

LCD 2x16 Character Module Quickstart Guide



The LCD Module is a display module for displaying data, be it in the form of numbers, texts or symbols. You can display 16 characters in a single row, with two rows available.

It is also easily integrated with popular boards such as Arduino as libraries are readily available for your use. Use this to display data anywhere, even in dark places as it has a backlight LED.

HARDWARE SPECIFICATIONS

- Working Voltage: DC 4.7-5V
- Blue Backlight
- Current consumption without backlight: 1mA
- Alpha numeric display module, displays numbers and alphabet in 5x8 pixel box

PARTS LIST

For this quickstart guide, we will need the following materials:

- 1 – Arduino Uno: <https://www.bitstoc.com/product/1/>
- 1 – Breadboard: <https://www.bitstoc.com/product/123/>
- 1 – 10k potentiometer: <https://www.bitstoc.com/product/190/>
- 1 – 300 resistor: <https://www.bitstoc.com/product/177/>
- Connecting Wires: <https://www.bitstoc.com/product/107/>
- 1 – LCD Module

HARDWARE OVERVIEW

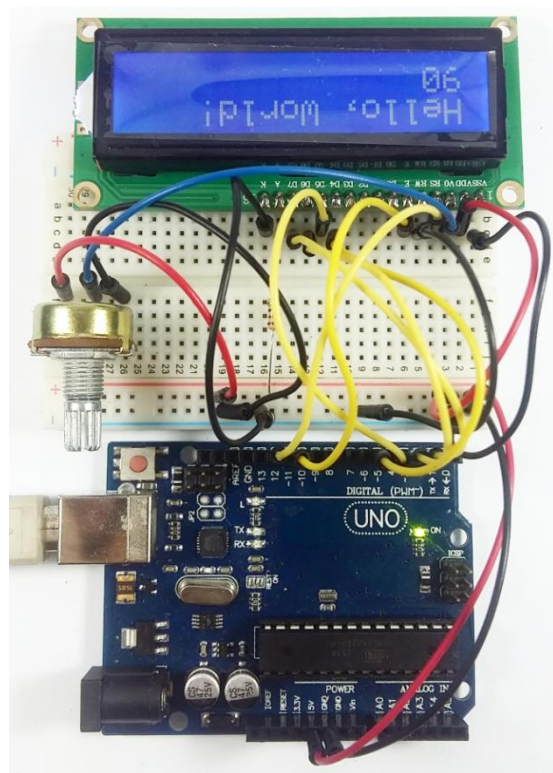
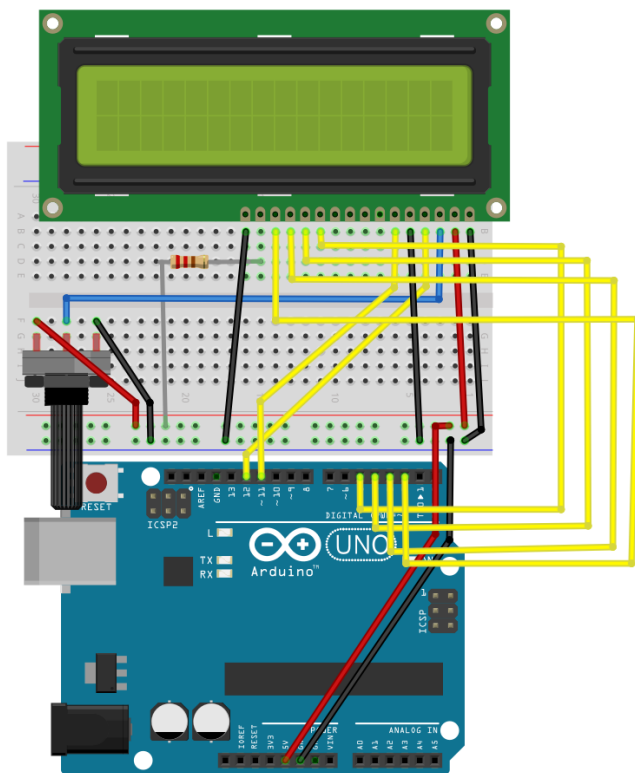


INPUT	Description
VDD	Connects to supply, should be at 5V.
VSS	Connects to GND.
DATA PIN (0-8)	Data pins 0-7 form an 8-bit data line. Can also operate as a 4-bit data line by connecting 0-3, leaving 4-7 free.
LED Positive	Backlight LED positive pin. Equivalent to anode of an LED.
LED Negative	Backlight LED negative pin. Equivalent to cathode of an LED.

PREPARING THE ARDUINO IDE

Connect the LCD Display module to the Arduino Board according to the table below:

- LCD pin 1 (VSS) to GND
 - LCD pin 2 (VDD) to 5V+
 - LCD pin 3 (V0) to Center of potentiometer
 - LCD pin 4 (RS) to Arduino pin 12
 - LCD pin 5 (RW) to GND
 - LCD pin 6 (E/Enable) to Arduino pin 11
 - LCD pin 7-10 (D0-D3) no connection
 - LCD pin 11 (D4) to Arduino pin 5
 - LCD pin 12 (D5) to Arduino pin 4
 - LCD pin 13 (D6) to Arduino pin 3
 - LCD pin 14 (D7) to Arduino pin 2
 - LCD pin 15 (A,Anode) to 300 ohm resistor to 5V+
 - LCD pin 16 (K,Cathode) to GND
- *one side of potentiometer to 5V+ and one side to GND



ARDUINO CODE

The example code below will display a “Hello, World!” message on the LCD module. To do this, open Arduino. On the sketch file, copy the code below:

```
/*  
  Project 8 - LCD Display  
*/
```

```

// We use the "#include" command to use an LCD library "LiquidCrystal.h"
// Always include this line when using an LCD display
#include <LiquidCrystal.h>

// An LCD needs some initialization pins, from the Arduino board
// we use the pins listed in the "lcd()" function below
LiquidCrystal lcd(12, 11, 5, 4, 3, 2);

void setup() {
  // To start using the LCD, we first need to set up the LCD's number of columns and rows:
  // thus, put (16 columns and 2 rows) using the "lcd.begin(x,y)" command
  lcd.begin(16, 2);
  // Now, we can print a message to the LCD.
  lcd.print("Hello, World!");
}

void loop() {
  // set the cursor to column 0, line 1
  // (note: line 1 is the second row, since counting begins with 0):
  lcd.setCursor(0, 1);
  // We test out by printing the number of seconds since the time we start or reset the Arduino
  lcd.print(millis() / 1000);
}

```

Once done, check the LCD module.

OUTPUT

On the LCD module, the first row displays a text message **"Hello, World!"** The second line displays the time that passed since the code started running. This code resets every time the Arduino board resets. This is in terms of seconds.



SOURCES

<https://components101.com/16x2-lcd-pinout-datasheet>

<https://www.engineersgarage.com/electronic-components/16x2-lcd-module-datasheet>