Erriez Oregon THN128 433MHz temperature sensor library for Arduino

1.1.0

Generated by Doxygen 1.9.1

1 Main Page 1

2 Module Index 5

2.1 Modules . . . 5

3 Class Index 7

3.1 Class List . . . 7

4 File Index 9

4.1 File List . . . 9

5 Module Documentation 11

5.1 data macro's . . . 11

5.1.1 Detailed Description . . . 11

5.1.2 Macro Definition Documentation . . . 11

5.1.2.1 GET_CHANNEL . . . 11

5.1.2.2 GET_CRC . . . 12

5.1.2.3 GET_ROL_ADDR . . . 12

5.1.2.4 GET_TEMP . . . 12

5.1.2.5 LOW_BAT_BIT . . . 12

5.1.2.6 SET_CHANNEL . . . 13

5.1.2.7 SET_CRC . . . 13

5.1.2.8 SET_ROL_ADDR . . . 13

5.1.2.9 SET_TEMP . . . 13

5.1.2.10 SIGN_BIT . . . 13

6 Class Documentation 15

6.1 OregonTHN128Data_t Struct Reference . . . 15

6.1.1 Detailed Description . . . 15

6.1.2 Member Data Documentation . . . 15

6.1.2.1 channel . . . 15

6.1.2.2 lowBattery . . . 16

6.1.2.3 rawData . . . 16

6.1.2.4 rollingAddress . . . 16

6.1.2.5 temperature . . . 16

7 File Documentation 17

7.1 src/ErriezOregonTHN128.c File Reference . . . 17

7.1.1 Detailed Description . . . 18

7.1.2 Function Documentation . . . 18

7.1.2.1 OregonTHN128_CheckCRC() . . . 18

7.1.2.2 OregonTHN128_DataToRaw() . . . 18

7.1.2.3 OregonTHN128_RawToData() . . . 19

7.1.2.4 OregonTHN128_TempToString() . . . 19

7.2 src/ErriezOregonTHN128Receive.c File Reference 20
7.2.1 Detailed Description 21
7.2.2 Enumeration Type Documentation 21
7.2.2.1 RxState_t 21
7.2.3 Function Documentation 21
7.2.3.1 OregonTHN128_Available() 21
7.2.3.2 OregonTHN128_Read() 22
7.2.3.3 OregonTHN128_RxBegin() 22
7.3 src/ErriezOregonTHN128Receive.h File Reference 22
7.3.1 Detailed Description 24
7.3.2 Function Documentation 24
7.3.2.1 OregonTHN128_Available() 24
7.3.2.2 OregonTHN128_Read() 25
7.3.2.3 OregonTHN128_RxBegin() 25
7.4 src/ErriezOregonTHN128Transmit.c File Reference 25
7.4.1 Detailed Description 26
7.4.2 Function Documentation 26
7.4.2.1 OregonTHN128_Transmit() 26
7.4.2.2 OregonTHN128_TxBegin() 27
7.4.2.3 OregonTHN128_TxEnd() 27
7.4.2.4 OregonTHN128_TxRawData() 27
7.5 src/ErriezOregonTHN128Transmit.h File Reference 28
7.5.1 Detailed Description 29
7.5.2 Function Documentation 29
7.5.2.1 OregonTHN128_Transmit() 29
7.5.2.2 OregonTHN128_TxBegin() 29
7.5.2.3 OregonTHN128_TxRawData() 29

Index **31**

Chapter 1

Main Page

Oregon THN128 433MHz temperature transmit/receive library for Arduino

This is a 433MHz wireless 3-channel Oregon THN128 temperature transmit/receive Arduino library for ATMega328, ESP8266 and ESP32 using the (reverse-engineered) Oregon THN128 v1 protocol:

Transmit / receive hardware

This Arduino library can be used with low-power ATMega328 microcontroller (AVR architectures like `Arduino UNO` and `Pro Mini 3.3V 8MHz` boards).

Temperature transmitter on the left breadboard:

- Pro-Mini 3V3 8MHz.
- Genuine DS18B20 temperature sensor.
- STX802 low-power 433MHz transmitter.

Receiver on the right breadboard:

- SRX882 low-power 433MHz receiver.
- SSD1306 I2C 128x64 OLED display.
- Pro-Mini 3V3 8MHz.

Supported microcontrollers

- ATMega328 AVR designed for low-power
- ESP8266
- ESP32
- Other microcontrollers are not tested and may or may not work

Arduino Examples

- Oregon THN128 Receive
- Oregon THN128 Receive SSD1306 OLED
- Oregon THN128 Transmit random temperature
- Oregon THN128 Transmit DS1820 1-wire temperature sensor
- Oregon THN128 ESP32 MQTT Homeassistant

ESP32 with MQTT and Homeassistant

The `Erriez_Oregon_THN128_ESP32_MQTT_Homeassistant.ino` sketch can be used with Homeassistant integration.

Example screenshot Homeassistant dasboard:

Follow the steps below:

1. Configure `Homeassistant MQTT` in `configuration.yaml`:

```
mqtt:
  discovery_prefix: ha
  # Enable when using SSL:
  # certificate: /ssl/ca.crt
  # client_cert: /ssl/client.crt
  # client_key: /ssl/client.key
```

1. MQTT broker hostname, username and password should be configured in `Homeassistant | Settings | Devices | MQTT`.
2. Configure the listed macro's in the example, build and run from the Arduino IDE. The following Oregon THN128 entities are automatically registered after a succesful MQTT connection:

- sensor.oregon_thn128_ch1
- sensor.oregon_thn128_ch2
- sensor.oregon_thn128_ch3
- sensor.oregon_thn128_battery

1. Configure Homeassistant dashboard configuration file:

- Homeassistant Dashboard YAML

Hardware Design Notes

Supported hardware:

- AVR designed for low-power
- ESP8266
- ESP32
- For low-power transmitters, a `Pro Mini 3V3 8MHz` bare board with ATMega328 microcontroller is highly recommended. The board has no serial interface chip which reduces continuous power consumption. An external FTDI232 - USB serial interface should be connected for serial console / programming. (See red PCB on the picture) The SMD power LED should be desoldered from the Pro Mini to reduce continuous power consumption.
- A transmitter with (protected) 1500mA 18650 battery can operate for at least 6 months with `LowPower.h` functionality implemented. (By sending the temperature every 30 seconds)
- Changing the BOD (Brown Out Detection) fuse to 1.8V allows operation between 1.8 and 4.2V 18650 battery. (Explanation beyond the scope of this project)
- 1 to 3 temperature transmitters are supported, similar to the original Oregon THN128 temperature transmitters.
- Check `list of counterfeit DS18B20 chips`, because this makes a huge difference in accuracy and read errors at 3.3V. Many DS18B20 chips from Aliexpress are counterfeit and won't work reliable at voltages below 3.3V.
- `NiceRF Wireless Technology Co., Ltd.` sells high quality 433MHz transmit (STX802) and receiver modules (STX882) with a good range.
- A 18650 battery (with protection circuit) should be connected directly to the VCC pin (not VIN).
- The voltage regulator can be desoldered from the pro-micro board when not used for more power reduction.

Oregon Protocol

A packet is sent twice:

Data (see header file `ErriezOregonTHN128Receive.h`):

- Byte 0:
  - Bit 0..3: Rolling address (Random value after power cycle)
  - Bit 6..7: Channel: (0 = channel 1 .. 2 = channel 3)
- Byte 1:
  - Bit 0..3: TH3
  - Bit 4..7: TH2
- Byte 2:
  - Bit 0..3: TH1
  - Bit 5: Sign
  - Bit 7: Low battery
- Byte 3:
  - Bit 0..7: CRC

Library Changes

v1.1.0

The callback function `void delay100ms()` has been removed as this was not compatible with ESP32. The application should change the code to:

```
{c++}
   // Send temperature twice with 100ms delay between packets
   OregonTHN128_Transmit(&data);
   delay(100);
   OregonTHN128_Transmit(&data);
```

AVR targets can replace `delay(100)` with LowPower usage:

```
{c++}
   LowPower.powerDown(SLEEP_15MS, ADC_OFF, BOD_OFF);
   LowPower.powerDown(SLEEP_60MS, ADC_OFF, BOD_OFF);
   LowPower.powerDown(SLEEP_15MS, ADC_OFF, BOD_OFF);
```

Saleae Logic Analyzer

`capture` from the Oregon THN128 can be opened with `https://www.saleae.com/downloads/`.

Generated Arduino Library Doxygen Documentation

- `Online Doxygen HTML`
- `Doxygen PDF`

MIT License

This project is published under `MIT license` with an additional end user agreement (next section).

End User Agreement :ukraine:

End users shall accept the `End User Agreement` holding export restrictions to Russia to stop the WAR before using this project.

Chapter 2

Module Index

2.1 Modules

Here is a list of all modules:

data macro's 11

Chapter 3

Class Index

3.1 Class List

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

OregonTHN128Data_t
Data structure 15

Chapter 4

File Index

4.1 File List

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

src/ErriezOregonTHN128.c
Oregon THN128 433MHz temperature transmit/receive library for Arduino 17
src/**ErriezOregonTHN128.h** . . . . ??
src/ErriezOregonTHN128Receive.c
Oregon THN128 433MHz temperature transmit/receive library for Arduino 20
src/ErriezOregonTHN128Receive.h
Oregon THN128 433MHz temperature receive library for Arduino 22
src/ErriezOregonTHN128Transmit.c
Oregon THN128 433MHz temperature transmit library for Arduino 25
src/ErriezOregonTHN128Transmit.h
Oregon THN128 433MHz temperature transmit library for Arduino 28

Chapter 5

Module Documentation

5.1 data macro's

Macros

- #define SET_ROL_ADDR(x) (((x) & 0x07) << 0)
- #define GET_ROL_ADDR(x) (((x) & 0x07) << 0)
- #define SET_CHANNEL(x) ((((x) - 1) & 0x03) << 6)
- #define GET_CHANNEL(x) ((((x) >> 6) & 0x03) + 1)
- #define SET_TEMP(x)
- #define GET_TEMP(x)
- #define SIGN_BIT (1UL << 21)
- #define LOW_BAT_BIT (1UL << 23)
- #define SET_CRC(x) ((uint32_t)(x) << 24)
- #define GET_CRC(x) ((x) >> 24)

5.1.1 Detailed Description

5.1.2 Macro Definition Documentation

5.1.2.1 GET_CHANNEL

```
#define GET_CHANNEL(
              x ) ((((x) >> 6) & 0x03) + 1)
```

Get channel

Definition at line 49 of file ErriezOregonTHN128.c.

5.1.2.2 GET_CRC

```
#define GET_CRC(
              x ) ((x) >> 24)
```

Get CRC

Definition at line 69 of file ErriezOregonTHN128.c.

5.1.2.3 GET_ROL_ADDR

```
#define GET_ROL_ADDR(
              x ) (((x) & 0x07) << 0)
```

Get rolling address

Definition at line 44 of file ErriezOregonTHN128.c.

5.1.2.4 GET_TEMP

```
#define GET_TEMP(
              x )
```

Value:

```
((((x) » 16) & 0x0f) * 100) + \
(((x) » 12) & 0x0f) * 10) + \
(((x) » 8) & 0x0f))
```

Get temperature

Definition at line 56 of file ErriezOregonTHN128.c.

5.1.2.5 LOW_BAT_BIT

```
#define LOW_BAT_BIT (1UL << 23)
```

Low battery bit

Definition at line 64 of file ErriezOregonTHN128.c.

5.1.2.6 SET_CHANNEL

```
#define SET_CHANNEL(
            x ) ((((x) - 1) & 0x03) << 6)
```

Set channel

Definition at line 47 of file ErriezOregonTHN128.c.

5.1.2.7 SET_CRC

```
#define SET_CRC(
            x ) ((uint32_t)(x) << 24)
```

Set CRC

Definition at line 67 of file ErriezOregonTHN128.c.

5.1.2.8 SET_ROL_ADDR

```
#define SET_ROL_ADDR(
            x ) (((x) & 0x07) << 0)
```

Set rolling address

Definition at line 42 of file ErriezOregonTHN128.c.

5.1.2.9 SET_TEMP

```
#define SET_TEMP(
            x )
```

Value:

```
(((((uint32_t)(x) / 100) % 10)) « 16) | \
((((uint32_t)(x) / 10) % 10) « 12) | \
(((x) % 10) « 8))
```

Set temperature

Definition at line 52 of file ErriezOregonTHN128.c.

5.1.2.10 SIGN_BIT

```
#define SIGN_BIT (1UL << 21)
```

Sign bit

Definition at line 61 of file ErriezOregonTHN128.c.

Chapter 6

Class Documentation

6.1 OregonTHN128Data_t Struct Reference

Data structure.

```
#include <ErriezOregonTHN128.h>
```

Public Attributes

- uint32_t rawData
- uint8_t rollingAddress
- uint8_t channel
- int16_t temperature
- bool lowBattery

6.1.1 Detailed Description

Data structure.

Definition at line 63 of file ErriezOregonTHN128.h.

6.1.2 Member Data Documentation

6.1.2.1 channel

```
uint8_t OregonTHN128Data_t::channel
```

Channel

Definition at line 66 of file ErriezOregonTHN128.h.

6.1.2.2 lowBattery

```
bool OregonTHN128Data_t::lowBattery
```

Low battery indication

Definition at line 68 of file ErriezOregonTHN128.h.

6.1.2.3 rawData

```
uint32_t OregonTHN128Data_t::rawData
```

Raw data

Definition at line 64 of file ErriezOregonTHN128.h.

6.1.2.4 rollingAddress

```
uint8_t OregonTHN128Data_t::rollingAddress
```

Rolling address

Definition at line 65 of file ErriezOregonTHN128.h.

6.1.2.5 temperature

```
int16_t OregonTHN128Data_t::temperature
```

Temperature

Definition at line 67 of file ErriezOregonTHN128.h.

The documentation for this struct was generated from the following file:

- src/ErriezOregonTHN128.h

Chapter 7

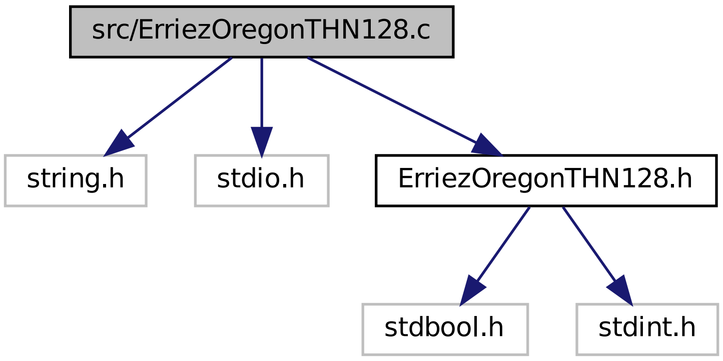
File Documentation

7.1 src/ErriezOregonTHN128.c File Reference

Oregon THN128 433MHz temperature transmit/receive library for Arduino.

```
#include <string.h>
#include <stdio.h>
#include "ErriezOregonTHN128.h"
```

Include dependency graph for ErriezOregonTHN128.c:



Macros

- #define SET_ROL_ADDR(x) (((x) & 0x07) << 0)
- #define GET_ROL_ADDR(x) (((x) & 0x07) << 0)
- #define SET_CHANNEL(x) ((((x) - 1) & 0x03) << 6)
- #define GET_CHANNEL(x) ((((x) >> 6) & 0x03) + 1)
- #define SET_TEMP(x)
- #define GET_TEMP(x)
- #define SIGN_BIT (1UL << 21)
- #define LOW_BAT_BIT (1UL << 23)
- #define SET_CRC(x) ((uint32_t)(x) << 24)
- #define GET_CRC(x) ((x) >> 24)

Functions

- bool OregonTHN128_CheckCRC (uint32_t rawData)

  Verify checksum.
- void OregonTHN128_TempToString (char ∗temperatureStr, uint8_t temperatureStrLen, int16_t temperature)

  Convert temperature to string.
- uint32_t OregonTHN128_DataToRaw (OregonTHN128Data_t ∗data)

  Convert data structure to 32-bit raw data.
- bool OregonTHN128_RawToData (uint32_t rawData, OregonTHN128Data_t ∗data)

  Cnonvert 32-bit raw data to OregonTHN128Data_t structure.

7.1.1 Detailed Description

Oregon THN128 433MHz temperature transmit/receive library for Arduino.

Source: `https://github.com/Erriez/ErriezOregonTHN128` Documentation: `https↩ ://erriez.github.io/ErriezOregonTHN128`

7.1.2 Function Documentation

7.1.2.1 OregonTHN128_CheckCRC()

```
bool OregonTHN128_CheckCRC (
            uint32_t rawData )
```

Verify checksum.

Parameters

rawData	32-bit raw data input

Returns

true: Success, false: error

Definition at line 101 of file ErriezOregonTHN128.c.

7.1.2.2 OregonTHN128_DataToRaw()

```
uint32_t OregonTHN128_DataToRaw (
            OregonTHN128Data_t ∗ data )
```

Convert data structure to 32-bit raw data.

Parameters

data	Input

Returns

Output

Definition at line 141 of file ErriezOregonTHN128.c.

7.1.2.3 OregonTHN128_RawToData()

```
bool OregonTHN128_RawToData (
             uint32_t rawData,
             OregonTHN128Data_t * data )
```

Cnonvert 32-bit raw data to OregonTHN128Data_t structure.

Parameters

rawData	32-bit input
data	output

Returns

CRC true: Success, false: error

Definition at line 180 of file ErriezOregonTHN128.c.

7.1.2.4 OregonTHN128_TempToString()

```
void OregonTHN128_TempToString (
             char * temperatureStr,
             uint8_t temperatureStrLen,
             int16_t temperature )
```

Convert temperature to string.

Parameters

temperatureStr	Character buffer
temperatureStrLen	Size of character buffer
temperature	Input temperature

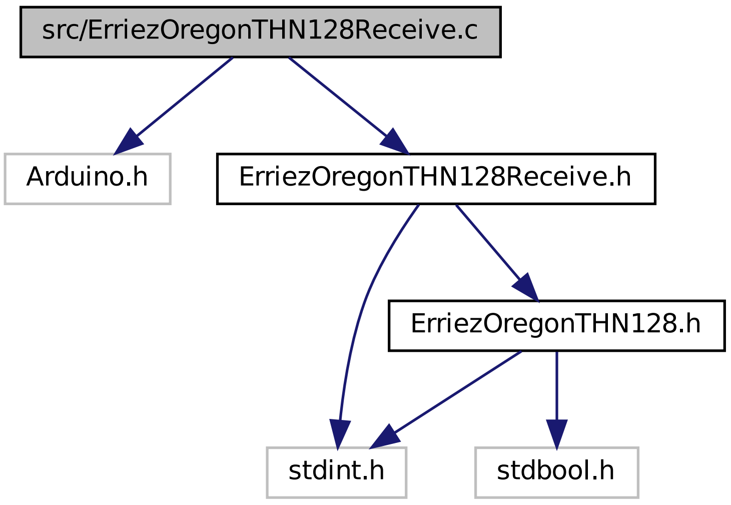
Definition at line 118 of file ErriezOregonTHN128.c.

7.2 src/ErriezOregonTHN128Receive.c File Reference

Oregon THN128 433MHz temperature transmit/receive library for Arduino.

```
#include <Arduino.h>
#include "ErriezOregonTHN128Receive.h"
```

Include dependency graph for ErriezOregonTHN128Receive.c:



Enumerations

- enum RxState_t {
  StateSearchSync = 0 , StateMid0 = 1 , StateMid1 = 2 , StateEnd = 3 ,
  StateRxComplete = 4 }

  Receive state.

Functions

- void rfPinChange (void)

  RF pin level change.
- void OregonTHN128_RxBegin (uint8_t extIntPin)

  Initialize receiver pin.
- void OregonTHN128_RxEnable ()

  Receive enable.
- void OregonTHN128_RxDisable ()

  Receive disable.
- bool OregonTHN128_Available ()

  Check if data received.
- bool OregonTHN128_Read (OregonTHN128Data_t ∗data)

  Read data.

7.2.1 Detailed Description

Oregon THN128 433MHz temperature transmit/receive library for Arduino.

Source: `https://github.com/Erriez/ErriezOregonTHN128` Documentation: `https://erriez.github.io/ErriezOregonTHN128`

7.2.2 Enumeration Type Documentation

7.2.2.1 RxState_t

```
enum RxState_t
```

Receive state.

Enumerator

StateSearchSync	Search for sync
StateMid0	Sample at the middle of a pulse part 1
StateMid1	Sample at the middle of a pulse part 2
StateEnd	Sample at the end of a pulse to store bit
StateRxComplete	Receive complete

Definition at line 44 of file ErriezOregonTHN128Receive.c.

7.2.3 Function Documentation

7.2.3.1 OregonTHN128_Available()

```
bool OregonTHN128_Available (
             void   )
```

Check if data received.

Return values

true	Data received
false	No data available

Definition at line 358 of file ErriezOregonTHN128Receive.c.

7.2.3.2 OregonTHN128_Read()

```
bool OregonTHN128_Read (
            OregonTHN128Data_t * data )
```

Read data.

Parameters

data	Structure OregonTHN128Data_t output

Return values

true	Data received
false	No data available

Definition at line 373 of file ErriezOregonTHN128Receive.c.

7.2.3.3 OregonTHN128_RxBegin()

```
void OregonTHN128_RxBegin (
            uint8_t extIntPin )
```

Initialize receiver pin.

Connect RX pin to an external interrupt pin such as INT0 (D2) or INT1 (D3)

Parameters

extIntPin	

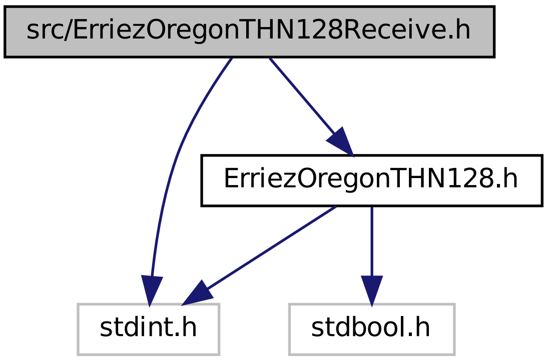
Definition at line 324 of file ErriezOregonTHN128Receive.c.

7.3 src/ErriezOregonTHN128Receive.h File Reference

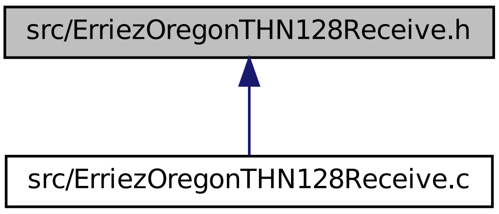
Oregon THN128 433MHz temperature receive library for Arduino.

```
#include <stdint.h>
#include "ErriezOregonTHN128.h"
```

Include dependency graph for ErriezOregonTHN128Receive.h:



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


src/ErriezOregonTHN128Receive.h
src/ErriezOregonTHN128Receive.c

Functions

- void OregonTHN128_RxBegin (uint8_t extIntPin)

  Initialize receiver pin.
- void OregonTHN128_RxEnable ()

  Receive enable.
- void OregonTHN128_RxDisable ()

  Receive disable.
- bool OregonTHN128_Available (void)

  Check if data received.
- bool OregonTHN128_Read (OregonTHN128Data_t ∗data)

  Read data.

7.3.1 Detailed Description

Oregon THN128 433MHz temperature receive library for Arduino.

Source: https://github.com/Erriez/ErriezOregonTHN128 Documentation: https://erriez.github.io/ErriezOregonTHN128

Protocol:

Transmit temperature twice every 30 seconds:

Bit: 0 7 0 7 0 7 0 7 +-—+-—+---—+---—+---—+---—+ +-—+-—+---—+– |PREA|SYNC|Byte 0|Byte 1|Byte 2|Byte 3| |PREA|SYNC|Byte 0| ... +-—+-—+---—+---—+---—+---—+-—/\/-—+-—+-—+---—+– |<-------------— 144ms ----------—>|<- 100ms ->| 30 sec

Logic '0': Logic '1': +-—+ +-—+ | | +-—+ +-—+ 1400 1500 1500 1400 (us)

PREA: Preamble 12x logic '1', 3000us low

SYNC: +-------—+ | |

- +-------—+ 5500us 5500us

Byte 0:

- Bit 0..3: Rolling address (Random value after power cycle)
- Bit 6..7: Channel: (0 = channel 1 .. 2 = channel 3)

Byte 1:

- Bit 0..3: TH3
- Bit 4..7: TH2

Byte 2:

- Bit 0..3: TH1
- Bit 5: Sign
- Bit 7: Low battery

Byte 3:

- Bit 0..7: CRC

Example: Rolling address = 5, channel = 1, temperature = 27.8 `C, low battery = false TH1 = 2, TH2 = 7, TH3 = 8: Byte 0: 0x05 Byte 1: 0x78 Byte 2: 0x02 Byte 3: 0x7f

Bits in time: PRE=1 S B0=0x05 B1=0x78 B2=0x02 B3=0x7f 111111111111 S 10100000 00011110 01000000 11111110

7.3.2 Function Documentation

7.3.2.1 OregonTHN128_Available()

```
bool OregonTHN128_Available (
            void )
```

Check if data received.

Return values

true	Data received
false	No data available

Definition at line 358 of file ErriezOregonTHN128Receive.c.

7.3.2.2 OregonTHN128_Read()

```
bool OregonTHN128_Read (
             OregonTHN128Data_t * data )
```

Read data.

Parameters

data	Structure OregonTHN128Data_t output

Return values

true	Data received
false	No data available

Definition at line 373 of file ErriezOregonTHN128Receive.c.

7.3.2.3 OregonTHN128_RxBegin()

```
void OregonTHN128_RxBegin (
             uint8_t extIntPin )
```

Initialize receiver pin.

Connect RX pin to an external interrupt pin such as INT0 (D2) or INT1 (D3)

Parameters

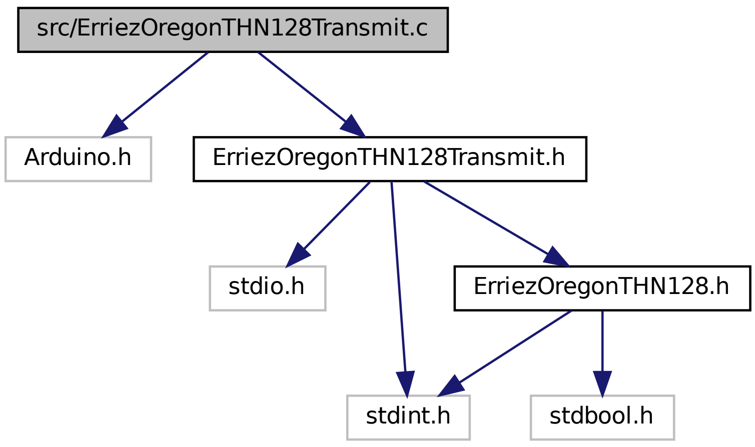
extIntPin	

Definition at line 324 of file ErriezOregonTHN128Receive.c.

7.4 src/ErriezOregonTHN128Transmit.c File Reference

Oregon THN128 433MHz temperature transmit library for Arduino.

```
#include <Arduino.h>
#include "ErriezOregonTHN128Transmit.h"
```
Include dependency graph for ErriezOregonTHN128Transmit.c:


src/ErriezOregonTHN128Transmit.c
Arduino.h
ErriezOregonTHN128Transmit.h
stdio.h
ErriezOregonTHN128.h
stdint.h
stdbool.h

Functions

- void OregonTHN128_TxBegin (uint8_t rfTxPin)

  Transmit begin.
- void OregonTHN128_TxEnd (void)

  Disable transmit.
- void OregonTHN128_TxRawData (uint32_t rawData)

  Transmit data.
- void OregonTHN128_Transmit (OregonTHN128Data_t ∗data)

  Transmit Transmit data.

7.4.1 Detailed Description

Oregon THN128 433MHz temperature transmit library for Arduino.

Source: `https://github.com/Erriez/ErriezOregonTHN128` Documentation: `https://erriez.github.io/ErriezOregonTHN128`

7.4.2 Function Documentation

7.4.2.1 OregonTHN128_Transmit()

```
void OregonTHN128_Transmit (
            OregonTHN128Data_t ∗ data )
```

Transmit Transmit data.

The application should call OregonTHN128_TxRawData() twice at 100ms interval.

Parameters

data	Oregon THN128 input structure

Definition at line 292 of file ErriezOregonTHN128Transmit.c.

7.4.2.2 OregonTHN128_TxBegin()

```
void OregonTHN128_TxBegin (
            uint8_t rfTxPin )
```

Transmit begin.

Connect rfTxPin to any DIGITAL pin

Parameters

rfTxPin	Arduino transmit pin

Definition at line 248 of file ErriezOregonTHN128Transmit.c.

7.4.2.3 OregonTHN128_TxEnd()

```
void OregonTHN128_TxEnd (
            void )
```

Disable transmit.

Set transmit pin to input

Definition at line 259 of file ErriezOregonTHN128Transmit.c.

7.4.2.4 OregonTHN128_TxRawData()

```
void OregonTHN128_TxRawData (
            uint32_t rawData )
```

Transmit data.

Parameters

rawData	32-bit raw data input

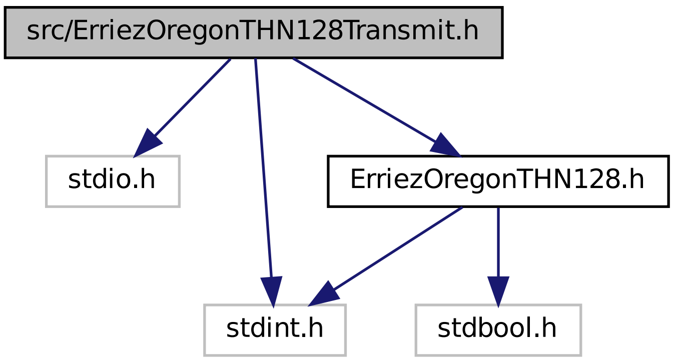
Definition at line 270 of file ErriezOregonTHN128Transmit.c.

7.5 src/ErriezOregonTHN128Transmit.h File Reference

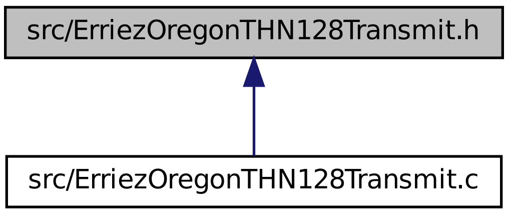
Oregon THN128 433MHz temperature transmit library for Arduino.

```
#include <stdio.h>
#include <stdint.h>
#include "ErriezOregonTHN128.h"
```

Include dependency graph for ErriezOregonTHN128Transmit.h:



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


src/ErriezOregonTHN128Transmit.h
src/ErriezOregonTHN128Transmit.c

Functions

- void OregonTHN128_TxBegin (uint8_t rfTxPin)

  Transmit begin.
- void OregonTHN128_TxRawData (uint32_t rawData)

  Transmit data.
- void OregonTHN128_Transmit (OregonTHN128Data_t ∗data)

  Transmit Transmit data.

7.5.1 Detailed Description

Oregon THN128 433MHz temperature transmit library for Arduino.

Source: https://github.com/Erriez/ErriezOregonTHN128 Documentation: https↩
://erriez.github.io/ErriezOregonTHN128

7.5.2 Function Documentation

7.5.2.1 OregonTHN128_Transmit()

```
void OregonTHN128_Transmit (
            OregonTHN128Data_t * data )
```

Transmit Transmit data.

The application should call OregonTHN128_TxRawData() twice at 100ms interval.

Parameters

data	Oregon THN128 input structure

Definition at line 292 of file ErriezOregonTHN128Transmit.c.

7.5.2.2 OregonTHN128_TxBegin()

```
void OregonTHN128_TxBegin (
            uint8_t rfTxPin )
```

Transmit begin.

Connect rfTxPin to any DIGITAL pin

Parameters

rfTxPin	Arduino transmit pin

Definition at line 248 of file ErriezOregonTHN128Transmit.c.

7.5.2.3 OregonTHN128_TxRawData()

```
void OregonTHN128_TxRawData (
            uint32_t rawData )
```

Transmit data.

Parameters

rawData	32-bit raw data input

Definition at line 270 of file ErriezOregonTHN128Transmit.c.

Index

channel
    OregonTHN128Data_t, 15

data macro's, 11
    GET_CHANNEL, 11
    GET_CRC, 11
    GET_ROL_ADDR, 12
    GET_TEMP, 12
    LOW_BAT_BIT, 12
    SET_CHANNEL, 12
    SET_CRC, 13
    SET_ROL_ADDR, 13
    SET_TEMP, 13
    SIGN_BIT, 13

ErriezOregonTHN128.c
    OregonTHN128_CheckCRC, 18
    OregonTHN128_DataToRaw, 18
    OregonTHN128_RawToData, 19
    OregonTHN128_TempToString, 19
ErriezOregonTHN128Receive.c
    OregonTHN128_Available, 21
    OregonTHN128_Read, 21
    OregonTHN128_RxBegin, 22
    RxState_t, 21
    StateEnd, 21
    StateMid0, 21
    StateMid1, 21
    StateRxComplete, 21
    StateSearchSync, 21
ErriezOregonTHN128Receive.h
    OregonTHN128_Available, 24
    OregonTHN128_Read, 25
    OregonTHN128_RxBegin, 25
ErriezOregonTHN128Transmit.c
    OregonTHN128_Transmit, 26
    OregonTHN128_TxBegin, 27
    OregonTHN128_TxEnd, 27
    OregonTHN128_TxRawData, 27
ErriezOregonTHN128Transmit.h
    OregonTHN128_Transmit, 29
    OregonTHN128_TxBegin, 29
    OregonTHN128_TxRawData, 29

GET_CHANNEL
    data macro's, 11
GET_CRC
    data macro's, 11
GET_ROL_ADDR
    data macro's, 12
GET_TEMP
    data macro's, 12

LOW_BAT_BIT
    data macro's, 12
lowBattery
    OregonTHN128Data_t, 15

OregonTHN128_Available
    ErriezOregonTHN128Receive.c, 21
    ErriezOregonTHN128Receive.h, 24
OregonTHN128_CheckCRC
    ErriezOregonTHN128.c, 18
OregonTHN128_DataToRaw
    ErriezOregonTHN128.c, 18
OregonTHN128_RawToData
    ErriezOregonTHN128.c, 19
OregonTHN128_Read
    ErriezOregonTHN128Receive.c, 21
    ErriezOregonTHN128Receive.h, 25
OregonTHN128_RxBegin
    ErriezOregonTHN128Receive.c, 22
    ErriezOregonTHN128Receive.h, 25
OregonTHN128_TempToString
    ErriezOregonTHN128.c, 19
OregonTHN128_Transmit
    ErriezOregonTHN128Transmit.c, 26
    ErriezOregonTHN128Transmit.h, 29
OregonTHN128_TxBegin
    ErriezOregonTHN128Transmit.c, 27
    ErriezOregonTHN128Transmit.h, 29
OregonTHN128_TxEnd
    ErriezOregonTHN128Transmit.c, 27
OregonTHN128_TxRawData
    ErriezOregonTHN128Transmit.c, 27
    ErriezOregonTHN128Transmit.h, 29
OregonTHN128Data_t, 15
    channel, 15
    lowBattery, 15
    rawData, 16
    rollingAddress, 16
    temperature, 16

rawData
    OregonTHN128Data_t, 16
rollingAddress
    OregonTHN128Data_t, 16
RxState_t
    ErriezOregonTHN128Receive.c, 21

SET_CHANNEL

data macro's, 12
SET_CRC
data macro's, 13
SET_ROL_ADDR
data macro's, 13
SET_TEMP
data macro's, 13
SIGN_BIT
data macro's, 13
src/ErriezOregonTHN128.c, 17
src/ErriezOregonTHN128Receive.c, 20
src/ErriezOregonTHN128Receive.h, 22
src/ErriezOregonTHN128Transmit.c, 25
src/ErriezOregonTHN128Transmit.h, 28
StateEnd
ErriezOregonTHN128Receive.c, 21
StateMid0
ErriezOregonTHN128Receive.c, 21
StateMid1
ErriezOregonTHN128Receive.c, 21
StateRxComplete
ErriezOregonTHN128Receive.c, 21
StateSearchSync
ErriezOregonTHN128Receive.c, 21

temperature
OregonTHN128Data_t, 16