

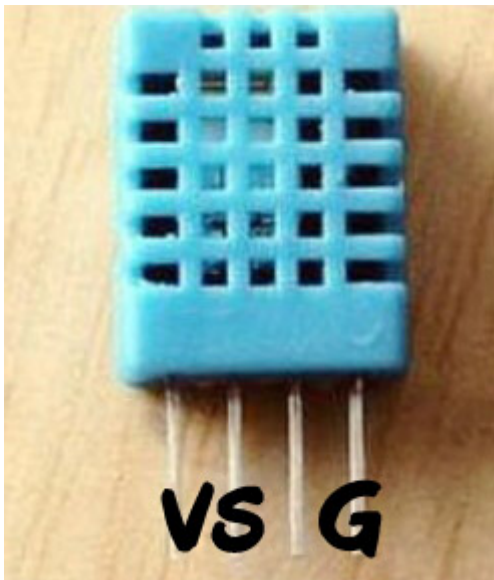
ODUINO ONE is a package of Arduino Uno R3 and LCD/Keypad/sensor. You can buy this item in this link. (Will be available soon)

Arduino Uno R3 schematics [http://arduino.cc/en/uploads/Main/Arduino\\_Uno\\_Rev3-schematic.pdf](http://arduino.cc/en/uploads/Main/Arduino_Uno_Rev3-schematic.pdf)

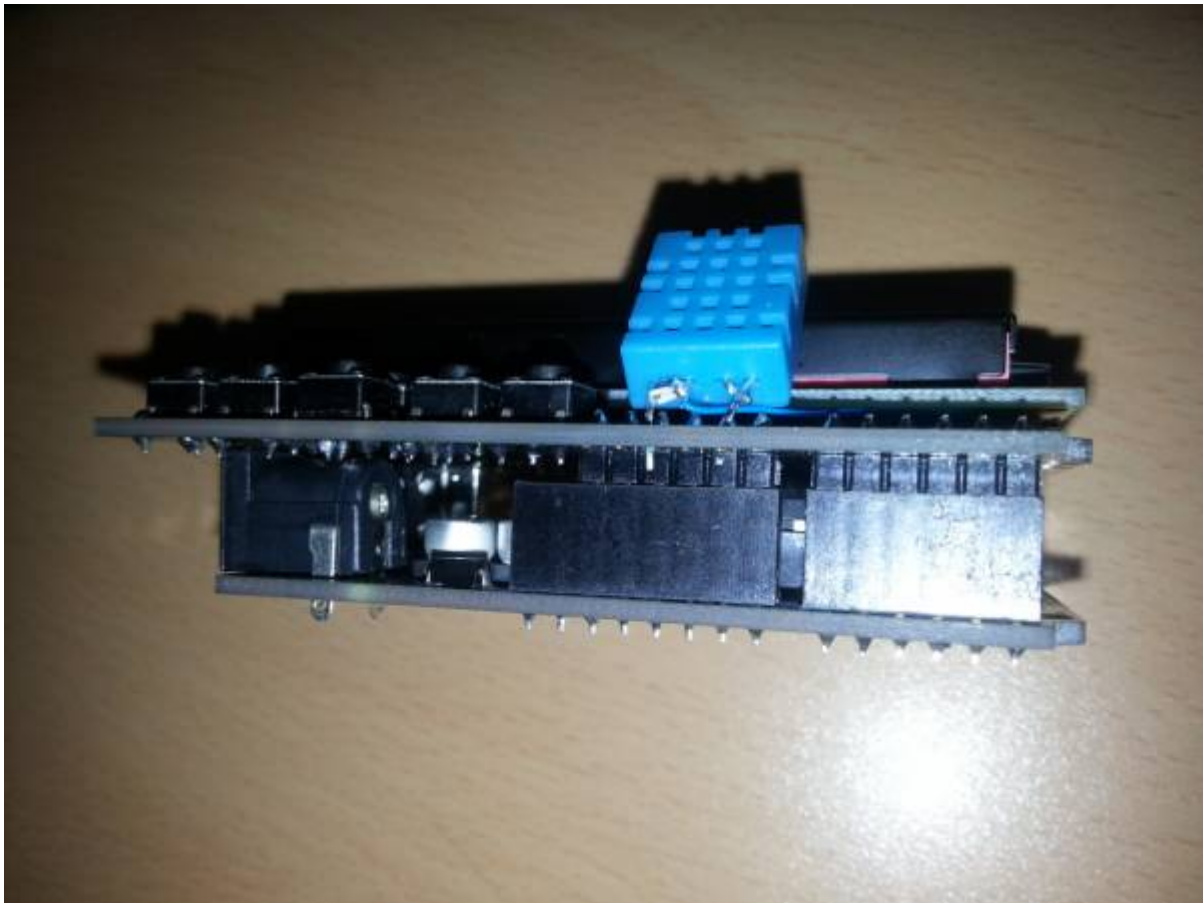
LCD+Keypad shield schematics <http://dn.odroid.com/ODUINO/schematics-v1.0-dfr0009.pdf>

DHT11 Sensor (Humidity / Temperature sensor) <http://www.micro4you.com/files/sensor/DHT11.pdf>

Connections are (V)oltage, (S)ignal, (G)round



DHT11 uses one-wire communication and I connected it to the digital Pin#3 of Arduino. Also note that we should add a 10Kohm pull-up resistor on that pin.



The example code shows the temperature, humidity and pressed keypad information on LCD. It also transmit that information to the host via USB.



To compile this source code, you need to install the Arduino IDE on your ODROID board or PC.

```
$ sudo apt-get install arduino
```

I could run the Arduino IDE on ODROID with Ubuntu image. The connection node of Arduino USB is "/dev/ttyACM0" or "/dev/ttyACM1".

To complete to compile this test code, you must install the library of DHT sensor.

Download dht.cpp and dht.h from below link and copy them into "~/.sketchbook/libraries/dht".

<http://playground.arduino.cc/Main/DHTLib>

I should restart the Arduino IDE after copying to use the library.

```
#include <LiquidCrystal.h>
#include <dht.h>
/*****
This program will test the LCD panel, the buttons
and the Humidity/Temperature sensor
Version : 0.1
Date : 20-Oct-2013
By Hardkernel
*****/
// for Digital Humidity and Temperature sensor (DHT11)
dht DHT;
#define DHT11_PIN 3
// Global variables
unsigned long elapsed_time;
// select the pins used on the LCD panel
LiquidCrystal lcd(8, 9, 4, 5, 6, 7);
// define some values used by the panel and buttons
int lcd_key = 0;
int adc_key_in = 0;
#define btnRIGHT 0
#define btnUP 1
#define btnDOWN 2
#define btnLEFT 3
#define btnSELECT 4
#define btnNONE 5
// read the buttons
int read_LCD_buttons()
{
  adc_key_in = analogRead(0); // read the value from the sensor
  // my buttons when read are centered at these values: 0, 144, 329, 504,
741
  // we add approx 50 to those values and check to see if we are close
  if (adc_key_in > 1000) return btnNONE; // We make this the 1st option
for speed reasons since it will be the most likely result
  if (adc_key_in < 50) return btnRIGHT;
  if (adc_key_in < 195) return btnUP;
```

```
    if (adc_key_in < 380) return btnDOWN;
    if (adc_key_in < 555) return btnLEFT;
    if (adc_key_in < 790) return btnSELECT;
    return btnNONE; // when all others fail, return this...
}
void setup()
{
    // initialize serial communication at 115200 bits per second:
    Serial.begin(115200);
    lcd.begin(16, 2);           // start the LCD library
    lcd.setCursor(0,0);
    lcd.print(" Hello, ODUINO! "); // print a simple message
    //      1234567890123456
    delay(1500); // Splash for 1.5 second
    Serial.println("ODUINO TEST PROGRAM ");
    Serial.println();
    Serial.println("Type,\tstatus,\tHumidity (%),\tTemperature (C)");
    elapsed_time = millis()/1000; // Returns the number of milliseconds
since the Arduino board began running the current program.
}
void loop()
{
    lcd.setCursor(0,1);           // move to the begining of the
second line
    lcd.print("KEY :");
    lcd.setCursor(6,1);           // move to the begining of the
second line
    lcd_key = read_LCD_buttons(); // read the buttons
    switch (lcd_key)              // depending on which button was
pushed, we perform an action
    {
        case btnRIGHT:
        {
            lcd.print("RIGHT ");
            Serial.println("RIGHT ");
            break;
        }
        case btnLEFT:
        {
            lcd.print("LEFT  ");
            Serial.println("LEFT ");
            break;
        }
        case btnUP:
        {
            lcd.print("UP    ");
            Serial.println("UP ");
            break;
        }
        case btnDOWN:
        {
```

```

        lcd.print("DOWN ");
        Serial.println("DOWN ");
        break;
    }
    case btnSELECT:
    {
        lcd.print("SELECT");
        Serial.println("SELECT ");
        break;
    }
    case btnNONE:
    {
        lcd.print("NONE ");
        break;
    }
}
// Read & Display the humidity / temperature data every 1 second
(approx.)
if(elapsed_time != millis()/1000)
{
    elapsed_time = millis()/1000;
    Serial.print("DHT11, \t");
    int chk = DHT.read11(DHT11_PIN);
    switch (chk)
    {
        case DHTLIB_OK:
            Serial.print("OK,\t");
            break;
        case DHTLIB_ERROR_CHECKSUM:
            Serial.print("Checksum error,\t");
            break;
        case DHTLIB_ERROR_TIMEOUT:
            Serial.print("Time out error,\t");
            break;
        default:
            Serial.print("Unknown error,\t");
            break;
    }
    // DISPLAY DATA
    Serial.print(DHT.humidity,0);
    Serial.print(",\t");
    Serial.println(DHT.temperature,0);
    lcd.setCursor(0,0); // move cursor to second line
    "1" and 9 spaces over
    lcd.print("HUMI:");
    lcd.print((int)(DHT.humidity));
    lcd.print("%");
    lcd.print(" TEM:");
    lcd.print((int)(DHT.temperature));
    lcd.print("C");
}

```

```
    delay(50); // delay 50 msec.  
}
```

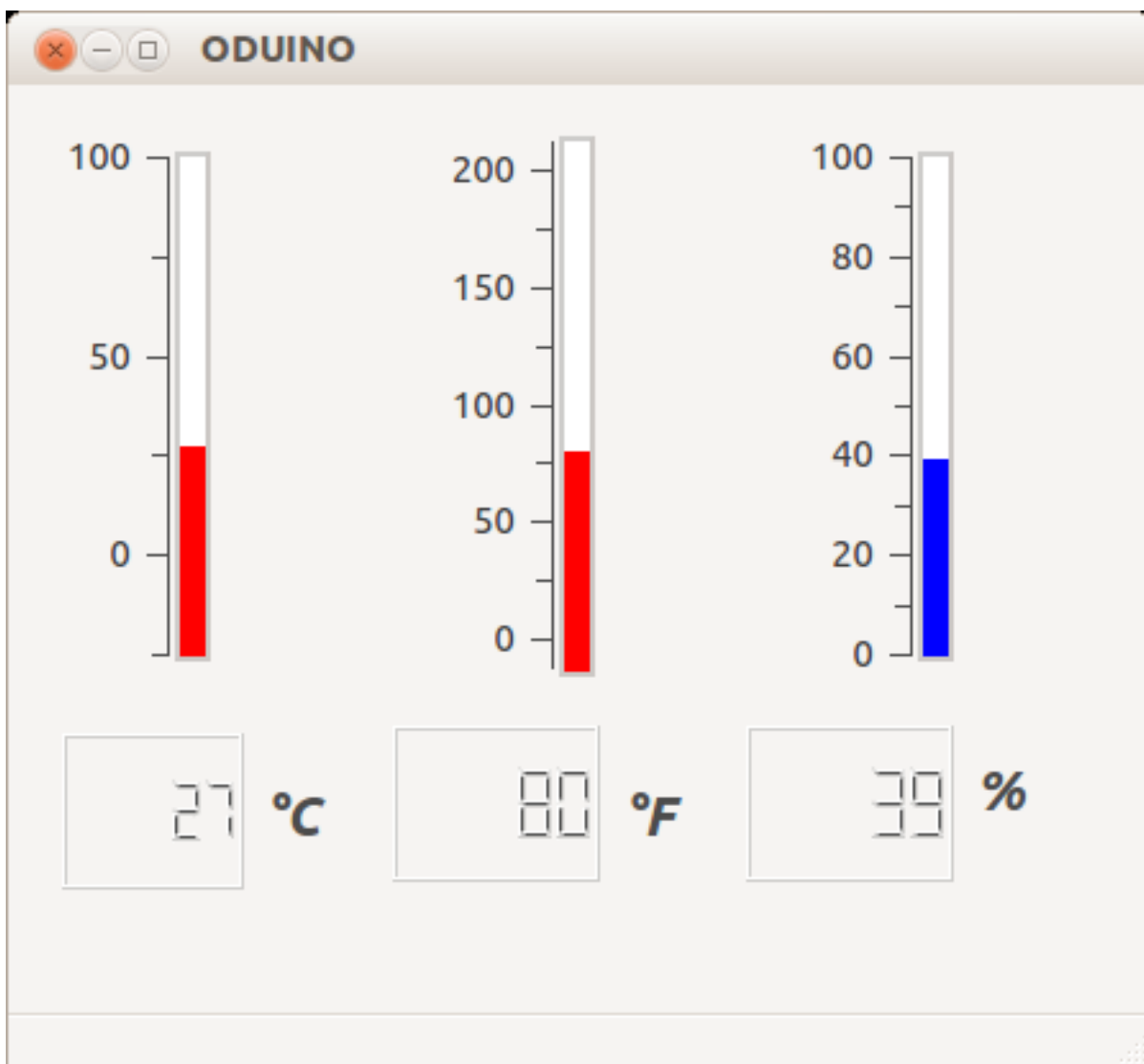
## Application

### Qt(Ubuntu x86)

[http://dn.odroid.com/ODUINO/binary/Ubuntu\\_Qt/x86/oduino](http://dn.odroid.com/ODUINO/binary/Ubuntu_Qt/x86/oduino)

### Qt(Ubuntu arm)

[http://dn.odroid.com/ODUINO/binary/Ubuntu\\_Qt/arm/oduino](http://dn.odroid.com/ODUINO/binary/Ubuntu_Qt/arm/oduino)



The binary & source code of PC Application.

[http://dn.odroid.com/ODUINO/source/Ubuntu\\_Qt/oduino.zip](http://dn.odroid.com/ODUINO/source/Ubuntu_Qt/oduino.zip)

## How to compile x86 and ARM Application for Ubuntu/Linux

### install packages

```
$ sudo apt-get install qt4-default qt4-designer libqwt-dev
```

### build the oduino

```
$ cd oduino  
$ uic oduin.ui > ui_oduino.h  
$ qmake  
$ make
```

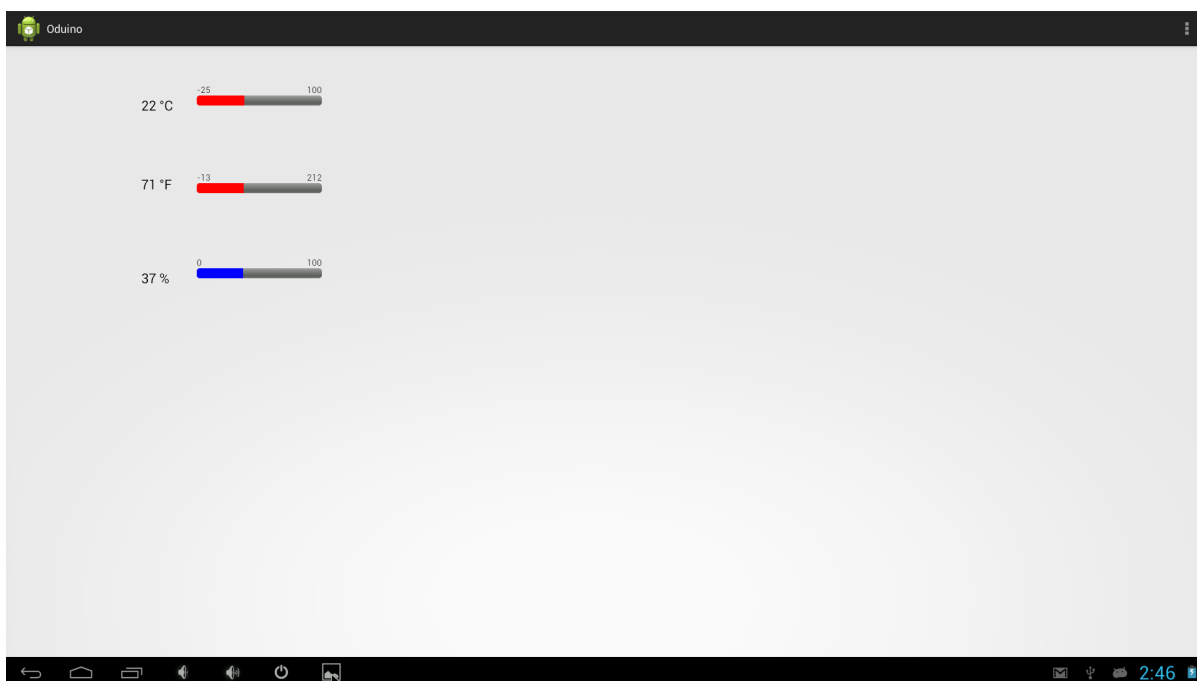
### Tip

If you need the application with Qt5, refer this link.

<http://forum.odroid.com/viewtopic.php?f=90&t=8524#p104675>

## Android

<http://dn.odroid.com/ODUINO/binary/Android/Oduino.apk>



The binary & source code of the Android Application.

<http://dn.odroid.com/ODUINO/source/Android/Oduino.zip>

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