Project 7 Bluetooth Remote Control

1.Description



There is a DX-BT24 5.1 Bluetooth module in this kit. This bluetooth module comes with 256Kb space and complies with V5.1BLE bluetooth specification, which supports AT commands. Users can change parameters such as the baud rate and device name of the serial port as required.

Furthermore, it supports UART interface and bluetooth serial port transparent transmission, which also contains the advantages of low cost, small size, low power consumption and high sensitivity for sending and receiving. Notably, it solely needs a few peripheral components to realize its powerful functions.

2.Specification

- Bluetooth protocol: Bluetooth Specification V5.1 BLE
- Working distance: In an open environment, it can achieve 40m ultra-long distance communication

- Operating frequency: 2.4GHz ISM band
- Communication interface: UART
- Bluetooth certification: Accord with FCC CE ROHS REACH certification standard
- Serial port parameters: 9600, 8 data bits, 1 stop bit, invalid bit, no flow control
- Power: 5V DC
- Operating temperature: –10℃ to +65℃

3.Application

The DX-BT24 module also supports the BT5.1 BLE protocol, which can be directly connected to iOS devices with BLE Bluetooth function, and supports resident running of background programs. It is mainly used in the field of short-distance data wireless transmission. It enables to avoid cumbersome cable connections and can directly replace serial cables.

Successful application areas of BT24 modules:

※ Bluetooth wireless data transmission;

※ Mobile phone, computer peripheral equipment;

※ Handheld POS equipment;

※ Wireless data transmission of medical equipment;

※ Smart home control;

※ Bluetooth printer;

※ Bluetooth remote control toys;

※ Shared bicycles;

4.Ports

①STATE：Status pin

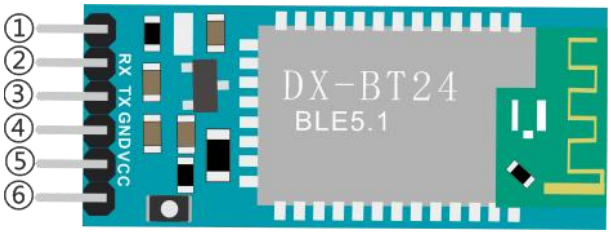
②RX：Receiving pin

③TX：sending pin

④GND：GND

⑤VCC：Power

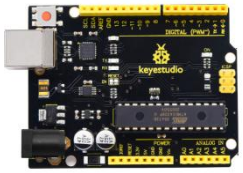
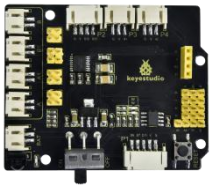
⑥EN：Enable pin



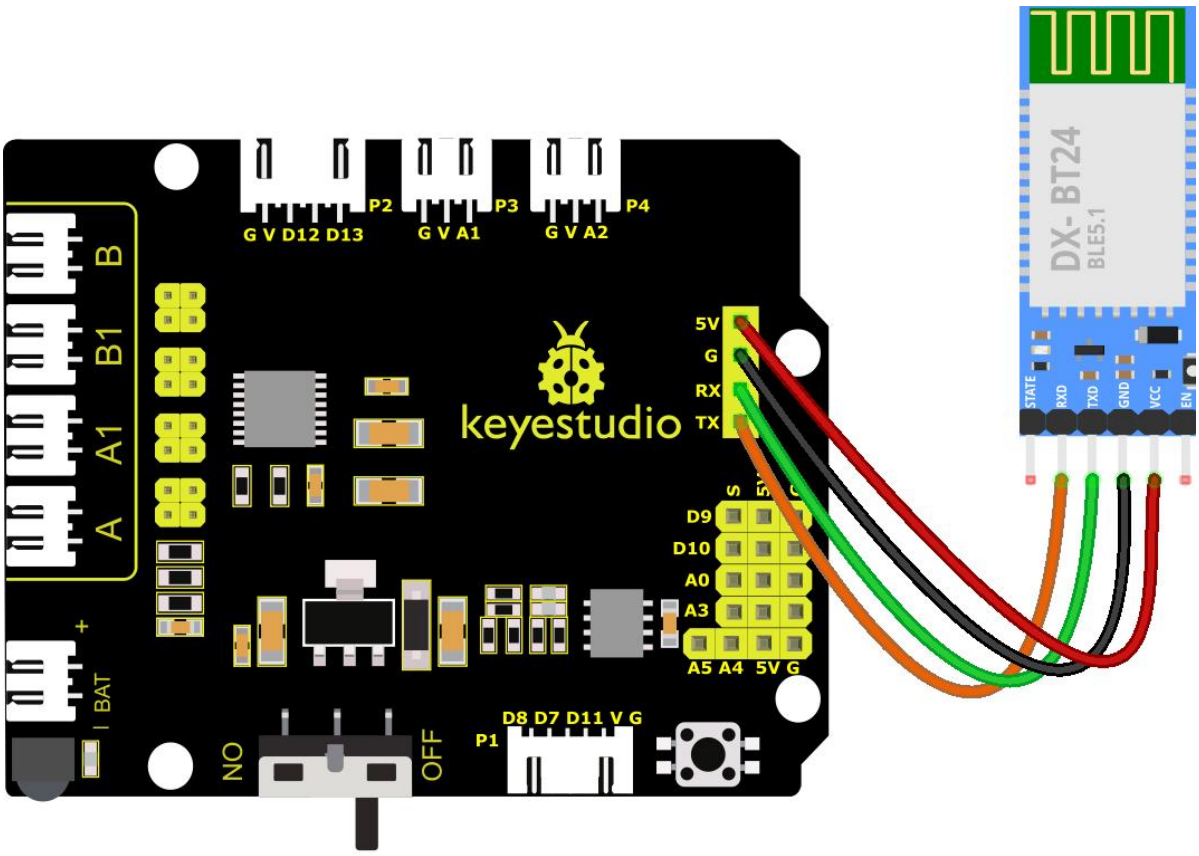
Connect the BT module to the development board.

Uno	BT24
TX	RX
RX	TX
VCC	5V
GND	GND

5.Components

Keyestudio 4.0 Development Board *1	Keyestudio 8833 Motor Driver Expansion Board *1	Red LED Module*1
		
3P F-F Dupont Wire*1	USB Cable*1	DX-BT24 Bluetooth Module*1
		

6.Wiring Diagram



RXD, TXD, GND and VCC of the BT module are connected to TX, RX, G and 5V.

STATE and BRK of the BT module don’ t need connection.

Note the direction of the BT module when inserting it onto the 8833 board. And don’ t insert it before uploading the code.

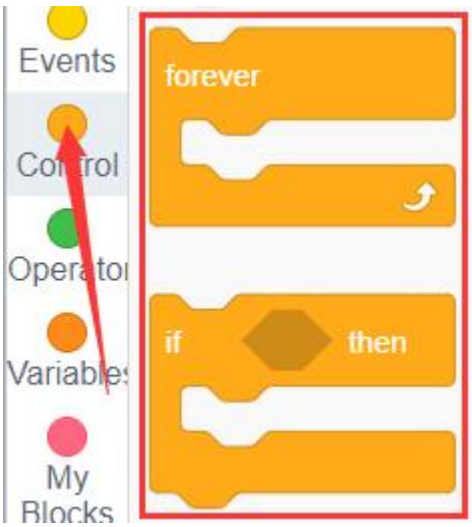
7.Test Code

You can drag blocks to edit. Blocks listed below are for your reference

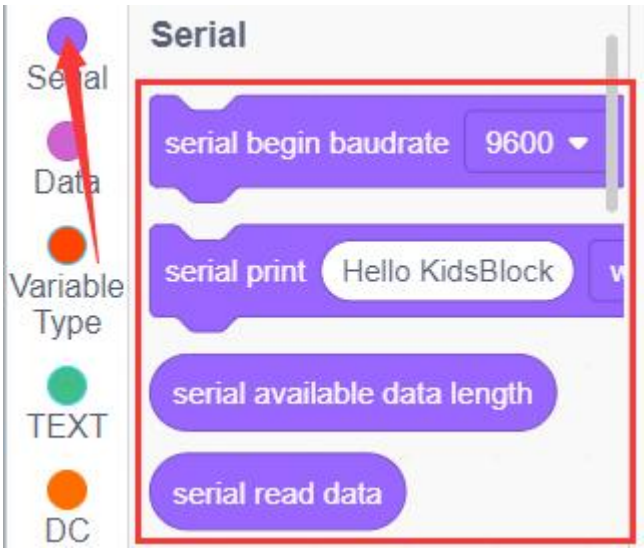
（1）



（2）



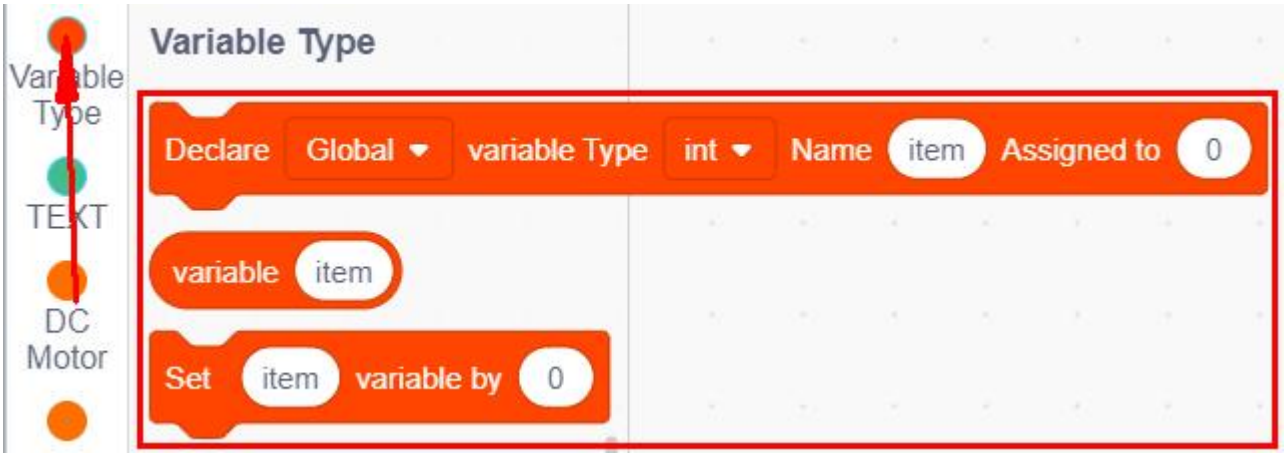
（3）


Serial
Data
Variable Type
TEXT
DC
serial begin baudrate 9600
serial print Hello KidsBlock
serial available data length
serial read data

（4）


> 50
< 50

（5）


Variable Type
TEXT
DC Motor
Declare Global variable Type int Name item Assigned to 0
variable item
Set item variable by 0

Complete Test Code



8.Test Result

Don’ t connect the BT module when uploading the code because serial communication port will be occupied when uploading code and inserting the BT module.

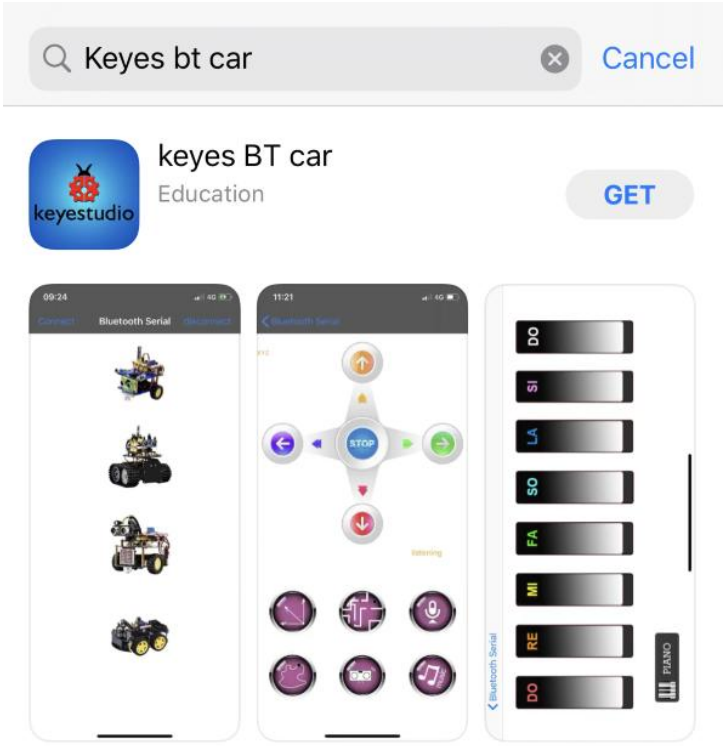
After successfully uploading the code to the V4.0 board, connect the wirings according to the wiring diagram, then connect the computer via a USB cable to power the board. After powering on, insert the BT module and the LED will flash, then we need to download the BT app.

9.Download Bluetooth APP

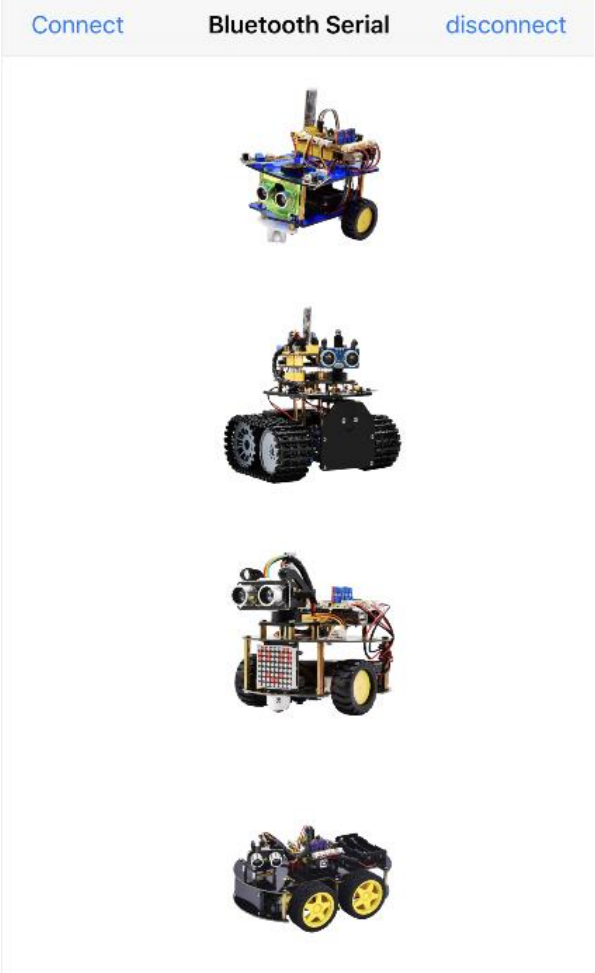
Apple system

A. Open the App Store on the iPhone.

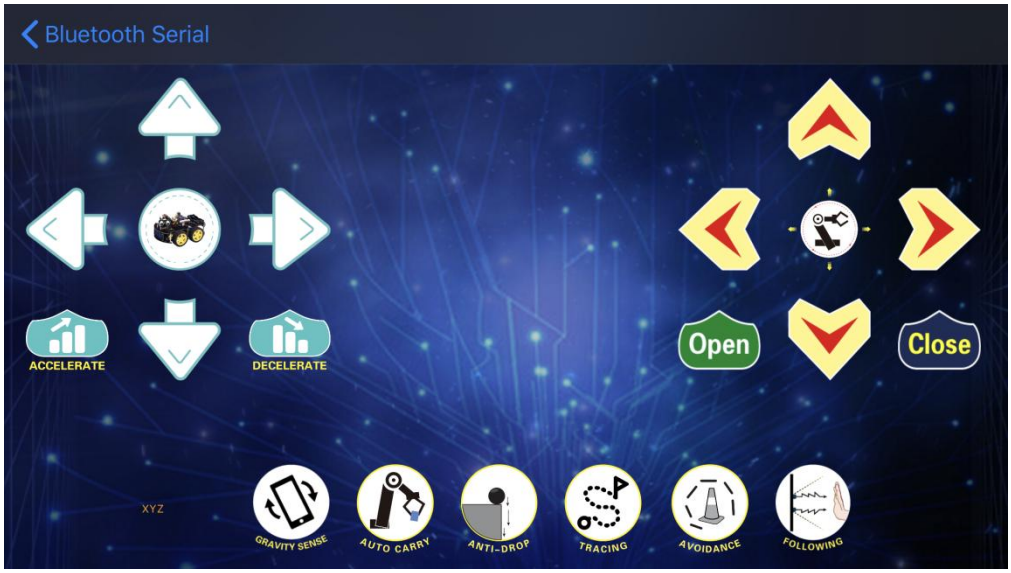
B. Search keyes BT car and download the APP to your phone.



After installation, enter its interface.

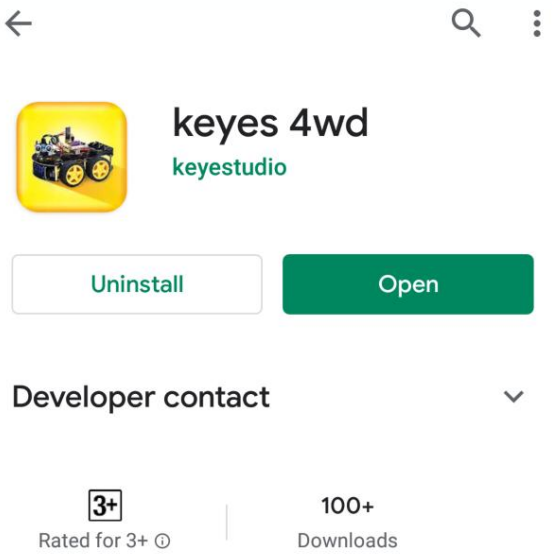


Click "Connect" button in the upper left corner to automatically search for Bluetooth. When BT24 is found, click "Connect" to connect Bluetooth, and then click  to enter the control interface of 4WD smart car.



Android System

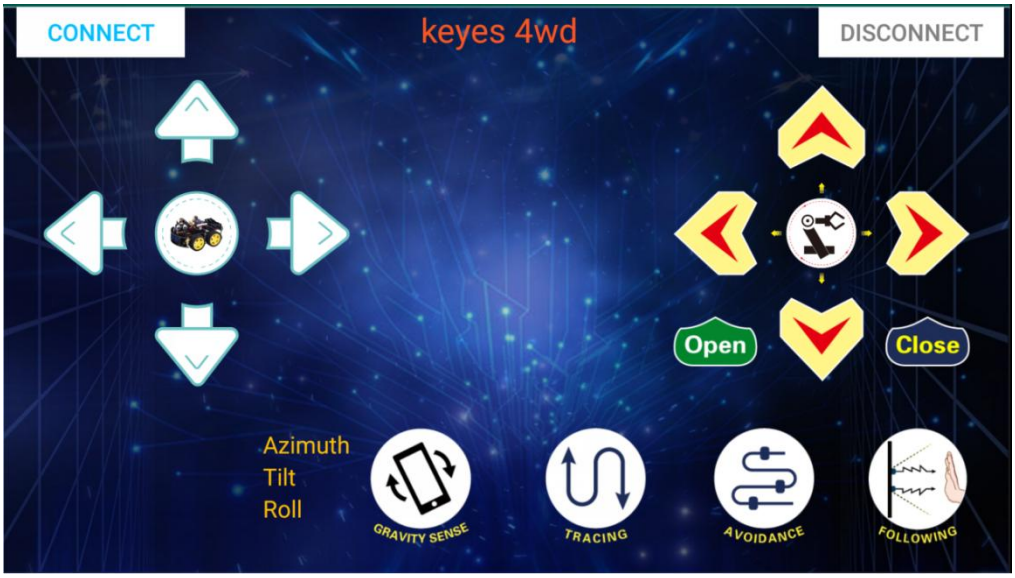
Enter google play store to search for "keyes 4wd"



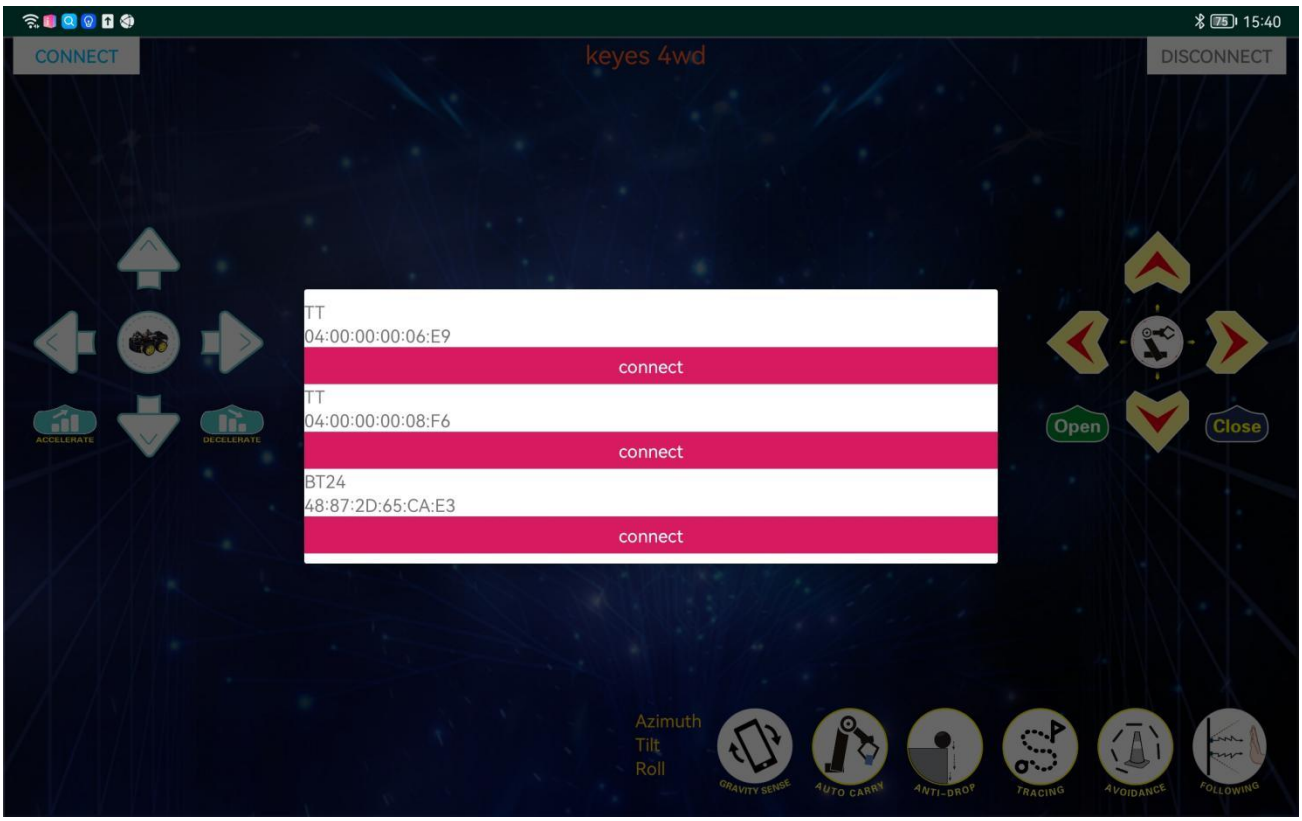
The app icon is shown below after installation.



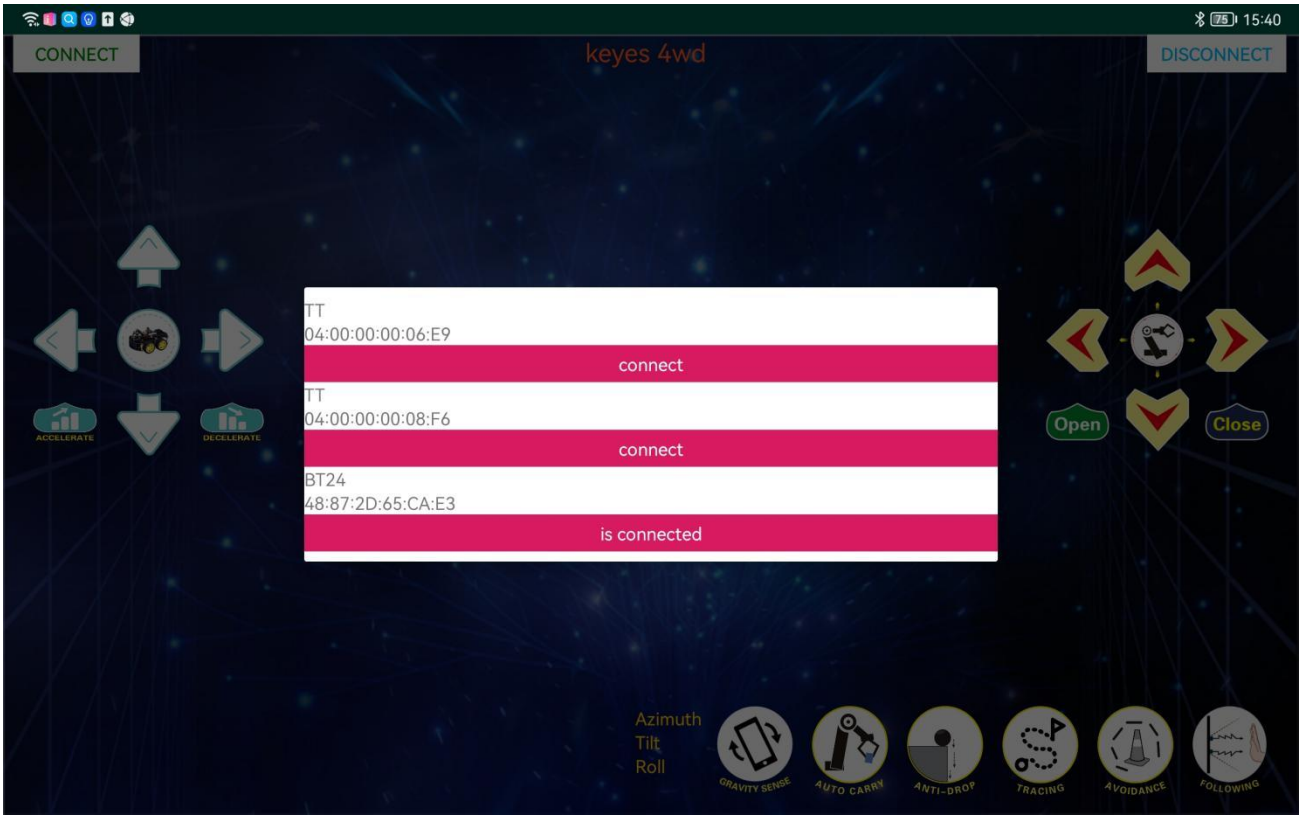
Click app to enter the following page.



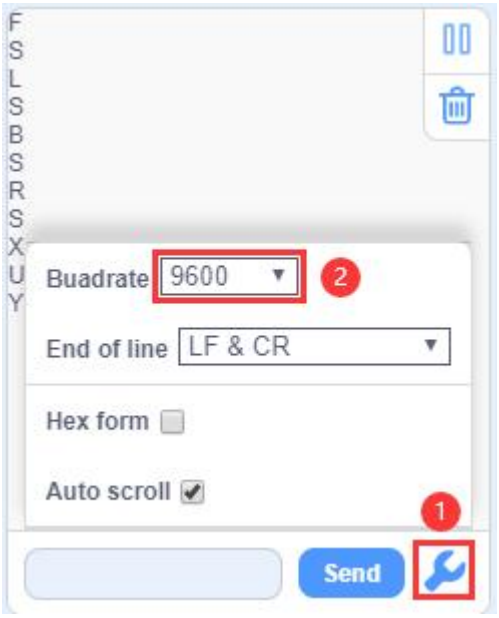
After connecting Bluetooth, plug in power and LED indicator of Bluetooth module will flicker. Tap "Connect" to search the Bluetooth.



When BT24 is found, click "connect" to connect Bluetooth. When "connect" turns into "is connected", it indicates that the Bluetooth connection is successful. As shown in the picture below, the Bluetooth LED becomes will stay on.



After connecting Bluetooth module, click to set baud rate to 9600. Pressing the button of the Bluetooth APP, and the corresponding characters will be displayed, as shown below:

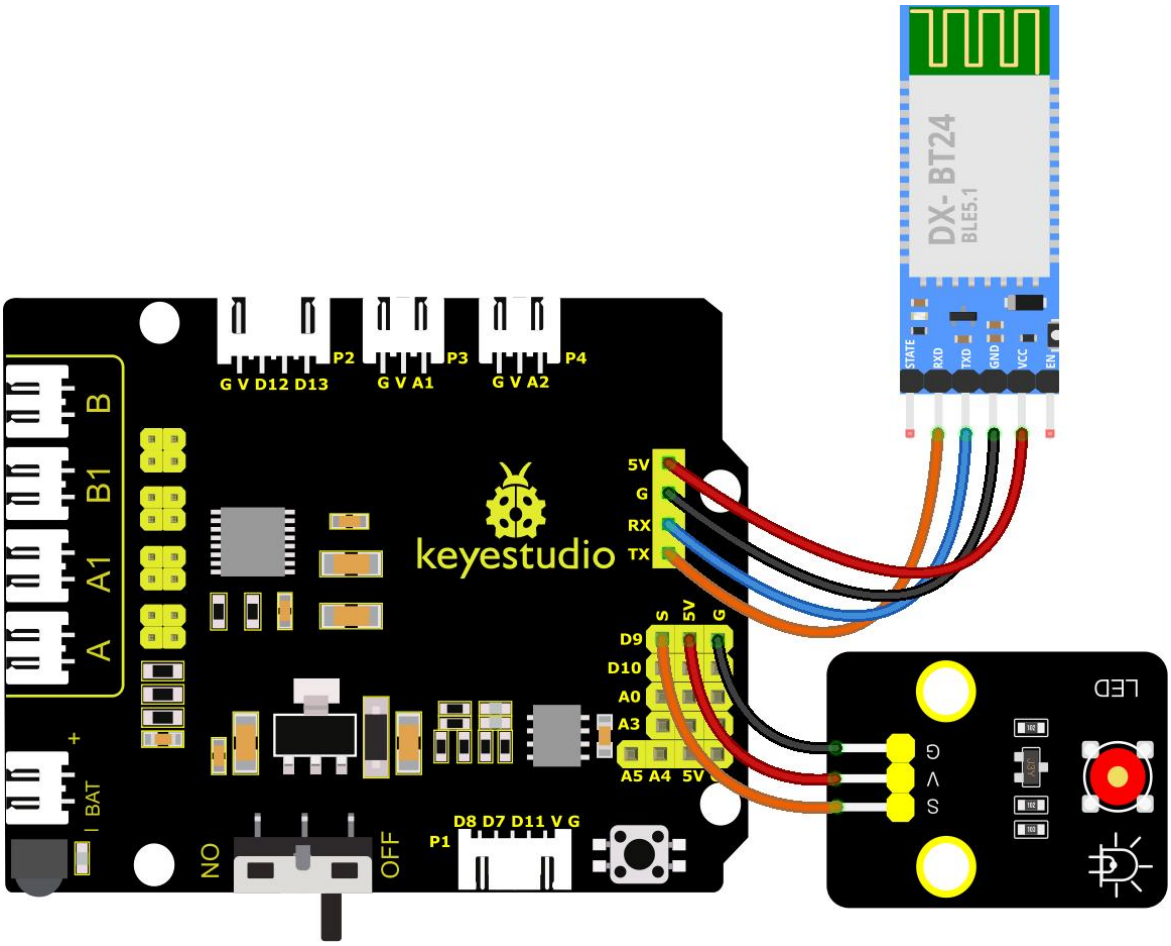


Key	Function	
CONNECT	Pair DX-BT24 5.1 Bluetooth module	
DISCONNECT	Disconnect Bluetooth	
	Control character	Function
	Press: F Release: S	Press the button, the car goes front; release to stop
	Press: L Release: S	Press the button, the car turns left; release to stop
	Press: R Release: S	Press the button, the car turns right; release to stop
	Press: B Release: S	Press the button, the car goes back; release to stop

	Press: "a" Release: "S"	Click to speed up(maximum:255)
	Press: "d" Release: "S"	Click to slow down (minimum:0)
	Click to start the gravity sensing function of the mobile phone: click again to exit the gravity sensing control	
	Click to send "X", click again to send "S"	Start line tracking function; click again to exit
	Click to send "Y", click again to send "S"	Start ultrasonic avoiding function; click again to exit
	Click to send "U", click again to send "S"	Start ultrasonic follow function; click again to exit
	Click to send "G", click again to send "S"	Start restricting function; click again to exit

10.Extension Practice

Here we look to use the command sent by the mobile phone to turn on or off an LED light. Looking at the wiring diagram, an LED is connected to the D9 pin.

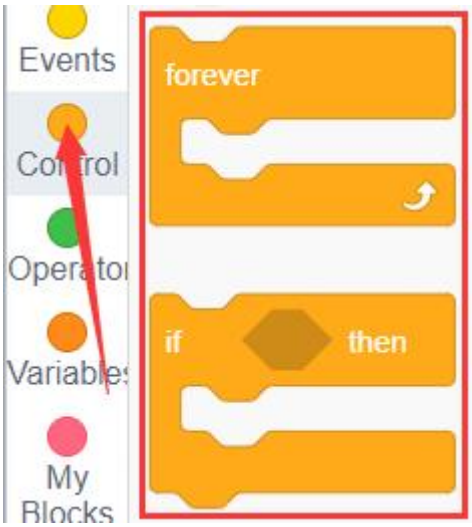


You can drag blocks to edit. Blocks listed below are for your reference

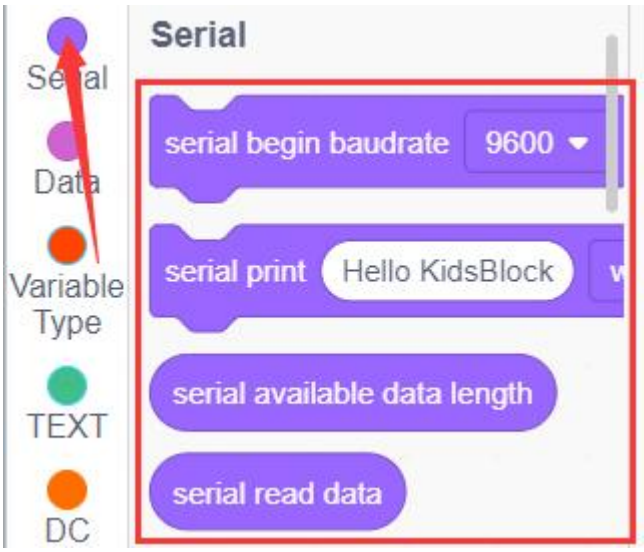
（1）



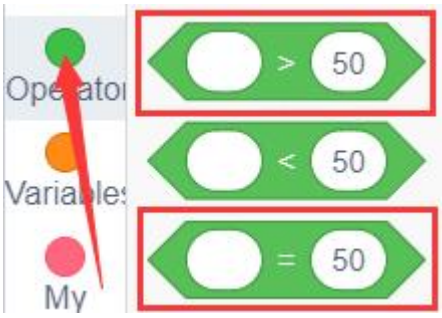
（2）



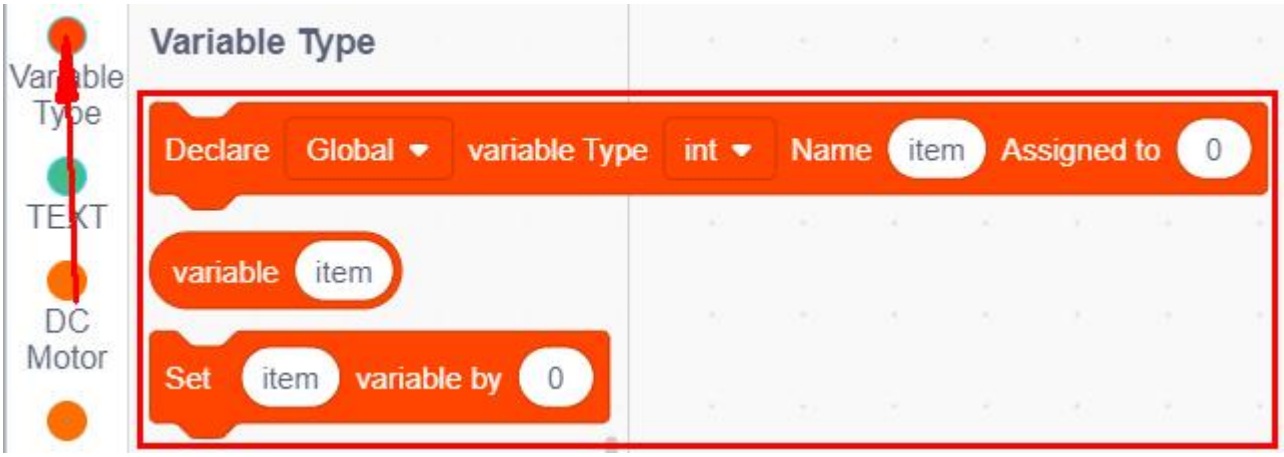
（3）


Serial
Data
Variable Type
TEXT
DC
serial begin baudrate 9600
serial print Hello KidsBlock
serial available data length
serial read data

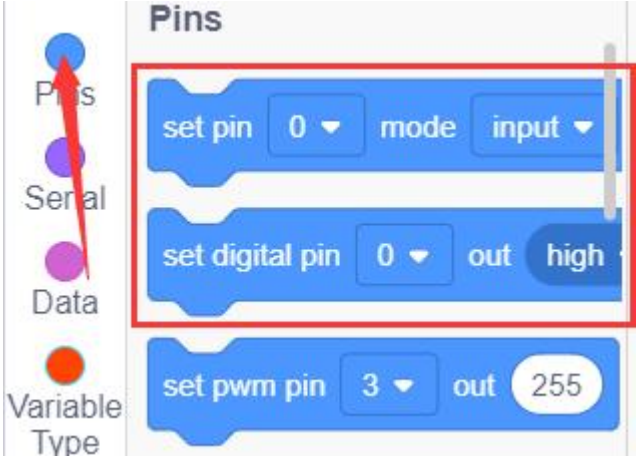
（4）


My
> 50
< 50
= 50

（5）


TEXT
DC Motor
Variable Type
Declare Global variable Type int Name item Assigned to 0
variable item
Set item variable by 0

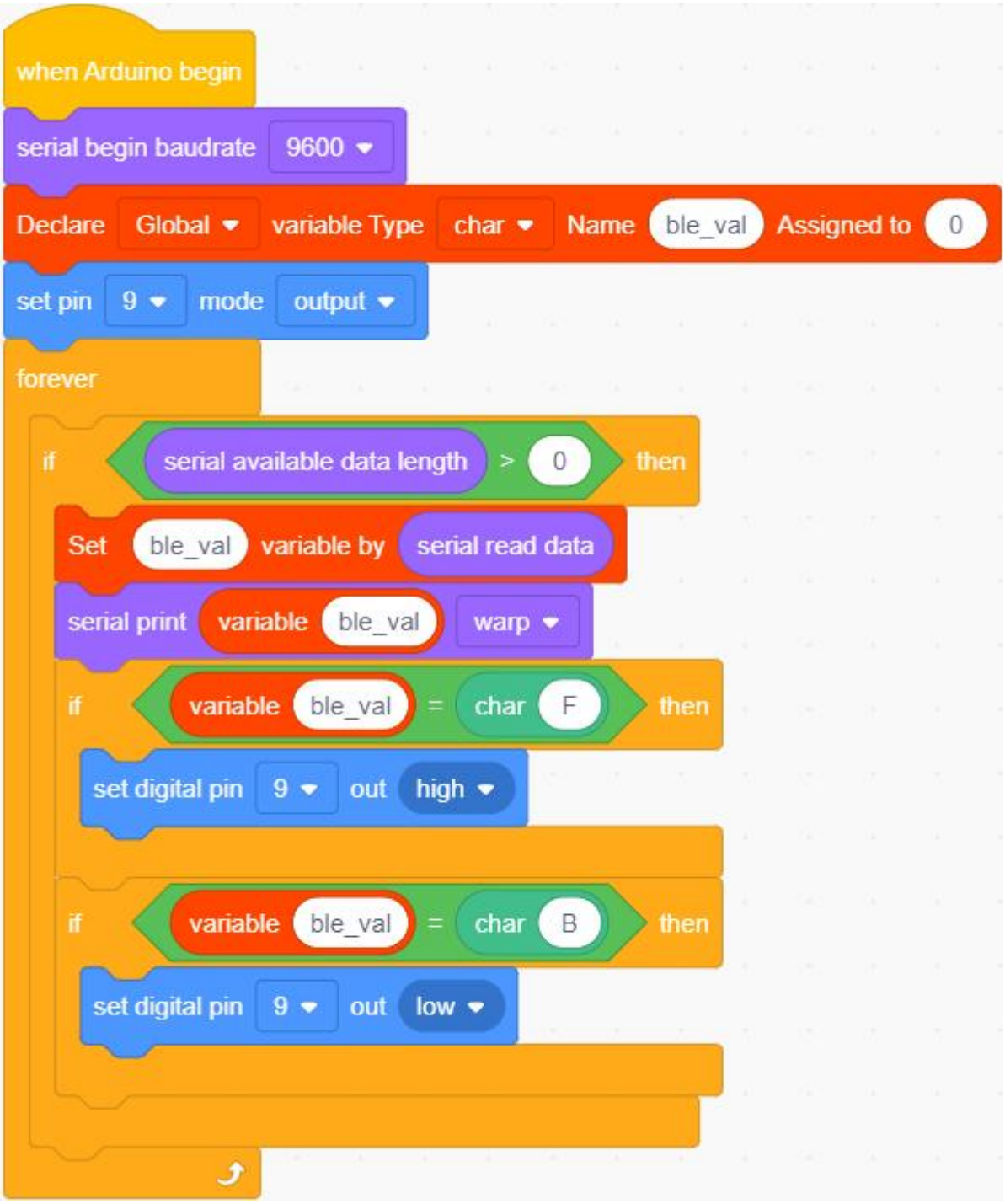
（6）


Data
Variable Type
Pins
set pin 0 mode input
set digital pin 0 out high
set pwm pin 3 out 255

（7）



Complete Test Code



After successfully uploading the code to the V4.0 board, connect the wirings according to the wiring diagram, then connect the computer via a USB cable to power the board. After powering on, click  and  to control the LED.