# **DIY weather station** 4

# With Arduino Nano, DHT11 sensor, and an **NFP1315 OLED** (SSD1306 compatible), displaying live **temperature and humidity**.

**⚡ Components Needed**

* **Arduino Nano**
* **DHT11 Sensor** (Temperature & Humidity)
* **OLED Display NFP1315** (usually 128x64 or 128x32, I2C—works like SSD1306)
* **Jumper wires**
* **Breadboard**
* **5V Power Source or USB**

**🔌 Circuit Connections**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Device | OLED 1315 Pin | | Arduino Nano Pin | |
| Power | VCC | | 5V | |
| Ground | GND | | GND | |
| I2C Data | SDA | | A4 | |
| I2C Clock | SCL | | A5 | |
| Device | **DHT11 Pin** | **Arduino Nano Pin** | |
| Power | VCC (+) | 5V | |
| Ground | GND (-) | GND | |
| Data | OUT (S) | D2 | |

**🧩 Required Libraries**

Open Arduino IDE → Tools → Manage Libraries, then install:

* **Adafruit SSD1306**
* **Adafruit GFX Library**
* **DHT sensor library by Adafruit**
* **Adafruit Unified Sensor**

**💾 Arduino Code (cpp)**

#**include** <Adafruit\_SSD1306.h>

#**include** <Adafruit\_GFX.h>

#**include** <DHT.h>

#**define** SCREEN\_WIDTH 128

#**define** SCREEN\_HEIGHT 64

#**define** OLED\_RESET -1

Adafruit\_SSD1306 display(SCREEN\_WIDTH, SCREEN\_HEIGHT, &Wire, OLED\_RESET);

#**define** DHTPIN 2

#**define** DHTTYPE DHT11

DHT dht(DHTPIN, DHTTYPE);

**void** setup() {

*// Initialize sensor & display*

dht.begin();

display.begin(SSD1306\_SWITCHCAPVCC, 0x3C); *// Address 0x3C for most 128x64 OLEDs*

display.clearDisplay();

display.setTextSize(1);

display.setTextColor(SSD1306\_WHITE);

display.setCursor(0,0);

display.print("Weather Station");

display.display();

delay(2000);

}

**void** loop() {

*// Read sensor data*

**float** tempC = dht.readTemperature();

**float** tempF = tempC \* 1.8 + 32;

**float** humidity = dht.readHumidity();

display.clearDisplay();

*// Display Temperature in Celsius*

display.setCursor(0, 0);

display.print("Temp: ");

**if** (!isnan(tempC)) {

display.print(tempC);

display.write((**char**)247); *// degree symbol*

display.print("C");

} **else** {

display.print("Err");

}

*// Display Temperature in Fahrenheit*

display.setCursor(0, 16);

display.print("Temp: ");

**if** (!isnan(tempF)) {

display.print(tempF);

display.write((**char**)247); *// degree symbol*

display.print("F");

} **else** {

display.print("Err");

}

*// Display Humidity*

display.setCursor(0, 32);

display.print("Humidity: ");

**if** (!isnan(humidity)) {

display.print(humidity);

display.print("%");

} **else** {

display.print("Err");

}

display.display();

delay(2000); *// Update every 2 seconds*

}

**🏁 How It Works**

* **Arduino Nano** reads live temperature and humidity from the **DHT11**.
* Values are displayed every 2 seconds on the **NFP1315 OLED**.
* Shows both °C and °F, plus humidity.