Erriez Oregon THN128 433MHz temperature sensor library for Arduino

1.0.0

Contents

Chapter 1

Erriez NTP Client library for Arduino

This is a minimized NTP Client library for Arduino to retrieve UNIX Epoch UTC from NTP time servers.

Supported hardware

- Arduino UNO with EtherShield (Wiznet W5100 Ethernet controller)

- ESP8266 WiFi

- ESP32 WiFi

Example output

```
{c++}
Erriez ESP8266 NTP example
Connecting to 'wifi'...OK
Epoch: 1600025290
UTC:   Sun Sep 13 19:28:10 2020
```

Example AVR

```
{c++}
#include <Ethernet.h>
#include <ErriezNTPClient.h>

// "pool.ntp.org", "time.nist.gov" or NTP server IP address
#define NTP_SERVER          "pool.ntp.org"

ErriezNTPClient ntp(NTP_SERVER);

// Newer Ethernet shields have a MAC address printed on a sticker on the shield
uint8_t mac[] = {
    0xDE, 0xAD, 0xBE, 0xEF, 0xFE, 0xED
};


void setup()
{
    // Initialize serial
    delay(500);
    Serial.begin(115200);
    Serial.println(F("\nErriez NTP client AVR example"));

    // Start Ethernet and UDP
    if (!Ethernet.begin(mac)) {
```

```c++
        Serial.println(F("Failed to configure Ethernet using DHCP"));

        // Check for Ethernet hardware present
        if (Ethernet.hardwareStatus() == EthernetNoHardware) {
            Serial.println(F("Ethernet shield was not found."));
        } else if (Ethernet.linkStatus() == LinkOFF) {
            Serial.println(F("Ethernet cable is not connected."));
        }
    }
}

void loop()
{
    time_t t;

    // Get epoch
    t = ntp.getEpoch();

    // Print result
    if (t > 0) {
        Serial.print(F("Epoch: "));
        Serial.println((uint32_t)t);

        // A UNIX offset is needed for AVR target
        t -= UNIX_OFFSET;

        Serial.print(F("UTC:   "));
        Serial.println(ctime(&t));
    } else {
        Serial.println(F("Timeout"));
    }

    delay(10000);
}
```

Example ESP8266 / ESP32

```c++
{c++}
#if defined(ARDUINO_ARCH_ESP8266)
#include <ESP8266WiFi.h>
#elif defined(ARDUINO_ARCH_ESP32)
#include <WiFi.h>
#endif

#include <ErriezNTPClient.h>

// WiFi SSID and Password
#define WIFI_SSID           ""
#define WIFI_PASSWORD       ""

// "pool.ntp.org", "time.nist.gov" or NTP server IP address
#define NTP_SERVER          "pool.ntp.org"

ErriezNTPClient ntp(NTP_SERVER);


void setup()
{
    // Initialize serial
    delay(500);
    Serial.begin(115200);
    Serial.println(F("\nErriez NTP client ESP8266 / ESP32 example"));

    // Initialize WiFi
    Serial.print(F("Connecting to '"));
    Serial.print(WIFI_SSID);
    Serial.print(F("'"));

    // Connect to your WiFi router
    WiFi.begin(WIFI_SSID, WIFI_PASSWORD);

    // Wait for connection
    while (WiFi.status() != WL_CONNECTED) {
        delay(500);
        Serial.print(".");
    }
    Serial.println("OK");
}

void loop()
{
    time_t t;
```

```
    // Get epoch
    t = ntp.getEpoch();

    // Print result
    if (t > 0) {
        Serial.print(F("Epoch: "));
        Serial.println((uint32_t)t);
        Serial.print(F("UTC:   "));
        Serial.println(ctime(&t));
    } else {
        Serial.println(F("Timeout"));
    }

    delay(10000);
}
```

```
        Serial.print(F("Epoch: "));
        Serial.println((uint32_t)t);
        Serial.print(F("UTC:   "));
        Serial.println(ctime(&t));
        Serial.println(F("Timeout"));
```

Chapter 2

Class Index

2.1 Class List

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

Chapter 3

File Index

3.1 File List

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

Chapter 4

Class Documentation

4.1 ErriezNTPClient Class Reference

NTP client class.

```
#include <ErriezNTPClient.h>
```

Public Member Functions

- ErriezNTPClient (const char ∗ntpServer=NTP_SERVER, uint16_t timeoutMs=NTP_RX_TIMEOUT_MS)
    Constructor.
- time_t getEpoch ()
    Get UNIX Epoch UTC time.

4.1.1 Detailed Description

NTP client class.

Definition at line 59 of file ErriezNTPClient.h.

4.1.2 Constructor & Destructor Documentation

4.1.2.1 ErriezNTPClient()

```
ErriezNTPClient::ErriezNTPClient (
            const char * ntpServer = NTP_SERVER,
            uint16_t timeoutMs = NTP_RX_TIMEOUT_MS )
```

Constructor.

Parameters

ntpServer	NTP server
timeoutMs	UDP receive timeout in ms

Definition at line 43 of file ErriezNTPClient.cpp.

4.1.3   Member Function Documentation

4.1.3.1   getEpoch()

```
time_t ErriezNTPClient::getEpoch ( )
```

Get UNIX Epoch UTC time.

Returns

UNIX Epoch in UTC

Definition at line 77 of file ErriezNTPClient.cpp.

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

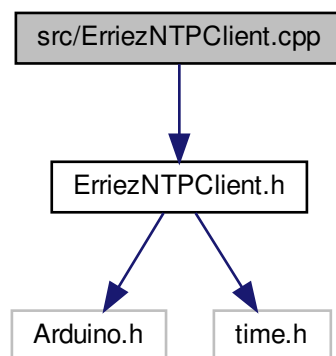- src/ErriezNTPClient.h
- src/ErriezNTPClient.cpp

Chapter 5

File Documentation

5.1   src/ErriezNTPClient.cpp File Reference

NTP client library for Arduino.

```
#include "ErriezNTPClient.h"
```
Include dependency graph for ErriezNTPClient.cpp:

```
┌─────────────────────────┐
│  src/ErriezNTPClient.cpp │
└─────────────────────────┘
              │
              ▼
     ┌──────────────────┐
     │ ErriezNTPClient.h │
     └──────────────────┘
         │          │
         ▼          ▼
   ┌──────────┐  ┌────────┐
   │ Arduino.h │  │ time.h │
   └──────────┘  └────────┘
```

5.1.1   Detailed Description

NTP client library for Arduino.

Source: https://github.com/Erriez/ErriezNTPClient Documentation: https://erriez.↵
github.io/ErriezNTPClient
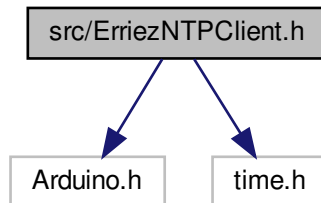
5.2 src/ErriezNTPClient.h File Reference
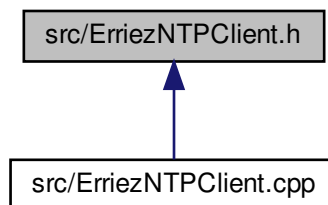
NTP client library for Arduino.

```
#include <Arduino.h>
#include <time.h>
```
Include dependency graph for ErriezNTPClient.h:

This graph shows which files directly or indirectly include this file:

Classes

- class ErriezNTPClient

  NTP client class.

Macros

- #define NTP_SERVER "pool.ntp.org"

  "pool.ntp.org", "time.nist.gov" or IP address
- #define NTP_PACKET_SIZE 48

  NTP time stamp is in the first 48 bytes of the message.
- #define NTP_LOCAL_PORT 2390

  UDP listen port.
- #define NTP_RX_TIMEOUT_MS 1000

  UDP receive timeout.

5.2.1 Detailed Description

NTP client library for Arduino.

Source: https://github.com/Erriez/ErriezNTPClient Documentation: https://erriez.↩
github.io/ErriezNTPClient

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