

Zmotor 3 Library

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1 Hierarchical Index

1.1 Class Hierarchy

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

PinExtender

Zmotor3 **2**

2 Data Structure Index

2.1 Data Structures

Here are the data structures with brief descriptions:

Zmotor3

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

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3 File Index

3.1 File List

Here is a list of all files with brief descriptions:

[Zmotor3.cpp](#)

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[Zmotor3.h](#)

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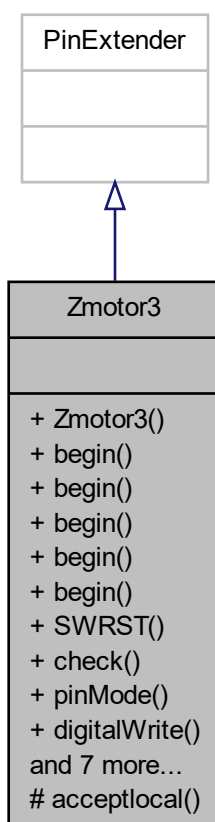
4 Data Structure Documentation

4.1 Zmotor3 Class Reference

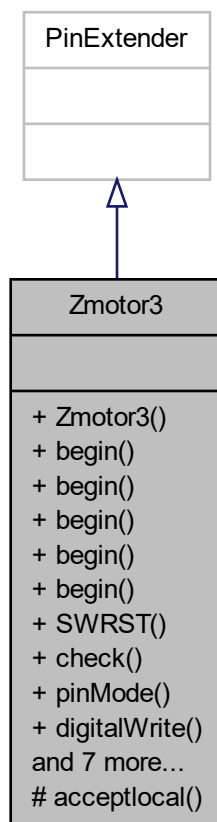
Class that stores state and functions for interacting with ZPCA9685 PWM chip.

```
#include <Zmotor3.h>
```

Inheritance diagram for Zmotor3:



Collaboration diagram for Zmotor3:



Public Member Functions

- [Zmotor3](#) ()
Instantiates a new [Zmotor3](#) 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.
- void [begin](#) (TwoWire *MyWire, uint8_t addr1)
Setups the I2C interface and hardware.
- void [begin](#) (TwoWire *i2c, uint8_t addr10, uint8_t addrpwm)
- void [begin](#) (uint8_t addr, uint8_t addr2)
- 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](#) ()
- 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 `getPin` (uint32_t ulPin)
- void `reset` (void)
Sends a reset command to the `Zmotor3` chip over I2C.
- uint32_t `analogRead` (uint32_t pin)
- void `setPWMFreq` (float freq)
Sets the PWM frequency for the entire chip, up to ~1.6 KHz.

Protected Member Functions

- bool `acceptlocal` (uint32_t p)

4.1.1 Detailed Description

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

Definition at line 95 of file `Zmotor3.h`.

4.1.2 Constructor & Destructor Documentation

4.1.2.1 `Zmotor3()`

```
Zmotor3::Zmotor3 ( )
```

Instantiates a new `Zmotor3` 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 30 of file `Zmotor3.cpp`.

4.1.3 Member Function Documentation

4.1.3.1 `acceptlocal()`

```
bool Zmotor3::acceptlocal (
    uint32_t p ) [protected]
```

Definition at line 100 of file `Zmotor3.cpp`.

4.1.3.2 analogRead()

```
uint32_t Zmotor3::analogRead (
    uint32_t pin )
```

Definition at line 178 of file Zmotor3.cpp.

4.1.3.3 analogWrite()

```
void Zmotor3::analogWrite (
    uint32_t ulPin,
    uint32_t ulValue )
```

Definition at line 146 of file Zmotor3.cpp.

4.1.3.4 analogWriteResolution()

```
void Zmotor3::analogWriteResolution (
    int res )
```

Definition at line 139 of file Zmotor3.cpp.

4.1.3.5 begin() [1/5]

```
void Zmotor3::begin (
    TwoWire * MyWire,
    uint8_t addr1 )
```

Setups the I2C interface and hardware.

Definition at line 40 of file Zmotor3.cpp.

References `begin()`, `MCP23017_ADDR_BASE`, and `PCA9685_ADDR_BASE`.

Here is the call graph for this function:



4.1.3.6 `begin()` [2/5]

```
void Zmotor3::begin (
    TwoWire * i2c,
    uint8_t  addrIo,
    uint8_t  addrpwm )
```

Definition at line 44 of file Zmotor3.cpp.

4.1.3.7 `begin()` [3/5]

```
void Zmotor3::begin (
    uint8_t  addr,
    uint8_t  addr2 )
```

4.1.3.8 `begin()` [4/5]

```
void Zmotor3::begin (
    uint8_t  addr )
```

Setups the I2C interface and hardware.

Definition at line 61 of file Zmotor3.cpp.

References `begin()`.

Here is the call graph for this function:



4.1.3.9 begin() [5/5]

```
void Zmotor3::begin (
    void )
```

Setups the I2C interface and hardware.

Definition at line 71 of file Zmotor3.cpp.

Referenced by begin().

Here is the caller graph for this function:



4.1.3.10 check()

```
bool Zmotor3::check ( )
```

4.1.3.11 digitalRead()

```
uint8_t Zmotor3::digitalRead (
    uint32_t ulPin )
```

dummy function

Definition at line 113 of file Zmotor3.cpp.

4.1.3.12 digitalWrite()

```
void Zmotor3::digitalWrite (
    uint32_t p,
    uint8_t d )
```

Definition at line 182 of file Zmotor3.cpp.

4.1.3.13 getPin()

```
uint32_t Zmotor3::getPin (
    uint32_t ulPin )
```

Definition at line 159 of file Zmotor3.cpp.

References MCP23017_ADDR_BASE, and PCA9685_ADDR_BASE.

4.1.3.14 pinMode()

```
void Zmotor3::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 127 of file Zmotor3.cpp.

4.1.3.15 reset()

```
void Zmotor3::reset (
    void )
```

Sends a reset command to the [Zmotor3](#) chip over I2C.

Definition at line 84 of file Zmotor3.cpp.

4.1.3.16 setPWMFreq()

```
void Zmotor3::setPWMFreq (
    float freq )
```

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

Parameters

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

Definition at line 95 of file Zmotor3.cpp.

4.1.3.17 SWRST()

```
void Zmotor3::SWRST (
    void )
```

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

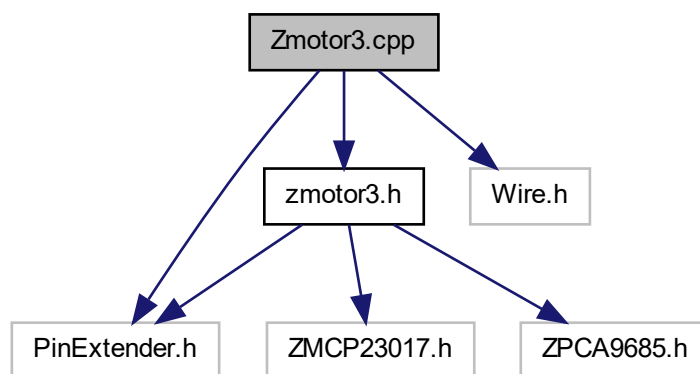
- [Zmotor3.h](#)
- [Zmotor3.cpp](#)

5 File Documentation

5.1 Zmotor3.cpp File Reference

```
#include "zmotor3.h"  
#include <Wire.h>  
#include "PinExtender.h"
```

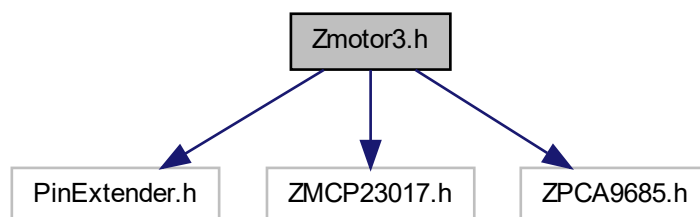
Include dependency graph for Zmotor3.cpp:



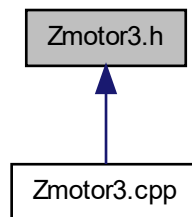
5.2 Zmotor3.h File Reference

```
#include "PinExtender.h"  
#include <ZMCP23017.h>  
#include <ZPCA9685.h>
```

Include dependency graph for Zmotor3.h:



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



Data Structures

- class [Zmotor3](#)

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

Macros

- `#define MCP23017_ADDR_BASE 0x20`
- `#define PCA9685_ADDR_BASE 0x40`
- `#define MOTOR3_IO_0 (MCP23017_GPB1 | MCP23017_ADDR_BASE<<16)`
- `#define MOTOR3_IO_1 (MCP23017_GPB3 | MCP23017_ADDR_BASE<<16)`
- `#define MOTOR3_IO_2 (MCP23017_GPB5 | MCP23017_ADDR_BASE<<16)`
- `#define MOTOR3_IO_3 (MCP23017_GPB7 | MCP23017_ADDR_BASE<<16)`
- `#define MOTOR3_IO_4 (MCP23017_GPA1 | MCP23017_ADDR_BASE<<16)`
- `#define MOTOR3_IO_5 (MCP23017_GPA3 | MCP23017_ADDR_BASE<<16)`
- `#define MOTOR3_IO_6 (MCP23017_GPA5 | MCP23017_ADDR_BASE<<16)`
- `#define MOTOR3_IO_7 (MCP23017_GPA7 | MCP23017_ADDR_BASE<<16)`
- `#define MOTOR3_EN_0 (MCP23017_GPB0 | MCP23017_ADDR_BASE<<16)`
- `#define MOTOR3_EN_1 (MCP23017_GPB2 | MCP23017_ADDR_BASE<<16)`
- `#define MOTOR3_EN_2 (MCP23017_GPB4 | MCP23017_ADDR_BASE<<16)`
- `#define MOTOR3_EN_3 (MCP23017_GPB6 | MCP23017_ADDR_BASE<<16)`
- `#define MOTOR3_EN_4 (MCP23017_GPA0 | MCP23017_ADDR_BASE<<16)`
- `#define MOTOR3_EN_5 (MCP23017_GPA2 | MCP23017_ADDR_BASE<<16)`
- `#define MOTOR3_EN_6 (MCP23017_GPA4 | MCP23017_ADDR_BASE<<16)`
- `#define MOTOR3_EN_7 (MCP23017_GPA6 | MCP23017_ADDR_BASE<<16)`
- `#define MOTOR3_PWM_0 (PCA9685_LED3 | PCA9685_ADDR_BASE<<16)`
- `#define MOTOR3_PWM_1 (PCA9685_LED2 | PCA9685_ADDR_BASE<<16)`
- `#define MOTOR3_PWM_2 (PCA9685_LED1 | PCA9685_ADDR_BASE<<16)`
- `#define MOTOR3_PWM_3 (PCA9685_LED0 | PCA9685_ADDR_BASE<<16)`
- `#define MOTOR3_PWM_4 (PCA9685_LED4 | PCA9685_ADDR_BASE<<16)`
- `#define MOTOR3_PWM_5 (PCA9685_LED5 | PCA9685_ADDR_BASE<<16)`
- `#define MOTOR3_PWM_6 (PCA9685_LED6 | PCA9685_ADDR_BASE<<16)`
- `#define MOTOR3_PWM_7 (PCA9685_LED7 | PCA9685_ADDR_BASE<<16)`
- `#define MOTOR3_P8_PWM MOTOR3_PWM_0`
- `#define MOTOR3_P8_IO MOTOR3_IO_0`
- `#define MOTOR3_P8_EN MOTOR3_EN_0`

- `#define MOTOR3_P12_PWM MOTOR3_PWM_1`
- `#define MOTOR3_P12_IO MOTOR3_IO_1`
- `#define MOTOR3_P12_EN MOTOR3_EN_1`
- `#define MOTOR3_P7_PWM MOTOR3_PWM_2`
- `#define MOTOR3_P7_IO MOTOR3_IO_2`
- `#define MOTOR3_P7_EN MOTOR3_EN_2`
- `#define MOTOR3_P11_PWM MOTOR3_PWM_3`
- `#define MOTOR3_P11_IO MOTOR3_IO_3`
- `#define MOTOR3_P11_EN MOTOR3_EN_3`
- `#define MOTOR3_P6_PWM MOTOR3_PWM_4`
- `#define MOTOR3_P6_IO MOTOR3_IO_4`
- `#define MOTOR3_P6_EN MOTOR3_EN_4`
- `#define MOTOR3_P10_PWM MOTOR3_PWM_5`
- `#define MOTOR3_P10_IO MOTOR3_IO_5`
- `#define MOTOR3_P10_EN MOTOR3_EN_5`
- `#define MOTOR3_P9_PWM MOTOR3_PWM_6`
- `#define MOTOR3_P9_IO MOTOR3_IO_6`
- `#define MOTOR3_P9_EN MOTOR3_EN_6`
- `#define MOTOR3_P13_PWM MOTOR3_PWM_7`
- `#define MOTOR3_P13_IO MOTOR3_IO_7`
- `#define MOTOR3_P13_EN MOTOR3_EN_7`

5.2.1 Macro Definition Documentation

5.2.1.1 MCP23017_ADDR_BASE

```
#define MCP23017_ADDR_BASE 0x20
```

Definition at line 27 of file Zmotor3.h.

Referenced by Zmotor3::begin(), and Zmotor3::getPin().

5.2.1.2 MOTOR3_EN_0

```
#define MOTOR3_EN_0 (MCP23017_GPB0 | MCP23017_ADDR_BASE<<16)
```

Definition at line 38 of file Zmotor3.h.

5.2.1.3 MOTOR3_EN_1

```
#define MOTOR3_EN_1 (MCP23017_GPB2 | MCP23017_ADDR_BASE<<16)
```

Definition at line 39 of file Zmotor3.h.

5.2.1.4 MOTOR3_EN_2

```
#define MOTOR3_EN_2 (MCP23017_GPB4 | MCP23017_ADDR_BASE<<16)
```

Definition at line 40 of file Zmotor3.h.

5.2.1.5 MOTOR3_EN_3

```
#define MOTOR3_EN_3 (MCP23017_GPB6 | MCP23017_ADDR_BASE<<16)
```

Definition at line 41 of file Zmotor3.h.

5.2.1.6 MOTOR3_EN_4

```
#define MOTOR3_EN_4 (MCP23017_GPA0 | MCP23017_ADDR_BASE<<16)
```

Definition at line 42 of file Zmotor3.h.

5.2.1.7 MOTOR3_EN_5

```
#define MOTOR3_EN_5 (MCP23017_GPA2 | MCP23017_ADDR_BASE<<16)
```

Definition at line 43 of file Zmotor3.h.

5.2.1.8 MOTOR3_EN_6

```
#define MOTOR3_EN_6 (MCP23017_GPA4 | MCP23017_ADDR_BASE<<16)
```

Definition at line 44 of file Zmotor3.h.

5.2.1.9 MOTOR3_EN_7

```
#define MOTOR3_EN_7 (MCP23017_GPA6 | MCP23017_ADDR_BASE<<16)
```

Definition at line 45 of file Zmotor3.h.

5.2.1.10 MOTOR3_IO_0

```
#define MOTOR3_IO_0 (MCP23017_GPB1 | MCP23017_ADDR_BASE<<16)
```

Definition at line 29 of file Zmotor3.h.

5.2.1.11 MOTOR3_IO_1

```
#define MOTOR3_IO_1 (MCP23017_GPB3 | MCP23017_ADDR_BASE<<16)
```

Definition at line 30 of file Zmotor3.h.

5.2.1.12 MOTOR3_IO_2

```
#define MOTOR3_IO_2 (MCP23017_GPB5 | MCP23017_ADDR_BASE<<16)
```

Definition at line 31 of file Zmotor3.h.

5.2.1.13 MOTOR3_IO_3

```
#define MOTOR3_IO_3 (MCP23017_GPB7 | MCP23017_ADDR_BASE<<16)
```

Definition at line 32 of file Zmotor3.h.

5.2.1.14 MOTOR3_IO_4

```
#define MOTOR3_IO_4 (MCP23017_GPA1 | MCP23017_ADDR_BASE<<16)
```

Definition at line 33 of file Zmotor3.h.

5.2.1.15 MOTOR3_IO_5

```
#define MOTOR3_IO_5 (MCP23017_GPA3 | MCP23017_ADDR_BASE<<16)
```

Definition at line 34 of file Zmotor3.h.

5.2.1.16 MOTOR3_IO_6

```
#define MOTOR3_IO_6 (MCP23017_GPA5 | MCP23017_ADDR_BASE<<16)
```

Definition at line 35 of file Zmotor3.h.

5.2.1.17 MOTOR3_IO_7

```
#define MOTOR3_IO_7 (MCP23017_GPA7 | MCP23017_ADDR_BASE<<16)
```

Definition at line 36 of file Zmotor3.h.

5.2.1.18 MOTOR3_P10_EN

```
#define MOTOR3_P10_EN MOTOR3_EN_5
```

Definition at line 79 of file Zmotor3.h.

5.2.1.19 MOTOR3_P10_IO

```
#define MOTOR3_P10_IO MOTOR3_IO_5
```

Definition at line 78 of file Zmotor3.h.

5.2.1.20 MOTOR3_P10_PWM

```
#define MOTOR3_P10_PWM MOTOR3_PWM_5
```

Definition at line 77 of file Zmotor3.h.

5.2.1.21 MOTOR3_P11_EN

```
#define MOTOR3_P11_EN MOTOR3_EN_3
```

Definition at line 71 of file Zmotor3.h.

5.2.1.22 MOTOR3_P11_IO

```
#define MOTOR3_P11_IO MOTOR3_IO_3
```

Definition at line 70 of file Zmotor3.h.

5.2.1.23 MOTOR3_P11_PWM

```
#define MOTOR3_P11_PWM MOTOR3_PWM_3
```

Definition at line 69 of file Zmotor3.h.

5.2.1.24 MOTOR3_P12_EN

```
#define MOTOR3_P12_EN MOTOR3_EN_1
```

Definition at line 62 of file Zmotor3.h.

5.2.1.25 MOTOR3_P12_IO

```
#define MOTOR3_P12_IO MOTOR3_IO_1
```

Definition at line 61 of file Zmotor3.h.

5.2.1.26 MOTOR3_P12_PWM

```
#define MOTOR3_P12_PWM MOTOR3_PWM_1
```

Definition at line 60 of file Zmotor3.h.

5.2.1.27 MOTOR3_P13_EN

```
#define MOTOR3_P13_EN MOTOR3_EN_7
```

Definition at line 87 of file Zmotor3.h.

5.2.1.28 MOTOR3_P13_IO

```
#define MOTOR3_P13_IO MOTOR3_IO_7
```

Definition at line 86 of file Zmotor3.h.

5.2.1.29 MOTOR3_P13_PWM

```
#define MOTOR3_P13_PWM MOTOR3_PWM_7
```

Definition at line 85 of file Zmotor3.h.

5.2.1.30 MOTOR3_P6_EN

```
#define MOTOR3_P6_EN MOTOR3_EN_4
```

Definition at line 75 of file Zmotor3.h.

5.2.1.31 MOTOR3_P6_IO

```
#define MOTOR3_P6_IO MOTOR3_IO_4
```

Definition at line 74 of file Zmotor3.h.

5.2.1.32 MOTOR3_P6_PWM

```
#define MOTOR3_P6_PWM MOTOR3_PWM_4
```

Definition at line 73 of file Zmotor3.h.

5.2.1.33 MOTOR3_P7_EN

```
#define MOTOR3_P7_EN MOTOR3_EN_2
```

Definition at line 67 of file Zmotor3.h.

5.2.1.34 MOTOR3_P7_IO

```
#define MOTOR3_P7_IO MOTOR3_IO_2
```

Definition at line 66 of file Zmotor3.h.

5.2.1.35 MOTOR3_P7_PWM

```
#define MOTOR3_P7_PWM MOTOR3_PWM_2
```

Definition at line 65 of file Zmotor3.h.

5.2.1.36 MOTOR3_P8_EN

```
#define MOTOR3_P8_EN MOTOR3_EN_0
```

Definition at line 58 of file Zmotor3.h.

5.2.1.37 MOTOR3_P8_IO

```
#define MOTOR3_P8_IO MOTOR3_IO_0
```

Definition at line 57 of file Zmotor3.h.

5.2.1.38 MOTOR3_P8_PWM

```
#define MOTOR3_P8_PWM MOTOR3_PWM_0
```

Definition at line 56 of file Zmotor3.h.

5.2.1.39 MOTOR3_P9_EN

```
#define MOTOR3_P9_EN MOTOR3_EN_6
```

Definition at line 83 of file Zmotor3.h.

5.2.1.40 MOTOR3_P9_IO

```
#define MOTOR3_P9_IO MOTOR3_IO_6
```

Definition at line 82 of file Zmotor3.h.

5.2.1.41 MOTOR3_P9_PWM

```
#define MOTOR3_P9_PWM MOTOR3_PWM_6
```

Definition at line 81 of file Zmotor3.h.

5.2.1.42 MOTOR3_PWM_0

```
#define MOTOR3_PWM_0 (PCA9685_LED3 | PCA9685_ADDR_BASE<<16)
```

Definition at line 47 of file Zmotor3.h.

5.2.1.43 MOTOR3_PWM_1

```
#define MOTOR3_PWM_1 (PCA9685_LED2 | PCA9685_ADDR_BASE<<16)
```

Definition at line 48 of file Zmotor3.h.

5.2.1.44 MOTOR3_PWM_2

```
#define MOTOR3_PWM_2 (PCA9685_LED1 | PCA9685_ADDR_BASE<<16)
```

Definition at line 49 of file Zmotor3.h.

5.2.1.45 MOTOR3_PWM_3

```
#define MOTOR3_PWM_3 (PCA9685_LED0 | PCA9685_ADDR_BASE<<16)
```

Definition at line 50 of file Zmotor3.h.

5.2.1.46 MOTOR3_PWM_4

```
#define MOTOR3_PWM_4 (PCA9685_LED4 | PCA9685_ADDR_BASE<<16)
```

Definition at line 51 of file Zmotor3.h.

5.2.1.47 MOTOR3_PWM_5

```
#define MOTOR3_PWM_5 (PCA9685_LED5 | PCA9685_ADDR_BASE<<16)
```

Definition at line 52 of file Zmotor3.h.

5.2.1.48 MOTOR3_PWM_6

```
#define MOTOR3_PWM_6 (PCA9685_LED6 | PCA9685_ADDR_BASE<<16)
```

Definition at line 53 of file Zmotor3.h.

5.2.1.49 MOTOR3_PWM_7

```
#define MOTOR3_PWM_7 (PCA9685_LED7 | PCA9685_ADDR_BASE<<16)
```

Definition at line 54 of file Zmotor3.h.

5.2.1.50 PCA9685_ADDR_BASE

```
#define PCA9685_ADDR_BASE 0x40
```

Definition at line 28 of file Zmotor3.h.

Referenced by Zmotor3::begin(), and Zmotor3::getPin().

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