

Erriez Timestamp library for Arduino
1.0.0

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Chapter 1

Timestamp measuring library for Arduino

This is a timestamp library for Arduino to measure execution durations in microseconds or milliseconds resolution.

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 micro seconds timestamp functions have small overhead on low-end microcontrollers. For example calling `start()` and `delta` may result in it may take 4..8us deviation on an Arduino UNO. 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	
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ErriezTimestamp.h	
Timestamp library for Arduino	13

Chapter 5

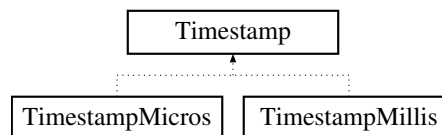
Class Documentation

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:

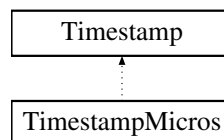
- [ErriezTimestamp.h](#)
- [ErriezTimestamp.cpp](#)

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:

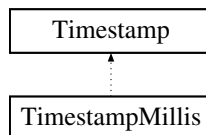
- [ErriezTimestamp.h](#)
- [ErriezTimestamp.cpp](#)

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>

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