

# A PharosThings Tutorial

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# Illustrations

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## Lesson 10 - LCD Display

In the previous lessons, we learned how to control LEDs and to use a button to interact with LEDs. We learned also how to use the I2C sensors to read the temperature, humidity, pressure and x, y, z axis. Also we saw how use a non I2C sensor, an ultrasonic sensor. Now we will learn how to use a LCD Display without I2C.

### 1.1 What we need?

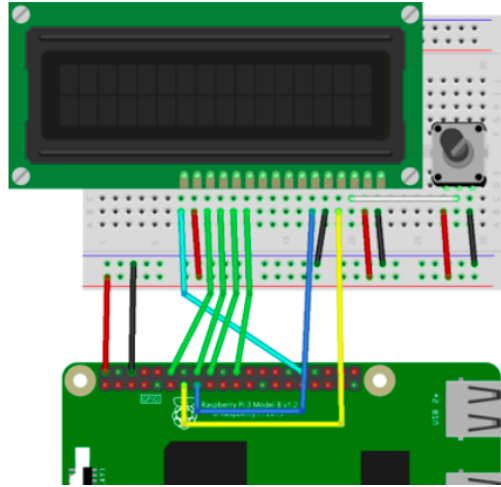
In this lesson we will use a setup with 3 different I2C sensors.

#### Components

- 1 Raspberry Pi connected to your network (wired or wireless)
- 1 Breadboard
- 1 LCD Display 1602
- 1 Potentiometer (10K ohms)
- Jumper wires

### 1.2 Experimental theory

Before constructing any circuit, you must know the parameters of the components in the circuit, such as their operating voltage, operating circuit, etc.



**Figure 1-1** Physical sensors connection.

## The LCD Display 1602

### How the LCD 1602 works?

## 1.3 Experimental procedure

Now we will build the circuit. This circuit consists of three sensors and a power supply (the Rasp).

- Connect the Ground PIN from Raspberry in the breadboard blue rail (-). In this experiment we will use the PIN6 (Ground);
- Then connect the 5V (PIN2) pin in the red rail (+).
- Now push the LCD 1602 in the breadboard;
- Push the potentiometer in the breadboard;
- And insert the jumper wires connecting the LCD Display in the Potentiometer and breadboard, like the scheme showed in the Figure 1-1.

The Figure 1-1 shows how the electric connection is made.

## 1.4 Connecting remotely

Through your local Pharo image, let's connect in the Pharo image by running on Raspberry, enable the auto-refresh feature of the inspector, and open the inspector. Run this code in your local playground:

## 1.5 Experimental code

```
remotePharo := TlpRemoteIDE connectTo: (TCPAddress ip: #[193 51 236  
    212] port: 40423)  
GTInspector enableStepRefresh.  
remoteBoard := remotePharo evaluate: [ RpiBoard3B current].  
remoteBoard inspect.
```

## 1.5 Experimental code

In your inspect window (Inspector on a PotRemoteBoard), let's create the instances of the LCD Display.

