
- Design and customization

To learn more about us or get our latest information, please visit our website:

http://www.freenove.com

Copyright

All the files provided in the ZIP file are released under Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Unported License. You can find a copy of the license in the ZIP file.

It means you can use these files on your own derived works, in part or completely. But not for commercial use.

Freenove® brand and logo are trademarks of Freenove Creative Technology Co., Ltd. Must not be used without permission.

Other registered trademarks and their owners appearing in this document:

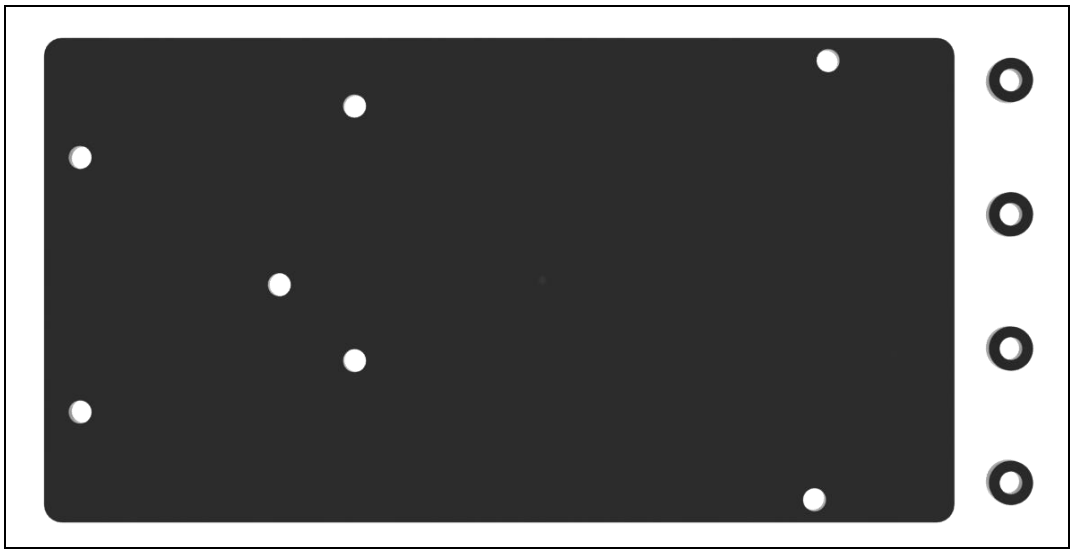
Arduino® is a trademark of Arduino LLC (https://www.arduino.cc/).
Raspberry Pi® is a trademark of Raspberry Pi Foundation (https://www.raspberrypi.org/).
micro:bit® is a trademark of Micro:bit Educational Foundation (https://www.microbit.org/).

Contents

Welcome i
Contents I
List 1
    Acrylic Parts 1
    Machinery Parts 1
    Electronic Parts 2
    Tools 3
    Self-prepared Parts 3
Preface 4
Assembly 5
How to use 11
    Freenove Products 11
    Arduino-compatible Products/Projects 11
    Other Products/Projects 12
What's next? 13

List

Acrylic Parts

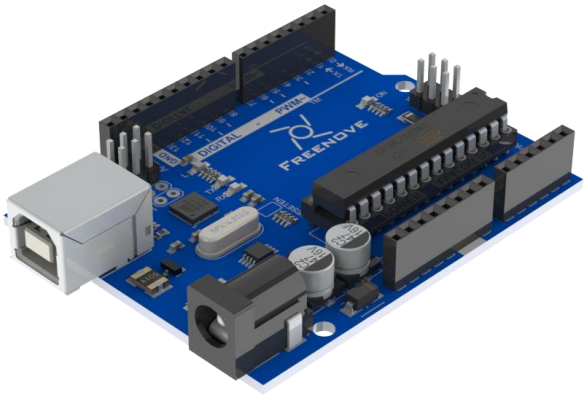
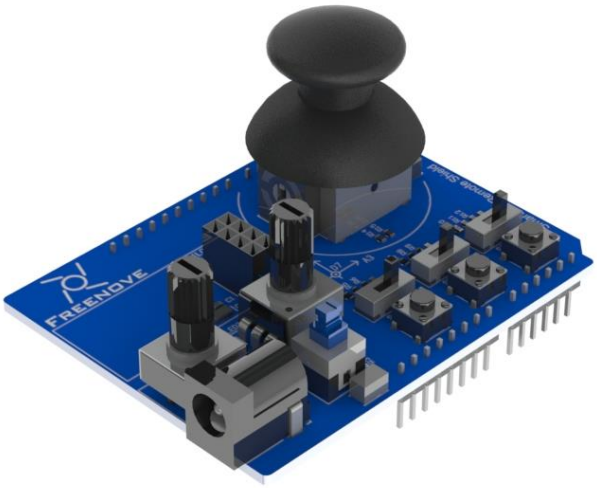
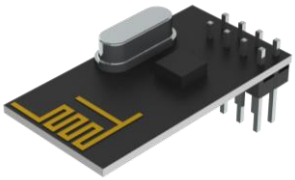


Remove the protective film on the surface of the acrylic parts first.
Clean residues possibly remained on some holes before using.

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	

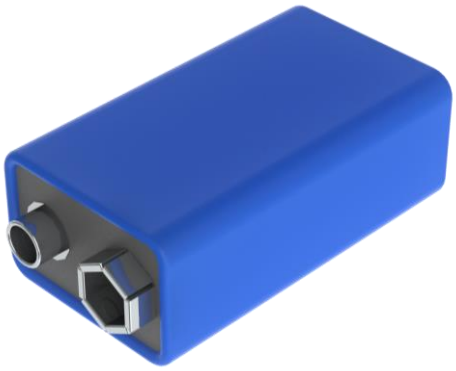
Tools

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.



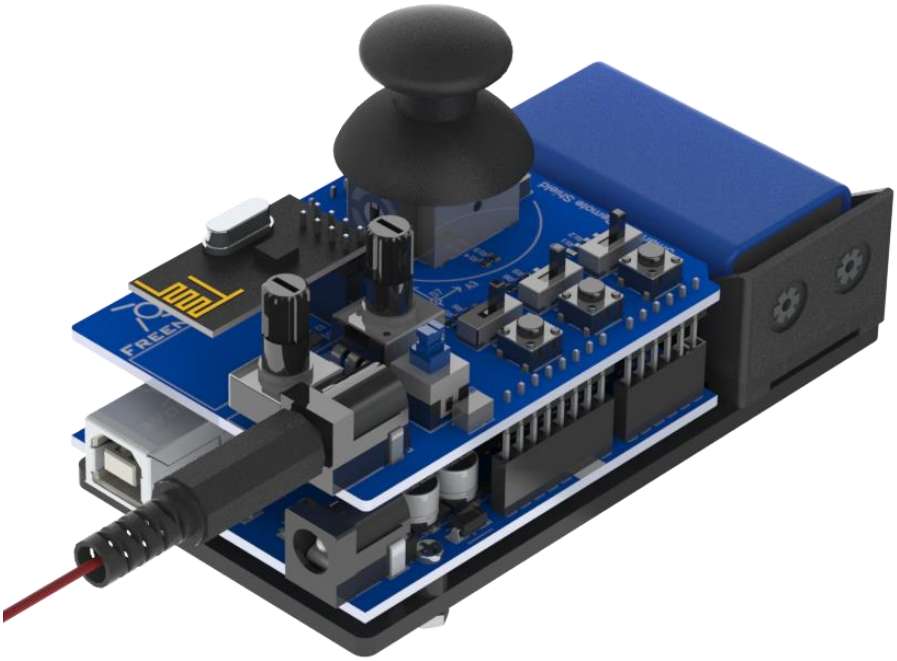
Preface

This is a remote control kit compatible with Arduino® IDE. (Arduino® is a trademark of Arduino LLC.)

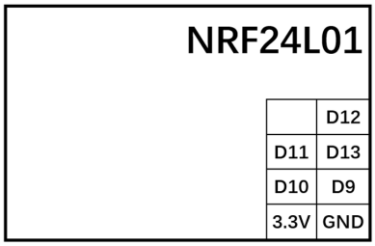
With this kit, you can assemble a remote to control your smart car, robot, or other projects. It contains two NRF24L01 modules. One is to be assembled on the remote, and the other on the devices to be controlled.

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).



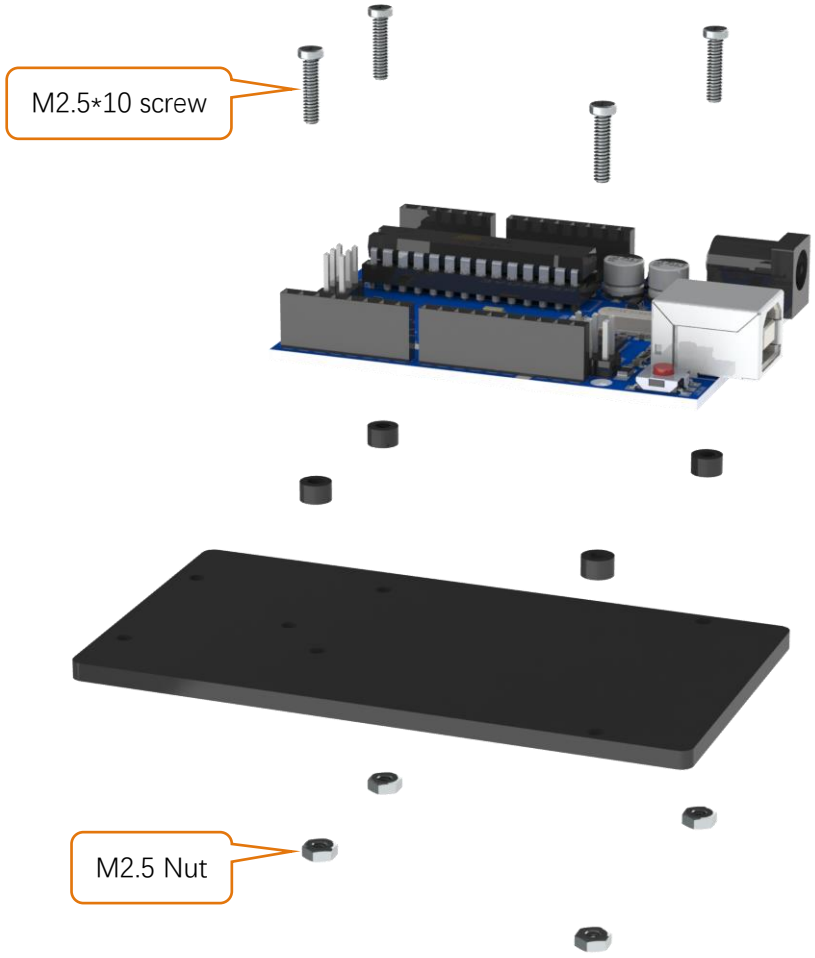
The ports of the NRF24L01 module's socket are as follows:



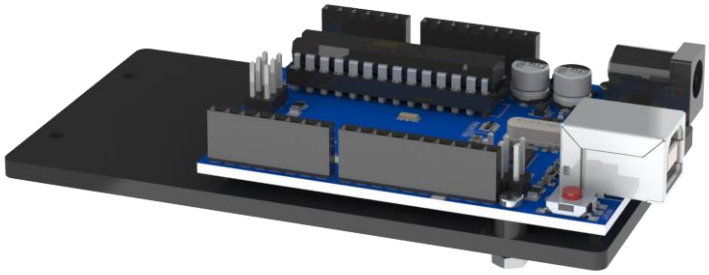
Assembly

Now let us start to assemble.

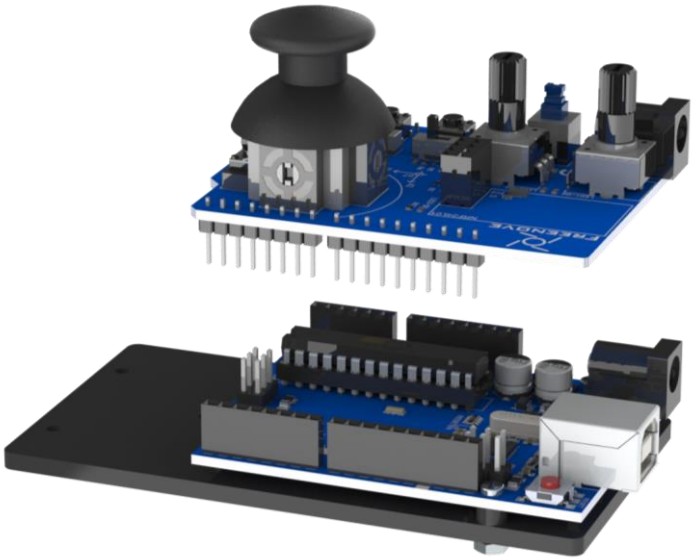
Assemble Freenove Control Board onto the acrylic board.



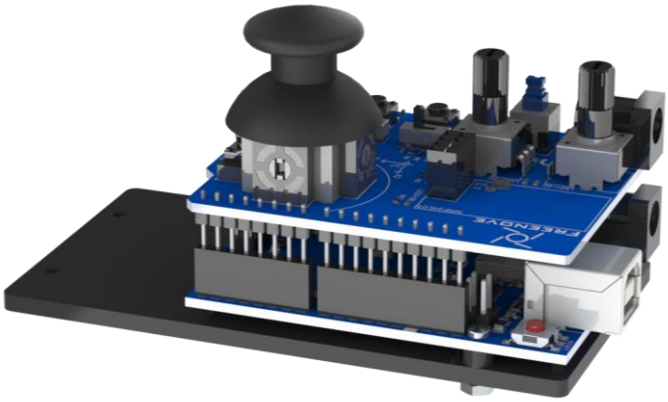
Effect diagram after assembling.



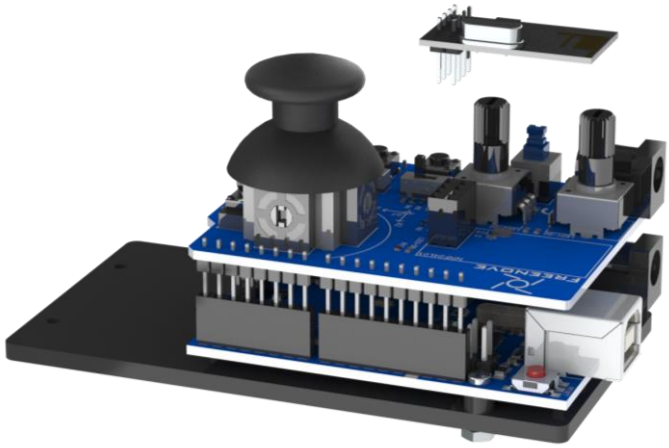
Assemble Freenove Smart Car Remote Shield onto Freenove Control Board.



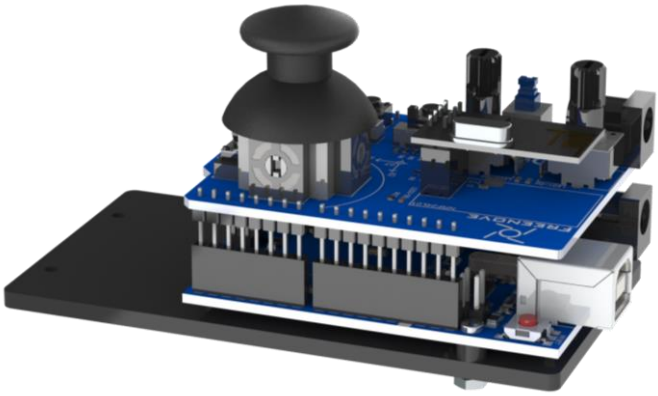
Effect diagram after assembling.



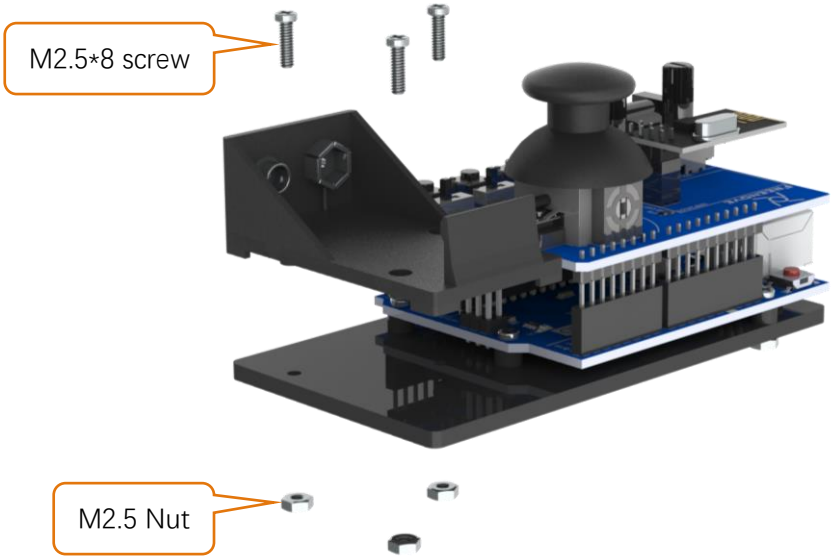
Assemble NRF24L01 Module onto Freenove Smart Car Remote Shield.



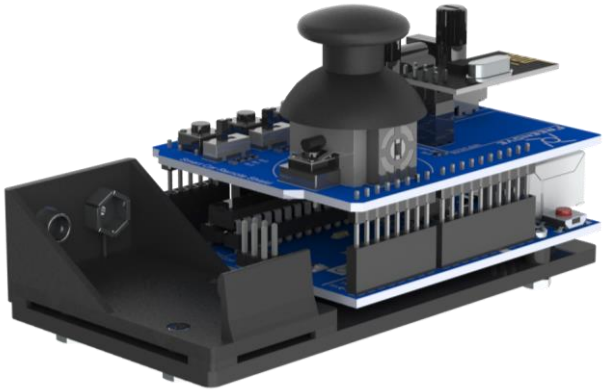
Effect diagram after assembling.



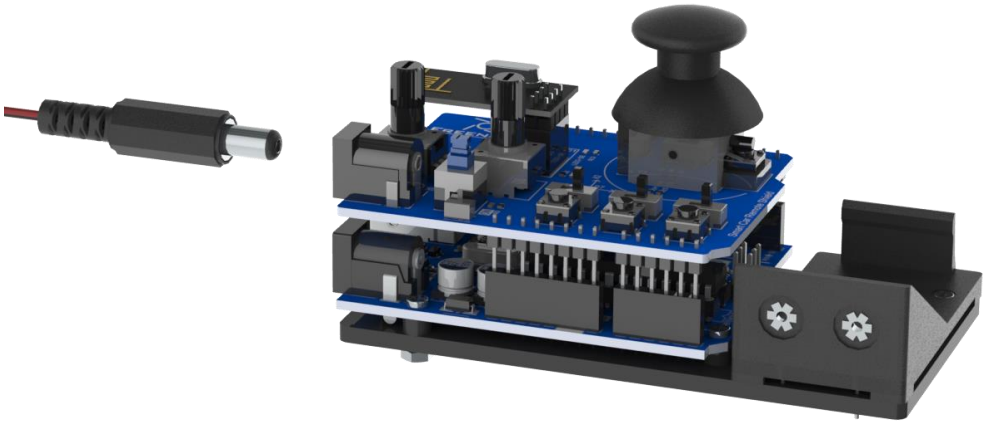
Assemble 9V Battery Holder onto the acrylic board.



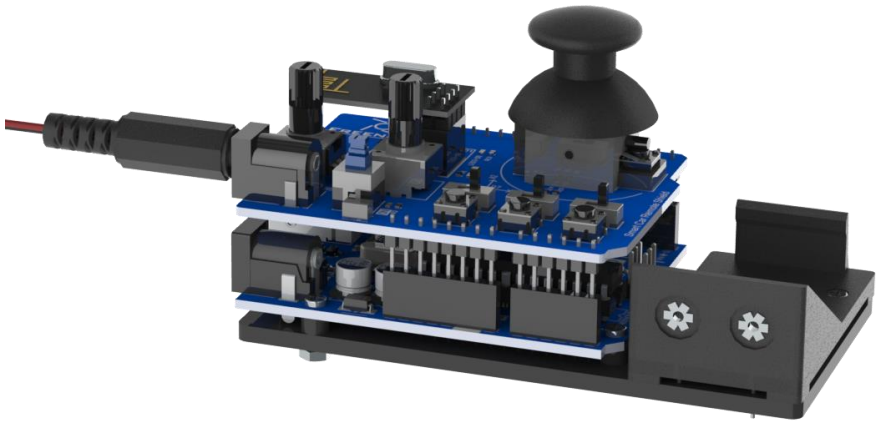
Effect diagram after assembling.



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.)

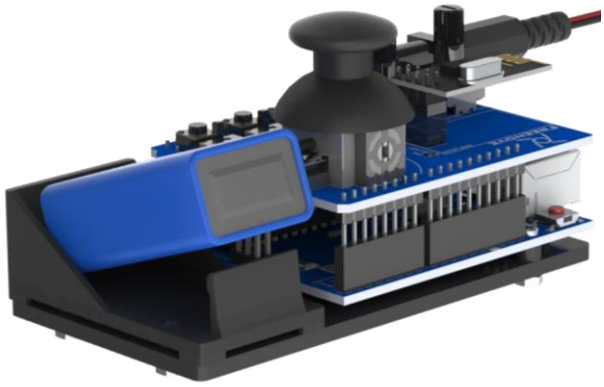


Effect diagram after assembling.

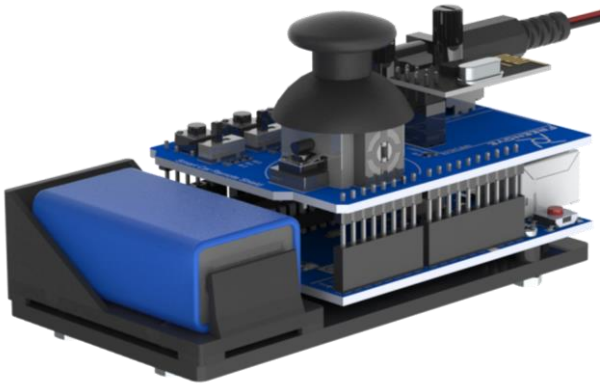


Assemble 9V Battery into the Battery Holder.

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.

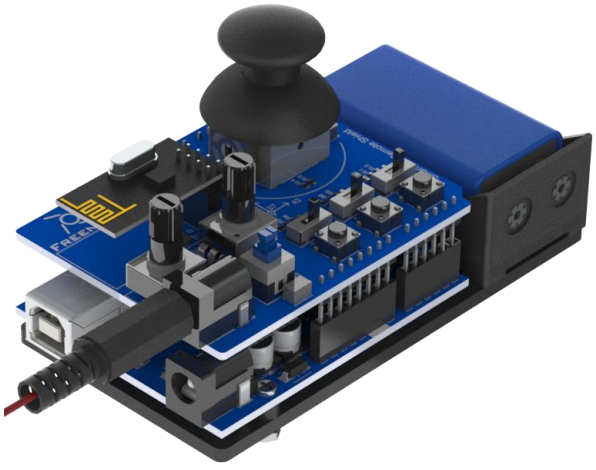


Effect diagram after assembling.



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

This remote can be widely used in various programmable products and projects.

You need to connect the remaining one NRF24L01 module to other products/boards, then write and upload your code.

Freenove Products

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

Arduino-compatible Products/Projects

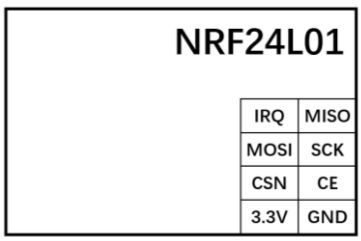
You can easily use this remote to control products/projects compatible with Arduino. Meanwhile, we provide the test circuit and code for that.

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

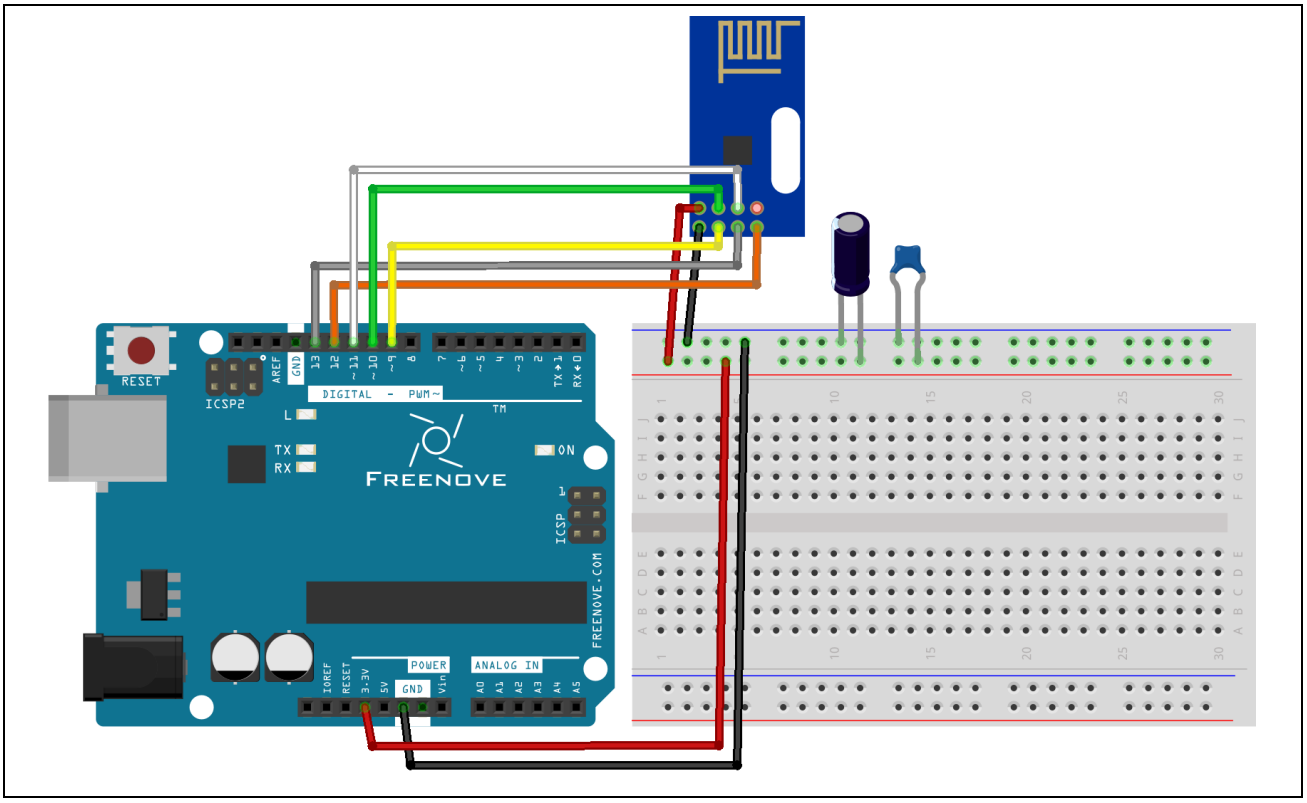
NRF24L01	Board
GND	GND
3.3V	3.3V
CE	D9
CSN	D10
SCK	SCK
MOSI	MOSI
MISO	MISO
IRQ	

For different Arduino-compatible 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:



If your project is based on Freenove Control Board (compatible with Arduino Uno board), then the wiring is shown below.



Then we need upload the sketch to the board in this circuit.

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

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

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

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

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, 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 to control products/projects based on other boards or microcontrollers. It’s not specified here.

What's next?

Thanks for your reading!

This document is all over here. If you find any mistakes, omissions or have other ideas or questions, please feel free to contact us. We would love to hear from you.

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

If you want to learn more about electronics and programming, interesting robots and projects, please continue to follow our website. We will continue to launch cost-effective, innovative and exciting products.

Thank you again for choosing Freenove products.