# Raspberry Peripheral Driver

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1.1 Class List							
Her	e are	the clas	sses, structs, unions and interfaces with brief descriptions:				
PwmRPi							

# 2 File Index

### 2.1 File List

Here is a list of all files with brief descriptions:

Arduino.h	3
Pwm.cpp	4
Pwm.h	4
simple_read.c	10
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# 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.

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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.

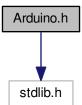
The documentation for this class was generated from the following files:

- 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)

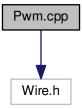
Definition at line 3 of file Arduino.h.

# 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)

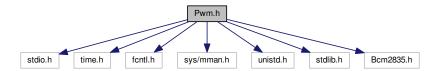
# 4.4 Pwm.cpp

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#### 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)</li>
- #define PWM\_CTL\_MODE1 (0x01 << 1)</li>
- #define PWM\_CTL\_RPTL1 (0x01 << 2)</li>
- #define PWM CTL SBIT1 (0x01 << 3)
- #define PWM CTL POLA1 (0x01 << 4)</li>
- #define PWM\_CTL\_USEF1 (0x01 << 5)</li>
- #define PWM\_CTL\_CLRF1 (0x01 << 6)</li>
- #define PWM\_CTL\_MSEN1 (0x01 << 7)</li>
- #define I VVIV\_OTE\_IVIOEIVI (0X01 << 1)
- #define PWM\_CTL\_PWEN2 (0x01 << 8)
- #define PWM\_CTL\_MODE2 (0x01 << 9)</li>
- #define PWM\_CTL\_RPTL2 (0x01 << 10)</li>
- #define PWM\_CTL\_SBIT2 (0x01 << 11)</li>
- #define PWM\_CTL\_POLA2 (0x01 << 12)</li>
- #define PWM\_CTL\_USEF2 (0x01 << 13)</li>
- #define PWM CTL MSEN2 (0x01 << 15)
- #define PWM\_STA\_FULL1 (0x01 << 0)
- #define PWM STA EMPT1 (0x01 << 1)</li>
- #define PWM\_STA\_WERR1 (0x01 << 2)</li>

```
    #define PWM_STA_RERR1 (0x01 << 3)</li>
```

- #define PWM\_STA\_GAPO1 (0x01 << 4)</li>
- #define PWM STA GAPO2 (0x01 << 5)</li>
- #define PWM STA GAPO3 (0x01 << 6)</li>
- #define PWM STA GAPO4 (0x01 << 7)</li>
- #define PWM\_STA\_BERR (0x01 << 8)</li>
- #define PWM\_STA\_STA1 (0x01 << 9)
- #define PWM\_STA\_STA2 (0x01 << 10)</li>
- #define PWM\_STA\_STA3 (0x01 << 11)</li>
- #define PWM\_STA\_STA4 (0x01 << 12)</li>
- #define PWM\_DMAC\_DREQ (0xff << 0)</li>
- #define PWM\_DMAC\_PANIC (0xff << 8)</li>
- #define PWM DMAC ENAB (0x01 << 31)</li>

#### **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.

 $\textbf{Thanks to this blog:} \ \texttt{http://www.susa.net/wordpress/2012/06/raspberry-pi-pcf8563-real-time-clock-points}. \\$ 

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 Pwm.h File Reference

```
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.
```

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```
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

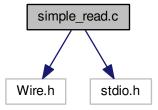
```
00011 #ifndef ___RASPBERRY_WIRE_H_
00012 #define ___RASPBERRY_WIRE_H__
00013
00014 #include <stdio.h>
00015 #include <time.h>
00016 #include <fcntl.h>
00017 #include <sys/mman.h>
00018 #include <unistd.h>
00019 #include <stdlib.h>
00020
00021 #include <Bcm2835.h>
00022
00023 #define PWM_ADDRESS
00024
00025 #define PWM_CTL
                               *((unsigned int *)(pwm.mem) + 0x00)
00026 #define PWM_STA
00027 #define PWM_DMAC
                               *((unsigned int *)(pwm.mem) + 0x01)
                               *((unsigned int *)(pwm.mem) + 0x02)
00028 #define PWM_RNG1
                               *((unsigned int *)(pwm.mem)
                                                             + 0x03)
00029 #define PWM_DAT1
                               *((unsigned int *)(pwm.mem)
                              *((unsigned int *)(pwm.mem)
00030 #define PWM_DAT1
00031 #define PWM_FIF1
                               *((unsigned int *)(pwm.mem) + 0x06)
00032 #define PWM_RNG2
00033 #define PWM_DAT2
                               *((unsigned int *)(pwm.mem) + 0x07)
                               *((unsigned int *)(pwm.mem) + 0x08)
00034
00035 // p142
                                (0x01 << 0)
00036 #define PWM_CTL_PWEN1
00037 #define PWM_CTL_MODE1
                                (0x01 << 1)
00038 #define PWM_CTL_RPTL1
                                (0x01 << 2)
00039 #define PWM_CTL_SBIT1
                                (0 \times 01 << 3)
00040 #define PWM_CTL_POLA1
                                (0x01 << 4)
00041 #define PWM_CTL_USEF1
                                (0x01 << 5)
00042 #define PWM_CTL_CLRF1
00043 #define PWM_CTL_MSEN1
                                (0x01 << 7)
00044
00045 #define PWM_CTL_PWEN2
                                (0 \times 01 << 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_GAP01
                                (0x01 << 4)
00059 #define PWM STA GAPO2
                                (0x01 << 5)
00060 #define PWM_STA_GAP03
                                (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);
88000
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 Pwml;
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.

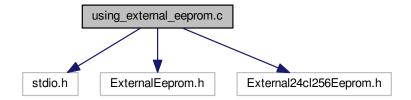
# 4.8 simple\_read.c

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

```
00004 int main() {
00005
          printf("Begining...");
00006
           Wire.begin();
00007
80000
           Wire.beginTransmission(0x21);
00009
           Wire.write(0x00);
00010
           Wire.write(0x00);
00011
           Wire.endTransmission();
00012
           Wire.requestFrom(0x21, 16);
00013
          while (Wire.available()) {
   printf("%d\n", Wire.read());
00014
00015
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
00010
          External24c1256Eeprom eeprom(0x00);
00011
           for (i = 0; i < 16; i++) {
    printf("%d\n", eeprom.read(i));</pre>
00012
00013
00014
00015
```

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

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