

# I2C\_Software Library Reference Manual

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# Chapter 1

## I2C\_Software

Software I2C for MSP430

### Contribute!

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Developed with [embedXcode](#)

### Author

Rei VILO

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### Date

Feb 10, 2014

### Version

104

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### See Also

- ReadMe.txt for references
- TwoWire.h - TWI/I2C library for Arduino & Wiring  
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- Arduino core files for MSP430  
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- Arduino I2cMaster Library  
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- calinp - Posted 21 February 2013 - 11:29 PM  
<http://forum.43oh.com/topic/3201-software-bit-bang-i2c-library-for-energia/?p=30>
- icserny - Posted 31 January 2014 - 03:36 PM  
<http://forum.43oh.com/topic/3617-energia-library-software-i2c-master-for-msp430g/>



## Chapter 2

# Class Index

### 2.1 Class List

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

<a href="#">SoftwareWire</a>	
Software I2C master class . . . . .	7





## Chapter 3

# File Index

### 3.1 File List

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

<a href="#">I2C_Software.ino</a>	
Main sketch Project I2C_Software Library . . . . .	11
<a href="#">I2C_SoftwareLibrary.h</a>	
Software I2C for MSP430 . . . . .	13



## Chapter 4

# Class Documentation

### 4.1 SoftwareWire Class Reference

Software I2C master class.

```
#include <I2C_SoftwareLibrary.h>
```

#### Public Member Functions

- [SoftwareWire](#) (uint8\_t pinSDA, uint8\_t pinSCL)  
*Constructor.*
- void [begin](#) ()  
*Initialisation.*
- void [beginTransaction](#) (uint8\_t address)  
*Begin a transmission to the I2C slave device.*
- uint8\_t [endTransmission](#) (void)  
*End a transmission to the I2C slave device.*
- virtual size\_t [write](#) (uint8\_t data)  
*Write data to the I2C slave device.*
- virtual size\_t [write](#) (const uint8\_t \*data, size\_t length)  
*Write data to the I2C slave device.*
- uint8\_t [requestFrom](#) (uint8\_t address, uint8\_t length)  
*Request bytes from a I2C slave device.*
- virtual int [available](#) (void)  
*Available.*
- virtual int [read](#) (void)  
*Read.*
- virtual int [peek](#) (void)  
*Peek.*
- virtual void [flush](#) (void)  
*Clear streams.*

#### 4.1.1 Detailed Description

Software I2C master class.

## 4.1.2 Constructor & Destructor Documentation

### 4.1.2.1 SoftwareWire::SoftwareWire ( uint8\_t *pinSDA*, uint8\_t *pinSCL* )

Constructor.

## Parameters

<i>pinSDA</i>	pin for SDA
<i>pinSCL</i>	pin for SCL

## 4.1.3 Member Function Documentation

4.1.3.1 `int SoftwareWire::available ( void ) [virtual]`

Available.

## Returns

number of bytes available on the stream

## Note

To be called after requestFrom(address, length)

4.1.3.2 `void SoftwareWire::beginTransaction ( uint8_t address )`

Begin a transmission to the I2C slave device.

## Parameters

<i>address</i>	I2C slave address
----------------	-------------------

4.1.3.3 `uint8_t SoftwareWire::endTransmission ( void )`

End a transmission to the I2C slave device.

## Returns

number of bytes sent

4.1.3.4 `void SoftwareWire::flush ( void ) [virtual]`

Clear streams.

4.1.3.5 `int SoftwareWire::peek ( void ) [virtual]`

Peek.

## Returns

first value or -1=error

## Note

peek doesn't remove the value read from the stream.  
To be called after requestFrom(address, length)

#### 4.1.3.6 `int SoftwareWire::read ( void ) [virtual]`

Read.

##### Returns

first value or -1=error

##### Note

read updates the stream by removing the value read.  
To be called after requestFrom(address, length)

#### 4.1.3.7 `uint8_t SoftwareWire::requestFrom ( uint8_t address, uint8_t length )`

Request bytes from a I2C slave device.

##### Parameters

<i>address</i>	I2C slave address
<i>length</i>	number of bytes requested

##### Returns

number of bytes received

#### 4.1.3.8 `size_t SoftwareWire::write ( uint8_t data ) [virtual]`

Write data to the I2C slave device.

##### Parameters

<i>data</i>	byte
-------------	------

##### Returns

number of bytes written=1

#### 4.1.3.9 `size_t SoftwareWire::write ( const uint8_t * data, size_t length ) [virtual]`

Write data to the I2C slave device.

##### Parameters

<i>data</i>	array of bytes
<i>length</i>	number of bytes

##### Returns

number of bytes written

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

- [I2C\\_SoftwareLibrary.h](#)
- [I2C\\_SoftwareLibrary.cpp](#)

## Chapter 5

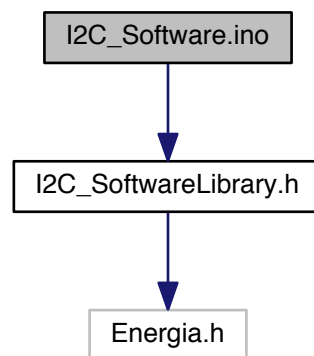
# File Documentation

### 5.1 I2C\_Software.ino File Reference

Main sketch Project I2C\_Software Library.

```
#include "I2C_SoftwareLibrary.h"
```

Include dependency graph for I2C\_Software.ino:



### Macros

- `#define _address 0x18`  
*Address of the sensor.*
- `#define I2C_HARDWARE 1`  
*I2C\_KIND.*
- `#define I2C_SOFTWARE 2`  
*2=software*
- `#define I2C_KIND I2C_SOFTWARE`  
*Select mode.*

## Functions

- void `setup` (void)  
*setup*
- void `loop` (void)  
*loop*

## Variables

- uint16\_t `_reading`  
*Read value.*
- #define `SCL_PIN` P2\_4  
*SoftwareWire initialisation.*
- #define `SDA_PIN` P2\_3  
*pin for SDA*
- `SoftwareWire` `Wire` (P2\_3, P2\_4)

### 5.1.1 Detailed Description

Main sketch Project I2C\_Software Library. Software I2C Library

Developed with [embedXcode+](#)

#### Author

Rei Vilo  
<http://embeddedcomputing.weebly.com>

#### Date

Feb 10, 2014 21:36

#### Version

Software I2C Library

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#### See Also

ReadMe.txt for references

- HMC6352 2-Axis Compass <http://www.sparkfun.com/datasheets/Components/HMC6352.pdf>

### 5.1.2 Macro Definition Documentation

#### 5.1.2.1 #define I2C\_HARDWARE 1

I2C\_KIND.

1=hardware



### 5.1.2.2 #define SCL\_PIN P2\_4

[SoftwareWire](#) initialisation.

pin for SCL

## 5.1.3 Variable Documentation

### 5.1.3.1 SoftwareWire Wire(P2\_3, P2\_4)

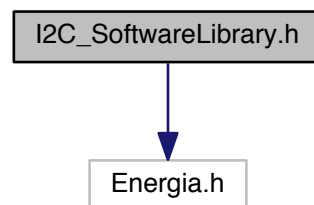
Instantiate [SoftwareWire](#)

## 5.2 I2C\_SoftwareLibrary.h File Reference

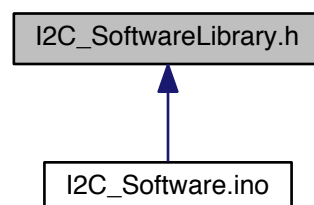
Software I2C for MSP430.

```
#include "Energia.h"
```

Include dependency graph for I2C\_SoftwareLibrary.h:



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



## Classes

- class [SoftwareWire](#)  
*Software I2C master class.*

## Macros

- `#define BUFFER_LENGTH 16`  
*Size of TX and RX buffers.*

### 5.2.1 Detailed Description

Software I2C for MSP430. I2C master only

#### Contribute!

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Developed with [embedXcode](#)

#### Author

Rei VILO  
<http://embedXcode.weebly.com>

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#### Version

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- icserny - Posted 31 January 2014 - 03:36 PM  
<http://forum.43oh.com/topic/3617-energia-library-software-i2c-master-for-msp430g>

### 5.2.2 Macro Definition Documentation

#### 5.2.2.1 `#define BUFFER_LENGTH 16`

Size of TX and RX buffers.

#### Warning

MSP430G2553 only features 512 bytes of RAM

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