

Erriez Timestamp library for Arduino
1.0.0

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Contents

1	Timestamp measuring library for Arduino	1
2	Hierarchical Index	3
2.1	Class Hierarchy	3
3	Class Index	5
3.1	Class List	5
4	File Index	7
4.1	File List	7
5	Class Documentation	9
5.1	Timestamp Class Reference	9
5.1.1	Detailed Description	10
5.2	TimestampMicros Class Reference	10
5.2.1	Detailed Description	10
5.2.2	Member Function Documentation	10
5.2.2.1	delta() override	10
5.2.2.2	print() override	11
5.3	TimestampMillis Class Reference	11
5.3.1	Detailed Description	11
5.3.2	Member Function Documentation	12
5.3.2.1	delta() override	12
5.3.2.2	print() override	12
6	File Documentation	13
6.1	ErriezTimestamp.cpp File Reference	13
6.1.1	Detailed Description	13
6.2	ErriezTimestamp.h File Reference	13
6.2.1	Detailed Description	13
	Index	15

Chapter 1

Timestamp measuring library for Arduino

This is a timestamp library for Arduino that can be used to measure execution time in microseconds or milliseconds.

Hardware

Any Arduino / ESP8266 board.

Library documentation

- [Doxygen online HTML](#)
- [Doxygen PDF](#)

Examples

Arduino IDE | Examples | Erriez [Timestamp](#):

- [Microseconds](#)
- [Milliseconds](#)

Example output [Timestamp](#) | Microseconds

```
1 Timestamp with microseconds resolution example
2
3 Printing this message takes: 768us
4 And this message takes: 2044us
5 delayMicroseconds(15) duration: 20us
6 analogRead() duration: 212us
7 digitalRead() duration: 4us
```

Example output [Timestamp](#) | Milliseconds

```
1 Timestamp with milliseconds resolution example
2
3 delay(15) takes:
4 15ms
5 14ms
6 16ms
7 15ms
8 15ms
9 16ms
10 14ms
11 15ms
12 16ms
13 15ms
```

Usage

Initialization

Add include file:

```
1 {c++}
2 #include <ErriezTimestamp.h>
```

Create timestamp object with microseconds resolution:

```
1 {c++}
2 TimestampMicros timestamp;
```

Create timestamp object with milliseconds resolution:

```
1 {c++}
2 TimestampMillis timestamp;
```

Single measurement

```
1 {c++}
2 unsigned long duration;
3
4 // Start measurement
5 timestamp.start();
6 // Do something
7 duration = timestamp.delta();
8
9 // Start new measurement
10 timestamp.start();
11 // Do something
12 duration = timestamp.delta();
```

Multiple measurements

```
1 {c++}
2 // Start timestamp
3 timestamp.start();
4 // Do something and print timestamp
5 timestamp.print();
6
7 // Do something and print timestamp without calling start()
8 timestamp.print();
```

Constraints

[TimestampMicros](#) uses the function `micros()`. [TimestampMillis](#) uses the function `millis()`.

Please refer to the description of these functions for the maximum possible duration and minimum resolution:

- <https://www.arduino.cc/reference/en/language/functions/time/micros/>
- <https://www.arduino.cc/reference/en/language/functions/time/millis/>

The timestamp functions introduce a small calling overhead on low-end microcontrollers. For example calling `start()` and `delta()` on an Arduino UNO may take an additional 4 to 8 microseconds. This is overhead is negligible on targets with a higher CPU clock such as the ESP8266.

Library installation

Please refer to the [Wiki](#) page.

Other Arduino Libraries and Sketches from Erriez

- [Erriez Libraries and Sketches](#)

Chapter 2

Hierarchical Index

2.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

Timestamp	9
TimestampMicros	10
TimestampMillis	11

Chapter 3

Class Index

3.1 Class List

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

Timestamp	
Timestamp class	9
TimestampMicros	
TimestampMicros class derived from Timestamp	10
TimestampMillis	
TimestampMillis class derived from Timestamp	11

Chapter 4

File Index

4.1 File List

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

ErriezTimestamp.cpp		
Timestamp	library for Arduino	13
ErriezTimestamp.h		
Timestamp	library for Arduino	13

Chapter 5

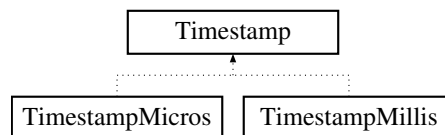
Class Documentation

5.1 Timestamp Class Reference

Timestamp class.

```
#include <ErriezTimestamp.h>
```

Inheritance diagram for Timestamp:



Public Member Functions

- `Timestamp ()`
Timestamp constructor.
- virtual void `start ()=0`
Derived class must implement `start()`
- virtual unsigned long `delta ()=0`
Derived class must implement `delta()`
- virtual void `print ()=0`
Derived class must implement `print()`

Public Attributes

- unsigned long `timestampStart`
Timestamp at the beginning of a measurement.

5.1.1 Detailed Description

Timestamp class.

Definition at line 42 of file ErriezTimestamp.h.

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

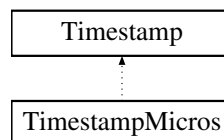
- [ErriezTimestamp.h](#)
- [ErriezTimestamp.cpp](#)

5.2 TimestampMicros Class Reference

[TimestampMicros](#) class derived from [Timestamp](#).

```
#include <ErriezTimestamp.h>
```

Inheritance diagram for TimestampMicros:



Public Member Functions

- void [start](#) () override
Start measurement in microseconds.
- unsigned long [delta](#) () override
End measurement.
- void [print](#) () override
Print measurement in microseconds.

5.2.1 Detailed Description

[TimestampMicros](#) class derived from [Timestamp](#).

Definition at line 57 of file ErriezTimestamp.h.

5.2.2 Member Function Documentation

5.2.2.1 unsigned long TimestampMicros::delta () [override],[virtual]

End measurement.

Returns

Duration in micro seconds

Implements [Timestamp](#).

Definition at line 58 of file ErriezTimestamp.cpp.

5.2.2.2 void TimestampMicros::print () [override],[virtual]

Print measurement in microseconds.

Print millis() - start time and restart measurement

Returns

Duration in microseconds

Implements [Timestamp](#).

Definition at line 70 of file ErriezTimestamp.cpp.

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

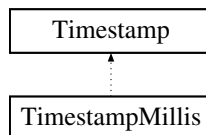
- [ErriezTimestamp.h](#)
- [ErriezTimestamp.cpp](#)

5.3 TimestampMillis Class Reference

[TimestampMillis](#) class derived from [Timestamp](#).

```
#include <ErriezTimestamp.h>
```

Inheritance diagram for TimestampMillis:



Public Member Functions

- void [start](#) () override
Start measurement in milliseconds.
- unsigned long [delta](#) () override
End measurement.
- void [print](#) () override
Print measurement in milliseconds.

5.3.1 Detailed Description

[TimestampMillis](#) class derived from [Timestamp](#).

Definition at line 68 of file ErriezTimestamp.h.

5.3.2 Member Function Documentation

5.3.2.1 unsigned long TimestampMillis::delta () [override],[virtual]

End measurement.

Returns

Duration in milliseconds

Implements [Timestamp](#).

Definition at line 94 of file ErriezTimestamp.cpp.

5.3.2.2 void TimestampMillis::print () [override],[virtual]

Print measurement in milliseconds.

Print millis() - start time and restart measurement

Returns

Duration in milliseconds

Implements [Timestamp](#).

Definition at line 106 of file ErriezTimestamp.cpp.

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

- [ErriezTimestamp.h](#)
- [ErriezTimestamp.cpp](#)

Chapter 6

File Documentation

6.1 ErriezTimestamp.cpp File Reference

Timestamp library for Arduino.

```
#include "ErriezTimestamp.h"
```

6.1.1 Detailed Description

Timestamp library for Arduino.

Source: <https://github.com/Erriez/ErriezTimestamp> Documentation: <https://erriez.github.io/ErriezTimestamp>

6.2 ErriezTimestamp.h File Reference

Timestamp library for Arduino.

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

Classes

- class [Timestamp](#)
Timestamp class.
- class [TimestampMicros](#)
TimestampMicros class derived from Timestamp.
- class [TimestampMillis](#)
TimestampMillis class derived from Timestamp.

6.2.1 Detailed Description

Timestamp library for Arduino.

Source: <https://github.com/Erriez/ErriezTimestamp> Documentation: <https://erriez.github.io/ErriezTimestamp>

Index

delta

TimestampMicros, [10](#)

TimestampMillis, [12](#)

ErriezTimestamp.cpp, [13](#)

ErriezTimestamp.h, [13](#)

print

TimestampMicros, [10](#)

TimestampMillis, [12](#)

Timestamp, [9](#)

TimestampMicros, [10](#)

delta, [10](#)

print, [10](#)

TimestampMillis, [11](#)

delta, [12](#)

print, [12](#)