

## Project 16: An Expressive Frog



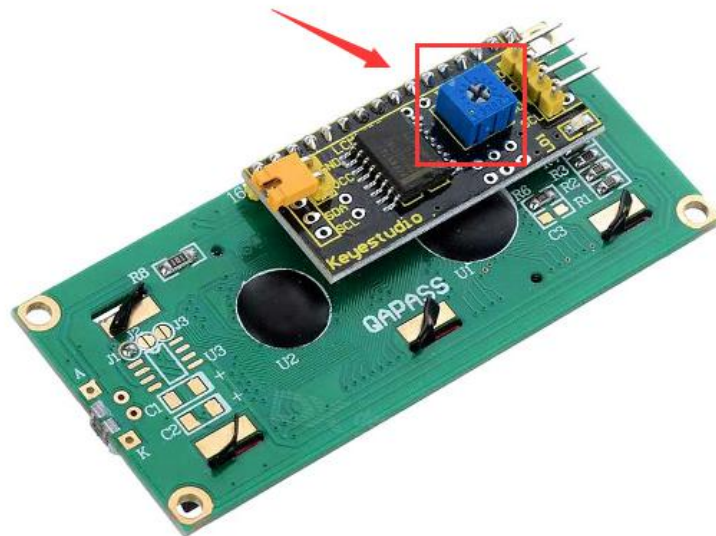
### 1. Project Introduction

In this project, we will make a frog that can communicate with the outside world and express its emotions in words. Here we use an LCD 1602 display controlled by Arduino.

The ordinary 1602 LCD display needs to occupy 7 IO ports of the control board when working. The 1602 LCD display we provide is equipped with IIC / I2C interface, which will save you 5 IO ports of the control board.

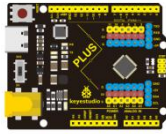
KEYESTUDIO 1602 I2C module is a 16 character by 2 line LCD display with Blue background and White backlight. It is very convenient to use with Arduino Liquid Crystal Library and great for showing letters, numbers, and characters.

On the back of LCD display there is a blue potentiometer. You can turn the potentiometer to adjust the contrast.



(Notice that when you rotate the potentiometer the screen will get brighter or darker, the proper angle will make the font clearer).

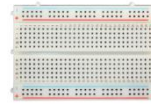
## 2.Project Hardware



Plus  
Development  
Board\*1



Plus Board  
Holder



400-Hole  
Breadboard



USB Cable\*1



I2C 1602  
LCD\*1

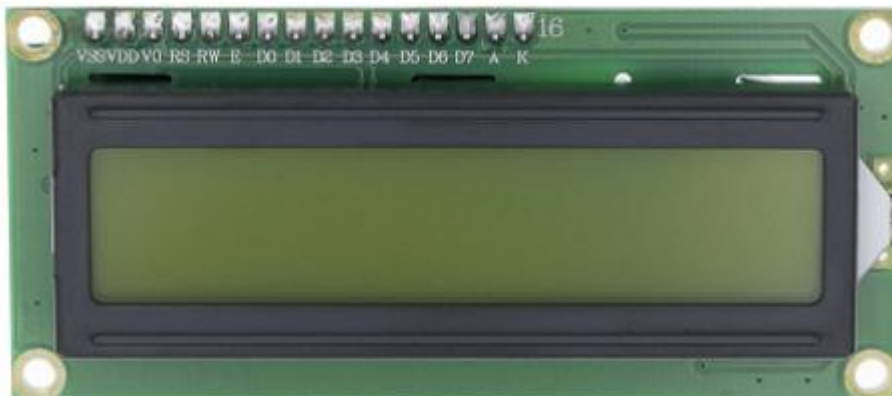


Jumper  
Wire\*4



Cartoon Frog  
Paper Card\*1

## 3.I2C 1602 LCD Parameters



- Display capacity 16 \* 2 characters
- Chip operating voltage 4.5 ~ 5.5V
- Working current 2.0mA (5.0V)

- Optimum working voltage of the module is 5.0V
- Character size 2.95 \* 4.35 (W \* H) mm
- I2C Address:0x27
- Backlight (Blue with white char color)

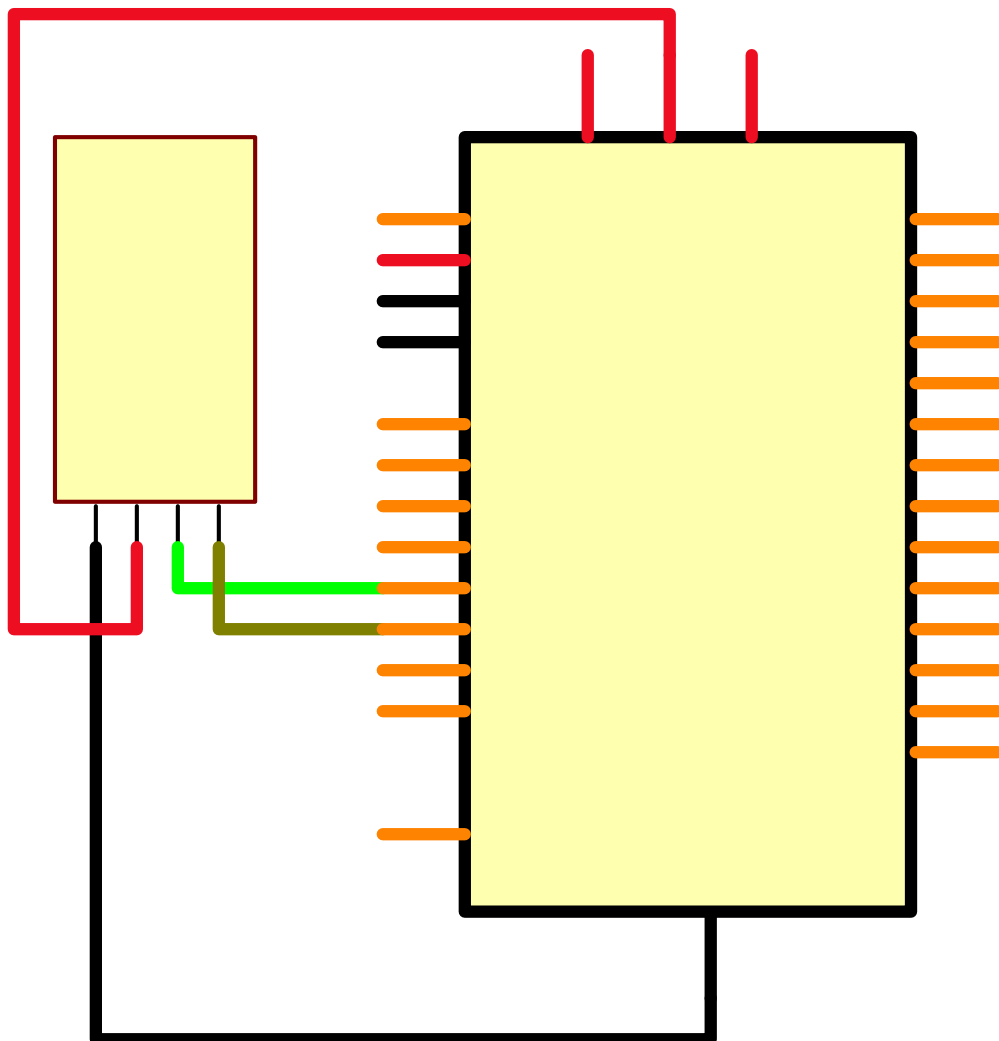
#### 4.Connection

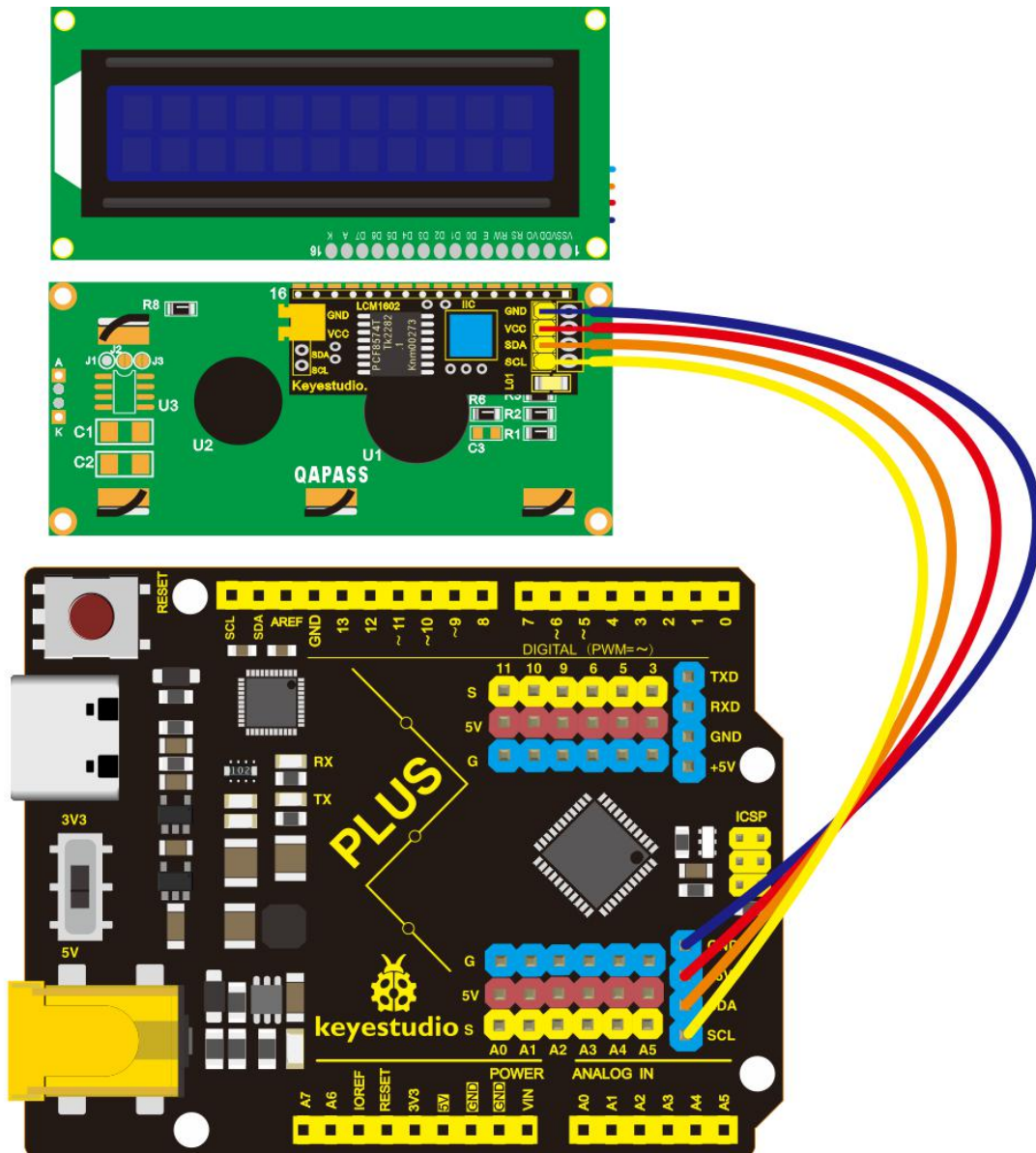
GND: connect to ground

VCC: connect to +5V

SDA: connect to A4

SCL: connect to A5





## 5. Project Code

/\*

keystudio STEM Starter Kit

Project 16

Frog Display Screen

<http://www.keystudio.com>

\*/

```

#include <Wire.h>

#include <LiquidCrystal_I2C.h>

LiquidCrystal_I2C lcd(0x27,16,2); // set the LCD address to
0x27

void setup()
{
  lcd.init(); // initialize the lcd
  lcd.init();
  lcd.backlight();
}

void loop()
{
  lcd.setCursor(3,0);
  lcd.print("Hello, world!");
  lcd.setCursor(2,1);
  lcd.print("keyestudio!");
}

////////////////////////////////////

```

## 6.Project Result

Upload the project code to the Plus development board. LCD1602 will display "Hello, world!" on the first line, "keyestudio!" on the second line.

By changing the text in the brackets of the code we provided and uploading the code again, you can control what the frog will say through the LCD display.

```
lcd.print("Hello, world!");
```

```
lcd.setCursor(2,1);
```

```
lcd.print("keyestudio!");
```

