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Using DS18B20 Temperature Sensor with Arduino to measure temperature.

Introduction:

Wanted to measure temperature of liquid, air and ground? This is the easiest sensor to be used in the mini project. DS18B20 is 1-Wire digital temperature sensor from Maxim IC. This sealed digital temperature probe lets you precisely measure temperatures in wet environments with a simple 1-Wire interface. The DS18B20 provides 9 to 12-bit (configurable) temperature readings over a 1-Wire interface, so that only one wire (and ground) needs to be connected from a central microprocessor. Each sensor has a unique 64-Bit Serial number etched into it - allows for a huge number of sensors to be used on one data bus.

Features:

- 3.0-5.5V input voltage
- Waterproof sealed with stainless steel
- -55°C to+125°C temperature range
- ±0.5°C accuracy from -10°C to +85°C
- 1 Wire interface
- Red = Vcc, White = Data, Black = GND
- Red = Vcc, Yellow = Data, Green = GND

Objective:

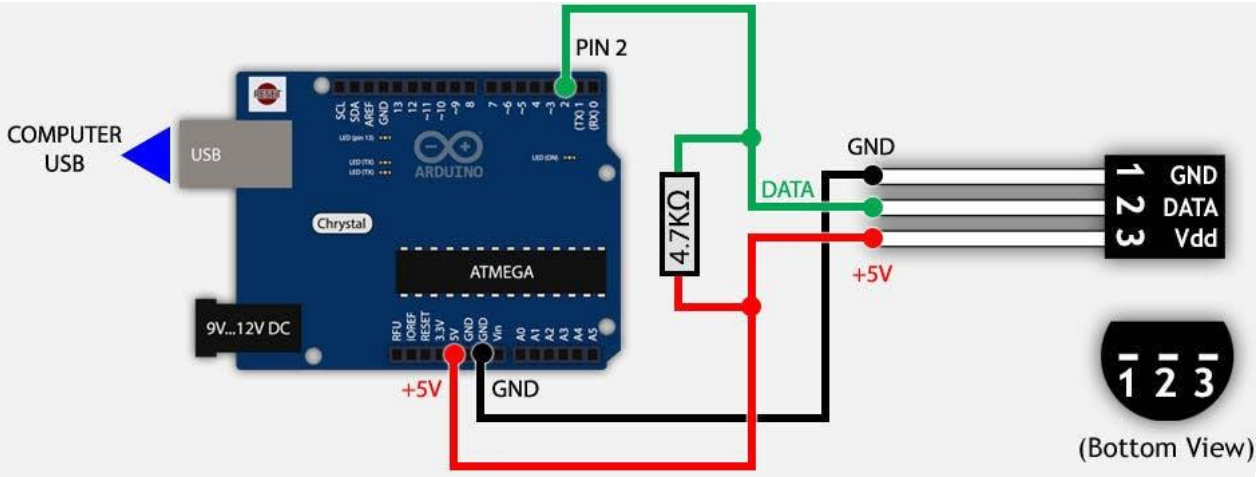
To measure the temperature of liquid, air or ground while the temperature data reading will be displayed at the **Arduino IDE Serial Monitor** tab.

Component Needed:

- 1x DS18B20 Temperature Sensor
- 1x Arduino UNO (Mega and Nano also can be used)
- 1x 4.7k Resistor
- 1x Breadboard
- Few Jumper Wires

Instructions: -

1. Connect all the components to the Arduino based on the diagram below.

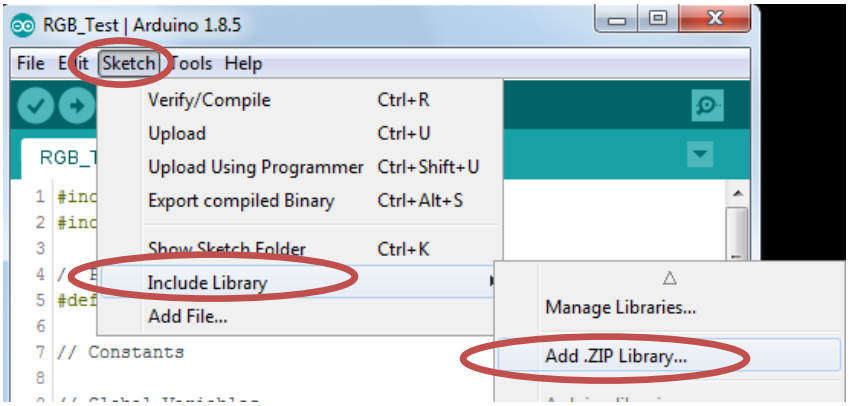


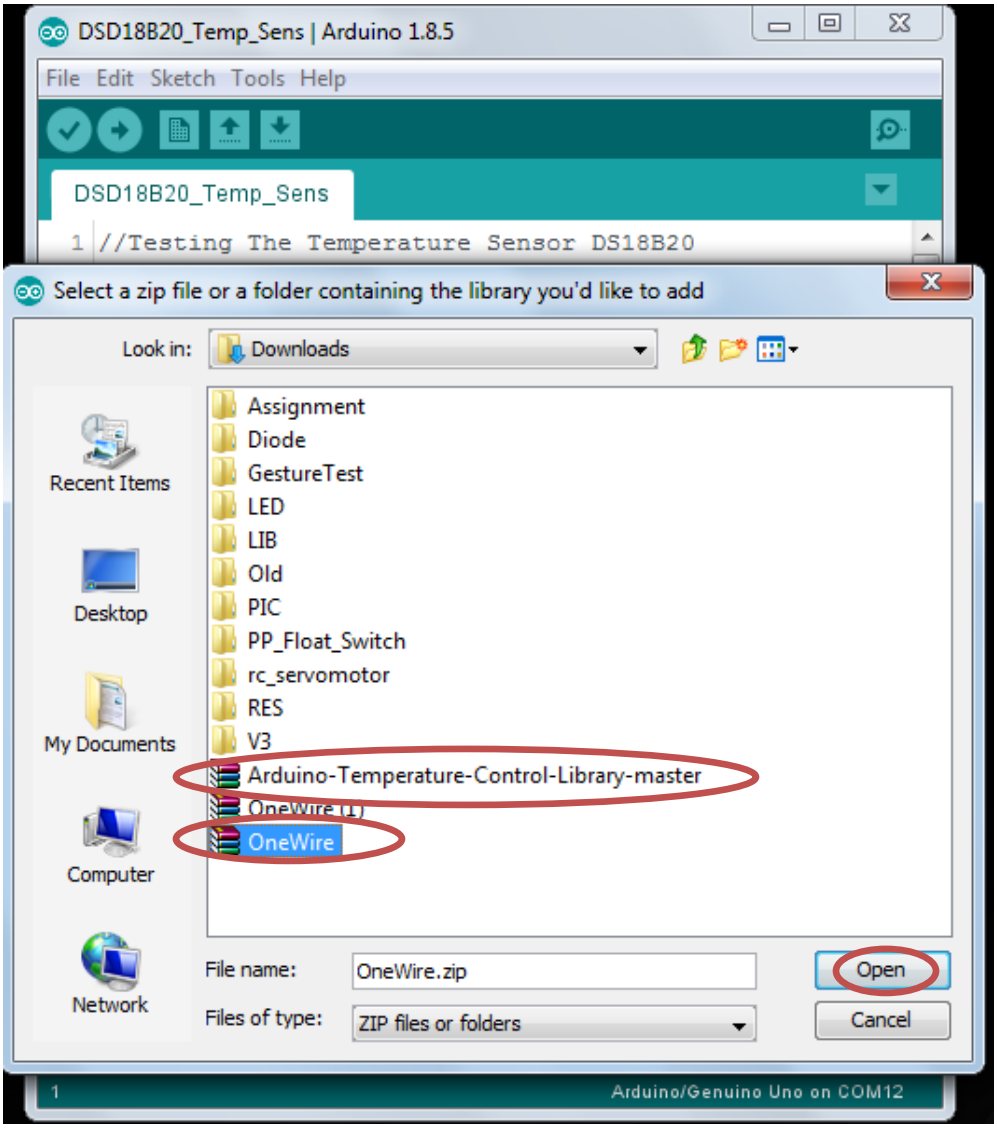
Arduino UNO	DS18B20 Sensor	Resistor 4.7k
PIN 2	DATA	Resistor
5V	Vdd	Resistor
GND	GND	-

2. Download the Library needed (click to download).

   i. OneWire
   ii. Arduino Temperature Control Library master

3. Add the downloaded library into Arduino IDE as the picture below.

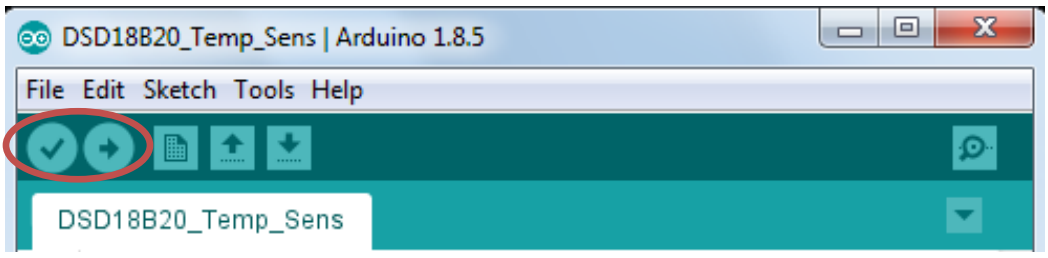




4. Still in Arduino IDE copy and paste the following coding.

```
//Testing The Temperature Sensor DS18B20
// First we include the libraries
#include <OneWire.h>
#include <DallasTemperature.h>

// Data wire is plugged into pin 2 on the Arduino
#define ONE_WIRE_BUS 2

// Setup a oneWire instance to communicate with any OneWire devices
// (not just Maxim/Dallas temperature ICs)
OneWire oneWire(ONE_WIRE_BUS);

// Pass our oneWire reference to Dallas Temperature.
DallasTemperature sensors(&oneWire);

void setup(void)
{
 // start serial port
 Serial.begin(9600);
 Serial.println("Dallas Temperature IC Control Library Demo");
 // Start up the library
 sensors.begin();
}
void loop(void)
{
 // call sensors.requestTemperatures() to issue a global temperature
 // request to all devices on the bus

 Serial.print(" Requesting temperatures...");
 sensors.requestTemperatures(); // Send the command to get temperature readings
 Serial.println("DONE");

 Serial.print("Temperature is: ");
 Serial.print(sensors.getTempCByIndex(0)); // Why "byIndex"?
   // You can have more than one DS18B20 on the same bus.
   // 0 refers to the first IC on the wire
   delay(1000);
}
```

5. Connect the Arduino to the PC, click on Verify to check if there are any error in the coding. Next, click on Upload to flash the coding into Arduino.



6. Done! Open the serial Monitor tab to see or check the temperature reading.