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DFR0049 Analog Gas Sensor  
(QM-NG1)DFR0100 DFRduino Beginner Kit  
For Arduino V3

DFR0133 X-Board

DFR0162 X-Board V2

DFR0188 Flymaple V1.1

DFR0182 Wireless GamePad V2.0

DFR0267 Bluno

DFR0282 Beetle

DFR0283 Dreamer Maple V1.0

DFR0296 Bluno Nano

DFR0302 MiniQ 2WD Plus

DFR0304 BLE Wireless Gamepad  
V2

DFR0305 RoMeo BLE

DFR0306 Bluno Mega 1280

DFR0321 Wido-WIFI IoT Node

DFR0323 Bluno Mega 2560

DFR0329 Bluno M3

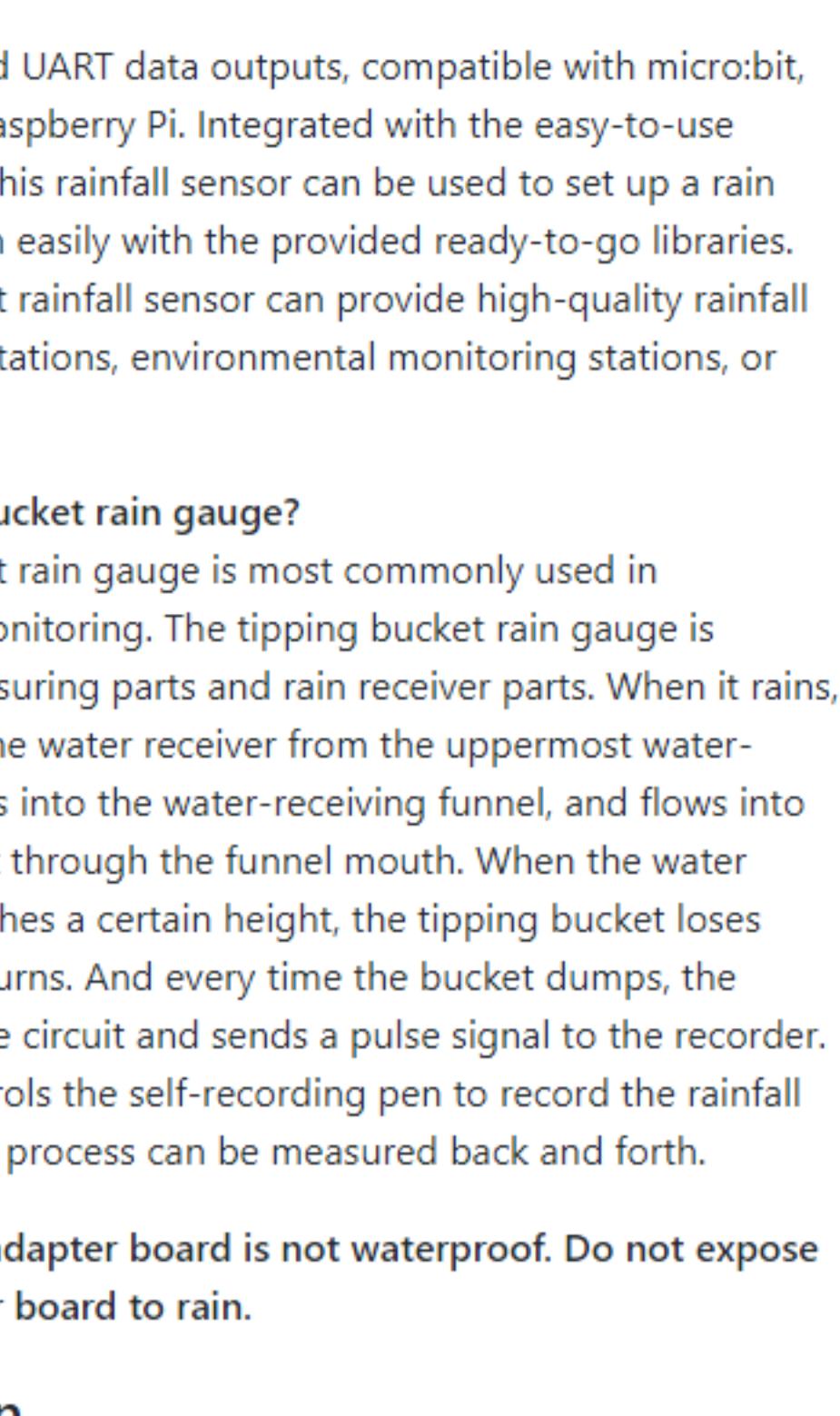
DFR0339 Bluno Beetle

DFR0342 LiPo Low Power

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## Introduction

Based on the principle of tipping bucket rainfall sensor provides users with rainfall values in millimeters and system operating time. The sensor has no electronic components inside and features a hollow bottom design that allows rainwater to automatically drain, making it more stable and sensitive.



It supports I2C and UART data outputs, compatible with micro:bit, Arduino, ESP32, Raspberry Pi. Integrated with the easy-to-use Gravity interface, this rainfall sensor can be used to set up a rain monitoring system easily with the provided ready-to-go libraries. The tipping bucket rainfall sensor can provide high-quality rainfall data for weather stations, environmental monitoring stations, or smart farms.

### What is tipping bucket rain gauge?

The tipping bucket rain gauge is most commonly used in meteorological monitoring. The tipping bucket rain gauge is composed of measuring parts and rain receiver parts. When it rains, rainwater enters the water receiver from the uppermost water-receiving port, falls into the water-receiving funnel, and flows into the tipping bucket through the funnel mouth. When the water accumulation reaches a certain height, the tipping bucket loses balance and overturns. And every time the bucket dumps, the switch turns on the circuit and sends a pulse signal to the recorder. The recorder controls the self-recording pen to record the rainfall so that the rainfall process can be measured back and forth.

**Note:** The signal adapter board is not waterproof. Do not expose the signal adapter board to rain.

## Specification

- Working Voltage: 3.3-5.5V DC
- Working Current: <3mA
- Output Signal: I2C/UART
- Resolution: 0.28mm
- Operating Temperature: -40 to 85°C
- PCB Size: 32mm x 37mm
- Flipper Size: 118mm x 59mm x 80mm
- Mounting Hole Size: 3.1mm
- Weight: 119g (Tipping bucket), 5.3g (PCB)

## Board Overview



## Sample Code

```
#include "DFRobot_RainfallSensor.h"

#ifndef MODE_UART
#define MODE_UART //UART communication
#include "SoftwareSerial.h"
SoftwareSerial mySerial(*rx = *10, *tx = *11);
DFRobot_RainfallSensor_UART Sensor(*mySerial);
#endif

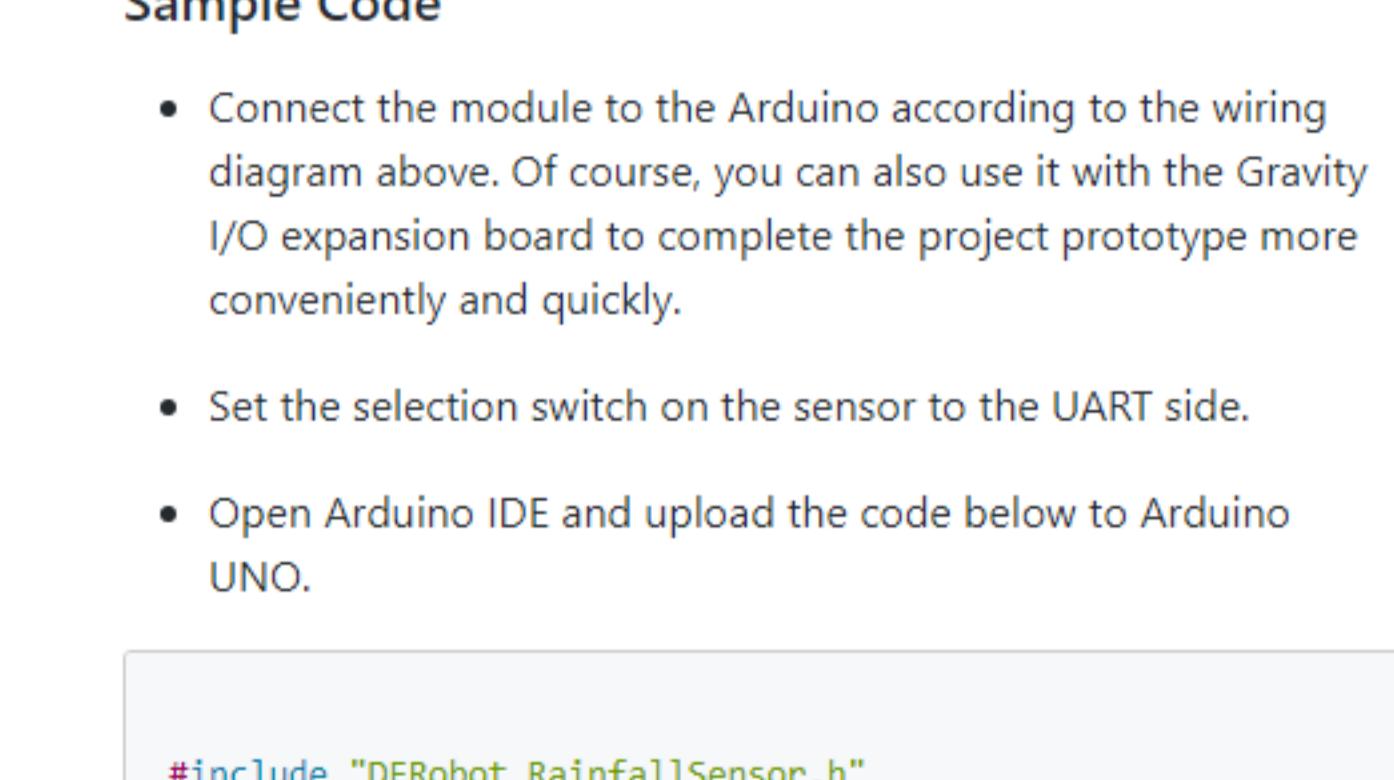
void setup(void)
{
  #ifdef MODE_UART
  mySerial.begin(9600);
  #endif
  Sensor.begin(115200);

  delay(1000);
  while(!Sensor.begin()){
    Serial.println("Sensor init err!!!");
    delay(1000);
  }
  Serial.print("vid:\t");
  Serial.println(Sensor.vid,HEX);
  Serial.print("pid:\t");
  Serial.println(Sensor.pid,HEX);
  Serial.print("Version:\t");
  Serial.println(Sensor.getFirmwareVersion());
  //Set the rain accumulated value, unit: mm
  //Sensor.setRainAccumulatedValue(0.2794);
}

void loop()
{
  //Get the sensor working time, unit: hour
  Serial.print("Sensor WorkingTime:\t");
  Serial.print(Sensor.getSensorWorkingTime());
  Serial.print(" H");
  //Get the accumulated rainfall during the sensor working time
  Serial.print("Rainfall:\t");
  Serial.println(Sensor.getRainfall());
  //Get the accumulated rainfall within 1 hour of the system
  Serial.print("1 Hour Rainfall:\t");
  Serial.print(Sensor.getRainfall(1));
  Serial.print(" mm");
  //Get the raw data, the number of tipping buckets for rainfall
  Serial.print(" Rainfall raw:\t");
  Serial.println(Sensor.getRawData());
  delay(1000);
}
```

## Expected Result

Open serial monitor to get the final data.

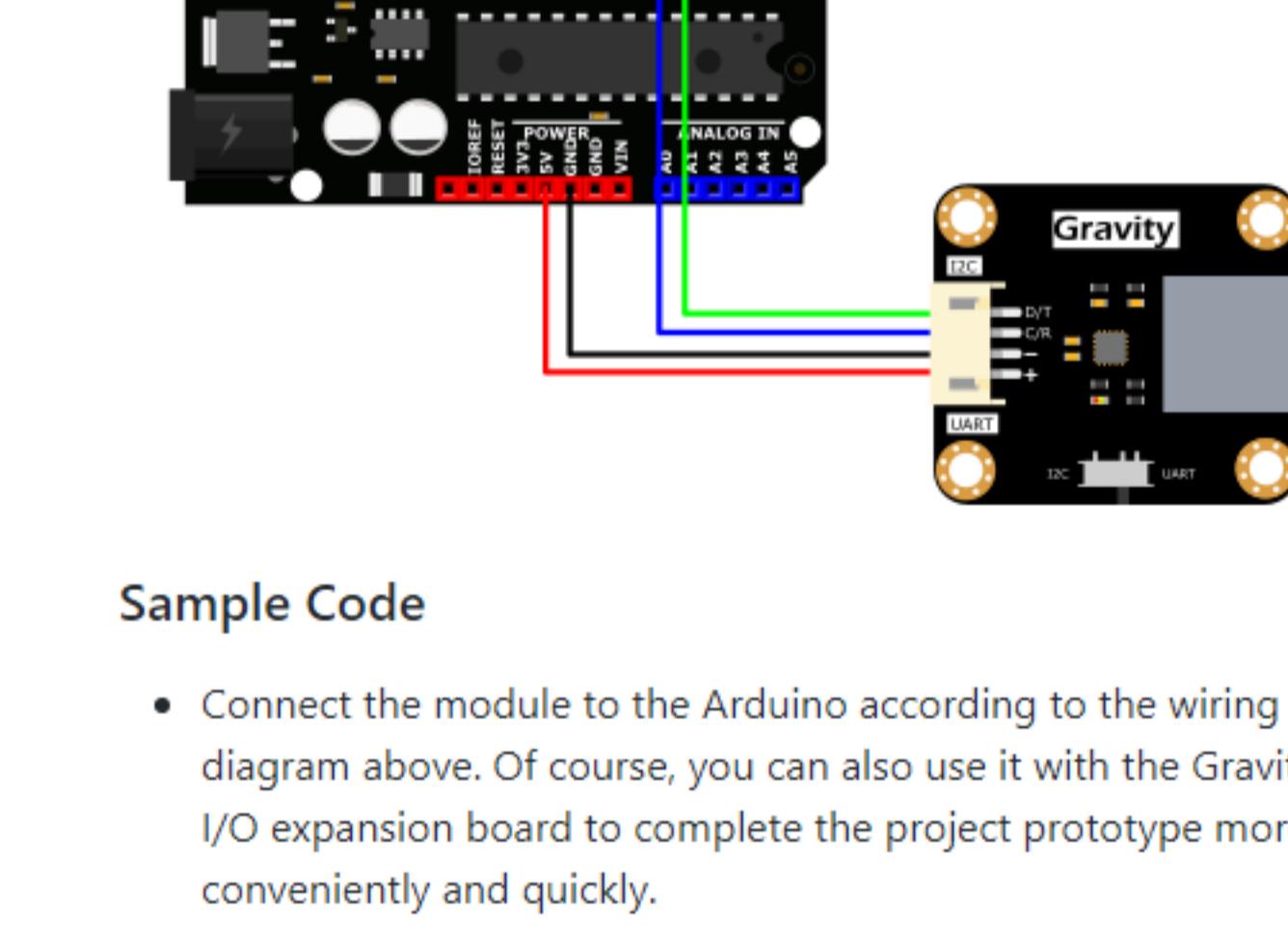


## Read Sensor Data via I2C

### Requirements

- Hardware
  - DFRduino Uno R3 (or similar) x 1
  - Gravity: Tipping Bucket Rainfall Sensor x 1
  - M-M/F-M/F-F Jumper wires
- Software
  - Arduino IDE
  - Download and install the [Rainfall Library](#) (About how to install the library?)

### Connection Diagram



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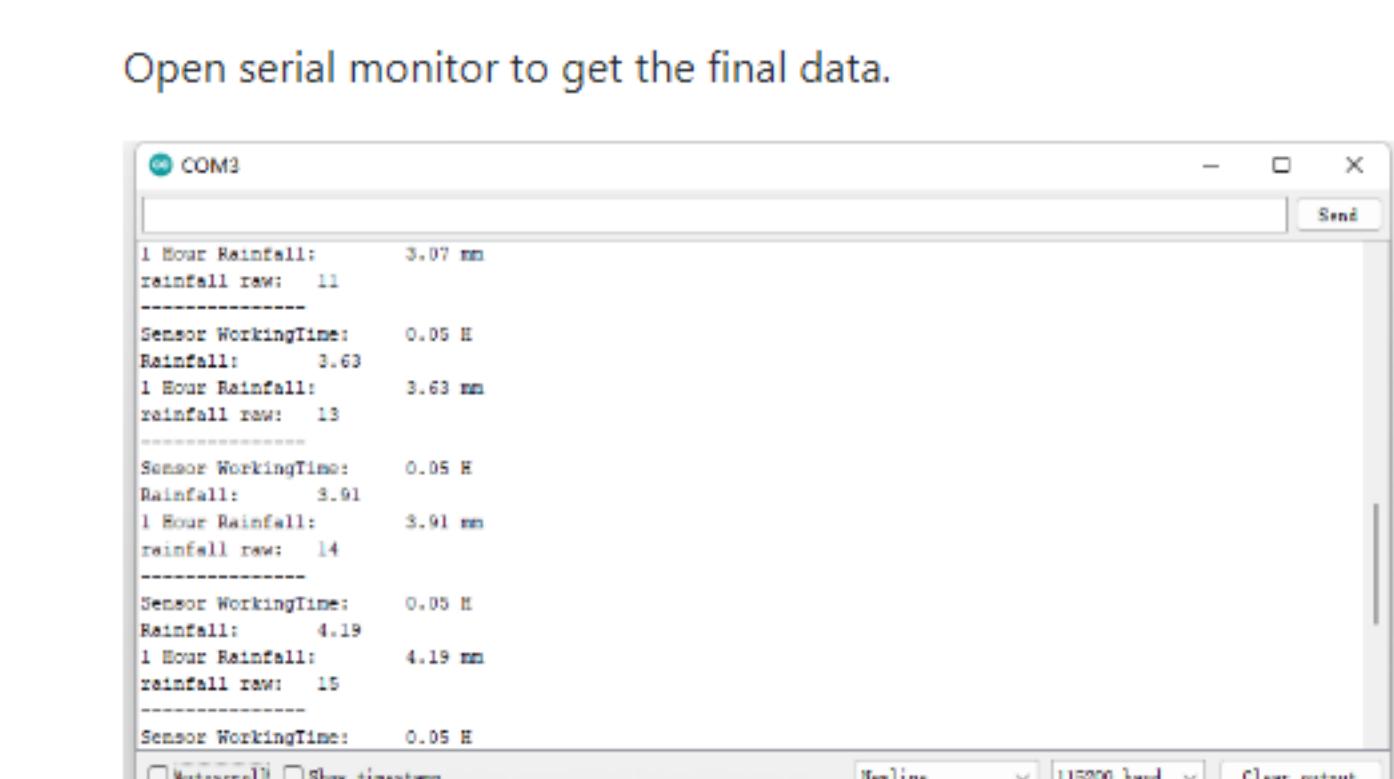
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## Expected Results

Open serial monitor to get the final data.



## FAQ

For any questions, advice or cool ideas to share, please visit the [DFRobot Forum](#).

## More Documents

- [Schematics](#)
- [Data Sheet](#)

 [Gravity: Tipping Bucket Rainfall Sensor - I2C & UART](#)

From DFRobot Store or [DFRobot Distributor](#) [Sensor - I2C & UART](#)

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