

lamaPLC: Arduino Modul: BME680

The program read [BME-680 sensor](#) to serial monitor.

```
/*
 * BME680 Sensor - Arduino Uno/Nano
 * Connection: I2C
 * Data: Temperature, Humidity, Pressure, Gas (Air Quality)
 *
 * Required Libraries (Arduino Library Manager):
 * - "Adafruit BME680 Library" by Adafruit
 * - "Adafruit Unified Sensor" by Adafruit
 *
 * Wiring (I2C):
 * BME680 --> Arduino Uno/Nano
 * VCC     --> 3.3V (or 5V depending on module)
 * GND     --> GND
 * SDA     --> A4
 * SCL     --> A5
 */

#include <Wire.h>
#include <Adafruit_Sensor.h>
#include <Adafruit_BME680.h>

// Sea level pressure for altitude calculation (adjust to your location in
// hPa!)
#define SEA_LEVEL_PRESSURE_HPA 1013.25

// Create BME680 object (I2C address: 0x76 or 0x77)
Adafruit_BME680 bme;

void setup() {
  Serial.begin(9600);
  while (!Serial); // Wait until Serial is ready

  Serial.println(F("====="));
  Serial.println(F("  BME680 Sensor - Arduino  "));
  Serial.println(F("====="));

  // Initialize sensor
  if (!bme.begin(0x76)) {
    Serial.println(F("ERROR: BME680 not found!"));
    Serial.println(F("Please check your wiring."));
    Serial.println(F("Trying address 0x77 ..."));

    if (!bme.begin(0x77)) {
      Serial.println(F("ERROR: BME680 not found on 0x77 either!"));
    }
  }
}
```

```
    while (1); // Halt program
  }
}

Serial.println(F("BME680 found successfully!"));

// Configure sensor settings
bme.setTemperatureOversampling(BME680_OS_8X);
bme.setHumidityOversampling(BME680_OS_2X);
bme.setPressureOversampling(BME680_OS_4X);
bme.setIIRFilterSize(BME680_FILTER_SIZE_3);
bme.setGasHeater(320, 150); // Heater temperature: 320°C, Heating time:
150ms

Serial.println(F("Sensor configured. Starting measurements...\n"));
delay(2000);
}

void loop() {
  // Start measurement and wait for result
  if (!bme.performReading()) {
    Serial.println(F("ERROR: Reading failed!"));
    delay(2000);
    return;
  }

  // Print sensor values
  Serial.println(F("-----"));

  // Temperature
  Serial.print(F("Temperature:      "));
  Serial.print(bme.temperature, 1);
  Serial.println(F(" °C"));

  // Humidity
  Serial.print(F("Humidity:          "));
  Serial.print(bme.humidity, 1);
  Serial.println(F(" %"));

  // Pressure
  Serial.print(F("Pressure:          "));
  Serial.print(bme.pressure / 100.0, 2);
  Serial.println(F(" hPa"));

  // Altitude above sea level (calculated)
  Serial.print(F("Altitude (approx): "));
  Serial.print(bme.readAltitude(SEA_LEVEL_PRESSURE_HPA), 1);
  Serial.println(F(" m"));

  // Gas resistance (air quality)
```

```
Serial.print(F("Gas Resistance:  "));
Serial.print(bme.gas_resistance / 1000.0, 2);
Serial.println(F(" kΩ"));

// Air quality as simple rating
Serial.print(F("Air Quality:  "));
Serial.println(getAirQuality(bme.gas_resistance));

Serial.println();

// Wait 3 seconds until next measurement
delay(3000);
}

// Simple air quality rating based on gas resistance
String getAirQuality(uint32_t gasResistance) {
    uint32_t kOhm = gasResistance / 1000;

    if (kOhm >= 300) {
        return F("Very Good");
    } else if (kOhm >= 150) {
        return F("Good");
    } else if (kOhm >= 50) {
        return F("Moderate");
    } else if (kOhm >= 10) {
        return F("Poor");
    } else {
        return F("Very Poor");
    }
}
```

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