

lamaPLC project: Arduino - OLED SH1106 with AHT20/BMP280 Sensor

The initial version of the project aimed to display measurements from the [AHT20/BMP280 sensor](#) as simply as possible on an [OLED display](#), specifically the available SH1106. The AHT20/BMP280 integrates two sensors into a single device. It operates with a 5V power supply and provides the following measurements:

- AHT 20 Temperature: 22.12 degrees C
- AHT 20 Humidity: 62.55% rH
- BMP280 Pressure: 99128.00 hPa
- BMP280 Pressure (64 bit): 99125.84 hPa
- BMP280 Temperature: 23.17 degrees C

The five measurements are shown on the OLED display in small letters.

Wiring

Since both the display and the sensor use [I²C](#) to communicate, wiring is straightforward:

- Arduino 5v - [AHT20/BMP280](#) sensor VDD - [SH1106 OLED](#) VDD
- Arduino GND - AHT20/BMP280 sensor GND - SH1106 OLED GND
- Arduino SCL - AHT20/BMP280 sensor SCL - SH1106 OLED SCK
- Arduino SDA - AHT20/BMP280 sensor SDA - SH1106 OLED SDA



Note: The **U8g2lib library** required for the OLED must be installed manually, as its source code is included in the [OLED description](#).

The initial version of the code:

```
// lamaPLC project: Arduino - OLED SH1106 with AHT20/BMP280 Sensor
// 2026.02.07. free code
// link:
https://lamaplc.com/doku.php?id=arduino:projects:oled_sh1106_with_aht20_bmp280

#include <Arduino.h>
#include <Wire.h>
#include <Adafruit_AHTX0.h>
#include <BMx280I2C.h>
#include <U8g2lib.h>

#define I2C_ADDRESS 0x77
```

```
char aht_temp[10]; // AHT sensor temperature
char aht_hum[10]; // AHT sensor humidity
char bmp_temp[10]; // BMP sensor temperature
char bmp_press[10]; // BMP sensor air pressure
char bmp_press_64[10]; // BMP sensor air pressure 64 bit

char finalBuf_1[32]; // a row complete
char finalBuf_2[32]; // a row complete
char finalBuf_3[32]; // a row complete
char finalBuf_4[32]; // a row complete
char finalBuf_5[32]; // a row complete

bool aht_ok, bmp_ok;

unsigned long startMillis, currentMillis; // current and start time
const unsigned long period = 5000; // the value is a number of
milliseconds

// Constructor for SH1106 128x64 I2C (Hardware I2C)
// U8G2_R0: No rotation. U8X8_PIN_NONE: No hardware reset pin.
U8G2_SH1106_128X64_NONAME_1_HW_I2C u8g2(U8G2_R0, /* reset= */ U8X8_PIN_NONE);

Adafruit_AHTX0 aht;

BMx280I2C bmx280(I2C_ADDRESS);

void (*resetFunc)(void) = 0; //declare reset function @ address 0

void setup() {
  Serial.begin(9600);
  Wire.begin();
  Serial.println("AHT20+BMP280 module test");

  if (!aht.begin()) {
    //Serial.println("Could not find a valid AHT20 sensor, check wiring!");
    //while (1);
    aht_ok = false;
  } else {
    aht_ok = true;
  }

  if (!bmx280.begin()) {
    //Serial.println("Could not find a valid BMP280 sensor, check wiring!");
    //while (1);
    bmp_ok = false;
  } else {
    bmp_ok = true;
  }
}
```

```
    bmx280.resetToDefaults();

    //set an oversampling setting for pressure and temperature measurements.
    bmx280.writeOversamplingPressure(BMx280MI::OSRS_P_x16);
    bmx280.writeOversamplingTemperature(BMx280MI::OSRS_T_x16);

    u8g2.begin();
}

void loop() {

    currentMillis = millis();           // get the current "time"
    (actually the number of milliseconds since the program started)
    if (currentMillis - startMillis >= period) // test whether the period has
    elapsed
    {
        startMillis = currentMillis; // time update

        // 2 second tact -----
        -----

        //start AHT20 measurement
        sensors_event_t humidity, temp;
        aht.getEvent(&humidity, &temp);

        dtostrf(temp.temperature, 9, 2, aht_temp);           // Converts to
        nnnn.nn format
        dtostrf(humidity.relative_humidity, 9, 2, aht_hum); // Converts to
        nnnn.nn format

        sprintf(finalBuf_1, sizeof(finalBuf_1), "Temp : %s C", aht_temp);
        sprintf(finalBuf_2, sizeof(finalBuf_2), "Hum : %s % rH", aht_hum);

        //start BMP280 measurement
        if (!bmx280.measure()) {
            bmp_ok = false;
        } else {
            bmp_ok = true;
        }
        //wait for the measurement to finish
        do {
            delay(100);
        } while (!bmx280.hasValue());

        dtostrf(bmx280.getTemperature(), 9, 2, bmp_temp);           // Converts to
        nnnn.nn format
        dtostrf(bmx280.getPressure(), 9, 2, bmp_press);           // Converts to
        nnnn.nn format
        dtostrf(bmx280.getPressure64(), 9, 2, bmp_press_64); // Converts to
        nnnn.nn format
    }
}
```

```
snprintf(finalBuf_3, sizeof(finalBuf_3), "Temp : %s C", bmp_temp);
snprintf(finalBuf_4, sizeof(finalBuf_4), "Press: %s hPa", bmp_press);
snprintf(finalBuf_5, sizeof(finalBuf_5), "P_64 : %s hPa", bmp_press_64);

u8g2.firstPage();
do {
    // https://docs.rs/u8g2-fonts/latest/u8g2_fonts/fonts/index.html
    u8g2.setFont(u8g2_font_6x13_me); // Set font
    u8g2.drawStr(0, 12, finalBuf_1); // Draw text
    u8g2.drawStr(0, 24, finalBuf_2); // Draw text
    u8g2.drawStr(0, 36, finalBuf_3); // Draw text
    u8g2.drawStr(0, 48, finalBuf_4); // Draw text
    u8g2.drawStr(0, 60, finalBuf_5); // Draw text

} while (u8g2.nextPage());
}
```

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