Arduino Device Driver

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Tue Aug 18 2015 22:51:25

ii CONTENTS

Contents

1	Hier	archical	I Index				
	1.1	Class F	Hierarchy		. 1		
2	Clas	s Index	t c		1		
	2.1	Class L	List		. 1		
3	File	Index			1		
	3.1	File Lis	st		. 1		
4	Clas	s Docur	mentation		2		
	4.1	Device	e Class Reference		. 2		
		4.1.1	Detailed Description		. 2		
		4.1.2	Constructor & Destructor Documentation		. 2		
	4.2	Eepron	mBasedWiredDevice Class Reference		. 2		
		4.2.1	Detailed Description		. 4		
		4.2.2	Member Enumeration Documentation		. 4		
		4.2.3	Constructor & Destructor Documentation		. 4		
		4.2.4	Member Function Documentation		. 4		
		4.2.5	Member Data Documentation		. 5		
	4.3	Registe	erBasedWiredDevice Class Reference		. 5		
		4.3.1	Detailed Description		. 6		
		4.3.2	Constructor & Destructor Documentation		. 7		
		4.3.3	Member Function Documentation		. 7		
		4.3.4	Member Data Documentation		. 7		
	4.4	WiredD	Device Class Reference		. 8		
		4.4.1	Detailed Description		. 8		
		4.4.2	Constructor & Destructor Documentation		. 8		
		4.4.3	Member Function Documentation		. 9		
		4.4.4	Member Data Documentation		. 9		
5	File	Docume	entation		ç		
_	5.1		e.cpp File Reference		_		
	5.2		e.cpp				
	5.3		e.h File Reference				
	5.4		e.h				
	5.5		mBasedWiredDevice.cpp File Reference				
	5.6		mBasedWiredDevice.cpp				
	5.7		mBasedWiredDevice.h File Reference				
	2-1	5.7.1	Macro Definition Documentation				
	5.8		mBasedWiredDevice.h				
				•			

1 Hierarchical Index

5.9 RegisterBasedWiredDevice.cpp File Reference	13
5.10 RegisterBasedWiredDevice.cpp	14
5.11 RegisterBasedWiredDevice.h File Reference	14
5.12 RegisterBasedWiredDevice.h	15
5.13 WiredDevice.cpp File Reference	
5.14 WiredDevice.cpp	
5.15 WiredDevice.h File Reference	
5.16 WiredDevice.h	17
Index	19
1 Hierarchical Index	
1.1 Class Hierarchy	
This inheritance list is sorted roughly, but not completely, alphabetically:	
Device	2
WiredDevice	8
EepromBasedWiredDevice	2
RegisterBasedWiredDevice	5
2 Class Index	
2.1 Class List	
Here are the classes, structs, unions and interfaces with brief descriptions:	
Device Arduino - Device	2
EepromBasedWiredDevice	2
RegisterBasedWiredDevice Arduino - Register Based Wire Device	5
WiredDevice Arduino - Wired Device	8
3 File Index	
3.1 File List	
Here is a list of all files with brief descriptions:	
Device.cpp	9
Device.h	10

EepromBasedWiredDevice.cpp	10
EepromBasedWiredDevice.h	12
RegisterBasedWiredDevice.cpp	13
RegisterBasedWiredDevice.h	14
WiredDevice.cpp	16
WiredDevice.h	16

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.

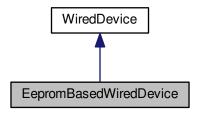
The documentation for this class was generated from the following files:

- Device.h
- Device.cpp

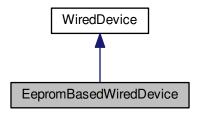
4.2 EepromBasedWiredDevice Class Reference

#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.

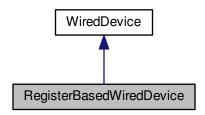
The documentation for this class was generated from the following files:

- EepromBasedWiredDevice.h
- EepromBasedWiredDevice.cpp

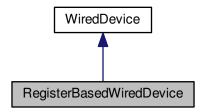
4.3 RegisterBasedWiredDevice Class Reference

#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.

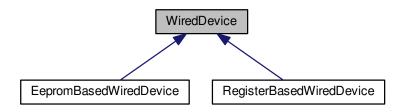
The documentation for this class was generated from the following files:

- · 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.

5 File Documentation 9

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:

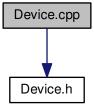
- WiredDevice.h
- WiredDevice.cpp

5 File Documentation

5.1 Device.cpp File Reference

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

Include dependency graph for Device.cpp:



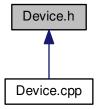
5.2 Device.cpp

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

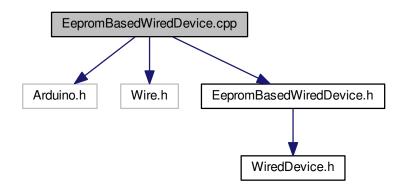
class Device

5.4 Device.h

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

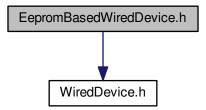
```
00001 #include <Arduino.h>
00002 #include <Wire.h>
00003 #include "EepromBasedWiredDevice.h"
00004
{\tt 00005\ EepromBasedWiredDevice:: EepromBasedWiredDevice (unsigned\ charges)}
     deviceAddress, char addressSize, unsigned char endianness)
00006
              : WiredDevice (deviceAddress), addressSize (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
00018
          Wire.beginTransmission(getDeviceAddress());
00019
          for (char i = addressSize; i > 0; i--) {
              Wire.write((unsigned char) (address >> ((i - 1) \star 8)) & 0xff);
00020
00021
00022
          for (int i = 0; i < len; i++) {</pre>
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();
          delay(EEPROM_BASED_WIRED_DEVICE_AFTER_WRITE_DELAY);
00037
          Wire.requestFrom((int) getDeviceAddress(), len);
00038
          for (int i = 0; i < len; i++) {
   tries = MAX_RETRIES_ON_READING;</pre>
00039
00040
00041
              while (!Wire.available() && --tries > 0) {
                  delayMicroseconds(1);
00042
00043
              if (tries == 0) {
00044
00045
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 }
```

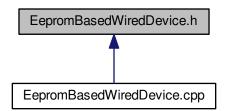
5.7 EepromBasedWiredDevice.h File Reference

```
#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.

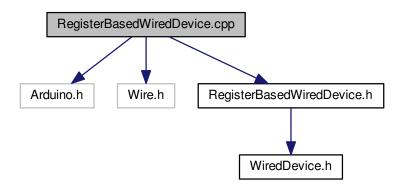
5.8 EepromBasedWiredDevice.h

```
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
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 {
             LITTLE_ENDIAN = 0 \times 00,
00026
00027
              BIG\_ENDIAN = 0x01
00028
          } Endianness;
00029
00037
          EepromBasedWiredDevice(unsigned char deviceAddress, char addressSize
      , unsigned char endianness);
00038
          EepromBasedWiredDevice(unsigned char deviceAddress, char addressSize
00042
     );
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:



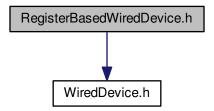
5.10 RegisterBasedWiredDevice.cpp

```
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,
            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
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) {
          char tries = MAX_RETRIES_ON_READING;
00028
00029
          Wire.beginTransmission(getDeviceAddress());
00030
          Wire.write(reg);
00031
          char status = Wire.endTransmission(false);
          if (status != 0) {
00032
00033
              return -(status);
00034
          Wire.requestFrom(getDeviceAddress(), (unsigned char) 1);
while (!Wire.available() && --tries > 0) {
00035
00036
00037
              delayMicroseconds(1);
00038
00039
          if (tries == 0)
              return -5;
00040
00041
00042
          return Wire.read();
00043 }
```

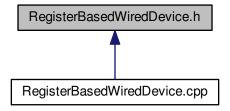
5.11 RegisterBasedWiredDevice.h File Reference

#include <WiredDevice.h>

Include dependency graph for RegisterBasedWiredDevice.h:



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



Classes

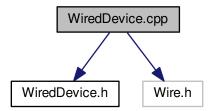
· class RegisterBasedWiredDevice

5.12 RegisterBasedWiredDevice.h

```
00001
00009 #ifndef __ARDUINO_DRIVER_REGISTER_BASED_WIRED_DEVICE_H_
00010 #define __ARDUINO_DRIVER_REGISTER_BASED_WIRED_DEVICE_H_ 1
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
         void configureRegisterBits(unsigned char reg, unsigned char mask,
00034
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:
```

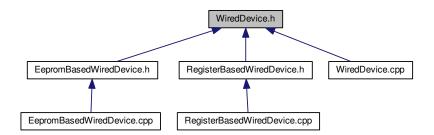


5.14 WiredDevice.cpp

```
00001 #include "WiredDevice.h" 00002 #include <Wire.h>
00003
00004 WiredDevice::WiredDevice(unsigned char deviceAddress)
00005
                : deviceAddress(deviceAddress) {
00006
           Wire.begin();
00007 }
80000
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

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
00013
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_ */
```

Index

addressSize	configureRegisterBits, 7
EepromBasedWiredDevice, 5	MAX_RETRIES_ON_READING, 7
DIO ENDIANI	readRegister, 7
BIG_ENDIAN	RegisterBasedWiredDevice, 7
EepromBasedWiredDevice, 4	writeRegister, 7
configureRegisterBits	RegisterBasedWiredDevice.cpp, 13, 14
RegisterBasedWiredDevice, 7	RegisterBasedWiredDevice.h, 14, 15
riogistor Bassarrii Gaborico, 7	setAddressSize
Device, 2	EepromBasedWiredDevice, 5
Device, 2	setDeviceAddress
Device.cpp, 9	WiredDevice, 9
Device.h, 10	,-
deviceAddress	WiredDevice, 8
WiredDevice, 9	deviceAddress, 9
FEDROM BASED WIDED DEVICE AFTER WRIT	getDeviceAddress, 9
EEPROM_BASED_WIRED_DEVICE_AFTER_WRIT← E DELAY	setDeviceAddress, 9
E_DELAT EepromBasedWiredDevice.h, 12	WiredDevice, 8
EepromBasedWiredDevice, 2	WiredDevice.cpp, 16
addressSize, 5	WiredDevice.h, 16, 17
BIG_ENDIAN, 4	writeBlock
EepromBasedWiredDevice, 4	EepromBasedWiredDevice, 5
Endianness, 5	writeRegister RegisterBasedWiredDevice, 7
endianness, 5	negisterbasedwiredbevice, 7
getAddressSize, 4	
LITTLE_ENDIAN, 4	
MAX_RETRIES_ON_READING, 5	
readBlock, 4	
setAddressSize, 5	
writeBlock, 5	
EepromBasedWiredDevice.cpp, 10, 11	
EepromBasedWiredDevice.h, 12, 13	
EEPROM_BASED_WIRED_DEVICE_AFTER_←	
WRITE_DELAY, 12	
Endianness ForcemPaged Wired Davies 5	
EepromBasedWiredDevice, 5 endianness	
EepromBasedWiredDevice, 5	
Ecprombased vireabevide, o	
getAddressSize	
EepromBasedWiredDevice, 4	
getDeviceAddress	
WiredDevice, 9	
LITTLE_ENDIAN	
EepromBasedWiredDevice, 4	
MAX_RETRIES_ON_READING	
EepromBasedWiredDevice, 5	
RegisterBasedWiredDevice, 7	
- 0.5.5. = 5.2 = 5 5, .	
readBlock	
EepromBasedWiredDevice, 4	
readRegister	
RegisterBasedWiredDevice, 7	
RegisterBasedWiredDevice, 5	