# Arduino Device Driver

Generated by Doxygen 1.8.9.1

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# Contents

# 1 Hierarchical Index

## 1.1 Class Hierarchy

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



# 2 Class Index

## 2.1 Class List

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



# 3 File Index

## 3.1 File List

Here is a list of all files with brief descriptions:

# 4 Class Documentation

## 4.1 Device Class Reference

`#include <Device.h>`

### Public Member Functions

- Device ()

#### 4.1.1 Detailed Description

Arduino - Device.

Device.cpp

**Author**

Dalmir da Silva dalmirdasilva@gmail.com

Definition at line 12 of file Device.h.

#### 4.1.2 Constructor & Destructor Documentation

##### 4.1.2.1 Device::Device ( )

Public constructor.

**Parameters**

| | |
|---|---|
| *address* | The wire address. |

Definition at line 3 of file Device.cpp.

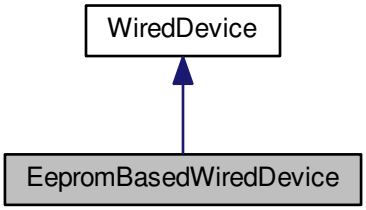
The documentation for this class was generated from the following files:

- Device.h
- Device.cpp

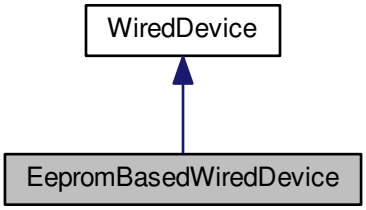
## 4.2 EepromBasedWiredDevice Class Reference

`#include <EepromBasedWiredDevice.h>`

Inheritance diagram for EepromBasedWiredDevice:




Collaboration diagram for EepromBasedWiredDevice:




#### Public Types

- enum { LITTLE_ENDIAN = 0x00, BIG_ENDIAN = 0x01 }

#### Public Member Functions

- EepromBasedWiredDevice (unsigned char deviceAddress, char addressSize, unsigned char endianness)
- EepromBasedWiredDevice (unsigned char deviceAddress, char addressSize)
- EepromBasedWiredDevice (unsigned char deviceAddress)
- void writeBlock (unsigned int address, unsigned char *buf, int len)
- void readBlock (unsigned int address, unsigned char *buf, int len)
- void setAddressSize (char addressSize)
- char getAddressSize ()

#### Public Attributes

- enum EepromBasedWiredDevice:: { ... } Endianness

#### Private Attributes

- char addressSize
- unsigned char endianness

**Static Private Attributes**

- static const char MAX_RETRIES_ON_READING = 0x7f

#### 4.2.1 Detailed Description

Definition at line 16 of file EepromBasedWiredDevice.h.

#### 4.2.2 Member Enumeration Documentation

##### 4.2.2.1 anonymous enum

**Enumerator**

***LITTLE_ENDIAN***

***BIG_ENDIAN***

Definition at line 25 of file EepromBasedWiredDevice.h.

#### 4.2.3 Constructor & Destructor Documentation

##### 4.2.3.1 EepromBasedWiredDevice::EepromBasedWiredDevice ( unsigned char *deviceAddress,* char *addressSize,* unsigned char *endianness* )

Public constructor.

**Parameters**

| | |
|---|---|
| *deviceAddress* | The wire address. |
| *addressSize* | How long is the internal device addresses. |
| *endianness* | The endianness. |

Definition at line 5 of file EepromBasedWiredDevice.cpp.

##### 4.2.3.2 EepromBasedWiredDevice::EepromBasedWiredDevice ( unsigned char *deviceAddress,* char *addressSize* )

Public constructor.

Definition at line 9 of file EepromBasedWiredDevice.cpp.

##### 4.2.3.3 EepromBasedWiredDevice::EepromBasedWiredDevice ( unsigned char *deviceAddress* )

Public constructor.

Definition at line 13 of file EepromBasedWiredDevice.cpp.

#### 4.2.4 Member Function Documentation

##### 4.2.4.1 char EepromBasedWiredDevice::getAddressSize ( )

Gets the address size.

addressSize

Definition at line 55 of file EepromBasedWiredDevice.cpp.

##### 4.2.4.2 void EepromBasedWiredDevice::readBlock ( unsigned int *address,* unsigned char * *buf,* int *len* )

Reads a block of bytes from the device.

Sends the address MSB fist.

**Parameters**

| | |
|---|---|
| *address* | |
| *buf* | |
| *len* | |

Definition at line 29 of file EepromBasedWiredDevice.cpp.

#### 4.2.4.3 void EepromBasedWiredDevice::setAddressSize ( char *addressSize* )

Sets the address size.

**Parameters**

| | |
|---|---|
| *addressSize* | |

Definition at line 51 of file EepromBasedWiredDevice.cpp.

#### 4.2.4.4 void EepromBasedWiredDevice::writeBlock ( unsigned int *address*, unsigned char * *buf*, int *len* )

Writes a block of bytes separately by pages to the device.

**Parameters**

| | |
|---|---|
| *address* | |
| *buf* | |
| *len* | |

Definition at line 17 of file EepromBasedWiredDevice.cpp.

### 4.2.5 Member Data Documentation

#### 4.2.5.1 char EepromBasedWiredDevice::addressSize [private]

Definition at line 20 of file EepromBasedWiredDevice.h.

#### 4.2.5.2 unsigned char EepromBasedWiredDevice::endianness [private]

Definition at line 21 of file EepromBasedWiredDevice.h.

#### 4.2.5.3 enum { ... } EepromBasedWiredDevice::Endianness

#### 4.2.5.4 const char EepromBasedWiredDevice::MAX_RETRIES_ON_READING = 0x7f [static], [private]

Definition at line 18 of file EepromBasedWiredDevice.h.

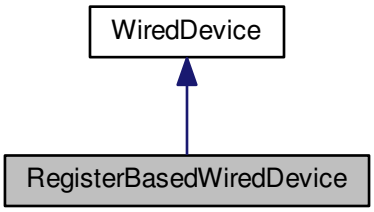
The documentation for this class was generated from the following files:

- EepromBasedWiredDevice.h
- EepromBasedWiredDevice.cpp

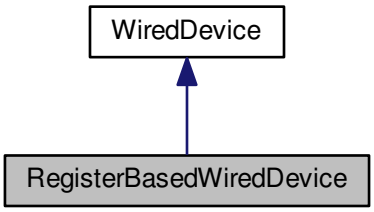
## 4.3 RegisterBasedWiredDevice Class Reference

```
#include <RegisterBasedWiredDevice.h>
```

Inheritance diagram for RegisterBasedWiredDevice:




Collaboration diagram for RegisterBasedWiredDevice:




#### Public Member Functions

- RegisterBasedWiredDevice (unsigned char address)
- void configureRegisterBits (unsigned char reg, unsigned char mask, unsigned char d)
- unsigned char writeRegister (unsigned char reg, unsigned char d)
- int readRegister (unsigned char reg)

#### Static Private Attributes

- static const unsigned char MAX_RETRIES_ON_READING = 10

### 4.3.1 Detailed Description

Arduino - Register Based Wire Device.

RegisterBasedWireDevice.cpp

#### Author

Dalmir da Silva dalmirdasilva@gmail.com

Definition at line 14 of file RegisterBasedWiredDevice.h.

#### 4.3.2 Constructor & Destructor Documentation

##### 4.3.2.1 RegisterBasedWiredDevice::RegisterBasedWiredDevice ( unsigned char *address* )

Public constructor.

**Parameters**

| | |
|---|---|
| *address* | The wire address. |

Definition at line 5 of file RegisterBasedWiredDevice.cpp.

#### 4.3.3 Member Function Documentation

##### 4.3.3.1 void RegisterBasedWiredDevice::configureRegisterBits ( unsigned char *reg*, unsigned char *mask*, unsigned char *d* )

Configures a register.

**Parameters**

| | |
|---|---|
| *reg* | The register number. |
| *mask* | The mask to be used. |
| *d* | The value to be used. |

Definition at line 10 of file RegisterBasedWiredDevice.cpp.

##### 4.3.3.2 int RegisterBasedWiredDevice::readRegister ( unsigned char *reg* )

Reades a value from a register.

**Parameters**

| | |
|---|---|
| *reg* | The register number. |

**Returns**

The register value.

Definition at line 27 of file RegisterBasedWiredDevice.cpp.

##### 4.3.3.3 unsigned char RegisterBasedWiredDevice::writeRegister ( unsigned char *reg*, unsigned char *d* )

Writes a value to a register.

**Parameters**

| | |
|---|---|
| *reg* | The register number. |
| *d* | The value to be used. |

Definition at line 19 of file RegisterBasedWiredDevice.cpp.

#### 4.3.4 Member Data Documentation

##### 4.3.4.1 const unsigned char RegisterBasedWiredDevice::MAX_RETRIES_ON_READING = 10 [static], [private]

Definition at line 16 of file RegisterBasedWiredDevice.h.

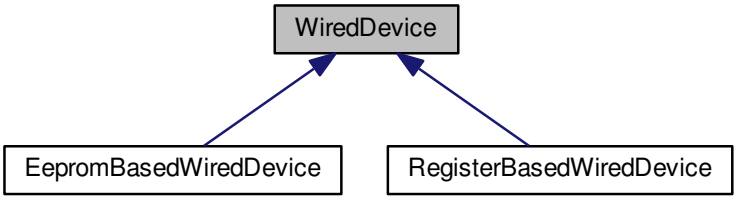
The documentation for this class was generated from the following files:

- RegisterBasedWiredDevice.h
- RegisterBasedWiredDevice.cpp

## 4.4 WiredDevice Class Reference

`#include <WiredDevice.h>`

Inheritance diagram for WiredDevice:




### Public Member Functions

- WiredDevice (unsigned char deviceAddress)
- unsigned char getDeviceAddress ()
- void setDeviceAddress (unsigned char deviceAddress)

### Private Attributes

- unsigned char deviceAddress

### 4.4.1 Detailed Description

Arduino - Wired Device.

WiredDevice.cpp

#### Author

Dalmir da Silva dalmirdasilva@gmail.com

Definition at line 12 of file WiredDevice.h.

### 4.4.2 Constructor & Destructor Documentation

#### 4.4.2.1 WiredDevice::WiredDevice ( unsigned char *deviceAddress* )

Public constructor.

**Parameters**

| | |
|---|---|
| *address* | The wire address. |

Definition at line 4 of file WiredDevice.cpp.

#### 4.4.3 Member Function Documentation

##### 4.4.3.1 unsigned char WiredDevice::getDeviceAddress ( )

Gets the device address.

**Returns**

address

Definition at line 9 of file WiredDevice.cpp.

##### 4.4.3.2 void WiredDevice::setDeviceAddress ( unsigned char *deviceAddress* )

Sets the device address.

**Parameters**

| | |
|---|---|
| *address* | The device address. |

Definition at line 13 of file WiredDevice.cpp.

#### 4.4.4 Member Data Documentation

##### 4.4.4.1 unsigned char WiredDevice::deviceAddress [private]

Definition at line 14 of file WiredDevice.h.

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

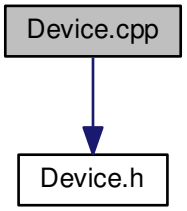
- WiredDevice.h
- WiredDevice.cpp

## 5 File Documentation

### 5.1 Device.cpp File Reference

```
#include "Device.h"
```

Include dependency graph for Device.cpp:



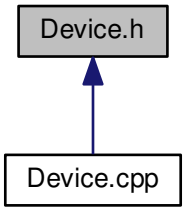

### 5.2 Device.cpp

```
00001 #include "Device.h"
```

```
00002
00003 Device::Device() {
00004 }
```

## 5.3 Device.h File Reference

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




### Classes

- class Device

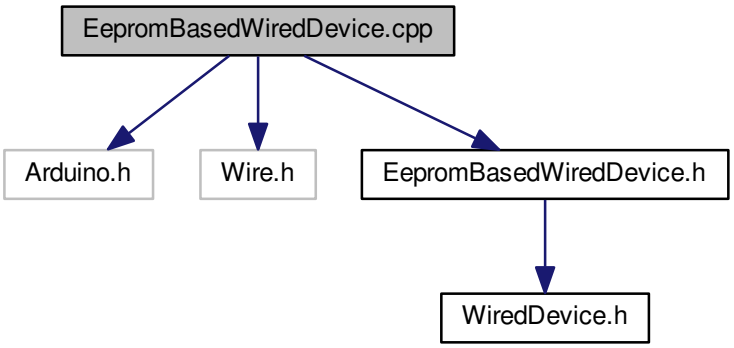
## 5.4 Device.h

```
00001
00009 #ifndef __ARDUINO_DRIVER_DEVICE_H__
00010 #define __ARDUINO_DRIVER_DEVICE_H__ 1
00011
00012 class Device {
00013
00014 public:
00015
00021     Device();
00022 };
00023
00024 #endif /* __ARDUINO_DRIVER_DEVICE_H__ */
```

## 5.5 EepromBasedWiredDevice.cpp File Reference

```
#include <Arduino.h>
#include <Wire.h>
#include "EepromBasedWiredDevice.h"
```

Include dependency graph for EepromBasedWiredDevice.cpp:



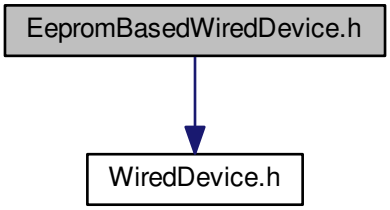

## 5.6 EepromBasedWiredDevice.cpp

```
00001 #include <Arduino.h>
00002 #include <Wire.h>
00003 #include "EepromBasedWiredDevice.h"
00004
00005 EepromBasedWiredDevice::EepromBasedWiredDevice(unsigned char
      deviceAddress, char addressSize, unsigned char endianness)
00006         : WiredDevice(deviceAddress), addressSize(addressSize), endianness(endianness) {
00007 }
00008
00009 EepromBasedWiredDevice::EepromBasedWiredDevice(unsigned char
      deviceAddress, char addressSize)
00010         : EepromBasedWiredDevice(deviceAddress, addressSize, LITTLE_ENDIAN) {
00011 }
00012
00013 EepromBasedWiredDevice::EepromBasedWiredDevice(unsigned char
      deviceAddress)
00014         : EepromBasedWiredDevice(deviceAddress, 0x02) {
00015 }
00016
00017 void EepromBasedWiredDevice::writeBlock(unsigned int address, unsigned
      char* buf, int len) {
00018     Wire.beginTransmission(getDeviceAddress());
00019     for (char i = addressSize; i > 0; i--) {
00020         Wire.write((unsigned char) (address >> ((i - 1) * 8)) & 0xff);
00021     }
00022     for (int i = 0; i < len; i++) {
00023         Wire.write(buf[i]);
00024     }
00025     Wire.endTransmission();
00026     delay(EEPROM_BASED_WIRED_DEVICE_AFTER_WRITE_DELAY);
00027 }
00028
00029 void EepromBasedWiredDevice::readBlock(unsigned int address, unsigned char
      * buf, int len) {
00030     char tries;
00031     unsigned char last = len - 1;
00032     Wire.beginTransmission(getDeviceAddress());
00033     for (char i = addressSize; i > 0; i--) {
00034         Wire.write((unsigned char) (address >> ((i - 1) * 8)) & 0xff);
00035     }
00036     Wire.endTransmission();
00037     delay(EEPROM_BASED_WIRED_DEVICE_AFTER_WRITE_DELAY);
00038     Wire.requestFrom((int) getDeviceAddress(), len);
00039     for (int i = 0; i < len; i++) {
00040         tries = MAX_RETRIES_ON_READING;
00041         while (!Wire.available() && --tries > 0) {
00042             delayMicroseconds(1);
00043         }
00044         if (tries == 0) {
00045             return;
00046         }
00047         buf[(endianness == BIG_ENDIAN) ? last - i : i] = Wire.read();
```

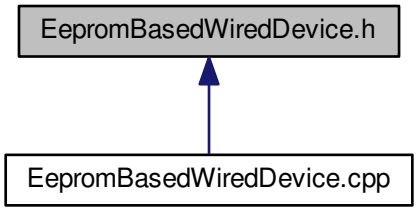
```
00048     }
00049 }
00050
00051 void EepromBasedWiredDevice::setAddressSize(char addressSize) {
00052     this->addressSize = addressSize;
00053 }
00054
00055 char EepromBasedWiredDevice::getAddressSize() {
00056     return addressSize;
00057 }
```

## 5.7 EepromBasedWiredDevice.h File Reference

`#include <WiredDevice.h>`
Include dependency graph for EepromBasedWiredDevice.h:




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




### Classes

- class EepromBasedWiredDevice

### Macros

- #define EEPROM_BASED_WIRED_DEVICE_AFTER_WRITE_DELAY 5

### 5.7.1 Macro Definition Documentation

#### 5.7.1.1 #define EEPROM_BASED_WIRED_DEVICE_AFTER_WRITE_DELAY 5

Arduino - Register Based Wire Device.

RegisterBasedWireDevice.cpp

**Author**

Dalmir da Silva dalmirdasilva@gmail.com

Definition at line 12 of file EepromBasedWiredDevice.h.

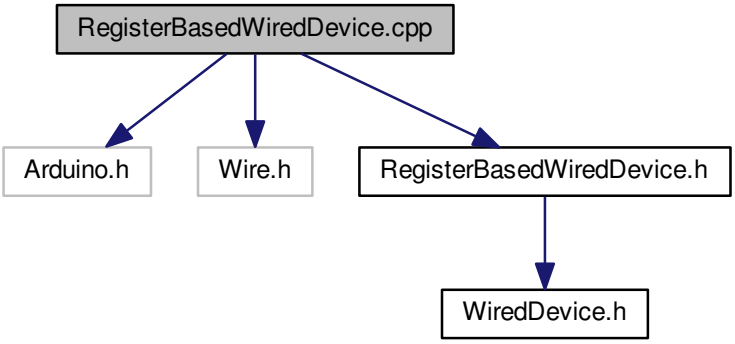
## 5.8 EepromBasedWiredDevice.h

```
00001
00009 #ifndef __ARDUINO_DRIVER_EEPROM_BASED_WIRED_DEVICE_H__
00010 #define __ARDUINO_DRIVER_EEPROM_BASED_WIRED_DEVICE_H__ 1
00011
00012 #define EEPROM_BASED_WIRED_DEVICE_AFTER_WRITE_DELAY     5
00013
00014 #include <WiredDevice.h>
00015
00016 class EepromBasedWiredDevice: public WiredDevice {
00017
00018     const static char MAX_RETRIES_ON_READING = 0x7f;
00019
00020     char addressSize;
00021     unsigned char endianness;
00022
00023 public:
00024
00025     enum {
00026         LITTLE_ENDIAN = 0x00,
00027         BIG_ENDIAN = 0x01
00028     } Endianness;
00029
00037     EepromBasedWiredDevice(unsigned char deviceAddress, char addressSize
      , unsigned char endianness);
00038
00042     EepromBasedWiredDevice(unsigned char deviceAddress, char addressSize
      );
00043
00047     EepromBasedWiredDevice(unsigned char deviceAddress);
00048
00056     void writeBlock(unsigned int address, unsigned char* buf, int len);
00057
00067     void readBlock(unsigned int address, unsigned char* buf, int len);
00068
00074     void setAddressSize(char addressSize);
00075
00081     char getAddressSize();
00082 };
00083
00084 #endif /* __ARDUINO_DRIVER_EEPROM_BASED_WIRED_DEVICE_H__ */
```

## 5.9 RegisterBasedWiredDevice.cpp File Reference

```
#include <Arduino.h>
#include <Wire.h>
#include "RegisterBasedWiredDevice.h"
```

Include dependency graph for RegisterBasedWiredDevice.cpp:



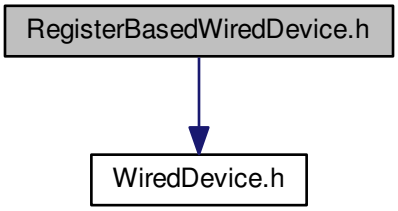

## 5.10 RegisterBasedWiredDevice.cpp

```
00001 #include <Arduino.h>
00002 #include <Wire.h>
00003 #include "RegisterBasedWiredDevice.h"
00004
00005 RegisterBasedWiredDevice::RegisterBasedWiredDevice(
00006         unsigned char address) :
00007         WiredDevice(address) {
00008 }
00009
00010 void RegisterBasedWiredDevice::configureRegisterBits(
      unsigned char reg,
00011         unsigned char mask, unsigned char d) {
00012     unsigned char n;
00013     n = readRegister(reg);
00014     n &= ~(mask);
00015     n |= d & mask;
00016     writeRegister(reg, n);
00017 }
00018
00019 unsigned char RegisterBasedWiredDevice::writeRegister(unsigned char
      reg,
00020         unsigned char d) {
00021     Wire.beginTransmission(getDeviceAddress());
00022     Wire.write(reg);
00023     Wire.write(d);
00024     return Wire.endTransmission();
00025 }
00026
00027 int RegisterBasedWiredDevice::readRegister(unsigned char reg) {
00028     char tries = MAX_RETRIES_ON_READING;
00029     Wire.beginTransmission(getDeviceAddress());
00030     Wire.write(reg);
00031     char status = Wire.endTransmission(false);
00032     if (status != 0) {
00033         return -(status);
00034     }
00035     Wire.requestFrom(getDeviceAddress(), (unsigned char) 1);
00036     while (!Wire.available() && --tries > 0) {
00037         delayMicroseconds(1);
00038     }
00039     if (tries == 0) {
00040         return -5;
00041     }
00042     return Wire.read();
00043 }
```

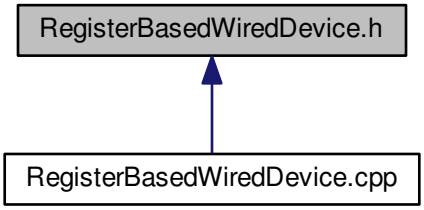
## 5.11 RegisterBasedWiredDevice.h File Reference

```
#include <WiredDevice.h>
```

Include dependency graph for RegisterBasedWiredDevice.h:




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




### Classes

- class RegisterBasedWiredDevice

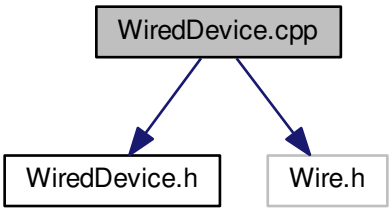
## 5.12 RegisterBasedWiredDevice.h

```
00001
00009 #ifndef __ARDUINO_DRIVER_REGISTER_BASED_WIRED_DEVICE_H__
00010 #define __ARDUINO_DRIVER_REGISTER_BASED_WIRED_DEVICE_H__ 1
00011
00012 #include <WiredDevice.h>
00013
00014 class RegisterBasedWiredDevice: public WiredDevice {
00015
00016     const static unsigned char MAX_RETRIES_ON_READING = 10;
00017
00018 public:
00019
00025     RegisterBasedWiredDevice(unsigned char address);
00026
00034     void configureRegisterBits(unsigned char reg, unsigned char mask,
00035             unsigned char d);
00036
00043     unsigned char writeRegister(unsigned char reg, unsigned char d);
00044
00051     int readRegister(unsigned char reg);
00052 };
00053
00054 #endif /* __ARDUINO_DRIVER_REGISTER_BASED_WIRED_DEVICE_H__ */
```

## 5.13 WiredDevice.cpp File Reference

```
#include "WiredDevice.h"
#include <Wire.h>
```

Include dependency graph for WiredDevice.cpp:

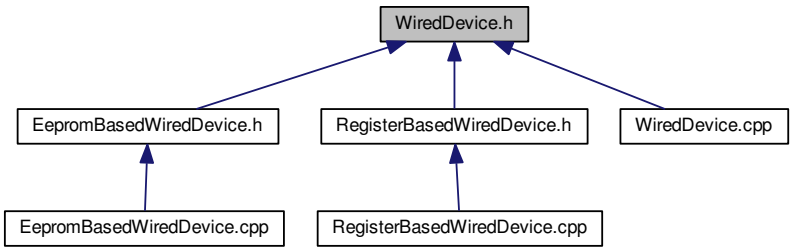



## 5.14 WiredDevice.cpp

```
00001 #include "WiredDevice.h"
00002 #include <Wire.h>
00003
00004 WiredDevice::WiredDevice(unsigned char deviceAddress)
00005         : deviceAddress(deviceAddress) {
00006     Wire.begin();
00007 }
00008
00009 unsigned char WiredDevice::getDeviceAddress() {
00010     return deviceAddress;
00011 }
00012
00013 void WiredDevice::setDeviceAddress(unsigned char deviceAddress) {
00014     this->deviceAddress = deviceAddress;
00015 }
```

## 5.15 WiredDevice.h File Reference

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




### Classes

- class WiredDevice

## 5.16 WiredDevice.h

```
00001
00009 #ifndef __ARDUINO_DRIVER_WIRED_DEVICE_H__
00010 #define __ARDUINO_DRIVER_WIRED_DEVICE_H__ 1
00011
00012 class WiredDevice {
00013
00014     unsigned char deviceAddress;
00015
00016 public:
00017
00023      WiredDevice(unsigned char deviceAddress);
00024
00030      unsigned char getDeviceAddress();
00031
00037      void setDeviceAddress(unsigned char deviceAddress);
00038 };
00039
00040 #endif /* __ARDUINO_DRIVER_WIRED_DEVICE_H__ */
```

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