Arduino Gyroscope Driver

Generated by Doxygen 1.8.9.1

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1.1 Class List

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

2 File Index

2.1 File List

Here is a list of all files with brief descriptions:

3 Class Documentation

3.1 PwmRPi Class Reference

```
#include <Pwm.h>
```

Public Member Functions

- PwmRPi (unsigned char channel)
- void begin ()
- void stop ()
- void analogWrite (unsigned char value)

Private Attributes

- Bcm2835::Peripheral pwm
- unsigned char channel

3.1.1 Detailed Description

Definition at line 73 of file Pwm.h.

3.1.2 Constructor & Destructor Documentation

3.1.2.1 PwmRPi::PwmRPi (unsigned char *channel*)

Definition at line 4 of file Pwm.cpp.

3.1.3 Member Function Documentation

3.1.3.1 void PwmRPi::analogWrite (unsigned char *value*)

3.1.3.2 void PwmRPi::begin ( )

Definition at line 8 of file Pwm.cpp.

3.1.3.3 void PwmRPi::stop ( )

Definition at line 13 of file Pwm.cpp.

3.1.4 Member Data Documentation

3.1.4.1 unsigned char PwmRPi::channel [private]

PWM pin.

Definition at line 83 of file Pwm.h.

3.1.4.2 Bcm2835::Peripheral PwmRPi::pwm [private]

Peripheral.

Definition at line 78 of file Pwm.h.

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

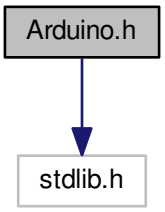
- Pwm.h
- Pwm.cpp

4 File Documentation

4.1 Arduino.h File Reference

```
#include <stdlib.h>
```

Include dependency graph for Arduino.h:



Macros

- #define delay(n) usleep(1000 * n)

4.1.1 Macro Definition Documentation

4.1.1.1 #define delay(*n*) usleep(1000 * n)

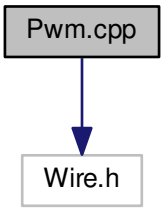
Definition at line 3 of file Arduino.h.

4.2 Arduino.h

```
00001 #include <stdlib.h>
00002
00003 #define delay(n) usleep(1000 * n)
```

4.3 Pwm.cpp File Reference

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



Variables

- PwmRPi Pwm0 (0)
- PwmRPi Pwm1 (1)

4.3.1 Variable Documentation

4.3.1.1 PwmRPi Pwm0(0)

4.3.1.2 PwmRPi Pwm1(1)

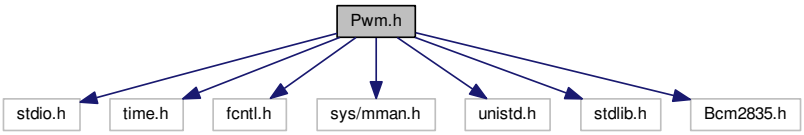
4.4 Pwm.cpp

```
00001
00002 #include "Wire.h"
00003
00004 PwmRPi::PwmRPi(unsigned char channel) {
00005     this->channel = (channel & 0x01);
00006 }
00007
00008 void PwmRPi::begin() {
00009     pwm.address = PWM_ADDRESS;
00010     Bcm2835::mapPeripheral(&pwm);
00011 }
00012
00013 void PwmRPi::stop() {
00014     Bcm2835::unmapPeripheral(&pwm);
00015 }
00016
00017 PwmRPi Pwm0(0);
00018 PwmRPi Pwm1(1);
```

4.5 Pwm.h File Reference

```
#include <stdio.h>
#include <time.h>
#include <fcntl.h>
#include <sys/mman.h>
#include <unistd.h>
#include <stdlib.h>
#include <Bcm2835.h>
```

Include dependency graph for Pwm.h:



Classes

- class PwmRPi

Macros

- #define PWM_ADDRESS 0x20c000
- #define PWM_CTL *((unsigned int *)(pwm.mem) + 0x00)
- #define PWM_STA *((unsigned int *)(pwm.mem) + 0x01)
- #define PWM_DMAC *((unsigned int *)(pwm.mem) + 0x02)
- #define PWM_RNG1 *((unsigned int *)(pwm.mem) + 0x03)
- #define PWM_DAT1 *((unsigned int *)(pwm.mem) + 0x04)
- #define PWM_DAT1 *((unsigned int *)(pwm.mem) + 0x05)
- #define PWM_FIF1 *((unsigned int *)(pwm.mem) + 0x06)
- #define PWM_RNG2 *((unsigned int *)(pwm.mem) + 0x07)
- #define PWM_DAT2 *((unsigned int *)(pwm.mem) + 0x08)
- #define PWM_CTL_PWEN1 (0x01 << 0)
- #define PWM_CTL_MODE1 (0x01 << 1)
- #define PWM_CTL_RPTL1 (0x01 << 2)
- #define PWM_CTL_SBIT1 (0x01 << 3)
- #define PWM_CTL_POLA1 (0x01 << 4)
- #define PWM_CTL_USEF1 (0x01 << 5)
- #define PWM_CTL_CLRF1 (0x01 << 6)
- #define PWM_CTL_MSEN1 (0x01 << 7)
- #define PWM_CTL_PWEN2 (0x01 << 8)
- #define PWM_CTL_MODE2 (0x01 << 9)
- #define PWM_CTL_RPTL2 (0x01 << 10)
- #define PWM_CTL_SBIT2 (0x01 << 11)
- #define PWM_CTL_POLA2 (0x01 << 12)
- #define PWM_CTL_USEF2 (0x01 << 13)
- #define PWM_CTL_MSEN2 (0x01 << 15)
- #define PWM_STA_FULL1 (0x01 << 0)
- #define PWM_STA_EMPT1 (0x01 << 1)
- #define PWM_STA_WERR1 (0x01 << 2)

- #define PWM_STA_RERR1 (0x01 << 3)
- #define PWM_STA_GAPO1 (0x01 << 4)
- #define PWM_STA_GAPO2 (0x01 << 5)
- #define PWM_STA_GAPO3 (0x01 << 6)
- #define PWM_STA_GAPO4 (0x01 << 7)
- #define PWM_STA_BERR (0x01 << 8)
- #define PWM_STA_STA1 (0x01 << 9)
- #define PWM_STA_STA2 (0x01 << 10)
- #define PWM_STA_STA3 (0x01 << 11)
- #define PWM_STA_STA4 (0x01 << 12)
- #define PWM_DMAC_DREQ (0xff << 0)
- #define PWM_DMAC_PANIC (0xff << 8)
- #define PWM_DMAC_ENAB (0x01 << 31)

Variables

- PwmRPi Pwm0
- PwmRPi Pwm1

4.5.1 Macro Definition Documentation

4.5.1.1 #define PWM_ADDRESS 0x20c000

This is a siple Wire library to Raspberry.

It doesn't use the specific i2c module (i2c_dev or i2c_bcm2708) it maps the memory (the BSC0 chunk) into the virtual memory space and handles directly the register.

Thanks to this blog: http://www.susa.net/wordpress/2012/06/raspberry-pi-pcf8563-real-time-clock-

Definition at line 23 of file Pwm.h.

4.5.1.2 #define PWM_CTL *((unsigned int *)(pwm.mem) + 0x00)

Definition at line 25 of file Pwm.h.

4.5.1.3 #define PWM_CTL_CLRF1 (0x01 << 6)

Definition at line 42 of file Pwm.h.

4.5.1.4 #define PWM_CTL_MODE1 (0x01 << 1)

Definition at line 37 of file Pwm.h.

4.5.1.5 #define PWM_CTL_MODE2 (0x01 << 9)

Definition at line 46 of file Pwm.h.

4.5.1.6 #define PWM_CTL_MSEN1 (0x01 << 7)

Definition at line 43 of file Pwm.h.

4.5.1.7 #define PWM_CTL_MSEN2 (0x01 << 15)

Definition at line 51 of file Pwm.h.

4.5.1.8 #define PWM_CTL_POLA1 (0x01 << 4)

Definition at line 40 of file Pwm.h.

4.5.1.9 #define PWM_CTL_POLA2 (0x01 << 12)

Definition at line 49 of file Pwm.h.

4.5.1.10 #define PWM_CTL_PWEN1 (0x01 << 0)

Definition at line 36 of file Pwm.h.

4.5.1.11 #define PWM_CTL_PWEN2 (0x01 << 8)

Definition at line 45 of file Pwm.h.

4.5.1.12 #define PWM_CTL_RPTL1 (0x01 << 2)

Definition at line 38 of file Pwm.h.

4.5.1.13 #define PWM_CTL_RPTL2 (0x01 << 10)

Definition at line 47 of file Pwm.h.

4.5.1.14 #define PWM_CTL_SBIT1 (0x01 << 3)

Definition at line 39 of file Pwm.h.

4.5.1.15 #define PWM_CTL_SBIT2 (0x01 << 11)

Definition at line 48 of file Pwm.h.

4.5.1.16 #define PWM_CTL_USEF1 (0x01 << 5)

Definition at line 41 of file Pwm.h.

4.5.1.17 #define PWM_CTL_USEF2 (0x01 << 13)

Definition at line 50 of file Pwm.h.

4.5.1.18 #define PWM_DAT1 *((unsigned int *)(pwm.mem) + 0x04)

Definition at line 30 of file Pwm.h.

4.5.1.19 #define PWM_DAT1 *((unsigned int *)(pwm.mem) + 0x05)

Definition at line 30 of file Pwm.h.

4.5.1.20 #define PWM_DAT2 *((unsigned int *)(pwm.mem) + 0x08)

Definition at line 33 of file Pwm.h.

4.5.1.21 #define PWM_DMAC *((unsigned int *)(pwm.mem) + 0x02)

Definition at line 27 of file Pwm.h.

4.5.1.22 #define PWM_DMAC_DREQ (0xff << 0)

Definition at line 69 of file Pwm.h.

4.5.1.23 #define PWM_DMAC_ENAB (0x01 << 31)

Definition at line 71 of file Pwm.h.

4.5.1.24 #define PWM_DMAC_PANIC (0xff << 8)

Definition at line 70 of file Pwm.h.

4.5.1.25 #define PWM_FIF1 *((unsigned int *)(pwm.mem) + 0x06)

Definition at line 31 of file Pwm.h.

4.5.1.26 #define PWM_RNG1 *((unsigned int *)(pwm.mem) + 0x03)

Definition at line 28 of file Pwm.h.

4.5.1.27 #define PWM_RNG2 *((unsigned int *)(pwm.mem) + 0x07)

Definition at line 32 of file Pwm.h.

4.5.1.28 #define PWM_STA *((unsigned int *)(pwm.mem) + 0x01)

Definition at line 26 of file Pwm.h.

4.5.1.29 #define PWM_STA_BERR (0x01 << 8)

Definition at line 62 of file Pwm.h.

4.5.1.30 #define PWM_STA_EMPT1 (0x01 << 1)

Definition at line 55 of file Pwm.h.

4.5.1.31 #define PWM_STA_FULL1 (0x01 << 0)

Definition at line 54 of file Pwm.h.

4.5.1.32 #define PWM_STA_GAPO1 (0x01 << 4)

Definition at line 58 of file Pwm.h.

4.5.1.33 #define PWM_STA_GAPO2 (0x01 << 5)

Definition at line 59 of file Pwm.h.

4.5.1.34 #define PWM_STA_GAPO3 (0x01 << 6)

Definition at line 60 of file Pwm.h.

4.5.1.35 #define PWM_STA_GAPO4 (0x01 << 7)

Definition at line 61 of file Pwm.h.

4.5.1.36 #define PWM_STA_RERR1 (0x01 << 3)

Definition at line 57 of file Pwm.h.

4.5.1.37 #define PWM_STA_STA1 (0x01 << 9)

Definition at line 63 of file Pwm.h.

4.5.1.38 #define PWM_STA_STA2 (0x01 << 10)

Definition at line 64 of file Pwm.h.

4.5.1.39 #define PWM_STA_STA3 (0x01 << 11)

Definition at line 65 of file Pwm.h.

4.5.1.40 #define PWM_STA_STA4 (0x01 << 12)

Definition at line 66 of file Pwm.h.

4.5.1.41 #define PWM_STA_WERR1 (0x01 << 2)

Definition at line 56 of file Pwm.h.

4.5.2 Variable Documentation

4.5.2.1 PwmRPi Pwm0

4.5.2.2 PwmRPi Pwm1

4.6 Pwm.h

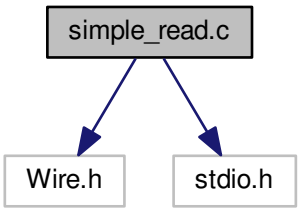
```
00001
00011 #ifndef __RASPBERRY_WIRE_H__
00012 #define __RASPBERRY_WIRE_H__ 1
00013
00014 #include <stdio.h>
00015 #include <time.h>
00016 #include <fcntl.h>
00017 #include <sys/mman.h>
00018 #include <unistd.h>
00019 #include <stdlib.h>
00020
00021 #include <Bcm2835.h>
00022
00023 #define PWM_ADDRESS     0x20c000
00024
00025 #define PWM_CTL         *((unsigned int *)(pwm.mem) + 0x00)
00026 #define PWM_STA         *((unsigned int *)(pwm.mem) + 0x01)
00027 #define PWM_DMAC        *((unsigned int *)(pwm.mem) + 0x02)
00028 #define PWM_RNG1        *((unsigned int *)(pwm.mem) + 0x03)
00029 #define PWM_DAT1        *((unsigned int *)(pwm.mem) + 0x04)
00030 #define PWM_DAT1        *((unsigned int *)(pwm.mem) + 0x05)
00031 #define PWM_FIF1        *((unsigned int *)(pwm.mem) + 0x06)
00032 #define PWM_RNG2        *((unsigned int *)(pwm.mem) + 0x07)
00033 #define PWM_DAT2        *((unsigned int *)(pwm.mem) + 0x08)
00034
00035 // p142
00036 #define PWM_CTL_PWEN1   (0x01 << 0)
00037 #define PWM_CTL_MODE1   (0x01 << 1)
00038 #define PWM_CTL_RPTL1   (0x01 << 2)
00039 #define PWM_CTL_SBIT1   (0x01 << 3)
00040 #define PWM_CTL_POLA1   (0x01 << 4)
00041 #define PWM_CTL_USEF1   (0x01 << 5)
00042 #define PWM_CTL_CLRF1   (0x01 << 6)
00043 #define PWM_CTL_MSEN1   (0x01 << 7)
00044
00045 #define PWM_CTL_PWEN2   (0x01 << 8)
00046 #define PWM_CTL_MODE2   (0x01 << 9)
00047 #define PWM_CTL_RPTL2   (0x01 << 10)
00048 #define PWM_CTL_SBIT2   (0x01 << 11)
00049 #define PWM_CTL_POLA2   (0x01 << 12)
00050 #define PWM_CTL_USEF2   (0x01 << 13)
00051 #define PWM_CTL_MSEN2   (0x01 << 15)
00052
00053 // p144
00054 #define PWM_STA_FULL1   (0x01 << 0)
00055 #define PWM_STA_EMPT1   (0x01 << 1)
00056 #define PWM_STA_WERR1   (0x01 << 2)
00057 #define PWM_STA_RERR1   (0x01 << 3)
00058 #define PWM_STA_GAPO1   (0x01 << 4)
00059 #define PWM_STA_GAPO2   (0x01 << 5)
00060 #define PWM_STA_GAPO3   (0x01 << 6)
00061 #define PWM_STA_GAPO4   (0x01 << 7)
00062 #define PWM_STA_BERR    (0x01 << 8)
00063 #define PWM_STA_STA1    (0x01 << 9)
00064 #define PWM_STA_STA2    (0x01 << 10)
00065 #define PWM_STA_STA3    (0x01 << 11)
00066 #define PWM_STA_STA4    (0x01 << 12)
00067
```

```
00068 // p145
00069 #define PWM_DMAC_DREQ   (0xff << 0)
00070 #define PWM_DMAC_PANIC  (0xff << 8)
00071 #define PWM_DMAC_ENAB   (0x01 << 31)
00072
00073 class PwmRPi {
00074
00078     Bcm2835::Peripheral pwm;
00079
00083     unsigned char channel;
00084
00085 public:
00086
00087     PwmRPi(unsigned char channel);
00088
00091     void begin();
00092
00095     void stop();
00096
00099     void analogWrite(unsigned char value);
00100
00101
00102 };
00103
00104 extern PwmRPi Pwm0;
00105 extern PwmRPi Pwm1;
00106
00107 #endif /* __RASPBERRY_PWM_H__ */
```

4.7 simple_read.c File Reference

```
#include <Wire.h>
#include <stdio.h>
```

Include dependency graph for simple_read.c:



Functions

- int main ()

4.7.1 Function Documentation

4.7.1.1 int main ( )

Definition at line 4 of file simple_read.c.

4.8 simple_read.c

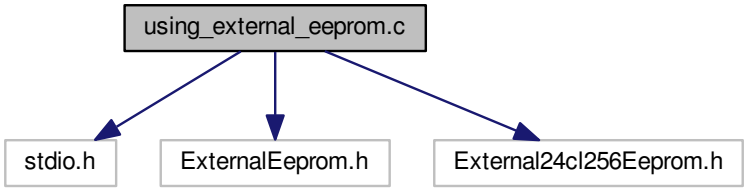
```
00001 #include <Wire.h>
00002 #include <stdio.h>
00003
```

```
00004 int main() {
00005     printf("Begining...");
00006     Wire.begin();
00007 
00008     Wire.beginTransmission(0x21);
00009     Wire.write(0x00);
00010     Wire.write(0x00);
00011     Wire.endTransmission();
00012 
00013     Wire.requestFrom(0x21, 16);
00014     while (Wire.available()) {
00015         printf("%d\n", Wire.read());
00016     }
00017     Wire.dumpStatus();
00018     Wire.stop();
00019     printf("Stop.");
00020 }
```

4.9 using_external_eeprom.c File Reference

```
#include <stdio.h>
#include <ExternalEeprom.h>
#include <External24cl256Eeprom.h>
```

Include dependency graph for using_external_eeprom.c:



Functions

- int main ()

4.9.1 Function Documentation

4.9.1.1 int main ( )

Definition at line 8 of file using_external_eeprom.c.

4.10 using_external_eeprom.c

```
00001 
00002 // Yout will find ExternalEeprom here: https://github.com/dalmirdasilva/ArduinoMemoryDriver
00003 
00004 #include <stdio.h>
00005 #include <ExternalEeprom.h>
00006 #include <External24cl256Eeprom.h>
00007 
00008 int main() {
00009     int i;
00010     External24cl256Eeprom eeprom(0x00);
00011 
00012     for (i = 0; i < 16; i++) {
00013         printf("%d\n", eeprom.read(i));
00014     }
00015 
```

```
00016     return 0;
00017 }
00018
00019
```

Index