

ZPCA9685 Library

Generated by Doxygen 1.8.14

Contents

1	Deprecated List	1
2	Hierarchical Index	1
2.1	Class Hierarchy	1
3	Data Structure Index	2
3.1	Data Structures	2
4	File Index	2
4.1	File List	2
5	Data Structure Documentation	2
5.1	ZPCA9685 Class Reference	2
5.1.1	Detailed Description	5
5.1.2	Constructor & Destructor Documentation	5
5.1.3	Member Function Documentation	6
6	File Documentation	21
6.1	ZPCA9685.cpp File Reference	21
6.1.1	Macro Definition Documentation	22
6.2	ZPCA9685.h File Reference	30
6.2.1	Macro Definition Documentation	31
	Index	35

1 Deprecated List

Global [ZPCA9685::check \(\)](#)

2 Hierarchical Index

2.1 Class Hierarchy

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

PinExtender

ZPCA9685	2
-----------------	----------

3 Data Structure Index

3.1 Data Structures

Here are the data structures with brief descriptions:

ZPCA9685	
Class that stores state and functions for interacting with ZPCA9685 PWM chip	2

4 File Index

4.1 File List

Here is a list of all files with brief descriptions:

ZPCA9685.cpp	21
ZPCA9685.h	30

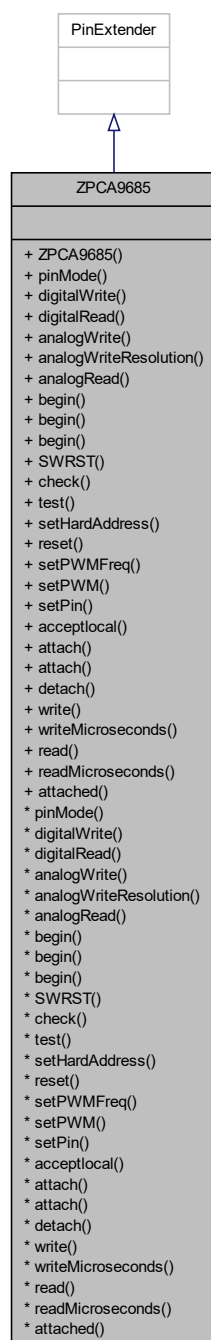
5 Data Structure Documentation

5.1 ZPCA9685 Class Reference

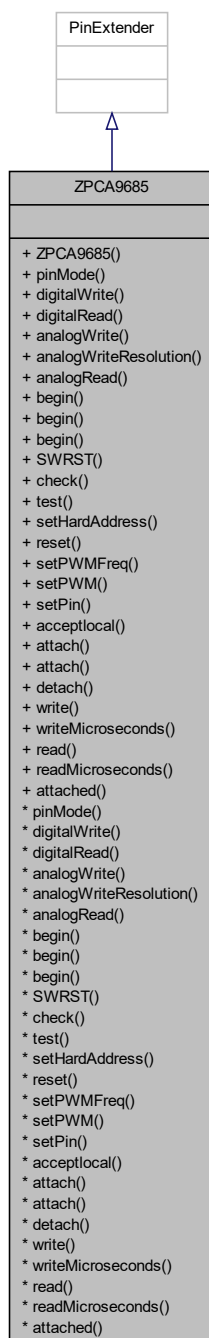
Class that stores state and functions for interacting with **ZPCA9685** PWM chip.

```
#include <ZPCA9685.h>
```

Inheritance diagram for ZPCA9685:



Collaboration diagram for ZPCA9685:



Public Member Functions

- [ZPCA9685](#) ()

Instantiates a new [ZPCA9685](#) PWM driver chip with the I2C address on the Wire interface. On Due we use Wire1 since its the interface on the 'default' I2C pins.

the Arduino like API

- void [pinMode](#) (uint32_t p, uint8_t d)
- void [digitalWrite](#) (uint32_t p, uint8_t d)
- uint8_t [digitalRead](#) (uint32_t p)
- void [analogWrite](#) (uint32_t ulPin, uint32_t ulValue)
- void [analogWriteResolution](#) (int res)
- uint32_t [analogRead](#) (uint32_t pin)

API for hardware management

- void [begin](#) (TwoWire *MyWire, uint8_t addr)
Setups the I2C interface and hardware.
- void [begin](#) (uint8_t addr)
Setups the I2C interface and hardware.
- void [begin](#) (void)
Setups the I2C interface and hardware.
- void [SWRST](#) (void)
- bool [check](#) ()
- bool [test](#) ()
- void [setHardAddress](#) (uint8_t A543210)
- void [reset](#) (void)
Sends a reset command to the [ZPCA9685](#) chip over I2C.
- void [setPWMFreq](#) (float freq)
Sets the PWM frequency for the entire chip, up to ~1.6 KHz.
- void [setPWM](#) (uint8_t num, uint16_t on, uint16_t off)
Sets the PWM output of one of the [ZPCA9685](#) pins.
- void [setPin](#) (uint8_t num, uint16_t val, bool invert=false)
Helper to set pin PWM output. Sets pin without having to deal with on/off tick placement and properly handles a zero value as completely off and 4095 as completely on. Optional invert parameter supports inverting the pulse for sinking to ground.
- bool [acceptlocal](#) (uint32_t p)

API for servo motor

- uint8_t [attach](#) (int pin)
- uint8_t [attach](#) (int pin, int min, int max)
- void [detach](#) (int pin)
- void [write](#) (int pin, int value)
- void [writeMicroseconds](#) (int ulPin, int value)
- int [read](#) (int ulPin)
- int [readMicroseconds](#) (int ulPin)
- bool [attached](#) (int ulPin)

5.1.1 Detailed Description

Class that stores state and functions for interacting with [ZPCA9685](#) PWM chip.

Definition at line 50 of file ZPCA9685.h.

5.1.2 Constructor & Destructor Documentation

5.1.2.1 ZPCA9685()

```
ZPCA9685::ZPCA9685 ( )
```

Instantiates a new [ZPCA9685](#) PWM driver chip with the I2C address on the Wire interface. On Due we use Wire1 since its the interface on the 'default' I2C pins.

Parameters

<i>addr</i>	The 7-bit I2C address to locate this chip, default is 0x40
-------------	--

Definition at line 108 of file ZPCA9685.cpp.

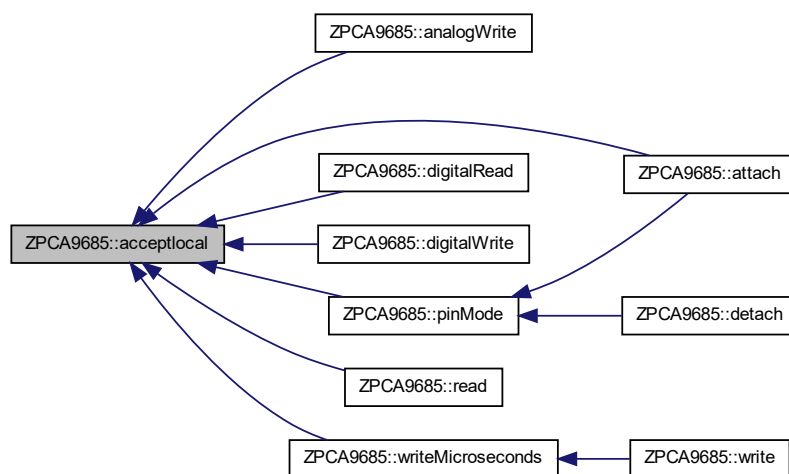
5.1.3 Member Function Documentation**5.1.3.1 acceptlocal()**

```
bool ZPCA9685::acceptlocal (
    uint32_t p )
```

Definition at line 252 of file ZPCA9685.cpp.

Referenced by analogWrite(), attach(), digitalRead(), digitalWrite(), pinMode(), read(), and writeMicroseconds().

Here is the caller graph for this function:

**5.1.3.2 analogRead()**

```
uint32_t ZPCA9685::analogRead (
    uint32_t pin )
```

Definition at line 334 of file ZPCA9685.cpp.

5.1.3.3 analogWrite()

```
void ZPCA9685::analogWrite (
    uint32_t ulPin,
    uint32_t ulValue )
```

Definition at line 310 of file ZPCA9685.cpp.

References `acceptlocal()`.

Here is the call graph for this function:



5.1.3.4 analogWriteResolution()

```
void ZPCA9685::analogWriteResolution (
    int res )
```

Definition at line 304 of file ZPCA9685.cpp.

5.1.3.5 attach() [1/2]

```
uint8_t ZPCA9685::attach (
    int pin )
```

Parameters

<i>pin</i>	the pin number (specific to this instance)
------------	--

Definition at line 451 of file ZPCA9685.cpp.

References `MAX_PULSE_WIDTH`, and `MIN_PULSE_WIDTH`.

5.1.3.6 attach() [2/2]

```
uint8_t ZPCA9685::attach (
    int ulPin,
```



```

    int min,
    int max )

```

attach a pin for servo motor

attach a pin for servo motor min : minimal us pulse, max max us pulse;

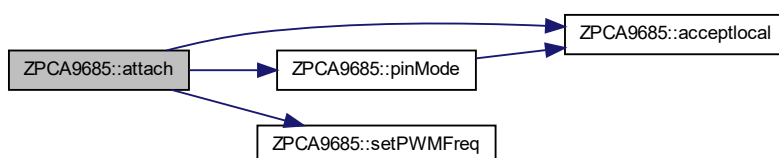
Parameters

<i>ulPin</i>	the pin number (specific to this instance)
<i>min</i>	the min angle, default 0
<i>max</i>	the max angle, default 180

Definition at line 458 of file ZPCA9685.cpp.

References `acceptlocal()`, `pinMode()`, `SEROFREQ`, and `setPWMFreq()`.

Here is the call graph for this function:



5.1.3.7 attached()

```

bool ZPCA9685::attached (
    int ulPin )

```

return true if this servo is attached, otherwise false

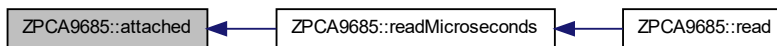
Parameters

<i>ulPin</i>	the pin number (specific to this instance)
--------------	--

Definition at line 542 of file ZPCA9685.cpp.

Referenced by `readMicroseconds()`.

Here is the caller graph for this function:



5.1.3.8 `begin()` [1/3]

```
void ZPCA9685::begin (
    TwoWire * MyWire,
    uint8_t addr )
```

Setups the I2C interface and hardware.

initialise the component, The Wire interface must be initialize before. see `wire.begin()`

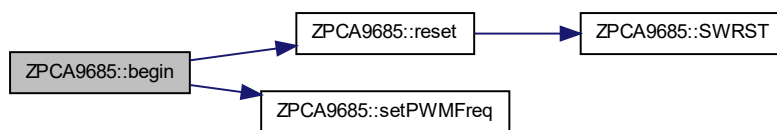
Parameters

<i>MyWire</i>	the Wire interface like <code>&Wire</code> for board that handle several one.
<i>addr</i>	the I2C address of PCA9685

Definition at line 118 of file `ZPCA9685.cpp`.

References `reset()`, `setPWMFreq()`, `ZPCA9685_ADDRESS`, and `ZPCA9685_ADDRESS_MASK`.

Here is the call graph for this function:



5.1.3.9 `begin()` [2/3]

```
void ZPCA9685::begin (
    uint8_t addr )
```

Setups the I2C interface and hardware.

initialise the component, The Wire interface must be initialize before. see `wire.begin()`

Parameters

<i>addr</i>	the I2C address of PCA9685
-------------	----------------------------

Definition at line 153 of file ZPCA9685.cpp.

References `begin()`.

Here is the call graph for this function:

**5.1.3.10 `begin()`** [3/3]

```
void ZPCA9685::begin (
    void )
```

Setups the I2C interface and hardware.

initialise the component, The Wire interface must be initialize before. see `wire.begin()` default Wire and addresses will be used : `#PCA9685_ADDR_BASE`.

Definition at line 163 of file ZPCA9685.cpp.

Referenced by `begin()`.

Here is the caller graph for this function:



5.1.3.11 check()

```
bool ZPCA9685::check ( )
```

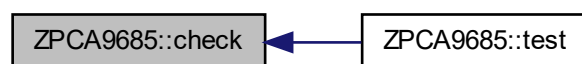
check the board

Deprecated

Definition at line 92 of file ZPCA9685.cpp.

Referenced by test().

Here is the caller graph for this function:



5.1.3.12 detach()

```
void ZPCA9685::detach (
    int pin )
```

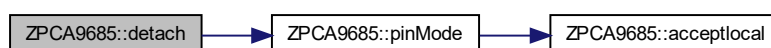
Parameters

<i>pin</i>	the pin number (specific to this instance)
------------	--

Definition at line 472 of file ZPCA9685.cpp.

References pinMode().

Here is the call graph for this function:



5.1.3.13 digitalRead()

```
uint8_t ZPCA9685::digitalRead (
    uint32_t ulPin )
```

dummy function

Definition at line 260 of file ZPCA9685.cpp.

References `acceptlocal()`.

Here is the call graph for this function:



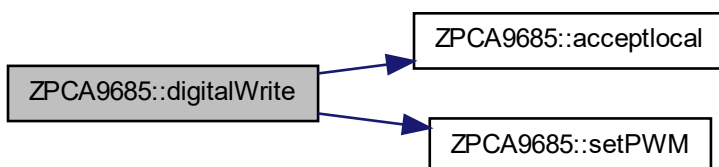
5.1.3.14 digitalWrite()

```
void ZPCA9685::digitalWrite (
    uint32_t p,
    uint8_t d )
```

Definition at line 338 of file ZPCA9685.cpp.

References `acceptlocal()`, `setPWM()`, and `ZPCA9685_PWM_FULL`.

Here is the call graph for this function:



5.1.3.15 pinMode()

```
void ZPCA9685::pinMode (
    uint32_t ulPin,
    uint8_t mode )
```

Sets the pin mode to either INPUT or OUTPUT but for all, and input doesn't exist

Definition at line 273 of file ZPCA9685.cpp.

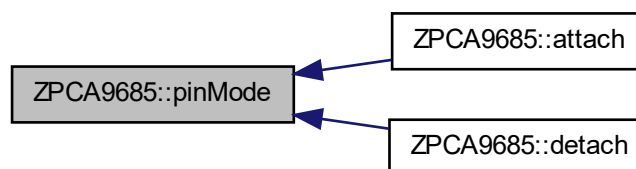
References `acceptlocal()`, `ZPCA9685_MODE2`, and `ZPCA9685_MODE2_OUTDRV`.

Referenced by `attach()`, and `detach()`.

Here is the call graph for this function:



Here is the caller graph for this function:



5.1.3.16 read()

```
int ZPCA9685::read (
    int ulPin )
```

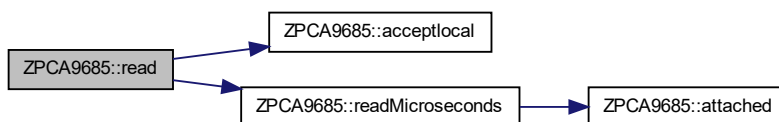
Parameters

<code>ulPin</code>	the pin number (specific to this instance)
--------------------	--

Definition at line 521 of file ZPCA9685.cpp.

References `acceptlocal()`, and `readMicroseconds()`.

Here is the call graph for this function:



5.1.3.17 `readMicroseconds()`

```
int ZPCA9685::readMicroseconds (
    int ulPin )
```

Parameters

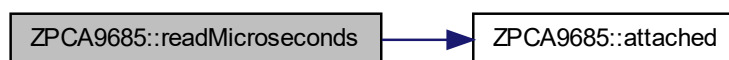
<i>ulPin</i>	the pin number (specific to this instance)
--------------	--

Definition at line 530 of file ZPCA9685.cpp.

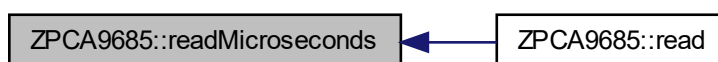
References `attached()`, `ticksToUs`, and `TRIM_DURATION`.

Referenced by `read()`.

Here is the call graph for this function:



Here is the caller graph for this function:



5.1.3.18 reset()

```
void ZPCA9685::reset (
    void )
```

Sends a reset command to the [ZPCA9685](#) chip over I2C.

reset the component

Definition at line 176 of file ZPCA9685.cpp.

References [SWRST\(\)](#), [ZPCA9685_MODE1](#), [ZPCA9685_MODE1_REG](#), [ZPCA9685_MODE_AUTOINC](#), and [ZPCA9685_MODE_RESTART](#).

Referenced by [begin\(\)](#).

Here is the call graph for this function:



Here is the caller graph for this function:



5.1.3.19 setHardAddress()

```
void ZPCA9685::setHardAddress (
    uint8_t A543210 )
```

setup the I2C device address on wire interface

Parameters

<i>A543210</i>	the I2C address bit 5...0 as define on pin of PCA9685
----------------	---

Definition at line 97 of file ZPCA9685.cpp.

5.1.3.20 setPin()

```
void ZPCA9685::setPin (
    uint8_t num,
    uint16_t val,
    bool invert = false )
```

Helper to set pin PWM output. Sets pin without having to deal with on/off tick placement and properly handles a zero value as completely off and 4095 as completely on. Optional invert parameter supports inverting the pulse for sinking to ground.

setup a PWM

Parameters

<i>num</i>	One of the PWM output pins, from 0 to 15
<i>val</i>	The number of ticks out of 4096 to be active, should be a value from 0 to 4095 inclusive.
<i>invert</i>	If true, inverts the output, defaults to 'false'

Parameters

<i>num</i>	the channel number
<i>val</i>	the value 0..4095
<i>invert</i>	the inversion of polarity of the waveform

Definition at line 391 of file ZPCA9685.cpp.

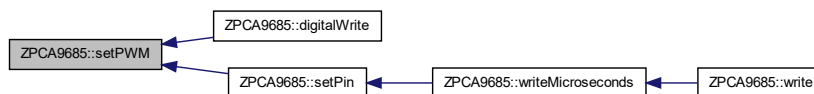
References setPWM().

Referenced by writeMicroseconds().

Here is the call graph for this function:



Here is the caller graph for this function:



5.1.3.22 setPWMFreq()

```
void ZPCA9685::setPWMFreq (
    float freq )
```

Sets the PWM frequency for the entire chip, up to ~1.6 KHz.

set up the frequency of the PWM note max is about 1500 Hz

Parameters

<i>freq</i>	Floating point frequency that we will attempt to match
-------------	--

Parameters

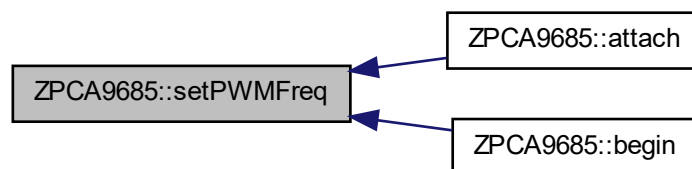
<i>freq</i>	the frequency in Hz
-------------	---------------------

Definition at line 217 of file ZPCA9685.cpp.

References ZPCA9685_MODE1, and ZPCA9685_PRESCALE.

Referenced by attach(), and begin().

Here is the caller graph for this function:



5.1.3.23 SWRST()

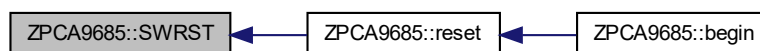
```
void ZPCA9685::SWRST (
    void )
```

Reset the board like a power up.

Definition at line 182 of file ZPCA9685.cpp.

Referenced by reset().

Here is the caller graph for this function:



5.1.3.24 test()

```
bool ZPCA9685::test ( )
```

test the hardware

Returns

true if all is ok.

Definition at line 132 of file ZPCA9685.cpp.

References `check()`, and `ZPCA9685_MODE2_REG`.

Here is the call graph for this function:



5.1.3.25 write()

```
void ZPCA9685::write (
    int pin,
    int value )
```

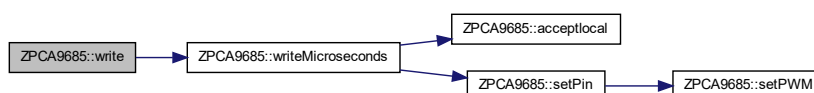
Parameters

<i>pin</i>	the pin number (specific to this instance)
------------	--

Definition at line 481 of file ZPCA9685.cpp.

References MIN_PULSE_WIDTH, and writeMicroseconds().

Here is the call graph for this function:

**5.1.3.26 writeMicroseconds()**

```
void ZPCA9685::writeMicroseconds (
    int ulPin,
    int value )
```

Parameters

<i>ulPin</i>	the pin number (specific to this instance)
--------------	--

Definition at line 498 of file ZPCA9685.cpp.

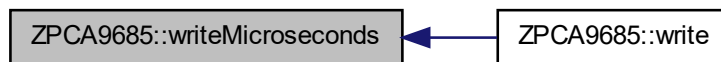
References `acceptlocal()`, `setPin()`, `TRIM_DURATION`, and `usToTicks`.

Referenced by `write()`.

Here is the call graph for this function:



Here is the caller graph for this function:



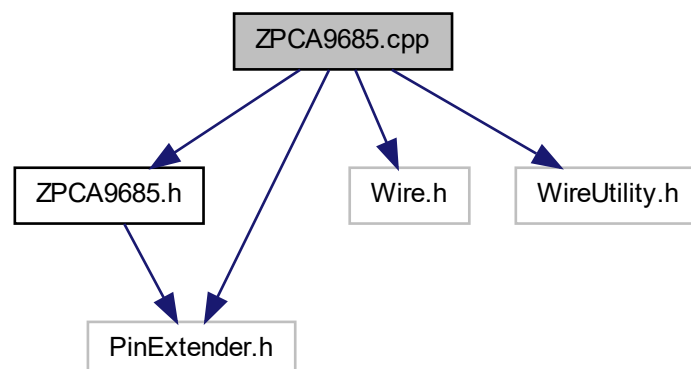
The documentation for this class was generated from the following files:

- [ZPCA9685.h](#)
- [ZPCA9685.cpp](#)

6 File Documentation

6.1 ZPCA9685.cpp File Reference

```
#include "ZPCA9685.h"  
#include <Wire.h>  
#include <WireUtility.h>  
#include "PinExtender.h"  
Include dependency graph for ZPCA9685.cpp:
```



Macros

- #define [ZPCA9685_MODE1_REG](#) (byte)0x00
- #define [ZPCA9685_MODE2_REG](#) (byte)0x01
- #define [ZPCA9685_SUBADR1_REG](#) (byte)0x02
- #define [ZPCA9685_SUBADR2_REG](#) (byte)0x03
- #define [ZPCA9685_SUBADR3_REG](#) (byte)0x04
- #define [ZPCA9685_ALLCALL_REG](#) (byte)0x05
- #define [ZPCA9685_LED0_REG](#) (byte)0x06
- #define [ZPCA9685_PRESCALE_REG](#) (byte)0xFE
- #define [ZPCA9685_ALLLED_REG](#) (byte)0xFA
- #define [ZPCA9685_ADDRESS_MASK](#) 0x40
- #define [ZPCA9685_ADDRESS](#) 0x40
- #define [ZPCA9685_SUBADR1](#) 0x2
- #define [ZPCA9685_SUBADR2](#) 0x3
- #define [ZPCA9685_SUBADR3](#) 0x4
- #define [ZPCA9685_MODE1](#) 0x0
- #define [ZPCA9685_MODE2](#) 0x1
- #define [ZPCA9685_PRESCALE](#) 0xFE
- #define [LED0_ON_L](#) 0x6
- #define [LED0_ON_H](#) 0x7
- #define [LED0_OFF_L](#) 0x8
- #define [LED0_OFF_H](#) 0x9
- #define [ALLLED_ON_L](#) 0xFA
- #define [ALLLED_ON_H](#) 0xFB
- #define [ALLLED_OFF_L](#) 0xFC
- #define [ALLLED_OFF_H](#) 0xFD
- #define [NO_CHANNEL](#) 0xfe
- #define [ZPCA9685_PWM_FULL](#) (uint16_t)0x01000
- #define [ZPCA9685_MODE_RESTART](#) (byte)0x80
- #define [ZPCA9685_MODE_EXTCLK](#) (byte)0x40
- #define [ZPCA9685_MODE_AUTOINC](#) (byte)0x20
- #define [ZPCA9685_MODE_SLEEP](#) (byte)0x10
- #define [ZPCA9685_MODE_SUBADR1](#) (byte)0x08
- #define [ZPCA9685_MODE_SUBADR2](#) (byte)0x04
- #define [ZPCA9685_MODE_SUBADR3](#) (byte)0x02
- #define [ZPCA9685_MODE_ALLCALL](#) (byte)0x01
- #define [ZPCA9685_MODE2_OUTDRV](#) (byte)0x04
- #define [ZPCA9685_MODE2_OUTNE_HIZ](#) (byte)0x02
- #define [SEROFREQ](#) 50
- #define [usToTicks](#)(_us) (((_us) *4096L)/(1000000L/SEROFREQ))
- #define [ticksToUs](#)(_ticks) (((_ticks) *(1000000L/SEROFREQ))/4096L)
- #define [TRIM_DURATION](#) 0
- #define [MIN_PULSE_WIDTH](#) 554
- #define [MAX_PULSE_WIDTH](#) 2500

6.1.1 Macro Definition Documentation

6.1.1.1 ALLLED_OFF_H

```
#define ALLLED_OFF_H 0xFD
```

Definition at line 57 of file ZPCA9685.cpp.

6.1.1.2 ALLLED_OFF_L

```
#define ALLLED_OFF_L 0xFC
```

Definition at line 56 of file ZPCA9685.cpp.

6.1.1.3 ALLLED_ON_H

```
#define ALLLED_ON_H 0xFB
```

Definition at line 55 of file ZPCA9685.cpp.

6.1.1.4 ALLLED_ON_L

```
#define ALLLED_ON_L 0xFA
```

Definition at line 54 of file ZPCA9685.cpp.

6.1.1.5 LED0_OFF_H

```
#define LED0_OFF_H 0x9
```

Definition at line 52 of file ZPCA9685.cpp.

6.1.1.6 LED0_OFF_L

```
#define LED0_OFF_L 0x8
```

Definition at line 51 of file ZPCA9685.cpp.

6.1.1.7 LED0_ON_H

```
#define LED0_ON_H 0x7
```

Definition at line 50 of file ZPCA9685.cpp.

6.1.1.8 LED0_ON_L

```
#define LED0_ON_L 0x6
```

Definition at line 49 of file ZPCA9685.cpp.

Referenced by ZPCA9685::setPWM().

6.1.1.9 MAX_PULSE_WIDTH

```
#define MAX_PULSE_WIDTH 2500
```

Definition at line 449 of file ZPCA9685.cpp.

Referenced by ZPCA9685::attach().

6.1.1.10 MIN_PULSE_WIDTH

```
#define MIN_PULSE_WIDTH 554
```

Definition at line 448 of file ZPCA9685.cpp.

Referenced by ZPCA9685::attach(), and ZPCA9685::write().

6.1.1.11 NO_CHANNEL

```
#define NO_CHANNEL 0xfe
```

Definition at line 59 of file ZPCA9685.cpp.

6.1.1.12 SEROFREQ

```
#define SEROFREQ 50
```

Definition at line 444 of file ZPCA9685.cpp.

Referenced by ZPCA9685::attach().

6.1.1.13 ticksToUs

```
#define ticksToUs(  
    _ticks ) ( ( (_ticks) *(1000000L/SEROFREQ) ) / 4096L)
```

Definition at line 446 of file ZPCA9685.cpp.

Referenced by ZPCA9685::readMicroseconds().

6.1.1.14 TRIM_DURATION

```
#define TRIM_DURATION 0
```

Definition at line 447 of file ZPCA9685.cpp.

Referenced by ZPCA9685::readMicroseconds(), and ZPCA9685::writeMicroseconds().

6.1.1.15 usToTicks

```
#define usToTicks(  
    _us ) ( ( (_us) *4096L) / (1000000L/SEROFREQ) )
```

Definition at line 445 of file ZPCA9685.cpp.

Referenced by ZPCA9685::writeMicroseconds().

6.1.1.16 ZPCA9685_ADDRESS

```
#define ZPCA9685_ADDRESS 0x40
```

Definition at line 39 of file ZPCA9685.cpp.

Referenced by ZPCA9685::begin().

6.1.1.17 ZPCA9685_ADDRESS_MASK

```
#define ZPCA9685_ADDRESS_MASK 0x40
```

Definition at line 38 of file ZPCA9685.cpp.

Referenced by ZPCA9685::begin().

6.1.1.18 ZPCA9685_ALLCALL_REG

```
#define ZPCA9685_ALLCALL_REG (byte)0x05
```

Definition at line 34 of file ZPCA9685.cpp.

6.1.1.19 ZPCA9685_ALLLED_REG

```
#define ZPCA9685_ALLLED_REG (byte)0xFA
```

Definition at line 37 of file ZPCA9685.cpp.

Referenced by ZPCA9685::setPWM().

6.1.1.20 ZPCA9685_LED0_REG

```
#define ZPCA9685_LED0_REG (byte)0x06
```

Definition at line 35 of file ZPCA9685.cpp.

6.1.1.21 ZPCA9685_MODE1

```
#define ZPCA9685_MODE1 0x0
```

Definition at line 45 of file ZPCA9685.cpp.

Referenced by ZPCA9685::reset(), and ZPCA9685::setPWMFreq().

6.1.1.22 ZPCA9685_MODE1_REG

```
#define ZPCA9685_MODE1_REG (byte)0x00
```

Arduino library for PWM and servo driver.

Definition at line 29 of file ZPCA9685.cpp.

Referenced by ZPCA9685::reset().

6.1.1.23 ZPCA9685_MODE2

```
#define ZPCA9685_MODE2 0x1
```

Definition at line 46 of file ZPCA9685.cpp.

Referenced by ZPCA9685::pinMode().

6.1.1.24 ZPCA9685_MODE2_OUTDRV

```
#define ZPCA9685_MODE2_OUTDRV (byte)0x04
```

Definition at line 73 of file ZPCA9685.cpp.

Referenced by ZPCA9685::pinMode().

6.1.1.25 ZPCA9685_MODE2_OUTNE_HIZ

```
#define ZPCA9685_MODE2_OUTNE_HIZ (byte)0x02
```

Definition at line 74 of file ZPCA9685.cpp.

6.1.1.26 ZPCA9685_MODE2_REG

```
#define ZPCA9685_MODE2_REG (byte)0x01
```

Definition at line 30 of file ZPCA9685.cpp.

Referenced by ZPCA9685::test().

6.1.1.27 ZPCA9685_MODE_ALLCALL

```
#define ZPCA9685_MODE_ALLCALL (byte)0x01
```

Definition at line 70 of file ZPCA9685.cpp.

6.1.1.28 ZPCA9685_MODE_AUTOINC

```
#define ZPCA9685_MODE_AUTOINC (byte)0x20
```

Definition at line 65 of file ZPCA9685.cpp.

Referenced by ZPCA9685::reset().

6.1.1.29 ZPCA9685_MODE_EXTCLK

```
#define ZPCA9685_MODE_EXTCLK (byte)0x40
```

Definition at line 64 of file ZPCA9685.cpp.

6.1.1.30 ZPCA9685_MODE_RESTART

```
#define ZPCA9685_MODE_RESTART (byte)0x80
```

Definition at line 63 of file ZPCA9685.cpp.

Referenced by ZPCA9685::reset().

6.1.1.31 ZPCA9685_MODE_SLEEP

```
#define ZPCA9685_MODE_SLEEP (byte)0x10
```

Definition at line 66 of file ZPCA9685.cpp.

6.1.1.32 ZPCA9685_MODE_SUBADR1

```
#define ZPCA9685_MODE_SUBADR1 (byte)0x08
```

Definition at line 67 of file ZPCA9685.cpp.

6.1.1.33 ZPCA9685_MODE_SUBADR2

```
#define ZPCA9685_MODE_SUBADR2 (byte)0x04
```

Definition at line 68 of file ZPCA9685.cpp.

6.1.1.34 ZPCA9685_MODE_SUBADR3

```
#define ZPCA9685_MODE_SUBADR3 (byte)0x02
```

Definition at line 69 of file ZPCA9685.cpp.

6.1.1.35 ZPCA9685_PRESCALE

```
#define ZPCA9685_PRESCALE 0xFE
```

Definition at line 47 of file ZPCA9685.cpp.

Referenced by ZPCA9685::setPWMFreq().

6.1.1.36 ZPCA9685_PRESCALE_REG

```
#define ZPCA9685_PRESCALE_REG (byte)0xFE
```

Definition at line 36 of file ZPCA9685.cpp.

6.1.1.37 ZPCA9685_PWM_FULL

```
#define ZPCA9685_PWM_FULL (uint16_t)0x01000
```

Definition at line 60 of file ZPCA9685.cpp.

Referenced by ZPCA9685::digitalWrite().

6.1.1.38 ZPCA9685_SUBADR1

```
#define ZPCA9685_SUBADR1 0x2
```

Definition at line 41 of file ZPCA9685.cpp.

6.1.1.39 ZPCA9685_SUBADR1_REG

```
#define ZPCA9685_SUBADR1_REG (byte) 0x02
```

Definition at line 31 of file ZPCA9685.cpp.

6.1.1.40 ZPCA9685_SUBADR2

```
#define ZPCA9685_SUBADR2 0x3
```

Definition at line 42 of file ZPCA9685.cpp.

6.1.1.41 ZPCA9685_SUBADR2_REG

```
#define ZPCA9685_SUBADR2_REG (byte) 0x03
```

Definition at line 32 of file ZPCA9685.cpp.

6.1.1.42 ZPCA9685_SUBADR3

```
#define ZPCA9685_SUBADR3 0x4
```

Definition at line 43 of file ZPCA9685.cpp.

6.1.1.43 ZPCA9685_SUBADR3_REG

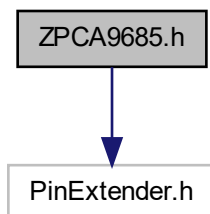
```
#define ZPCA9685_SUBADR3_REG (byte) 0x04
```

Definition at line 33 of file ZPCA9685.cpp.

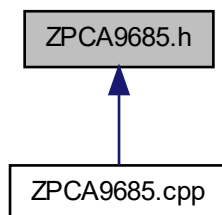
6.2 ZPCA9685.h File Reference

```
#include "PinExtender.h"
```

Include dependency graph for ZPCA9685.h:



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



Data Structures

- class [ZPCA9685](#)

Class that stores state and functions for interacting with [ZPCA9685](#) PWM chip.

Macros

- #define [PCA9685_LED15](#) 15
- #define [PCA9685_LED14](#) 14
- #define [PCA9685_LED13](#) 13
- #define [PCA9685_LED12](#) 12
- #define [PCA9685_LED11](#) 11
- #define [PCA9685_LED10](#) 10
- #define [PCA9685_LED9](#) 9
- #define [PCA9685_LED8](#) 8
- #define [PCA9685_LED7](#) 7

- `#define PCA9685_LED6 6`
- `#define PCA9685_LED5 5`
- `#define PCA9685_LED4 4`
- `#define PCA9685_LED3 3`
- `#define PCA9685_LED2 2`
- `#define PCA9685_LED1 1`
- `#define PCA9685_LED0 0`

6.2.1 Macro Definition Documentation

6.2.1.1 PCA9685_LED0

```
#define PCA9685_LED0 0
```

Definition at line 42 of file ZPCA9685.h.

6.2.1.2 PCA9685_LED1

```
#define PCA9685_LED1 1
```

Definition at line 41 of file ZPCA9685.h.

6.2.1.3 PCA9685_LED10

```
#define PCA9685_LED10 10
```

Definition at line 31 of file ZPCA9685.h.

6.2.1.4 PCA9685_LED11

```
#define PCA9685_LED11 11
```

Definition at line 30 of file ZPCA9685.h.

6.2.1.5 PCA9685_LED12

```
#define PCA9685_LED12 12
```

Definition at line 29 of file ZPCA9685.h.

6.2.1.6 PCA9685_LED13

```
#define PCA9685_LED13 13
```

Definition at line 28 of file ZPCA9685.h.

6.2.1.7 PCA9685_LED14

```
#define PCA9685_LED14 14
```

Definition at line 27 of file ZPCA9685.h.

6.2.1.8 PCA9685_LED15

```
#define PCA9685_LED15 15
```

Definition at line 26 of file ZPCA9685.h.

6.2.1.9 PCA9685_LED2

```
#define PCA9685_LED2 2
```

Definition at line 40 of file ZPCA9685.h.

6.2.1.10 PCA9685_LED3

```
#define PCA9685_LED3 3
```

Definition at line 39 of file ZPCA9685.h.

6.2.1.11 PCA9685_LED4

```
#define PCA9685_LED4 4
```

Definition at line 38 of file ZPCA9685.h.

6.2.1.12 PCA9685_LED5

```
#define PCA9685_LED5 5
```

Definition at line 37 of file ZPCA9685.h.

6.2.1.13 PCA9685_LED6

```
#define PCA9685_LED6 6
```

Definition at line 36 of file ZPCA9685.h.

6.2.1.14 PCA9685_LED7

```
#define PCA9685_LED7 7
```

Definition at line 35 of file ZPCA9685.h.

6.2.1.15 PCA9685_LED8

```
#define PCA9685_LED8 8
```

Definition at line 33 of file ZPCA9685.h.

6.2.1.16 PCA9685_LED9

```
#define PCA9685_LED9 9
```

Definition at line 32 of file ZPCA9685.h.

Index

ALLLED_OFF_H
 ZPCA9685.cpp, [22](#)

ALLLED_OFF_L
 ZPCA9685.cpp, [23](#)

ALLLED_ON_H
 ZPCA9685.cpp, [23](#)

ALLLED_ON_L
 ZPCA9685.cpp, [23](#)

acceptlocal
 ZPCA9685, [6](#)

analogRead
 ZPCA9685, [6](#)

analogWrite
 ZPCA9685, [6](#)

analogWriteResolution
 ZPCA9685, [7](#)

attach
 ZPCA9685, [7](#)

attached
 ZPCA9685, [8](#)

begin
 ZPCA9685, [9](#), [10](#)

check
 ZPCA9685, [10](#)

detach
 ZPCA9685, [11](#)

digitalRead
 ZPCA9685, [11](#)

digitalWrite
 ZPCA9685, [12](#)

LED0_OFF_H
 ZPCA9685.cpp, [23](#)

LED0_OFF_L
 ZPCA9685.cpp, [23](#)

LED0_ON_H
 ZPCA9685.cpp, [23](#)

LED0_ON_L
 ZPCA9685.cpp, [23](#)

MAX_PULSE_WIDTH
 ZPCA9685.cpp, [24](#)

MIN_PULSE_WIDTH
 ZPCA9685.cpp, [24](#)

NO_CHANNEL
 ZPCA9685.cpp, [24](#)

PCA9685_LED0
 ZPCA9685.h, [31](#)

PCA9685_LED1
 ZPCA9685.h, [31](#)

PCA9685_LED10
 ZPCA9685.h, [31](#)

PCA9685_LED11
 ZPCA9685.h, [31](#)

PCA9685_LED12
 ZPCA9685.h, [31](#)

PCA9685_LED13
 ZPCA9685.h, [31](#)

PCA9685_LED14
 ZPCA9685.h, [32](#)

PCA9685_LED15
 ZPCA9685.h, [32](#)

PCA9685_LED2
 ZPCA9685.h, [32](#)

PCA9685_LED3
 ZPCA9685.h, [32](#)

PCA9685_LED4
 ZPCA9685.h, [32](#)

PCA9685_LED5
 ZPCA9685.h, [32](#)

PCA9685_LED6
 ZPCA9685.h, [32](#)

PCA9685_LED7
 ZPCA9685.h, [33](#)

PCA9685_LED8
 ZPCA9685.h, [33](#)

PCA9685_LED9
 ZPCA9685.h, [33](#)

pinMode
 ZPCA9685, [12](#)

read
 ZPCA9685, [13](#)

readMicroseconds
 ZPCA9685, [14](#)

reset
 ZPCA9685, [15](#)

SEROFREQ
 ZPCA9685.cpp, [24](#)

SWRST
 ZPCA9685, [18](#)

setHardAddress
 ZPCA9685, [15](#)

setPWMFreq
 ZPCA9685, [18](#)

setPWM
 ZPCA9685, [17](#)

setPin
 ZPCA9685, [16](#)

TRIM_DURATION
 ZPCA9685.cpp, [24](#)

test
 ZPCA9685, [19](#)

ticksToUs
 ZPCA9685.cpp, [24](#)

- usToTicks
 - ZPCA9685.cpp, 25
- write
 - ZPCA9685, 19
- writeMicroseconds
 - ZPCA9685, 20
- ZPCA9685, 2
 - acceptLocal, 6
 - analogRead, 6
 - analogWrite, 6
 - analogWriteResolution, 7
 - attach, 7
 - attached, 8
 - begin, 9, 10
 - check, 10
 - detach, 11
 - digitalRead, 11
 - digitalWrite, 12
 - pinMode, 12
 - read, 13
 - readMicroseconds, 14
 - reset, 15
 - SWRST, 18
 - setHardAddress, 15
 - setPWMFreq, 18
 - setPWM, 17
 - setPin, 16
 - test, 19
 - write, 19
 - writeMicroseconds, 20
 - ZPCA9685, 5
- ZPCA9685.cpp, 21
 - ALLLED_OFF_H, 22
 - ALLLED_OFF_L, 23
 - ALLLED_ON_H, 23
 - ALLLED_ON_L, 23
 - LED0_OFF_H, 23
 - LED0_OFF_L, 23
 - LED0_ON_H, 23
 - LED0_ON_L, 23
 - MAX_PULSE_WIDTH, 24
 - MIN_PULSE_WIDTH, 24
 - NO_CHANNEL, 24
 - SEROFREQ, 24
 - TRIM_DURATION, 24
 - ticksToUs, 24
 - usToTicks, 25
 - ZPCA9685_ADDRESS_MASK, 25
 - ZPCA9685_ADDRESS, 25
 - ZPCA9685_ALLCALL_REG, 25
 - ZPCA9685_ALLLED_REG, 25
 - ZPCA9685_LED0_REG, 25
 - ZPCA9685_MODE1, 26
 - ZPCA9685_MODE1_REG, 26
 - ZPCA9685_MODE2, 26
 - ZPCA9685_MODE2_OUTDRV, 26
 - ZPCA9685_MODE2_OUTNE_HIZ, 26
- ZPCA9685_MODE2_REG, 26
- ZPCA9685_MODE_ALLCALL, 27
- ZPCA9685_MODE_AUTOINC, 27
- ZPCA9685_MODE_EXTCLK, 27
- ZPCA9685_MODE_RESTART, 27
- ZPCA9685_MODE_SLEEP, 27
- ZPCA9685_MODE_SUBADR1, 27
- ZPCA9685_MODE_SUBADR2, 28
- ZPCA9685_MODE_SUBADR3, 28
- ZPCA9685_PRESCALE_REG, 28
- ZPCA9685_PRESCALE, 28
- ZPCA9685_PWM_FULL, 28
- ZPCA9685_SUBADR1, 28
- ZPCA9685_SUBADR1_REG, 29
- ZPCA9685_SUBADR2, 29
- ZPCA9685_SUBADR2_REG, 29
- ZPCA9685_SUBADR3, 29
- ZPCA9685_SUBADR3_REG, 29
- ZPCA9685.h, 30
 - PCA9685_LED0, 31
 - PCA9685_LED1, 31
 - PCA9685_LED10, 31
 - PCA9685_LED11, 31
 - PCA9685_LED12, 31
 - PCA9685_LED13, 31
 - PCA9685_LED14, 32
 - PCA9685_LED15, 32
 - PCA9685_LED2, 32
 - PCA9685_LED3, 32
 - PCA9685_LED4, 32
 - PCA9685_LED5, 32
 - PCA9685_LED6, 32
 - PCA9685_LED7, 33
 - PCA9685_LED8, 33
 - PCA9685_LED9, 33
- ZPCA9685_ADDRESS_MASK
 - ZPCA9685.cpp, 25
- ZPCA9685_ADDRESS
 - ZPCA9685.cpp, 25
- ZPCA9685_ALLCALL_REG
 - ZPCA9685.cpp, 25
- ZPCA9685_ALLLED_REG
 - ZPCA9685.cpp, 25
- ZPCA9685_LED0_REG
 - ZPCA9685.cpp, 25
- ZPCA9685_MODE1
 - ZPCA9685.cpp, 26
- ZPCA9685_MODE1_REG
 - ZPCA9685.cpp, 26
- ZPCA9685_MODE2
 - ZPCA9685.cpp, 26
- ZPCA9685_MODE2_OUTDRV
 - ZPCA9685.cpp, 26
- ZPCA9685_MODE2_OUTNE_HIZ
 - ZPCA9685.cpp, 26
- ZPCA9685_MODE2_REG
 - ZPCA9685.cpp, 26
- ZPCA9685_MODE_ALLCALL

ZPCA9685.cpp, [27](#)
ZPCA9685_MODE_AUTOINC
ZPCA9685.cpp, [27](#)
ZPCA9685_MODE_EXTCLK
ZPCA9685.cpp, [27](#)
ZPCA9685_MODE_RESTART
ZPCA9685.cpp, [27](#)
ZPCA9685_MODE_SLEEP
ZPCA9685.cpp, [27](#)
ZPCA9685_MODE_SUBADR1
ZPCA9685.cpp, [27](#)
ZPCA9685_MODE_SUBADR2
ZPCA9685.cpp, [28](#)
ZPCA9685_MODE_SUBADR3
ZPCA9685.cpp, [28](#)
ZPCA9685_PRESCALE_REG
ZPCA9685.cpp, [28](#)
ZPCA9685_PRESCALE
ZPCA9685.cpp, [28](#)
ZPCA9685_PWM_FULL
ZPCA9685.cpp, [28](#)
ZPCA9685_SUBADR1
ZPCA9685.cpp, [28](#)
ZPCA9685_SUBADR1_REG
ZPCA9685.cpp, [29](#)
ZPCA9685_SUBADR2
ZPCA9685.cpp, [29](#)
ZPCA9685_SUBADR2_REG
ZPCA9685.cpp, [29](#)
ZPCA9685_SUBADR3
ZPCA9685.cpp, [29](#)
ZPCA9685_SUBADR3_REG
ZPCA9685.cpp, [29](#)