KS0505 Keyestudio STEM Starter Kit with plus board

1. Download Resources

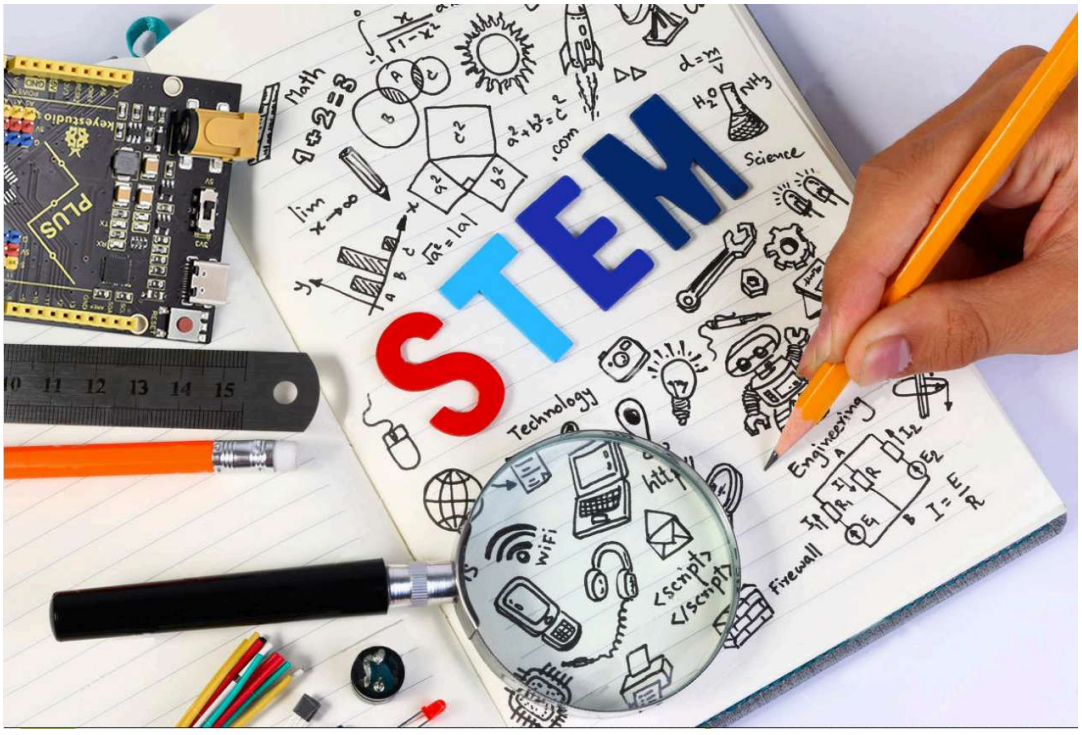
Download codes, libraries, drivers and more details, please refer to the following link:
https://fs.keyestudio.com/KS0505-0506

2. Introduction

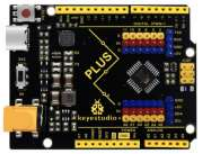
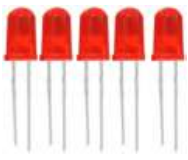
Do you want to acquire programming knowledge? As long as you are passionate about science and dare to explore new things, this STEM starter kit must be your best choice.

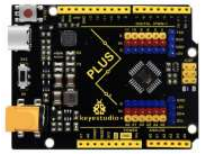
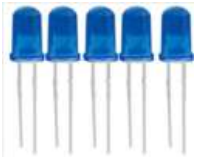
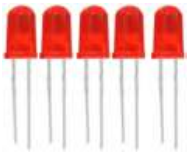
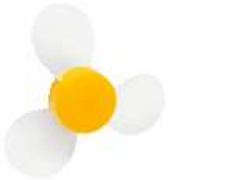
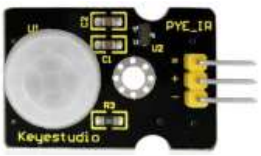
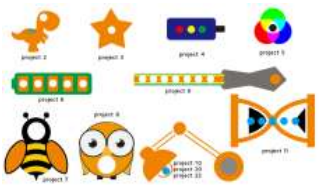
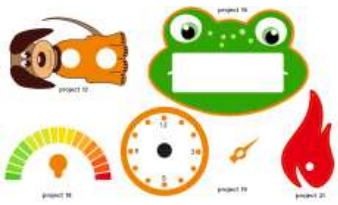
KEYESTUDIO STEM Starter Kit is a programming learning kit based on Arduino. With a controller, numerous sensors, modules and electronic components, you can do many different DIY projects.

This kit also comes with 28 projects tutorials, which are entirely suitable for beginners. Each tutorial has detailed wiring diagrams and fascinating Project Codes. You can learn electronics, physics, science and programming knowledge.

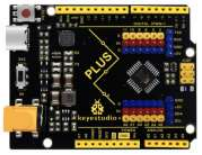
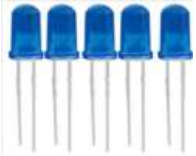
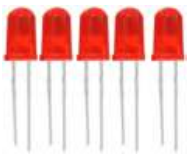


3. Part List

			
Plus board*1	LED - Blue*5	LED - Red*5	LED

			
			
220Ω Resistor*10	10KΩ Resistor*10	1KΩ Resistor*10	10K
			
Button Switch*4	Ball Tilt Sensor*2	Photo Cell*3	Flan
			
TIP122 Transistor*1	1 Digital Tube Display*1	4 Digital Tube Display*1	8*8
			
IR Remote Control*1	Servo Motor*1	130 Motor Propeller*1	130
			
Joystick Module*1	Sound Sensor*1	PIR Motion Sensor*1	HC-
			
Plus board holder*1	Male to Female Dupont Wire*10	Female to Female Dupont Wire*10	Flex
			

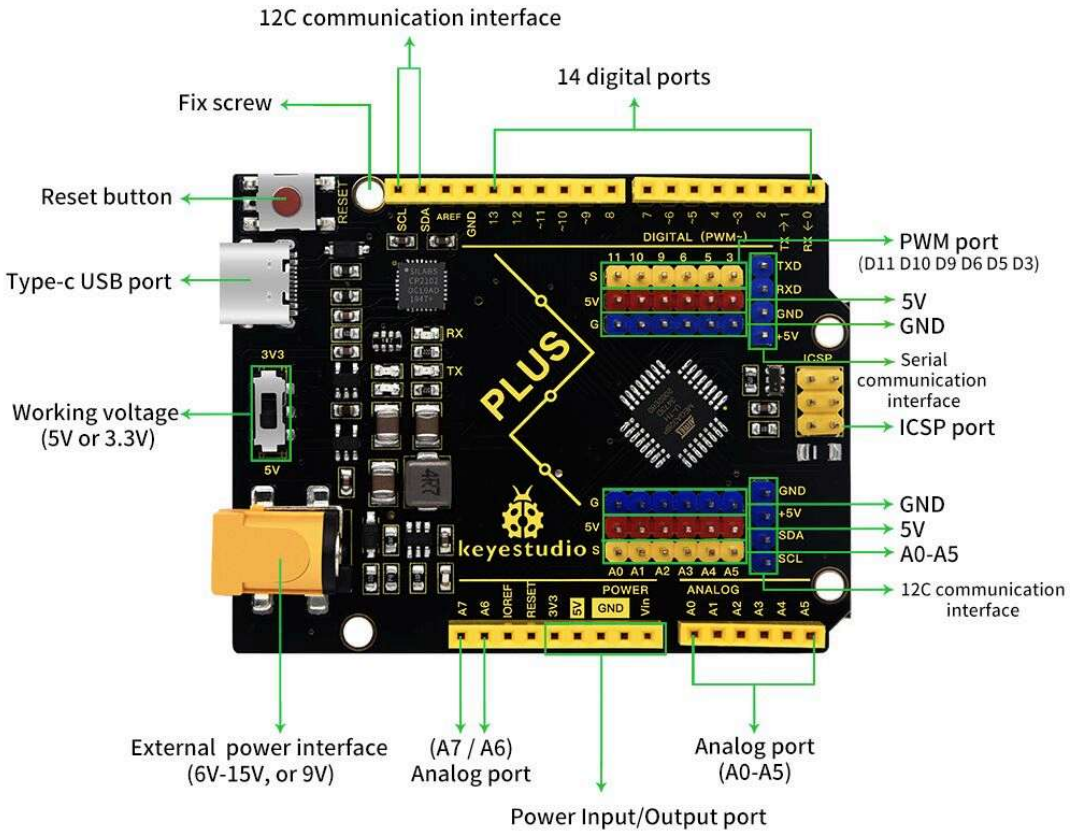
latest

			
Type c USB Cable*1	Cartoon paper	Cartoon paper	Cart

4. KEYESTUDIO Plus Development Board

Before we get started with the KEYESTUDIO STEM Starter Kit, we first introduce the Plus Development Board, it is the core of all the projects.

KEYESTUDIO Plus Development Board is fully compatible with Arduino and contains all the functions of the Arduino UNO R3, but it is more powerful than the Arduino UNO R3. It is the best choice to learn how to build circuits and design your own code. Let us get more detailed information about it.



Serial communication interface: D0 is RX, D1 is TX

PWM interface (pulse width modulation): D3 D5 D6 D9 D10 D11

External interrupt interface: D2 (interrupt 0) and D3 (interrupt 1)

SPI communication interface: D10 is SS, D11 is MOSI, D12 is MISO, D13 is SCK

IIC communication port: A4 is SDA, A5 is SCL

1. USB serial chip: CP2102, more stable and compatible		1. USB serial chip:16U2, poor compatible
2. 3.3V or 5V, can be connected with 3.3V sensors		2. only 5V, can't be connected with 3.3V sensors
3. more IO ports:A6,A7		3. No 2 IO ports
4. extend serial communication and I2C interface, wire easily		4. Not too many interfaces, wire difficultly
5. special DC-DC design, 5V 2A, can drive high current loads, such as servos and motors		5. 5V, 1A, can't drive high current devices
6. extend 6 PWM and 6 analog ports, can connect with sensors directly		6. extend no ports, connect difficultly
7. input voltage: 6-15V, the wide range of voltage, more choices		7. input voltage: 7-12V, the option of power supply is limited
8. type-c interface, artistic and fashionable, transmission speed is more fast		8. traditional USB port, ordinary

5. Install Arduino IDE and Driver

Click the link to start learning how to download software, install drivers, upload code, and install library files.

https://getting-started-with-arduino.readthedocs.io

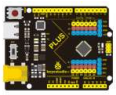
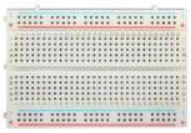
6. Projects

Project 1: Hello World

1. Project Introduction

For Arduino starters, we will begin with something simple. In this project, you will only need a Plus development board and a USB cable to complete the “Hello World!” project. It is not only a communication test of your Arduino board and the PC, but also a primer project in the Arduino world!

2. Project Hardware

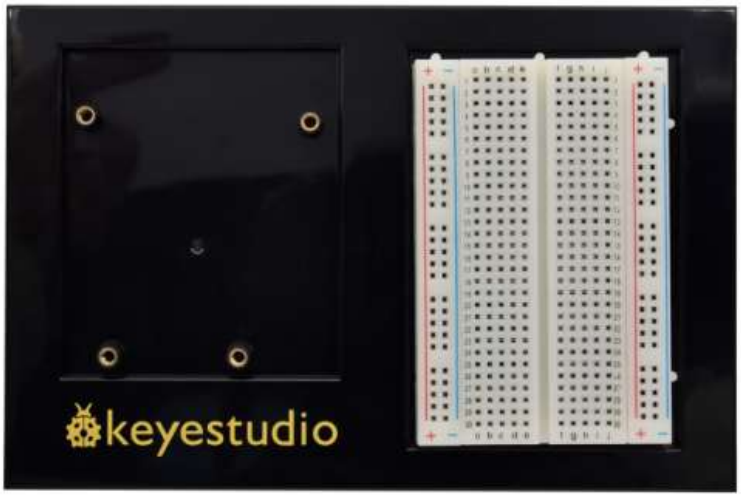
				
Plus Board*1	Plus Board Holder	400-Hole Breadboard	USB Cable*1	Hello World Card*1

3. Assembly Project Platform

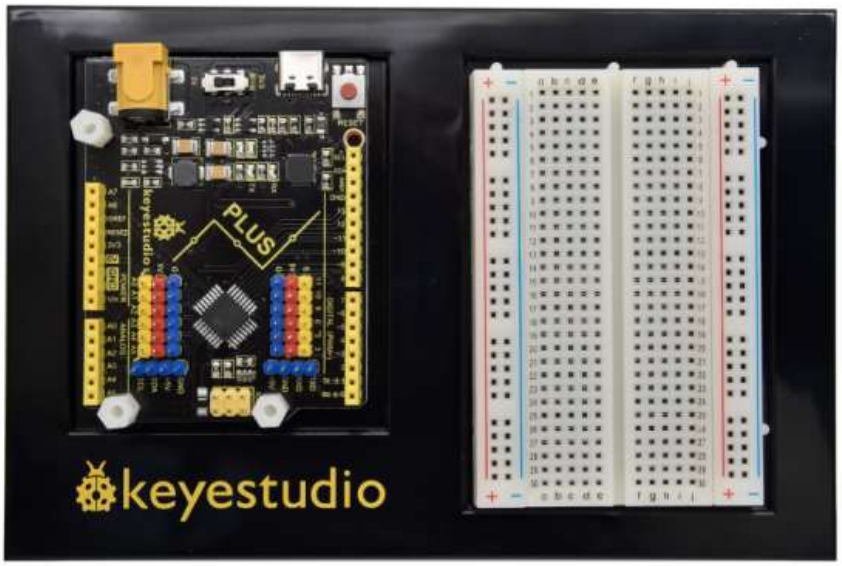
Before starting the project, we will install the Plus Development Board and 400-Hole breadboard onto the board holder.

Remove the adhesive sticker of the breadboard.

Attach the breadboard to the board holder



Use three plastic columns to fix the PLUS development board on the board holder.



The assembly of the project platform is complete.

4. Project Code

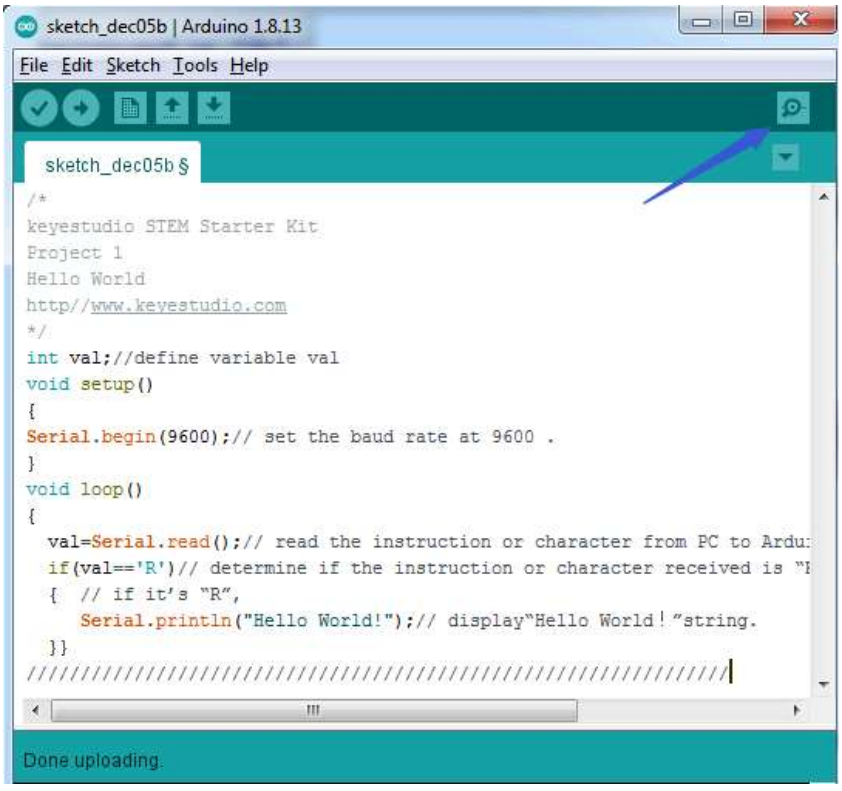
A simple **If () statement** programming control structure will be used. Arduino uses a serial monitor for displaying information such as print statements, sensor data, and so on. This is a very powerful tool for debugging long codes. Now for your first code!

```
/*
keyestudio STEM Starter Kit
Project 1
Hello World
http//www.keyestudio.com
*/
int val;//define variable val
void setup()
{
Serial.begin(9600);// set the baud rate at 9600 .
}
void loop()
{
  val=Serial.read();// read the instruction or character from PC to Arduino, and assign them to Val.
  if(val=='R')// determine if the instruction or character received is “R”.
  {  // if it’s “R”,
     Serial.println("Hello World!");// display“Hello World! ”string.
  }}
////////////////////////////////////////////////////////////////
```

5. Project Result

Double-click 

icon to enter serial monitor.



Every time you enter an “R” in the text box and click “send”, the onboard LED on the plus board will flash once, and the serial monitor will display a Hello World!