

ARDUINO THERMOMETER WITH DS18B20

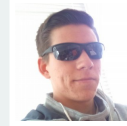
DS18B20 (Digital Temperature Sensor) and Arduino © GPL3+

In this protip, I will show you how to build DS18B20 Digital Thermometer with Arduino.

temperature thermometer

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AUTHOR



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COMPONENTS AND SUPPLIES



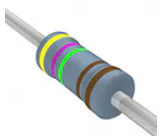
Arduino UNO

x 1



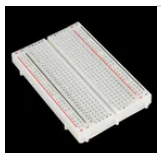
Maxim Integrated DS18B20 Programmable Resolution 1-Wire Digital Thermometer

x 1



Resistor 4.75k ohm

x 1



Breadboard (generic)

x 1



Jumper wires (generic)



APPS AND ONLINE SERVICES



Arduino IDE



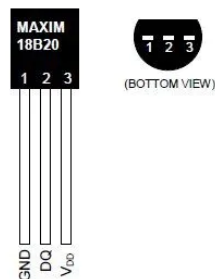
Arduino Web Editor



ABOUT THIS PROJECT

Hello, everyone! Today I'm going to show you how to use **DS18B20** digital temperature sensor with Arduino, so you can measure the temperature of the air, liquids like water and the temperature of the ground.

Step 1: Information About The Sensor



DS18B20 is 1-Wire digital temperature sensor from Maxim IC. Reports degrees in Celsius with 9 to 12-bit precision, from -55 to 125 (+/-0.5). 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:

- Unique 1-Wire® interface requires only one port pin for communication
- Each device has a unique 64-bit serial code stored in an onboard ROM
- Multidrop capability simplifies distributed temperature sensing applications
- Requires no external components
- Can be powered from data line.
- Power supply range is 3.0V to 5.5V
- Measures temperatures from -55°C to +125°C (-67°F to +257°F) ±0.5°C accuracy from -10°C to +85°C

- User-definable nonvolatile (NV) alarm settings
- Alarm search command identifies and addresses devices whose temperature is outside of programmed limits (temperature alarm condition)
- Applications include thermostatic controls, industrial systems, consumer products, thermometers, or any thermally sensitive system

Step 2: What you need:

[< PREVIOUS](#)[NEXT >](#)

To make the thermometer you will need the following things:

- Arduino board ([UNO](#), [DUE](#), Micro, etc..).
- DS18B20 sensor a [waterproof](#) or [not](#) and one 4.7k resistor*
- Breadboard
- Jumpers to connect everything together.

*Some stores sell the sensor with 4.7k resistor.

Step 3: Libraries

Before you start, download and unzip the following libraries at **/Program Files(x86)/Arduino/Libraries (default)**, in order to use the sensor with the Arduino board.

- [1- Wire bus](#)
- [Dallas Temperature](#), it does all the calculations and other stuff

 [ONEWIRE.ZIP](#)

Step 4: Build simple circuit

[< PREVIOUS](#)[NEXT >](#)

To print the data from DS18B20 on the serial monitor of the IDE you have to build the circuit by following the schematic.

First plug the sensor on the breadboard the connect its pins to the Arduino using the jumpers in the following order: pin 1 to GND; pin 2 to any digital pin (pin 2 in our case); pin 3 to +5V or +3.3V, at the end put the pull-up resistor.

Step 5: Code

```
/*  
// 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");  
}
```

Download, open and upload the .ino file.


If everything is okay you should see the temperature being measured and showed in the **Serial monitor at the IDE** like on the screenshot above.

[FSXAS9CIFMTNEBR.INO](#)

CODE

Github

<https://github.com/milesburton/Arduino-Temperature-Control-Library>


 milesburton / [Arduino-Temperature-Control-Library](#) 788 436

Arduino plug and go library for the Maxim (previously Dallas) DS18B20 (and similar) temperature ICs — [Read More](#)
https://milesburton.com/Dallas_Temperature_Control_Library

Latest commit to the **master** branch on 5-28-2021 Download as zip

Github

<https://github.com/fdebrabander/Arduino-LiquidCrystal-I2C-library>

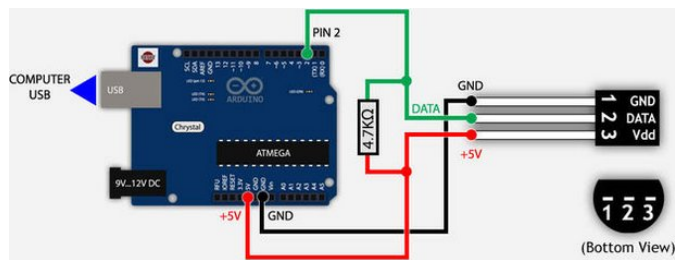
 fdebrabander / [Arduino-LiquidCrystal-I2C-library](#) 480 482

Library for the LiquidCrystal LCD display connected to an Arduino board. — [Read More](#)

Latest commit to the **master** branch on 9-30-2020 Download as zip

Schematic

DOWNLOAD



COMMENTS

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**fathizohri**

4 years ago

Why my ds18b20 showing at the lcd temperature that is -127 Celcius. My connection is true for what I follow but Im not using the arduino uno board but using intel edison board can u help me..???

**Riffeler**

4 years ago

You need to connect the Resistor in Parralel it is not optional.

**Licmeth**

4 years ago

Same here unfortunately 😞 I builded the circuit like in the schematics (with the resistor in parallel) and copy-pasted the code. I'm working with an Arduino Uno board.

**Gulfishin2**

4 years ago

Just be careful, I bough a DS18B20 out of China and pins 1 & 3 are actually reversed from this tutorial. that will give you a high reading. fell the sensor, it will be very hot to touch. Swap over pins 1 & 3 and you should be good to go.

[2 thanks](#)

**cri2309**

4 years ago

Have you solved the problem? I also use an intel edison board and i have the same problem, it display -127

**AKJ**

3 years ago

To all those seeing -127. Remember that S on the sensor module stands for Signal. So switch the signal and the power pins.



I had the same -127 error and tried all the suggestions posted here but in the end it was my signal wire that was not connected to the Arduino (I used a development board pin which I though was connected. My suggestion: test all wires with a mulitmeter for connectivity from the sensor to the Arduino pins.

**nabeelkirmani**

3 years ago

If you bought the waterproof DS18B20 with the Metal Cylinder enclosure on the top and if the wires extending from it are RED YELLOW BLACK then:

RED is Vdd = 5v input to sensor

YELLOW is Signal = digital output from sensor

BLACK = Ground

and you need to add 4.7k ohm resistor between Vdd and Signal.

And also give a minimum delay of 25ms between taking Signal input from the sensor.

Goodluck!

1 thank

**MaxPolizzo**

2 years ago

Thank you @Gulfishin2 you just saved my day 😊

**user1580230**

a year ago

In my case digital input bus 2 was broken. When I took bus 5 it started working.

**Milagres**

4 years ago

Hello! I'd like to know how can I include more than one sensor of temperature and a clock? what do I have to put in the Code for it?

I'm beginner with arduino so I don't know how to do it

(please help me, thanks)

**Hannes777**

4 years ago

ATTENTION! I think the Schematic is wrong, it's twistet.. try to twist your DS18B20 about 180 degree and it will work perfekt!

1 thank

**PhDWho**

4 years ago

Thanks for the tutorial. FYI, I think the Arduino in your photo is counterfeit.

**Konstantin Dimitrov**

4 years ago

You're welcome !

Yeah this UNO is a Chinese one, I bought it with a box full of different things such as jumper wires, resistors, servo, etc. and it cost me the same price as and original Arduino UNO. But last year I bought couple original Arduino boards (DUE and 101)

1 thank



4 years ago

Thanks for the code, it was very helpful. To the few comments below saying that their readings are high. Just be careful, I bought a DS18B20 out of China and pins 1 & 3 are actually reversed from this tutorial. That will give you a high reading. Feel the sensor, it will be very hot to touch. Swap over pins 1 & 3 and you should be good to go.

**plusco**

4 years ago

What is the purpose of the one 4.7k resistor. Why is it required? Thank you.

**Konstantin Dimitrov**

4 years ago

The 4.7 kOhm resistor is pull-up, without it you won't get true readings from the sensor. Here is some information about pull-up resistors - https://en.wikipedia.org/wiki/Pull-up_resistor

**MakkaraKoopra**

4 years ago

Just to clarify because I was unsure myself; the resistor requirement is "approximately 5kOhm" in the datasheet. I was able to use a 5.1kOhm from my starter kit.

**JayWillis**

4 years ago

Excellent thanks for the project. I used it to wire up to an Adafruit feather logger 32u4 and it worked perfectly first time. I wonder if there is any way to calibrate the temperature - or if it is pre-calibrated depending on the resistor value. Either way, thanks for the posting.

**BobEdge**

4 years ago

You can also wire this up with pins 1, and 3 to ground, and the signal connected to a 4k7 pull up resistor.

Jay I bought 2 last week, and tested them against a calibrated thermometer, and a thermocouple thermometer we have at work. They were spot on. I think they are laser trimmed or something, and don't need calibrating.

**Smeiman**

4 years ago

It would be really helpful if u guys could help me. I'm trying to use 2 ds18b20 sensors to measure two different temperatures. One sensor reads correctly while the other reads but displays -127. How do I make both the sensors output 2 temperatures instead of only 1 sensor outputting the temperature?

**Paulnaude01**

3 years ago

I have mine set up like this - if both sensors share the same wires, make sure your code is:

```
lcd.setCursor(11,0);  
lcd.print(sensors.getTempCByIndex(0));  
lcd.setCursor(11,1);  
lcd.print(sensors.getTempCByIndex(1));
```

If that is not the problem, test connectivity with a multimeter since the output is -127 when no reading is read from the sensor.



4 years ago

Hey everyone, I am in desperate need of help! I've been using the dallas temperature code for some time now. I am currently working on a project that involves ten probes using a feather huzzah board. My probes will be submerged under water but i need to get the probes i got soldered together organized feedback. For example getting the temperature feedback from top to bottom rather randomly collected data throughout the 10 probes being stretched out. Please contact me with any information about that. Reply a link where i can find the how to for that function.

Thank You



djitark

3 years ago

did you solved your problem? i also want to do the same kind of thing, if you can help me then it will be very good.

thank you



Mike H

3 years ago

You need to use index to get your probe data then BUT you will have to load your array of probes or know which index is where when you read it.

For instance;

1. If you load the array as you read back probes then the array will load randomly.
2. If you load the array in a specific order then you'll need to know the probe ids for that load order.

NOTE: As I understand it, the probes will ALWAYS read back in the same order every time they are read.

Does that make sense?

I got this from reading the Dallas Semiconductor engineering notes on their website.

Good luck!



sidbatman

4 years ago

@Konstantin Dimitrov....thanks for the project and simple explanation. But i need a help. I am currently on a project to generate square waves with the values i get from the ds18b20 sensor. That is, if the temperature is between 25 and 28c, my square wave will have 10% duty ratio. If the temperature is between 29 and 31, wave will have 20% duty ratio and so on. I can't seem to generate the same. Can somebody tell me how I can implement it?



Icebrk

4 years ago

Hi, I had first same problem that temperature was -127celcius. Reason was simple, I proved circuit without resistor. Actually I don't have 4.7kOhm resistor, but I have instead 4.6kOhm resistor and it works fine. If I recall right there is 5% quality range in cheap resistors, so 4.6kOhm resistor works actually somewhere between 4.37-4.8kOhm. Not accuracy, but enough for home projects.

Thanks for good guide:)



MakkaraKoopra

4 years ago

DS18B20 datasheet says "approximately 5kOhm". I doesn't need to be a precise resistance because it's a pull-up resistor.



Hello guys I have a project using this sensor and Arduino Uno
I'm showing the measured temperature in a Display (Matrix Led)
The problem is that when I read the Temperature the display is turned off, and this is not so cool.
It looks that it makes a lot of operations.
Some advice to avoid this delay??
Thanksss

**rcanha**

4 years ago

Hello. Thank you very much for your project.

I am a chemistry professor and I have to perform a class in which each student team have a sensor to measure temperature in a phase diagram experiment. I will use only one arduino uno board.

Do you have any idea how to modify your code so I can use 5 temperature sensors simultaneously?

Do you find it interesting to include a loop between the void setup and the void loop?

Best

Renato

**Doreen**

4 years ago

Hi, thanks for sharing this project! may i know which website or software did you use to design the schematic diagram? 😊

**Mike H**

4 years ago

Here's documentation for the DS18B20

<https://datasheets.maximintegrated.com/en/ds/DS18B20.pdf>

If readers got it to work backwards then good for them.

Looks like there is some messed up product out there.

I got three temp sensors working in parasitic mode with 2 wires.

These are easy and great to use for limited resource processors.

Once you know your ROM ID then the rest is cake.

**jofuone**

4 years ago

Hi there, thanks for writing this up. One thing I would add, bearing in mind your leading photo is of the DS18B20 on a 1 meter lead, is that knowing the function of each wire based on their position beneath the sensor wont work. Instead, you need to know the function by colour. This might be obvious to some, but just in case - black is ground, red is input voltage, and yellow is output voltage (i.e. connected to pin 2 in the example above). Source is

<https://www.adafruit.com/product/381>

**dave-in-nj**

4 years ago

Thanks for the code and the description. it does work for me.

I have two so I changed the lines to:

```
Serial.print("Temperature is: ");
```

```
Serial.print(sensors.getTempCByIndex(0)); // Why "byIndex"?
```

```
Serial.print(" - ");
```

```
Serial.println(sensors.getTempCByIndex(1));
```

One thing I would like is to have a way to set the resolution in setup()



4 years ago

dave-in-nj,

Here's a good article on setting the resolution.

It looks like you can configure the resolution dynamic until power is cycled or static (written into EEPROM) so already set if power is cycled.

<http://www.homautomation.org/2015/11/17/ds18b20-how-to-change-resolution-9101112-bits/>

Alarms are cool to use too because it shares the work with the computer chip in the DS18B20 so the Arduino can do other work instead of enforcing business logic.

Good Luck!!

-mike, Meridian, Idaho



winperl

3 years ago

```
unsigned long tm;
tm = micros();
sensors.requestTemperatures();
tm = micros()-tm;
Serial.println(tm); //!!!590ms = 0.6sec !!!!!!!!!!!!!!! ...
//incredibly, the error in the head developer of the library! :\\
```

```
////////// My code:
#include <math.h>

#define ONE_WIRE_BUS 2

void OW_Set(unsigned char mode){
  if (mode){
    pinMode(ONE_WIRE_BUS, OUTPUT);
    digitalWrite(ONE_WIRE_BUS, LOW);
  }
  else
    pinMode(ONE_WIRE_BUS, INPUT);
}

unsigned char OW_CheckIn(void){
  return digitalRead(ONE_WIRE_BUS);
}

unsigned char OW_Reset(void){
  pinMode(ONE_WIRE_BUS, OUTPUT);
  digitalWrite(ONE_WIRE_BUS, LOW);
  delay(10);
  digitalWrite(ONE_WIRE_BUS, HIGH);
  delay(10);
  digitalWrite(ONE_WIRE_BUS, LOW);
  delay(10);
  return digitalRead(ONE_WIRE_BUS);
}
```



maxwell83

a year ago

How do i stop continuously reading the temp and get the final output of temperature in serial monitor? it works .. But i don't know how to get a specific value of the result.. just like digital thermometer beep sound then show number matching the temp. please help me. How is it?



naveenkumars

3 years ago

i got it working,just wanna know weather the value is in degree Celsius or in Fahrenheit??



Mike H

3 years ago

Default is C, I believe.



winperl

3 years ago



```
const int //pins of LCD screen
rs = 7,
en = 6,
d4 = 5,
d5 = 4,
d6 = 3,
d7 = 2;
LiquidCrystal lcd(rs, en, d4, d5, d6, d7);

#define ONE_WIRE_BUS 8

void OW_Set(unsigned char mode){
  if (mode){
    pinMode(ONE_WIRE_BUS, OUTPUT);
    digitalWrite(ONE_WIRE_BUS, LOW);
  }
```

**theric**

3 years ago

i got this sketch to work, its pretty cool. i am interested in putting together the simplest thermostat possible.

All of the other sketches i have found have potentiometers and led screens.

Is there a simple way to modify this sketch to turn a relay (pin) on at one temperature and off at another?

**Mike H**

3 years ago

I'd create a timer interrupt to evaluate current temperature:

Here's link:

<https://learn.adafruit.com/multi-tasking-the-arduino-part-2/timers>

With logic similar to:

```
currTemp = getCurrTemp(DS_temperatureProbe_1) // calls function to get temp
```

```
guardBand = 3
```

```
if currTemp == setPoint then return
```

```
else If currTemp - setPoint > guardBand then set(relay_1, on)
```

```
else If setPoint - currTemp < guardBand then set(relay_1, off)
```

Then a function maybe called set() which will contain appropriate logic.

Here is link to how to make gpio work:

<https://www.arduino.cc/en/Tutorial/DigitalPins>

Here is relay driver circuit and even a device ready to go:

<https://makezine.com/2009/02/02/connecting-a-relay-to-arduino/>

Have fun!

**winperl**

3 years ago

```
//---Thermostat---
#include <math.h>
#include <LiquidCrystal.h>
//fix!!! released SCL SDA pins
const int rs = 13, en = 12, d4 = 11, d5 = 10, d6 = 9, d7 = 8;
LiquidCrystal lcd(rs, en, d4, d5, d6, d7);

#define ONE_WIRE_BUS 7
#define RELE 6
#define ANALOG_HEAT_COOL A0

void OW_Set(unsigned char mode){
  if (mode){
    pinMode(ONE_WIRE_BUS, OUTPUT);
    digitalWrite(ONE_WIRE_BUS, LOW);
  }
  else
    pinMode(ONE_WIRE_BUS, INPUT);
}
```



 3 years ago

the code you suggested i use, it would be added onto the end of the sketch i used on this page? or do i add the commands to one of the libraries utilized by the sketch on this page...



winperl

3 years ago

Update. Test OK!



theric

3 years ago

here it is. this simple code causes the arduino to activate pin 9 at 90 deg at a delay, and turns the pin off at 68. simplest cooling thermostat achieved. thanks for all the help



theric

3 years ago

/* Arduino DS18B20 temp sensor tutorial

More info: <http://www.ardumotive.com/how-to-use-the-ds18b20-temperature-sensor-en.html>

Date: 19/6/2015 // www.ardumotive.com */

//Include 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);

const int pin9 = 9;

const double HIGH_TEMP = 92;

const double LOW_TEMP = 65;

void setup(void)

{

pinMode(pin9, OUTPUT);

delay(5000);

Serial.begin(9600); //Begin serial communication

Serial.println("Arduino Digital Temperature // Serial Monitor Version"); //Print a message

sensors.begin();

}

void loop(void)

{

// Send the command to get temperatures

sensors.requestTemperatures();

Serial.print("Temperature is: ");

Serial.println(sensors.getTempFByIndex(0)); // Why "byIndex"? You can have more than one IC on the same bus. 0 refers to the first IC on the wire

if (sensors.getTempFByIndex(0) > HIGH_TEMP) {

digitalWrite(pin9, HIGH);

} else if (sensors.getTempFByIndex(0) < LOW_TEMP) {

digitalWrite(pin9, LOW);

}

//Update value every 1 sec.

delay(1000);

}



winperl



Not to mention the code that ...
This code must be smaller than 1 k!
:\



Cateflashy

3 years ago

I downloaded the .ino file, extracted the two zips in the /Program Files(x86)/Arduino/Libraries and tried to compile, but i keep receiving this error... What am I missing? Sorry, I am a beginner.

Linking everything together...

```
"C:\Program Files (x86)\Arduino\hardware\tools\avr\bin\avr-gcc" -w -Os -g -flto -fuse-linker-plugin -Wl,--gc-sections,--relax -mmcu=atmega2560 -o
```

```
"C:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933\F5XAS9CIFMTNEBR.ino.elf"  
"C:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933\sketch\F5XAS9CIFMTNEBR.ino.cpp.o"
```

```
"C:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933\libraries\OneWire\OneWire.cpp.o" "C:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933\libraries\Arduino-Temperature-Control-Library-master\DallasTemperature.cpp.o"
```

```
"C:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933\libraries\Arduino-Temperature-Control-Library-master\OneWire.cpp.o"
```

```
"C:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933\core\core.a" "-LC:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933" -lm
```

```
C:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933\libraries\Arduino-Temperature-Control-Library-master\OneWire.cpp.o (symbol from plugin): In function `OneWire::write(unsigned char, unsigned char)':
```

(.text+0x0): multiple definition of `OneWire::write(unsigned char, unsigned char)'

C:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933\libraries\OneWire\OneWire.cpp.o (symbol from plugin):.text+0x0: first defined here

c:/program files

(x86)/arduino/hardware/tools/avr/bin/./lib/gcc/avr/4.9.2/./.././../avr/bin/ld.exe: Disabling relaxation: it will not work with multiple definitions

```
C:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933\libraries\Arduino-Temperature-Control-Library-master\OneWire.cpp.o (symbol from plugin): In function `OneWire::write(unsigned char, unsigned char)':
```

(.text+0x0): multiple definition of `OneWire::write_bytes(unsigned char const*, unsigned int, bool)'

C:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933\libraries\OneWire\OneWire.cpp.o (symbol from plugin):.text+0x0: first defined here

```
C:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933\libraries\Arduino-Temperature-Control-Library-master\OneWire.cpp.o (symbol from plugin): In function `OneWire::write(unsigned char, unsigned char)':
```

(.text+0x0): multiple definition of `OneWire::reset()'

C:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933\libraries\OneWire\OneWire.cpp.o (symbol from plugin):.text+0x0: first defined here

```
C:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933\libraries\Arduino-Temperature-Control-Library-master\OneWire.cpp.o (symbol from plugin): In function `OneWire::write(unsigned char, unsigned char)':
```

(.text+0x0): multiple definition of `OneWire::write_bit(unsigned char)'

C:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933\libraries\OneWire\OneWire.cpp.o (symbol from plugin):.text+0x0: first defined here

```
C:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933\libraries\Arduino-Temperature-Control-Library-master\OneWire.cpp.o (symbol from plugin): In function `OneWire::write(unsigned char, unsigned char)':
```

(.text+0x0): multiple definition of `OneWire::read_bit()'

Multiple libraries were found for "OneWire.h"

C:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933\libraries\OneWire\OneWire.cpp.o (symbol from plugin):.text+0x0: first defined here

Used: C:\Users\Lorenzo Catelli\Documents\Arduino\libraries\OneWire

Not used: C:\Users\Lorenzo Catelli\Documents\Arduino\libraries\Arduino-Temperature-Control-Library-master

Not used: C:\Program Files (x86)\Arduino\libraries\OneWire

Not used: C:\Program Files (x86)\Arduino\libraries\Arduino-Temperature-Control-Library-master



error: multiple definition of 'OneWire::read()':

Multiple libraries were found for "DallasTemperature.h"
(.text+0x0): multiple definition of 'OneWire::read()'

Used: C:\Users\Lorenzo Catelli\Documents\Arduino\libraries\Arduino-Temperature-Control-Library-master

Not used: C:\Program Files (x86)\Arduino\libraries\Arduino-Temperature-Control-Library-master
C:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933\libraries\OneWire\OneWire.cpp.o (symbol from plugin): (.text+0x0): first defined here

Not used: C:\Program Files (x86)\Arduino\libraries\Arduino-Temperature-Control-Library-master
Not used: C:\Program Files (x86)\Arduino\libraries\Arduino-Temperature-Control-Library-master
Not used: C:\Program Files (x86)\Arduino\libraries\Arduino-Temperature-Control-Library-master
C:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933\libraries\Arduino-Temperature-Control-Library-master\OneWire.cpp.o (symbol from plugin): In function 'OneWire::write(unsigned char, unsigned char)':

(.text+0x0): multiple definition of 'OneWire::read_bytes(unsigned char*, unsigned int)'

C:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933\libraries\OneWire\OneWire.cpp.o (symbol from plugin): (.text+0x0): first defined here

C:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933\libraries\Arduino-Temperature-Control-Library-master\OneWire.cpp.o (symbol from plugin): In function 'OneWire::write(unsigned char, unsigned char)':

(.text+0x0): multiple definition of 'OneWire::select(unsigned char const*)'

C:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933\libraries\OneWire\OneWire.cpp.o (symbol from plugin): (.text+0x0): first defined here

C:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933\libraries\Arduino-Temperature-Control-Library-master\OneWire.cpp.o (symbol from plugin): In function 'OneWire::write(unsigned char, unsigned char)':

(.text+0x0): multiple definition of 'OneWire::skip()'

C:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933\libraries\OneWire\OneWire.cpp.o (symbol from plugin): (.text+0x0): first defined here

C:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933\libraries\Arduino-Temperature-Control-Library-master\OneWire.cpp.o (symbol from plugin): In function 'OneWire::write(unsigned char, unsigned char)':

(.text+0x0): multiple definition of 'OneWire::depower()'

C:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933\libraries\OneWire\OneWire.cpp.o (symbol from plugin): (.text+0x0): first defined here

C:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933\libraries\Arduino-Temperature-Control-Library-master\OneWire.cpp.o (symbol from plugin): In function 'OneWire::write(unsigned char, unsigned char)':

(.text+0x0): multiple definition of 'OneWire::reset_search()'

C:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933\libraries\OneWire\OneWire.cpp.o (symbol from plugin): (.text+0x0): first defined here

C:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933\libraries\Arduino-Temperature-Control-Library-master\OneWire.cpp.o (symbol from plugin): In function 'OneWire::write(unsigned char, unsigned char)':

(.text+0x0): multiple definition of 'OneWire::OneWire(unsigned char)'

C:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933\libraries\OneWire\OneWire.cpp.o (symbol from plugin): (.text+0x0): first defined here

C:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933\libraries\Arduino-Temperature-Control-Library-master\OneWire.cpp.o (symbol from plugin): In function 'OneWire::write(unsigned char, unsigned char)':

(.text+0x0): multiple definition of 'OneWire::OneWire(unsigned char)'

C:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933\libraries\OneWire\OneWire.cpp.o (symbol from plugin): (.text+0x0): first defined here

C:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933\libraries\Arduino-Temperature-Control-Library-master\OneWire.cpp.o (symbol from plugin): In function 'OneWire::write(unsigned char, unsigned char)':

(.text+0x0): multiple definition of 'OneWire::target_search(unsigned char)'

C:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933\libraries\OneWire\OneWire.cpp.o (symbol from plugin): (.text+0x0): first defined here



```
OneWire::write(unsigned char, unsigned char);
```

(.text+0x0): multiple definition of `OneWire::crc8(unsigned char const*, unsigned char)`

C:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933\libraries\OneWire\OneWire.cpp.o (symbol from plugin) 🤔.text+0x0): first defined here

C:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933\libraries\Arduino-Temperature-Control-Library-master\OneWire.cpp.o (symbol from plugin): In function `OneWire::write(unsigned char, unsigned char)':

(.text+0x0): multiple definition of `OneWire::crc16(unsigned char const*, unsigned int, unsigned int)`

C:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933\libraries\OneWire\OneWire.cpp.o (symbol from plugin) 🤔.text+0x0): first defined here

C:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933\libraries\Arduino-Temperature-Control-Library-master\OneWire.cpp.o (symbol from plugin): In function `OneWire::write(unsigned char, unsigned char)':

(.text+0x0): multiple definition of `OneWire::check_crc16(unsigned char const*, unsigned int, unsigned char const*, unsigned int)`

C:\Users\LORENZ~1\AppData\Local\Temp\arduino_build_527933\libraries\OneWire\OneWire.cpp.o (symbol from plugin) 🤔.text+0x0): first defined here

collect2.exe: error: ld returned 1 exit status

Using library OneWire in folder: C:\Users\Lorenzo Catelli\Documents\Arduino\libraries\OneWire (legacy)

Using library Arduino-Temperature-Control-Library-master at version 3.7.9 in folder:

C:\Users\Lorenzo Catelli\Documents\Arduino\libraries\Arduino-Temperature-Control-Library-master

exit status 1

Error compiling for board Arduino/Genuino Mega or Mega 2560.



winperl

3 years ago

"multiple definition of `OneWire"

you need to delete the folder with the installed library OneWire

a copy of the library already present in the folder with the Dallas library



MichDragstar

3 years ago

Thank you for sharing. It was a great help to me!



Eunate Mayor - SIGFOX Universities Program Manager

3 years ago

Hi, I'm organising a student challenge for projects in IoT that can help save the planet on the occasion of Earth's Day, using SIGFOX technology.

I really like your project, do you want to participate?

Eunate - SIGFOX Universities Program Manager

<https://www.sigfox.com/en/news/sensing-earth-sigfoxs-2018-universities-challenge>

<https://www.hackster.io/contests/sigfoxuniversities>



jonejana

3 years ago

Please. I noticed unstable temp.. How to set 12bit precision.



sandrosachser

3 years ago

```
#define TEMP_12_BIT 0x7F
```



3 years ago

Converts temperature to 12-bit digital word in 750ms (max.) HoW?

**sandrosachser**

3 years ago

```
#define TEMP_12_BIT 0x7F
```

**AadiP**

3 years ago

Hello

Can someone suggest any other temperature sensor which I can use while making this project?

**sandrosachser**

3 years ago

LM35, LM335 but with another sketch (ADC ports).

**Ingo Lohs**

a year ago

DHT11 / DHT22, BMP280, BME680

**Joyinfinity29**

3 years ago

My sensor is showing -127°C . I have checked all the connections and tried everything given in the comment section. I have used the same code given above. Please help me because tomorrow is my presentation.

**sandrosachser**

3 years ago

Hi, I am using 3V3 to supply it. If you are supplying with 5V try change it, ok? Bye.

**JorgeGrave**

2 years ago

Within the x.h file you can find the following error codes

```
// Error Codes
```

```
#define DEVICE_DISCONNECTED_C -127
```

```
#define DEVICE_DISCONNECTED_F -196.6
```

```
#define DEVICE_DISCONNECTED_RAW -7040
```

This happened to me, I corrected the connection and OK

**Satish_sharma**

3 years ago

Simple and effective project...could be put to use in online temperature measurements...

**sandrosachser**

3 years ago



Comments

**ddefault**

3 years ago

Hello, I try to test this example project (read a 18B20 temp sensor). but I can't compile the code. I always get this error:

```
"U:\Documents divers\Arduino\mes_programmes\DS18B20_test\DS18B20_test.ino:1:21: fatal error: OneWire.h: No such file or directory #include <OneWire.h>"
```

I downloaded OneWire.h file from this web site and saved it in the same folder with the program itself (.ino file).

What is wrong?

Thank you for your help.

**sandrosachser**

3 years ago

Hi. You should save in the Arduino libraries file.

Good luck.

**QuincyBoa**

2 years ago

I want to use two sensors..

how can I add two sensors?

**Zaky_Firmansyah**

2 years ago

thank you for the tutorial, it is very useful for the project that I am making

**harish_mechpro**

2 years ago

I am trying to hook up an NPN NO proximity sensor to my arduino. I built a voltage divider since sensor is powered by a 12v SMPS. Then the V out goes to pin 7 in my case which gives out 4.9V after going through the divider circuit..

Question is

- Do I have to connect my V+ from SMPS to Vin in arduino
- Do I have to connect my V- from SMPS to GND pin of arduino

**Z3bastian**

2 years ago

Works great. Thanks for that simple straight forward example!

**IceBev**

2 years ago

I was very confused at first, as I thought the temperature sensor I was using operated via the analogue in. When it didn't work, I soon realised it was a digital one! Be careful to connect it the correct way around; gets very hot otherwise! I was worried that I had fried it, but it seems to be fine - it's supposed to survive high temperatures anyway...



instructions on this tutorial but in the end my code lit up in red with errors.
that is the code i wrote, taken from here

```
#include<OneWire.h>
#include<DallasTemperature.h>

#defineONE_WIRE_BUS 2

OneWire oneWire(ONE_WIRE_BUS);
DallasTemperature sensors(&oneWire);
*/

void setup(void) {
  Serial.begin(9600);
  Serial.print("Dallas Temperature IC Control Library Demo");
  sensors.begin();
}

void loop(void) {
  Serial.print("Requesting temperatures...");
  sensors.requestTemperatures();
  Serial.println("DONE")
```

```
Serial.print("Temperature is: ")
serial.print(sensors.getTempCByIndex(0));
delay(1000);
```

and these are the errors the compiler found

```
/tmp/090092700/sketch_aug8b/sketch_aug8b.ino: In function 'void setup()':
```

```
/tmp/090092700/sketch_aug8b/sketch_aug8b.ino:15:5: error: 'sensors' was not declared in this scope
```

```
/tmp/090092700/sketch_aug8b/sketch_aug8b.ino: In function 'void loop()':
```

```
/tmp/090092700/sketch_aug8b/sketch_aug8b.ino:20:5: error: 'sensors' was not declared in this scope
```

```
/tmp/090092700/sketch_aug8b/sketch_aug8b.ino:21:12: error: 'class HardwareSerial' has no member named 'println'
```

exit status 1

if anyone could help, i would be very grateful.



Cohen Murray

2 years ago

How can I add a temperature alarm to your code



Ingo Lohs

a year ago

with an if-clause



kpsiegel1

2 years ago

Hi! I am getting the same errors of -127 reading, I understand that that means the sensor is not being detected. However, I have followed all the same code, schematics, and tips that have already been posted. I do not think my pins are switched because I tried to reverse them and the device became very hot. I have tried switching from 5V to 3.3V. However, nothing is working? Are there any other tricks that have worked for you guys? I feel like this should be a simple application.



kpsiegel1

2 years ago

Update: I got the sensor working on an Arduino Mega board but not my Uno, any ideas?



2 years ago

I am trying to do this and I am following the schematic exactly but my sensor is still reading -127 any thoughts?



ARNARNSDE

a year ago

Thanks for the tutorial.

but can you tell me if i have a waterproof DS18B20 and the three wires are red blue and black what will the function of each wire.

And thanks again.

I am looking forward to your answer.



C Payne

a year ago

Red is 5v or 3v, blue is signal/data and black is ground. In this type of wiring (12v,5v,3v,etc) the standard is always red is positive or hot and black is always ground. The other colors would be associated with what the duty the device is to perform. In this case being that we know red is positive and black is ground, we are left with blue being the data or signal wire. But according to how you connect this device the signal wire can also be the positive wire.



tijs-claerhout

a year ago

if i want to upload to my arduino, the computer says this:

F5XAS9CIFMTNEBR:1:10: fatal error: OneWire.h: No such file or directory

#include <OneWire.h>

```
^~~~~~
```

compilation terminated.

exit status 1

OneWire.h: No such file or directory

can somebody pleas help me out



ph poc_man

a year ago

Did you install correct library?

Check the instruction in the following link to see how to install library:

<https://arduinogetstarted.com/tutorials/arduino-temperature-sensor>



valkatr

a year ago

doesn't work on UNO WIFI R2 !

works on DUE !

seems like there's a bug in OneWire library that on UNO WIFI R2 it doesn't work, i have a feeling that it doesn't output anything on the data line.


i need an oscilloscope for further investigation.



valkatr

a year ago

i've managed to make it work on UNO WIFI REV2 by changing version of OneWire library it has to be 2.3.4 or above

 a year ago

How to read two ds18b20 connected at the same bus? I need 1 or 2 resistors? Have they different addresses?

**mahesh_hatolkar**

a year ago

I'm trying to read temperature with ds18b20 with help of this tutorial. But my sensor is heating up a lot and reads only -127°C (nothing else). As mentioned in one of the comments here, I reversed connections for GND and VDD. Heating problem is gone but still the reading is same -127°C. Somebody please help me.

**IoT_hobbyist**

a year ago

Try the library from Adafruit. See this tutorial

<https://arduinogetstarted.com/tutorials/arduino-temperature-sensor>

**lee**

a year ago

How many DS18B20 sensors can you get on one board, getting very frustrated at the moment, as I am new to this, I require six sensors, get to four with the Uno board then it trips out and I lose them. Can someone send me a schematic of how this is supposed to be wired and if the Uno will allow it, have just brought a mega so can change to that if that will allow me to have the six sensors on.

PLEASE PLEASE Help me, this is becoming urgent.

Many Thanks Lee

lee@energyshift.energy

**rugby15**

7 months ago

https://create.arduino.cc/projecthub/TheGadgetBoy/ds18b20-digital-temperature-sensor-and-arduino-9cc806?ref=similar&ref_id=61723&offset=0

This should help

**danieladamames**

9 months ago

I'm running the Uno WiFi Rev. 2 and I got the dreaded -127 issue. Here's how I finally fixed it. There are 2 things you must "fix"...

1. The OneWire lib provided here is outdated and not compatible with our beautiful Uno WiFi Rev 2 boards. Go get the latest OneWire lib from github:
<https://github.com/PaulStoffregen/OneWire>
2. (As of this writing [09/15/2020]) Now you have to fix the "encoding" of the new OneWire.h file. Before you do this, go ahead and see if step 1 fixed your problem. If not, keep reading. This step was discovered by accident - I kept getting compiler warnings and linker errors with the latest OneWire lib. I mean, weird errors. So I opened the OneWire.h file in Notepad++, and intentionally inserted bad syntax. I typed in "poop" on a random line and saved it. This was just to see if the compiler would even notice a "real" issue, or if it was just out of its ever-loving mind. It "worked", in that the compiler puked at the bad syntax. So I removed the bad line and saved it again. Essentially restoring the file to normal. After that - the sketch compiles and I get correct readings from the sensor!!!

My theory - I think OneWire.h has some encoding in it that the compiler no like. Maybe it's the line endings. I dunno. Point is: opening OneWire.h and re-saving it in Notepad++ seems to have "fixed" it. Maybe unix2dos or dos2unix could've fixed it too? Good luck!