

LM35 library for Arduino  
1.0.0

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# Chapter 1

## LM35 temperature sensor library for Arduino

This is an accurate [LM35](#) analog temperature sensor library for Arduino with noise cancellation.

### Library features

- Synchronous 16-bit temperature read
- Temperature range: 0.0 .. 110.0 degree Celsius
- Accuracy: 0.1 degree Celsius
- Noise cancellation
- Small footprint

### Hardware

#### Connection [LM35](#) - Arduino UNO

<a href="#">LM35</a>	Arduino UNO
GND	GND
Vs	5V (or 3.3V)
Vout	A0 (ANALOG pin)

### Notes:

- Keep wires short to prevent noise.
- This library has been tested on the Arduino UNO only which supports internal 1.1V ADC reference voltage. This may not be available with other MCU's.

### [LM35](#) pins

### Documentation

[DHT35 datasheet](#)

## LM35 specifications

- Supply voltage: 3.3V .. 30V
- Low power: Around 65uA
- Analog voltage interface

## Examples

Examples | ErriezLM35:

- [Example](#)

## Usage

### Initialization

```
{c++}
#include <LM35.h>

// Connect LM35 data pin to Arduino DIGITAL pin
#define LM35_PIN  A0

LM35 lm35 = LM35(LM35_PIN);
```

### Read temperature and humidity

```
{c++}
void loop()
{
    // Read temperature from sensor
    int16_t lm35_temp = lm35.readTemperature();

    // Print temperature
    Serial.print(F("LM35: "));
    Serial.print(lm35_temp / 10);
    Serial.print(F("."));
    Serial.print(lm35_temp % 10);
    Serial.println(F(" *C"));

    // Wait some time
    delay(2000);
}
```

### Serial output

```
Analog LM35 temperature sensor example

LM35: 18.1 *C
LM35: 18.2 *C
LM35: 18.2 *C
...
```

## Chapter 2

# Class Index

### 2.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

<a href="#">LM35</a>	
<a href="#">LM35</a> sensor class . . . . .	<a href="#">7</a>





## Chapter 3

# File Index

### 3.1 File List

Here is a list of all documented files with brief descriptions:

src/ <a href="#">LM35.cpp</a>	
Analog <a href="#">LM35</a> temperature sensor library for Arduino . . . . .	9
src/ <a href="#">LM35.h</a>	
Analog <a href="#">LM35</a> temperature sensor library for Arduino . . . . .	9



## Chapter 4

# Class Documentation

### 4.1 LM35 Class Reference

LM35 sensor class.

```
#include <LM35.h>
```

#### Public Member Functions

- [LM35](#) (uint8\_t pin)  
*LM35 constructor.*
- int16\_t [readTemperature](#) ()  
*Read analog temperature in range between 0.0 .. 110 degree Celsius.*

#### 4.1.1 Detailed Description

LM35 sensor class.

Definition at line 46 of file LM35.h.

#### 4.1.2 Constructor & Destructor Documentation

##### 4.1.2.1 LM35()

```
LM35::LM35 (
    uint8_t pin ) [explicit]
```

LM35 constructor.

The constructor changes the ADC to 1.1V internal ADC reference voltage for higher accuracy. This affects all ANALOG pins.

**Parameters**

<i>pin</i>	<a href="#">LM35</a> analog pin.
------------	----------------------------------

Definition at line 40 of file LM35.cpp.

### 4.1.3 Member Function Documentation

#### 4.1.3.1 readTemperature()

```
int16_t LM35::readTemperature ( )
```

Read analog temperature in range between 0.0 .. 110 degree Celsius.

Sample [LM35](#) analog pin multiple times to find two identical samples to reduce noise. A maximum number of samples can be configured with macro LM35\_MAX\_SAMPLES. The last sampled temperature will be returned when no identical temperatures found.

A negative temperature cannot be measured, because the ADC pin can only sample between positive 0.0 and 1.1 Volt.

**Returns**

Divide temperature by 10 to get the temperature integer, temperature modulo 10 results in the fraction, for example: int16\_t temperature = 182 means 18.2 degree Celsius.

Definition at line 64 of file LM35.cpp.

The documentation for this class was generated from the following files:

- [src/LM35.h](#)
- [src/LM35.cpp](#)

## Chapter 5

# File Documentation

### 5.1 src/LM35.cpp File Reference

Analog [LM35](#) temperature sensor library for Arduino.

```
#include "LM35.h"
```

#### 5.1.1 Detailed Description

Analog [LM35](#) temperature sensor library for Arduino.

Source: <https://github.com/Erriez/ErriezLM35>

### 5.2 src/LM35.h File Reference

Analog [LM35](#) temperature sensor library for Arduino.

```
#include <Arduino.h>
```

#### Classes

- class [LM35](#)  
*[LM35](#) sensor class.*

#### Macros

- #define [LM35\\_MAX\\_SAMPLES](#) 10  
*Maximum number of [LM35](#) ADC samples.*

#### 5.2.1 Detailed Description

Analog [LM35](#) temperature sensor library for Arduino.

Source: <https://github.com/Erriez/ErriezLM35>



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