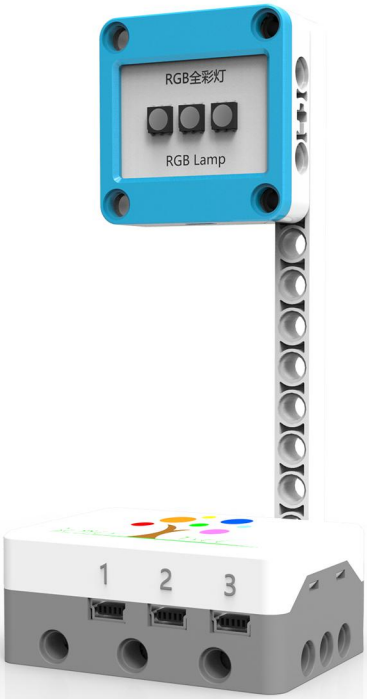
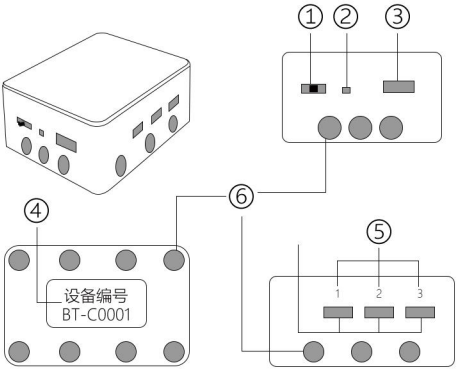
Model：EdgeUTech



EdgeUTech Programmable Electronic Building Blocks Instruction

Product Description

1、CUBIC Controller



① Switch

② Power indicator

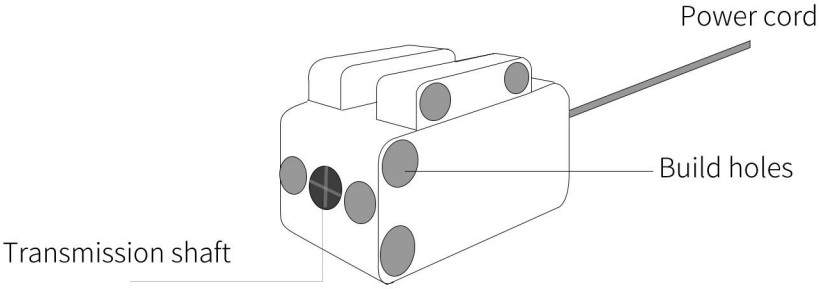
③ Charging / data interface

④ Buletooth number

⑤ Electronic block interface

⑥ Building hole

2、Motor



Application Installation

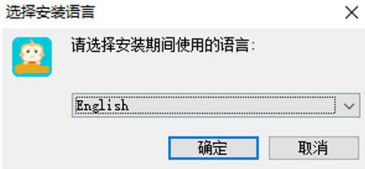
一、Download ScratchPi Graphical Programming Software

Visit the official website : www.bettertree.cn, click "Download" to enter the resource download page, as shown in 2.1-1.

2.1-2 Click to download ScratchPi stable version

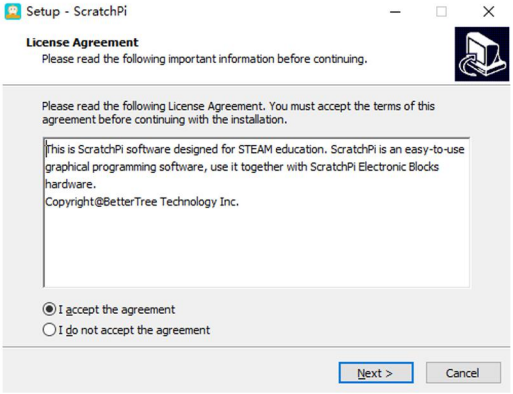
二、Download ScratchPi Graphical Programming Software

1、Double-click the downloaded ScratchPi installer to enter the installation wizard. As shown in 2.2-1



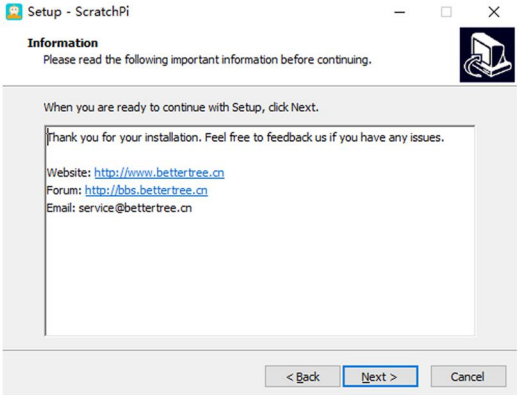
2.2-1 language selection

2、Select the language and click OK to enter the authorization interface, as shown in Figure 2.2-2



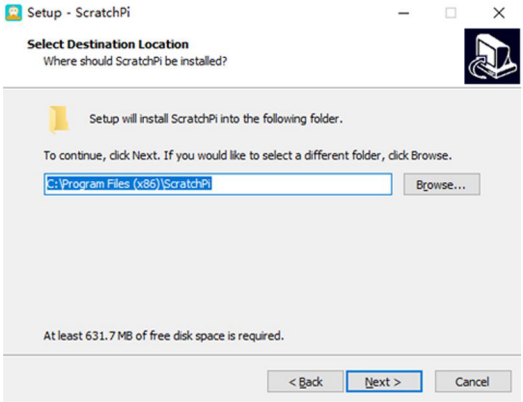
2.2-2 software licensing

3、Select "I accept" and click Next to read important information, as shown in 2.2-3



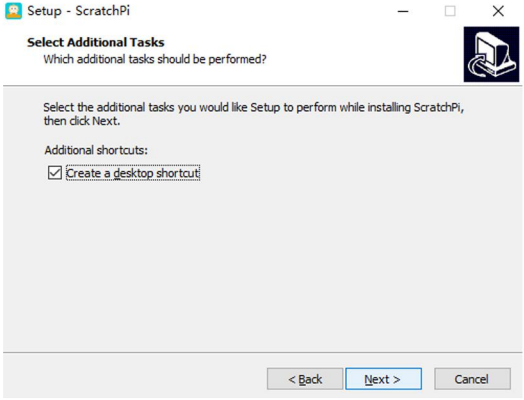
2.2-3 read important information

4、After reading, click Next and select the installation target file, as shown in 2.2-4



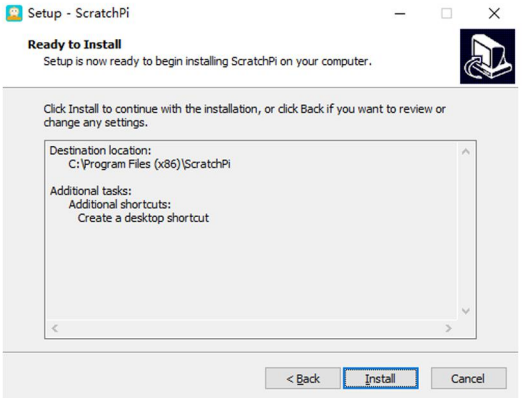
2.2-4 select the installation target file

5、After selecting the installation folder, click Next, as shown in 2.2-5



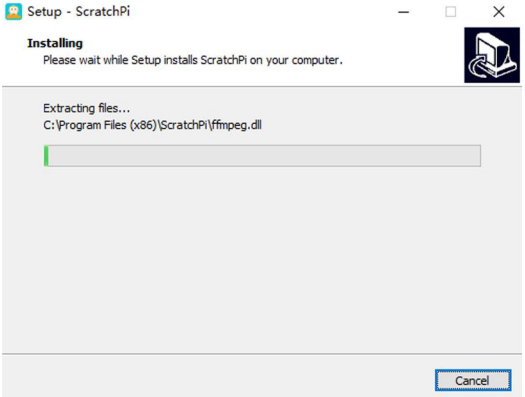
2.2-5Create a desktop icon

6、Create a desktop icon, click Next, as shown in 2.2-6



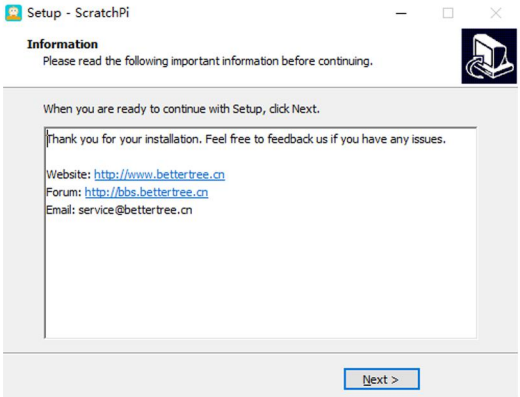
2.2-6 confirm installation information

7、Confirm the installation information and click Install to start the automatic installation process, as shown in 2.2-7.



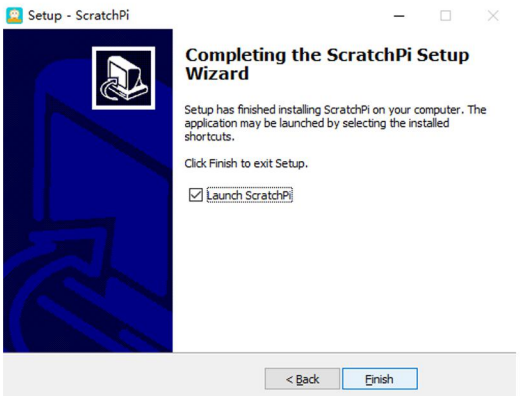
2.2-7 installation process

8、After the installation is complete, confirm important information, as shown in 2.2-8.



2.2-8 reading important information

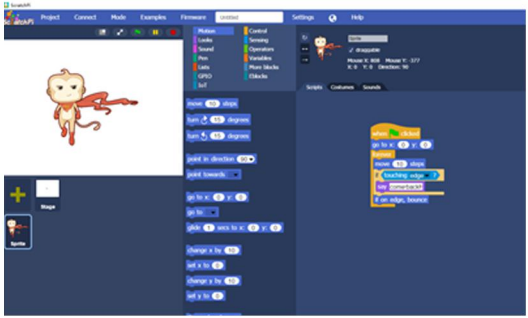
9、Read important information, installation is complete, as shown in 2.2-9



2.2-9 installed

三、ScratchPi graphical programming software introduction

After the software installation is complete, the program will automatically open. The initial interface of ScratchPi is shown in 2.3-1.



2.3-1 Software initial interface diagram

Menu bar: Contains software operation functions such as project, connection, mode, example, firmware, language switching, etc.

Stage: An area where all characters are displayed together. Characters can be hidden from the stage by being hidden.

Role list: can control program roles and the addition and delect of the stage background.

Program block category: All programming control modules are classified according to function, which is easy to find when using.

Program block: The Scratch program is composed of various splicable program blocks.

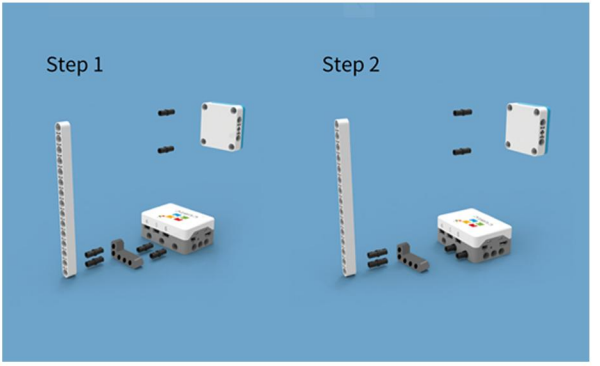
area: The sequence of program blocks obtained by combining program blocks is called a script, and its operation area becomes a script area.

Tutorial Case-Traffic Light

Traffic lights can be seen everywhere in our lives. In this task, we will use ScratchPi to program traffic lights and understand the control principle of traffic lights.The traffic light shape is shown in 2.3-2.

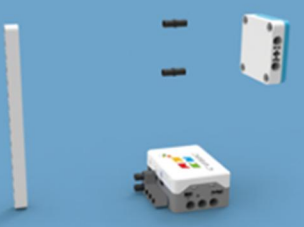
2.3-3 traffic lights

一、Build steps



Step 3

Step 4

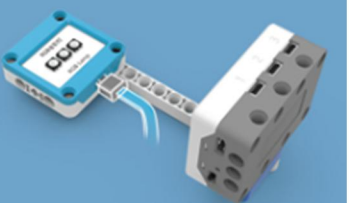


Step 5

Step 6

Step 7

Step 8

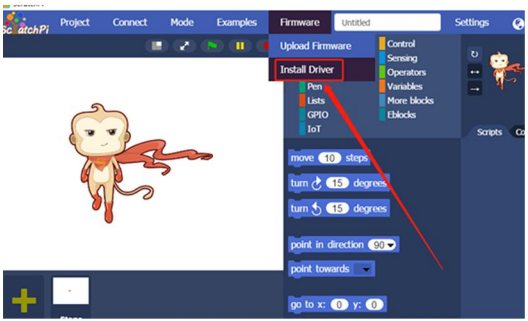


Step 9

Final effect

二、install driver

1、Click the menu bar "Firmware"-> "Install Driver", shown in 3,1-1

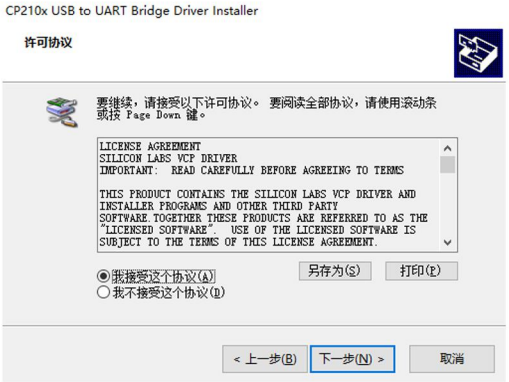


2、3,1-1Install Driver

2、Enter the driver installation wizard, as shown in 3.1-2

3.1-2 Driver Installation Wizard

3、Click Next to enter the authorization permission interface, as shown in 3.1-3.



3.1-3 authorization permission interface

4、Accept the license and click Next to complete the installation. As shown in 3.1-4

3.1-4 complete installatio

三、Boot steps

Turn on the switch. When the blue indicator light is on, it enters the working state; when the red indicator light is on, it enters the charging mode; when the yellow indicator light is on, it indicates that it is fully charged; as shown in 3.2-1

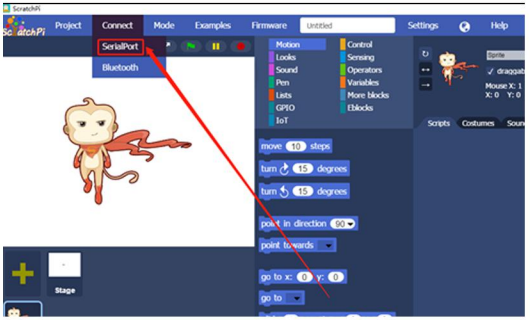
3.2-1 cubic control switch

四、Connection method-serial port

Find the white USB data cable in the package, insert the MicroUSB end of the data cable into the data interface of the Cubic controller, and connect the USB interface of the computer host at the other end, as shown in 3.3-1

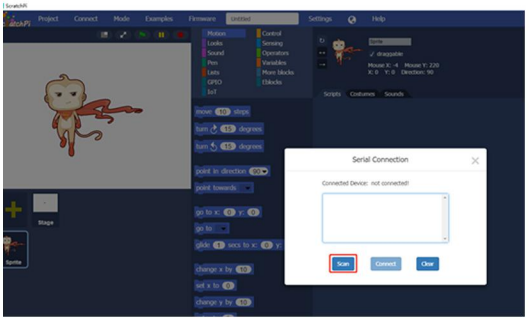
3.3-1 Cubic uses a serial cable to connect to the computer

1、Click "Connection"-> "Serial Port" in the menu bar, as shown in 3.3-2



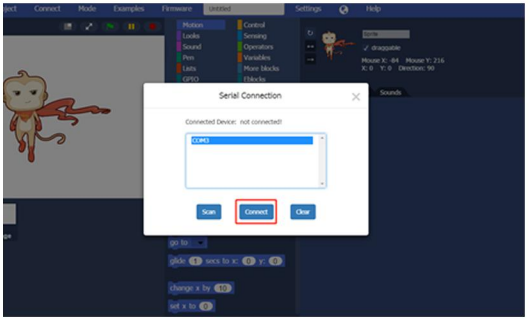
3.3-2 Connection method selection

2、Click "Serial Port" to enter the serial port connection interface, as shown in 3.3-3.



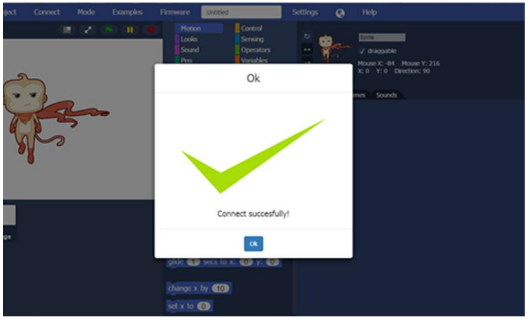
3.3-3 Serial connection interface

3、Click Scan to display the serial port name of the scanned Cubic controller, as shown in 3.3-4



3.3-4 Scan the serial port

4、Select the serial port name and click the "Connect" button. The connection is successful, as shown in 3.3-5



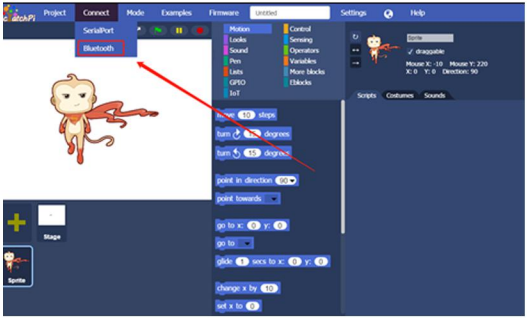
3.3-5 Serial connection successful

Connection method-Bluetooth

Check whether the computer has Bluetooth function, and the Bluetooth function is activated normally. If the desktop computer does not have Bluetooth, you can use the USB Bluetooth head included in the package to achieve Bluetooth connection. Insert the USB Bluetooth head into the USB port of the host computer, as shown in 3.4-1

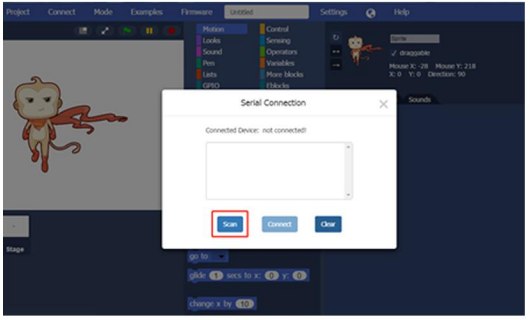
3.4-1 USB Bluetooth head plugged into host USB port

1、Click "Connection"-> "Bluetooth" in the menu bar, as shown in Figure 3.4-2



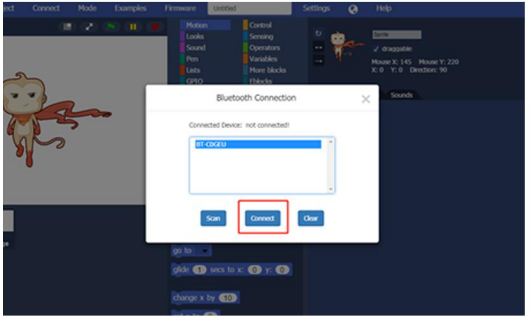
3.4-2 Bluetooth connection method

2、Click "Bluetooth" to enter the Bluetooth connection interface, as shown in 3.4-3.



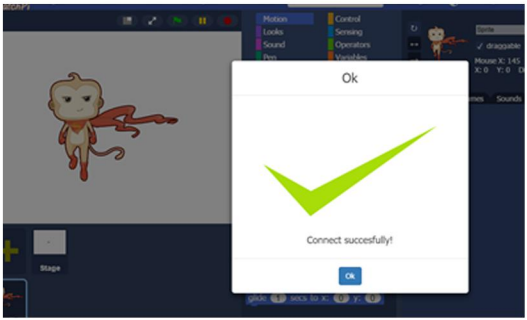
3.4-3 Buletooth connection

3、Click Scan to display the Bluetooth name of the scanned Cubic controller, as shown in 3.4-4



3.4-4 scan the buletooth

4、Select the Bluetooth name of the specified device (see the label at the bottom of the Cubic controller) and click "Connect". The connection is successful, as shown in 3.4-5.

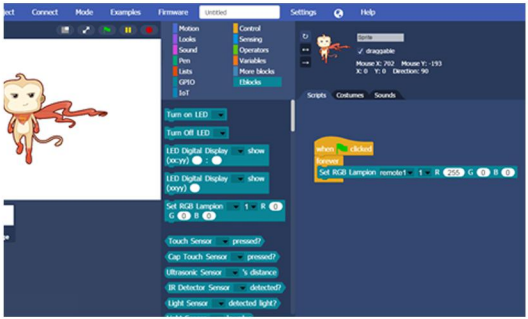


3.4-5 Bluetooth connection succeeded

六、Programming mode-Scratch mode

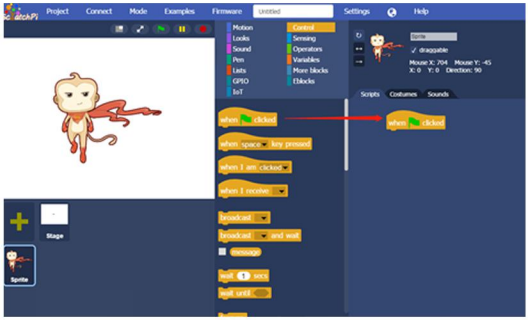
Scratch mode is mainly used to write games or stories that include animation functions. ScratchPi also supports electronic building blocks to implement software and hardware combined works like gamepads.

1、programming software, the default mode is Scratch mode, as shown in 3.5-1.



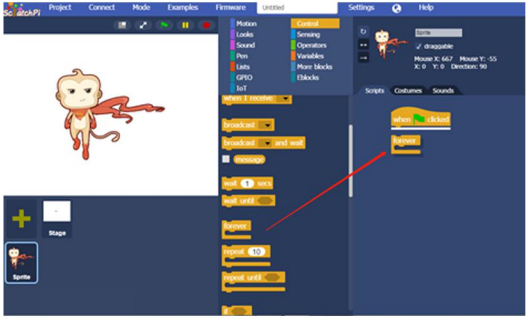
3.5-1 Scratch model

2、The user can choose the serial port or Bluetooth to connect the Cubic controller, and then start writing the traffic light program. First, click the left mouse button under the "Control" when clicked category and drag it to the script area, as shown in 3.5-2.



3.5-2 Drag and drop blocks into the script area

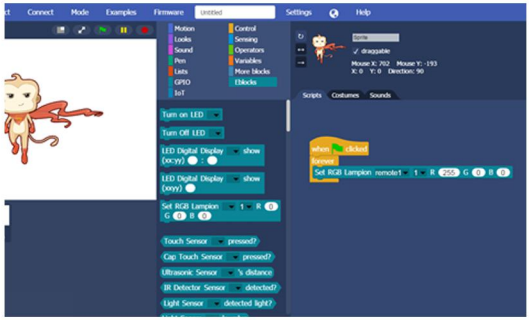
3、Drag the control category forever to the bottom of the script when clicked area . When the gaps of the program blocks are aligned, a white line appears. Release the mouse and the two program blocks will automatically combine, as shown in 3.5-3.



3.5-3 Combination of blocks

4、For the same operation, drag

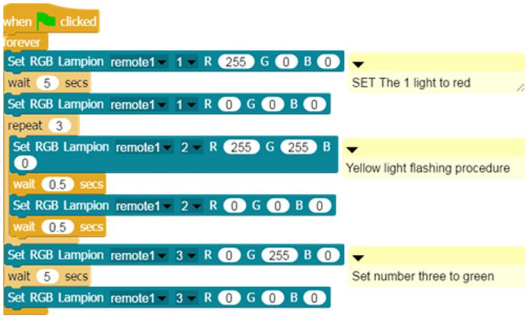
under the "electronic module" category to the inside of the repetitive execution, and set the red value of the No. 1 light of the "remote 1" port to 255, as shown in 3.5-4.



3.5-4 Add electronic building block control block

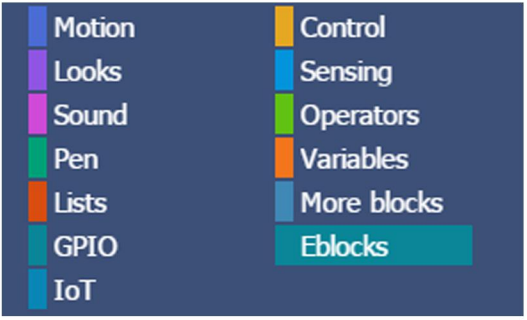
5、 Refer to the program scrip

wn in 3.5-5 to program the traffic light program.



3.5-5 Traffic light final program script

Tip: According to the color of the module in the sample program, you can know which category the module belongs to. Color classification is shown in 3.5-6.



3.5-6 Brick color classification

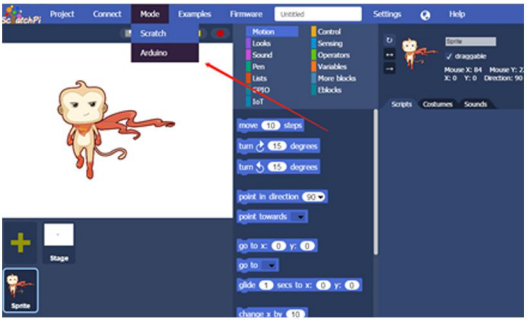
6、 After programming, click the icon on the stage to start the program, as shown in 3.5-7.

3.5-7 Click the little green flag to run the program

七、programming mode-Arduino model

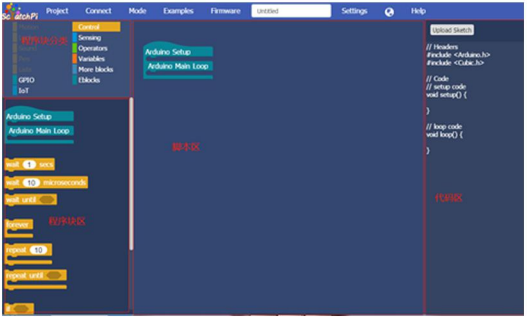
Arduino mode supports uploading programs to the Cubic controller, allowing the device to run without a computer. In Arduino mode, there is no animation related function because there is no computer to participate.

1、Click "Mode"-> "Arduino" in the menu bar to enter Arduino mode, as shown in 3.6-1.



3.6-1 Switch to Arduino mode

2、In Arduino mode, functions such as animation are not supported. The functions such as the stage and character list on the right are disabled, and the Arduino code generated in real time can be seen on the right side of the interface, as shown in 3.6-2.



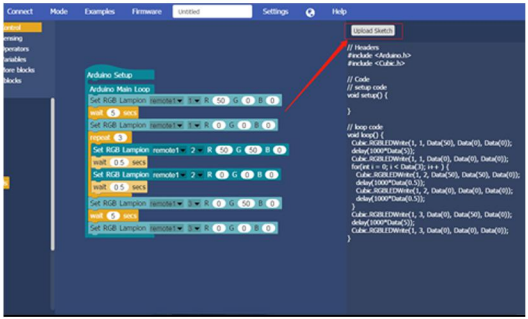
3.6-2 Arduino mode interface

3、ScratchPi supports Arduino code to automaticall generate Arduino code through graphical programming in Arduino mode, and burn the code into the Cubic controller last time to achieve offline operation. The user can choose the serial port or Bluetooth to connect the Cubic controller, and then start writing the traffic light program.

Refer to the program script shown in 3.6-3 to program the traffic light program.

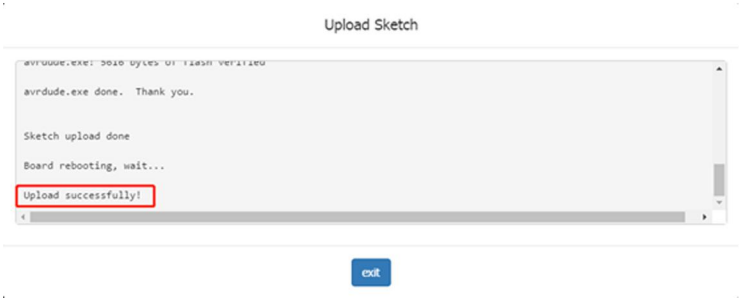
3.5-6 Brick color classification

4、After the script is written, you can see the automatically generated Arduino code in the right column of the interface. Click the button above Upload Sketch the code to upload the program to the Cubic controller, as shown in 3.6-4.



3.6-4upload code

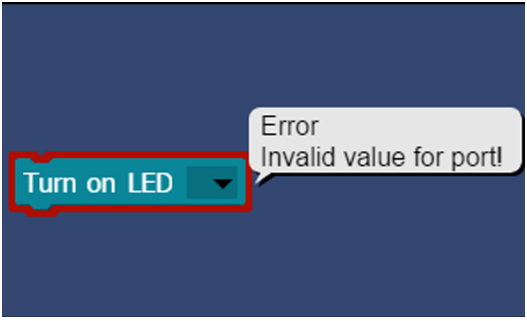
5、Click the "Upload Code" button, the software will automatically compile and upload the program, wait for the interface to prompt " upload successful" and then exit, Cubic can run the program without connecting to the computer, as shown in 3.6-5



3.6-5 Uploaded successfully

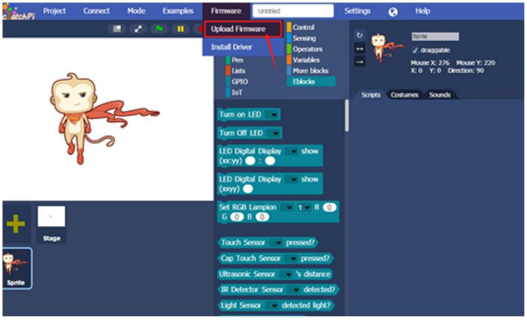
八、restore factory firmware

Switch from Arduino mode to Scratch mode and use Cubic again.
As the factory firmware in Cubic controller is replaced by the user's own program, Scratch mode will not be able to communicate with the Cubic controller. At this time, when running the program, the software will prompt "Error, with hardware Communication timed out! ", As shown in 3.7-1.



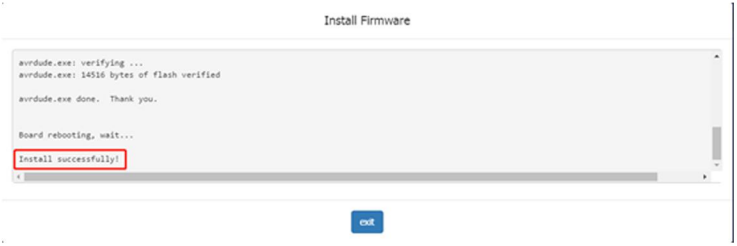
3.7-1 Communication timeout

This issue can be fixed by restoring the factory firmware. First, connect the Cubic controller using the serial port or blue mode. After the connection is successful, click the menu bar "Firmware"-> "Install Firmware", as shown in 3.7-2.



3.7-2 install driver

Wait for the software to be installed automatically, as shown in 3.7-3



3.7-3 Successful installation

After successfully installing the factory firmware, you can use Cubic in Scratch mode.

Troubleshooting table

Fault state	Confirmation	Operation processing
The indicator does not light after turning on the switch	Whether the main control power is insufficient	Charge the master
Serial port cannot scan to device	Whether the master is properly connected	Refer to the manual to connect the master controller correctly
	Whether to turn on the main control switch	Turn on the main control switch, the indicator light is on
	Whether the serial port driver has been installed	Software menu "Firmware" > "Install driver"
Bluetooth cannot scan to devic	Whether the computer has Bluetooth	Connect the included USB Bluetooth device
	Whether to turn on the main control switch	Turn on the main control switch, the indicator light is on
	Whether the Bluetooth function is turned on	Start the system Bluetooth service
Software prompts not connected	Whether the master is properly connected	Refer to the manual to connect the master controller correctly
	Whether the software has completed the connection operation	Refer to the manual to complete the connection operation
Software prompts hardware communication failure	Have you used Arduino mode	Software menu "Firmware" > "Install driver"
Upload code failed	Whether the master is properly connected	Refer to the manual to connect the master controller correctly
	Whether the software has completed the connection operation	Refer to the manual to complete the connection operation
	Whether the data cable is damaged	Replace with any Android phone data cable
No red light when charging is off	Whether the charging adapter is plugged into a socket	Try changing to a power outlet
	Whether the charging / data cable is loose	Tighten the USB connector
Unable to charge	Whether to use a professional adapter	Use a dedicated adapter
	Whether the master is deformed	Call after-sales service hotline for maintenance

Basic parameters

Product name: EdgeUTech programmable electronic building blocks

Product model: Inventor kit

Applicable age: 7+

Material: ABS, PC, PLA

Battery type: lithium polymer battery

Battery capacity: 1400mah

Input voltage: 4.2V

Input current: 600ma

Operation control: Bluetooth / Serial port

Wireless connection: Bluetooth 2.0

Operating temperature: -10 ° C ~ 45 ° C

Storage temperature: -20 ° C ~ 45 ° C

Precautions

The main control and motor must not be disassembled.

Do not keep this product near heat, sources of ignition, and places where the temperature is above 60 ° C.

Do not short this product.

Do not subject this product to mechanical shock.

Do not immerse the product in any liquid.

Children under 7 years of age require adult supervision.

This product contains small parts. It is prohibited for children under 3 years of age to avoid the risk of suffocation.

This prouuct contains a Button or Coin Cell Battery.A swallowed Button or Coin Cell Battery can couse internla chemical burns in as little as two hours and lead to death.Dispose of used batteries immediately.keep new and use batteris away from children.if you think batteries might bave been swallowed or placed inside any part of body,seek immediate medical attention.

CHOKING HAZARD--Small parts。Not for children under 3 years.

FCC STATEMENT :

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) This device must accept any interference received, including interference that may cause undesired operation.
Warning: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.