Motor 2 Library

Generated by Doxygen 1.8.14

Contents

1 Hierarchical Index

1.1 Class Hierarchy

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

PinExtender

2 Data Structure Index

2.1 Data Structures

Here are the data structures with brief descriptions:

3 File Index

3.1 File List

Here is a list of all files with brief descriptions:

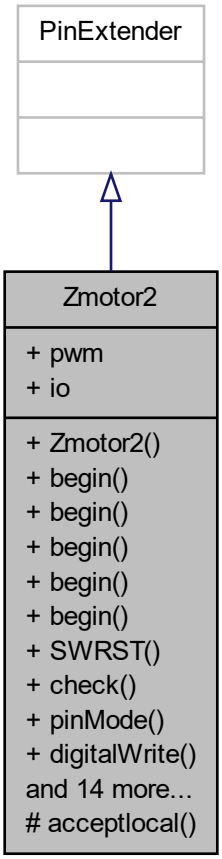
4 Data Structure Documentation

4.1 Zmotor2 Class Reference

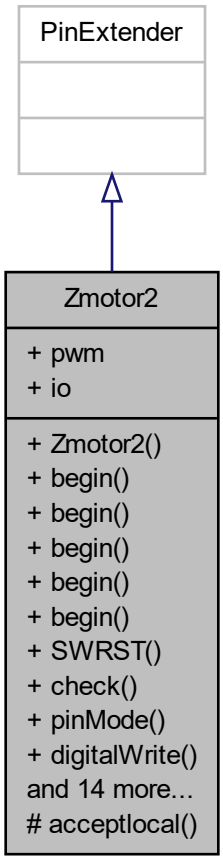
Class that stores state and functions for interacting with ZPCA9685 PWM chip.

```
#include <Zmotor2.h>
```

Inheritance diagram for Zmotor2:



Collaboration diagram for Zmotor2:



Public Member Functions

- Zmotor2 ()

  Instantiates a new Zmotor2 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 addrio, 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 ulchannel)
- uint32_t getPinIo (uint32_t ulchannel)
- uint32_t getPinPwm (uint32_t ulchannel)
- void reset (void)

  Sends a reset command to the Zmotor2 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.
- void cmd (uint32_t channel, int32_t ulValue)
- bool test ()
- void setup (ros::NodeHandle *myNodeHandle, const char *topic, void callbackinstance(const std_msgs::Int16 &cmd_msg), int pin)
- void setup (ros::NodeHandle *myNodeHandle, const char *topic, int pin)
- void loop ()

Data Fields

- ZPCA9685 pwm
- ZMCP23017 io

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 139 of file Zmotor2.h.

4.1.2 Constructor & Destructor Documentation

4.1.2.1 Zmotor2()

```
Zmotor2::Zmotor2 ( )
```

Instantiates a new Zmotor2 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

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

Definition at line 36 of file Zmotor2.cpp.

4.1.3 Member Function Documentation

4.1.3.1 acceptlocal()

```
bool Zmotor2::acceptlocal (
            uint32_t p )  [protected]
```

Definition at line 117 of file Zmotor2.cpp.

References io, and pwm.

4.1.3.2 analogRead()

```
uint32_t Zmotor2::analogRead (
            uint32_t pin )
```

Parameters

pin	the pin requested, it is the instance number or the generic number .

Definition at line 215 of file Zmotor2.cpp.

4.1.3.3 analogWrite()

```
void Zmotor2::analogWrite (
            uint32_t ulPin,
            uint32_t ulValue )
```

Parameters

ulPin	the pin requested, it is the instance number or the generic number .

Definition at line 163 of file Zmotor2.cpp.

References io, and pwm.

4.1.3.4 analogWriteResolution()

```
void Zmotor2::analogWriteResolution (
            int res )
```

Definition at line 156 of file Zmotor2.cpp.

References io, and pwm.

4.1.3.5 begin() [1/5]

```
void Zmotor2::begin (
            TwoWire * MyWire,
            uint8_t addr1 )
```

Setups the I2C interface and hardware.

Definition at line 46 of file Zmotor2.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 Zmotor2::begin (
            TwoWire * i2c,
            uint8_t addrio,
            uint8_t addrpwm )
```

Definition at line 50 of file Zmotor2.cpp.

References io, and pwm.

4.1.3.7 begin() [3/5]

```
void Zmotor2::begin (
            uint8_t addr,
            uint8_t addr2 )
```

4.1.3.8 begin() [4/5]

```
void Zmotor2::begin (
            uint8_t addr )
```

Setups the I2C interface and hardware.

Definition at line 78 of file Zmotor2.cpp.

References begin().

Here is the call graph for this function:

4.1.3.9 begin() [5/5]

```
void Zmotor2::begin (
            void  )
```

Setups the I2C interface and hardware.

Definition at line 88 of file Zmotor2.cpp.

Referenced by begin().

Here is the caller graph for this function:

4.1.3.10 check()

```
bool Zmotor2::check ( )
```

4.1.3.11 cmd()

```
void Zmotor2::cmd (
            uint32_t channel,
            int32_t ulValue )
```

apply a PWM command on motor connected on IO[channel] and PWM[channel]

Parameters

channel	the channel requested between 0 to 15 like MOTOR2_0
ulValue	the PWM value requested between -4096 to 4095

Definition at line 174 of file Zmotor2.cpp.

References io, MOTOR2_IO, MOTOR2_PWM, and pwm.

4.1.3.12 digitalRead()

```
uint8_t Zmotor2::digitalRead (
            uint32_t ulPin )
```

dummy function

Parameters

ulPin	the pin requested, it is the instance number or the generic number .

Definition at line 130 of file Zmotor2.cpp.

References io, and pwm.

4.1.3.13 digitalWrite()

```
void Zmotor2::digitalWrite (
            uint32_t p,
            uint8_t d )
```

Parameters

p	the pin requested, it is the instance number or the generic number .

Definition at line 219 of file Zmotor2.cpp.

References io, and pwm.

4.1.3.14 getPin()

```
uint32_t Zmotor2::getPin (
            uint32_t ulchannel )
```

return the pin number of current instance from the generioc name

Parameters

ulchannel	the generic pin number requested like PIN_MOTOR2_IO_0 or PIN_MOTOR2_PWM_0

Definition at line 196 of file Zmotor2.cpp.

References io, MCP23017_ADDR_BASE, PCA9685_ADDR_BASE, and pwm.

4.1.3.15 getPinIo()

```
uint32_t Zmotor2::getPinIo (
            uint32_t ulchannel )
```

return the IO pin number of current instance

Parameters

ulchannel	the channel requested between 0 to 15

4.1.3.16 getPinPwm()

```
uint32_t Zmotor2::getPinPwm (
            uint32_t ulchannel )
```

return the PWM pin number of current instance

Parameters

ulchannel	the channel requested between 0 to 15

4.1.3.17 loop()

```
void Zmotor2::loop ( )
```

loop : on loop before NodeHandle refresh(spinOnce), call this to update the topic

Definition at line 334 of file Zmotor2.cpp.

4.1.3.18 pinMode()

```
void Zmotor2::pinMode (
            uint32_t ulPin,
            uint8_t mode )
```

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

Parameters

ulPin	the pin requested, it is the instance number or the generic number .

Definition at line 144 of file Zmotor2.cpp.

References io, and pwm.

4.1.3.19 reset()

```
void Zmotor2::reset (
            void  )
```

Sends a reset command to the Zmotor2 chip over I2C.

Definition at line 101 of file Zmotor2.cpp.

References pwm.

4.1.3.20 setPWMFreq()

```
void Zmotor2::setPWMFreq (
            float freq )
```

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

set the PWM freqeuncy.

Parameters

freq	Floating point frequency that we will attempt to match

Definition at line 112 of file Zmotor2.cpp.

References pwm.

4.1.3.21 setup() [1/2]

```
void Zmotor2::setup (
            ros::NodeHandle * myNodeHandle,
            const char * topic,
            void  callbackinstanceconst std_msgs::Int16 &cmd_msg,
            int pin )
```

setup : At setup after NodeHandle setup, call this to initialise the topic

Definition at line 319 of file Zmotor2.cpp.

Referenced by setup().

Here is the caller graph for this function:

4.1.3.22 setup() [2/2]

```
void Zmotor2::setup (
            ros::NodeHandle * myNodeHandle,
            const char * topic,
            int pin )
```

Definition at line 309 of file Zmotor2.cpp.

References setup().

Here is the call graph for this function:

4.1.3.23 SWRST()

```
void Zmotor2::SWRST (
            void  )
```

4.1.3.24 test()

```
bool Zmotor2::test ( )
```

Definition at line 66 of file Zmotor2.cpp.

References io, and pwm.

4.1.4 Field Documentation

4.1.4.1 io

`ZMCP23017 Zmotor2::io`

Definition at line 198 of file Zmotor2.h.

Referenced by acceptlocal(), analogWrite(), analogWriteResolution(), begin(), cmd(), digitalRead(), digitalWrite(), getPin(), pinMode(), and test().

4.1.4.2 pwm

`ZPCA9685 Zmotor2::pwm`

Definition at line 197 of file Zmotor2.h.

Referenced by acceptlocal(), analogWrite(), analogWriteResolution(), begin(), cmd(), digitalRead(), digitalWrite(), getPin(), pinMode(), reset(), setPWMFreq(), and test().

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

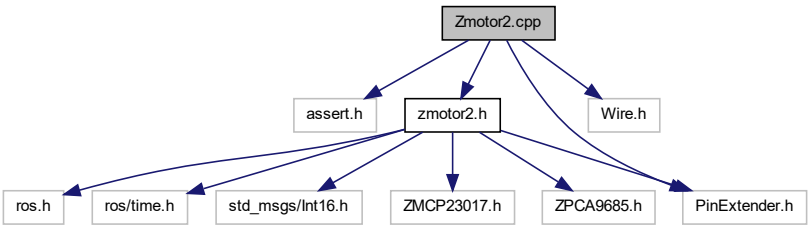
- Zmotor2.h
- Zmotor2.cpp

5 File Documentation

5.1 Zmotor2.cpp File Reference

```
#include <assert.h>
#include "zmotor2.h"
#include <Wire.h>
#include "PinExtender.h"
```

Include dependency graph for Zmotor2.cpp:



Macros

- #define DEBUG(a) a

Variables

- uint32_t MOTOR2_PWM [ ] ={PIN_MOTOR2_PWM_0,PIN_MOTOR2_PWM_1,PIN_MOTOR2_PWM_2,PIN_MOTOR2_PWM_
- uint32_t MOTOR2_IO [ ] ={PIN_MOTOR2_IO_0,PIN_MOTOR2_IO_1,PIN_MOTOR2_IO_2,PIN_MOTOR2_IO_3,PIN_MOTOR
- Zmotor2 * myZmotor2

5.1.1 Macro Definition Documentation

5.1.1.1 DEBUG

```
#define DEBUG(
              a ) a
```

Definition at line 24 of file Zmotor2.cpp.

5.1.2 Variable Documentation

5.1.2.1 MOTOR2_IO

```
uint32_t MOTOR2_IO[] ={PIN_MOTOR2_IO_0,PIN_MOTOR2_IO_1,PIN_MOTOR2_IO_2,PIN_MOTOR2_IO_3,PIN_MOTOR2_IO_4,PIN_MO
```

Definition at line 28 of file Zmotor2.cpp.

Referenced by Zmotor2::cmd().

5.1.2.2 MOTOR2_PWM

```
uint32_t MOTOR2_PWM[] ={PIN_MOTOR2_PWM_0,PIN_MOTOR2_PWM_1,PIN_MOTOR2_PWM_2,PIN_MOTOR2_PWM_3,PIN_MOTOR2_PWM_4,
```

Definition at line 27 of file Zmotor2.cpp.

Referenced by Zmotor2::cmd().

5.1.2.3 myZmotor2

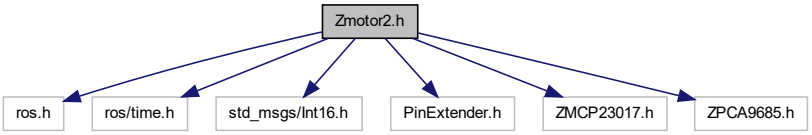
```
Zmotor2* myZmotor2
```

Definition at line 235 of file Zmotor2.cpp.

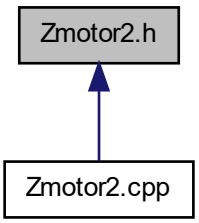
5.2 Zmotor2.h File Reference

```
#include <ros.h>
#include <ros/time.h>
#include <std_msgs/Int16.h>
#include "PinExtender.h"
#include <ZMCP23017.h>
#include <ZPCA9685.h>
```

Include dependency graph for Zmotor2.h:



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



Data Structures

- class Zmotor2

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

Macros

- #define ROS_USED
- #define MOTOR2_0 0
- #define MOTOR2_1 1
- #define MOTOR2_2 2
- #define MOTOR2_3 3
- #define MOTOR2_4 4
- #define MOTOR2_5 5
- #define MOTOR2_6 6
- #define MOTOR2_7 7

- #define MOTOR2_8 8
- #define MOTOR2_9 9
- #define MOTOR2_10 10
- #define MOTOR2_11 11
- #define MOTOR2_12 12
- #define MOTOR2_13 13
- #define MOTOR2_14 14
- #define MOTOR2_15 15
- #define MOTOR2_A MOTOR2_10
- #define MOTOR2_B MOTOR2_11
- #define MOTOR2_C MOTOR2_12
- #define MOTOR2_D MOTOR2_13
- #define MOTOR2_E MOTOR2_14
- #define MOTOR2_F MOTOR2_15
- #define MCP23017_ADDR_BASE 0x20
- #define PCA9685_ADDR_BASE 0x40
- #define PIN_MOTOR2_IO_0 (MCP23017_GPA7 | MCP23017_ADDR_BASE<<16)
- #define PIN_MOTOR2_IO_1 (MCP23017_GPA6 | MCP23017_ADDR_BASE<<16)
- #define PIN_MOTOR2_IO_2 (MCP23017_GPA5 | MCP23017_ADDR_BASE<<16)
- #define PIN_MOTOR2_IO_3 (MCP23017_GPA4 | MCP23017_ADDR_BASE<<16)
- #define PIN_MOTOR2_IO_4 (MCP23017_GPA3 | MCP23017_ADDR_BASE<<16)
- #define PIN_MOTOR2_IO_5 (MCP23017_GPA2 | MCP23017_ADDR_BASE<<16)
- #define PIN_MOTOR2_IO_6 (MCP23017_GPA1 | MCP23017_ADDR_BASE<<16)
- #define PIN_MOTOR2_IO_7 (MCP23017_GPA0 | MCP23017_ADDR_BASE<<16)
- #define PIN_MOTOR2_IO_8 (MCP23017_GPB7 | MCP23017_ADDR_BASE<<16)
- #define PIN_MOTOR2_IO_9 (MCP23017_GPB6 | MCP23017_ADDR_BASE<<16)
- #define PIN_MOTOR2_IO_10 (MCP23017_GPB5 | MCP23017_ADDR_BASE<<16)
- #define PIN_MOTOR2_IO_11 (MCP23017_GPB4 | MCP23017_ADDR_BASE<<16)
- #define PIN_MOTOR2_IO_12 (MCP23017_GPB3 | MCP23017_ADDR_BASE<<16)
- #define PIN_MOTOR2_IO_13 (MCP23017_GPB2 | MCP23017_ADDR_BASE<<16)
- #define PIN_MOTOR2_IO_14 (MCP23017_GPB1 | MCP23017_ADDR_BASE<<16)
- #define PIN_MOTOR2_IO_15 (MCP23017_GPB0 | MCP23017_ADDR_BASE<<16)
- #define PIN_MOTOR2_IO_A PIN_MOTOR2_IO_10
- #define PIN_MOTOR2_IO_B PIN_MOTOR2_IO_11
- #define PIN_MOTOR2_IO_C PIN_MOTOR2_IO_12
- #define PIN_MOTOR2_IO_D PIN_MOTOR2_IO_13
- #define PIN_MOTOR2_IO_E PIN_MOTOR2_IO_14
- #define PIN_MOTOR2_IO_F PIN_MOTOR2_IO_15
- #define PIN_MOTOR2_PWM_0 (PCA9685_LED15 | PCA9685_ADDR_BASE<<16)
- #define PIN_MOTOR2_PWM_1 (PCA9685_LED14 | PCA9685_ADDR_BASE<<16)
- #define PIN_MOTOR2_PWM_2 (PCA9685_LED13 | PCA9685_ADDR_BASE<<16)
- #define PIN_MOTOR2_PWM_3 (PCA9685_LED12 | PCA9685_ADDR_BASE<<16)
- #define PIN_MOTOR2_PWM_4 (PCA9685_LED11 | PCA9685_ADDR_BASE<<16)
- #define PIN_MOTOR2_PWM_5 (PCA9685_LED10 | PCA9685_ADDR_BASE<<16)
- #define PIN_MOTOR2_PWM_6 (PCA9685_LED9 | PCA9685_ADDR_BASE<<16)
- #define PIN_MOTOR2_PWM_7 (PCA9685_LED8 | PCA9685_ADDR_BASE<<16)
- #define PIN_MOTOR2_PWM_8 (PCA9685_LED7 | PCA9685_ADDR_BASE<<16)
- #define PIN_MOTOR2_PWM_9 (PCA9685_LED6 | PCA9685_ADDR_BASE<<16)
- #define PIN_MOTOR2_PWM_10 (PCA9685_LED5 | PCA9685_ADDR_BASE<<16)
- #define PIN_MOTOR2_PWM_11 (PCA9685_LED4 | PCA9685_ADDR_BASE<<16)
- #define PIN_MOTOR2_PWM_12 (PCA9685_LED3 | PCA9685_ADDR_BASE<<16)
- #define PIN_MOTOR2_PWM_13 (PCA9685_LED2 | PCA9685_ADDR_BASE<<16)
- #define PIN_MOTOR2_PWM_14 (PCA9685_LED1 | PCA9685_ADDR_BASE<<16)
- #define PIN_MOTOR2_PWM_15 (PCA9685_LED0 | PCA9685_ADDR_BASE<<16)
- #define PIN_MOTOR2_PWM_A PIN_MOTOR2_PWM_10

- #define PIN_MOTOR2_PWM_B PIN_MOTOR2_PWM_11
- #define PIN_MOTOR2_PWM_C PIN_MOTOR2_PWM_12
- #define PIN_MOTOR2_PWM_D PIN_MOTOR2_PWM_13
- #define PIN_MOTOR2_PWM_E PIN_MOTOR2_PWM_14
- #define PIN_MOTOR2_PWM_F PIN_MOTOR2_PWM_15

Variables

- uint32_t MOTOR2_PWM [ ]
- uint32_t MOTOR2_IO [ ]

5.2.1 Detailed Description

this lib support a board called Motor2 based on MCP23017 and PCA9685. this board offer 16 motor channel. Each channel have 2 pin, one where we can apply LOW or HIGH level thanks to digitalWrite(), and one where we can apply PWM value thanks to analogWrite() The pin can be identify by the generic name like PIN_MOTOR2_IO_0 PIN_MOTOR2_PWM_0, in this case you have to do instanceBoard.digitalWrite(PIN_MOTOR2_IO_0,LOW) The pin can be identify by the instance name like pin=instanceBoard.getpin(PIN_MOTOR2_IO_0) or pin=instance↩ Board.getpinIo(MOTOR2_0) or or pin=instanceBoard.getpinPwm(MOTOR2_0), in this case you have to do digital↩ Write(pin,LOW); from arduino API, this offer a compatibility with any library, but before you should link your board to arduino API by calling setPinExtender(&instanceBoard); if you have 2 board, then do it :instanceBoard.setPin↩ Extender(&instanceBoard_2);

generic name is used inside the instance of board, and the instance pin name allow to use generic arduino IPA, it content on it the I2C addresse of the device and the channel. note that instanceBoard.getpin() must be called after instanceBoard creation and initialisation with begin(), the pin number is a 32bit number.

The cmd(channel, pwm) function allow to manage easly the motor control, channel is between 0 and 15 like on skillprint of the board. The pwm value is between -4096 and 4095, 0 give no power.

The name PIN_MOTOR2_IO_0 can be replace by MOTOR2_IO[0]. The name PIN_MOTOR2_PWM_0 can be replace by MOTOR2_PWM[0].

5.2.2 Macro Definition Documentation

5.2.2.1 MCP23017_ADDR_BASE

```
#define MCP23017_ADDR_BASE 0x20
```

Definition at line 75 of file Zmotor2.h.

Referenced by Zmotor2::begin(), and Zmotor2::getPin().

5.2.2.2 MOTOR2_0

```
#define MOTOR2_0 0
```

Definition at line 52 of file Zmotor2.h.

5.2.2.3 MOTOR2_1

```
#define MOTOR2_1 1
```

Definition at line 53 of file Zmotor2.h.

5.2.2.4 MOTOR2_10

```
#define MOTOR2_10 10
```

Definition at line 62 of file Zmotor2.h.

5.2.2.5 MOTOR2_11

```
#define MOTOR2_11 11
```

Definition at line 63 of file Zmotor2.h.

5.2.2.6 MOTOR2_12

```
#define MOTOR2_12 12
```

Definition at line 64 of file Zmotor2.h.

5.2.2.7 MOTOR2_13

```
#define MOTOR2_13 13
```

Definition at line 65 of file Zmotor2.h.

5.2.2.8 MOTOR2_14

```
#define MOTOR2_14 14
```

Definition at line 66 of file Zmotor2.h.

5.2.2.9 MOTOR2_15

```
#define MOTOR2_15 15
```

Definition at line 67 of file Zmotor2.h.

5.2.2.10 MOTOR2_2

```
#define MOTOR2_2 2
```

Definition at line 54 of file Zmotor2.h.

5.2.2.11 MOTOR2_3

```
#define MOTOR2_3 3
```

Definition at line 55 of file Zmotor2.h.

5.2.2.12 MOTOR2_4

```
#define MOTOR2_4 4
```

Definition at line 56 of file Zmotor2.h.

5.2.2.13 MOTOR2_5

```
#define MOTOR2_5 5
```

Definition at line 57 of file Zmotor2.h.

5.2.2.14 MOTOR2_6

```
#define MOTOR2_6 6
```

Definition at line 58 of file Zmotor2.h.

5.2.2.15 MOTOR2_7

```
#define MOTOR2_7 7
```

Definition at line 59 of file Zmotor2.h.

5.2.2.16 MOTOR2_8

```
#define MOTOR2_8 8
```

Definition at line 60 of file Zmotor2.h.

5.2.2.17 MOTOR2_9

```
#define MOTOR2_9 9
```

Definition at line 61 of file Zmotor2.h.

5.2.2.18 MOTOR2_A

```
#define MOTOR2_A MOTOR2_10
```

Definition at line 68 of file Zmotor2.h.

5.2.2.19 MOTOR2_B

```
#define MOTOR2_B MOTOR2_11
```

Definition at line 69 of file Zmotor2.h.

5.2.2.20 MOTOR2_C

```
#define MOTOR2_C MOTOR2_12
```

Definition at line 70 of file Zmotor2.h.

5.2.2.21 MOTOR2_D

```
#define MOTOR2_D MOTOR2_13
```

Definition at line 71 of file Zmotor2.h.

5.2.2.22 MOTOR2_E

```
#define MOTOR2_E MOTOR2_14
```

Definition at line 72 of file Zmotor2.h.

5.2.2.23 MOTOR2_F

```
#define MOTOR2_F MOTOR2_15
```

Definition at line 73 of file Zmotor2.h.

5.2.2.24 PCA9685_ADDR_BASE

```
#define PCA9685_ADDR_BASE 0x40
```

Definition at line 76 of file Zmotor2.h.

Referenced by Zmotor2::begin(), and Zmotor2::getPin().

5.2.2.25 PIN_MOTOR2_IO_0

```
#define PIN_MOTOR2_IO_0 (MCP23017_GPA7 | MCP23017_ADDR_BASE<<16)
```

Definition at line 79 of file Zmotor2.h.

5.2.2.26 PIN_MOTOR2_IO_1

```
#define PIN_MOTOR2_IO_1 (MCP23017_GPA6 | MCP23017_ADDR_BASE<<16)
```

Definition at line 80 of file Zmotor2.h.

5.2.2.27 PIN_MOTOR2_IO_10

```
#define PIN_MOTOR2_IO_10 (MCP23017_GPB5 | MCP23017_ADDR_BASE<<16)
```

Definition at line 90 of file Zmotor2.h.

5.2.2.28 PIN_MOTOR2_IO_11

```
#define PIN_MOTOR2_IO_11 (MCP23017_GPB4 | MCP23017_ADDR_BASE<<16)
```

Definition at line 91 of file Zmotor2.h.

5.2.2.29 PIN_MOTOR2_IO_12

```
#define PIN_MOTOR2_IO_12 (MCP23017_GPB3 | MCP23017_ADDR_BASE<<16)
```

Definition at line 92 of file Zmotor2.h.

5.2.2.30 PIN_MOTOR2_IO_13

```
#define PIN_MOTOR2_IO_13 (MCP23017_GPB2 | MCP23017_ADDR_BASE<<16)
```

Definition at line 93 of file Zmotor2.h.

5.2.2.31 PIN_MOTOR2_IO_14

```
#define PIN_MOTOR2_IO_14 (MCP23017_GPB1 | MCP23017_ADDR_BASE<<16)
```

Definition at line 94 of file Zmotor2.h.

5.2.2.32 PIN_MOTOR2_IO_15

```
#define PIN_MOTOR2_IO_15 (MCP23017_GPB0 | MCP23017_ADDR_BASE<<16)
```

Definition at line 95 of file Zmotor2.h.

5.2.2.33 PIN_MOTOR2_IO_2

```
#define PIN_MOTOR2_IO_2 (MCP23017_GPA5 | MCP23017_ADDR_BASE<<16)
```

Definition at line 81 of file Zmotor2.h.

5.2.2.34 PIN_MOTOR2_IO_3

```
#define PIN_MOTOR2_IO_3 (MCP23017_GPA4 | MCP23017_ADDR_BASE<<16)
```

Definition at line 82 of file Zmotor2.h.

5.2.2.35 PIN_MOTOR2_IO_4

```
#define PIN_MOTOR2_IO_4 (MCP23017_GPA3 | MCP23017_ADDR_BASE<<16)
```

Definition at line 83 of file Zmotor2.h.

5.2.2.36 PIN_MOTOR2_IO_5

```
#define PIN_MOTOR2_IO_5 (MCP23017_GPA2 | MCP23017_ADDR_BASE<<16)
```

Definition at line 84 of file Zmotor2.h.

5.2.2.37 PIN_MOTOR2_IO_6

```
#define PIN_MOTOR2_IO_6 (MCP23017_GPA1 | MCP23017_ADDR_BASE<<16)
```

Definition at line 85 of file Zmotor2.h.

5.2.2.38 PIN_MOTOR2_IO_7

```
#define PIN_MOTOR2_IO_7 (MCP23017_GPA0 | MCP23017_ADDR_BASE<<16)
```

Definition at line 86 of file Zmotor2.h.

5.2.2.39 PIN_MOTOR2_IO_8

```
#define PIN_MOTOR2_IO_8 (MCP23017_GPB7 | MCP23017_ADDR_BASE<<16)
```

Definition at line 88 of file Zmotor2.h.

5.2.2.40 PIN_MOTOR2_IO_9

```
#define PIN_MOTOR2_IO_9 (MCP23017_GPB6 | MCP23017_ADDR_BASE<<16)
```

Definition at line 89 of file Zmotor2.h.

5.2.2.41 PIN_MOTOR2_IO_A

```
#define PIN_MOTOR2_IO_A PIN_MOTOR2_IO_10
```

Definition at line 97 of file Zmotor2.h.

5.2.2.42 PIN_MOTOR2_IO_B

```
#define PIN_MOTOR2_IO_B PIN_MOTOR2_IO_11
```

Definition at line 98 of file Zmotor2.h.

5.2.2.43 PIN_MOTOR2_IO_C

```
#define PIN_MOTOR2_IO_C PIN_MOTOR2_IO_12
```

Definition at line 99 of file Zmotor2.h.

5.2.2.44 PIN_MOTOR2_IO_D

```
#define PIN_MOTOR2_IO_D PIN_MOTOR2_IO_13
```

Definition at line 100 of file Zmotor2.h.

5.2.2.45 PIN_MOTOR2_IO_E

```
#define PIN_MOTOR2_IO_E PIN_MOTOR2_IO_14
```

Definition at line 101 of file Zmotor2.h.

5.2.2.46 PIN_MOTOR2_IO_F

```
#define PIN_MOTOR2_IO_F PIN_MOTOR2_IO_15
```

Definition at line 102 of file Zmotor2.h.

5.2.2.47 PIN_MOTOR2_PWM_0

```
#define PIN_MOTOR2_PWM_0 (PCA9685_LED15 | PCA9685_ADDR_BASE<<16)
```

Definition at line 104 of file Zmotor2.h.

5.2.2.48 PIN_MOTOR2_PWM_1

```
#define PIN_MOTOR2_PWM_1 (PCA9685_LED14 | PCA9685_ADDR_BASE<<16)
```

Definition at line 105 of file Zmotor2.h.

5.2.2.49 PIN_MOTOR2_PWM_10

```
#define PIN_MOTOR2_PWM_10 (PCA9685_LED5 | PCA9685_ADDR_BASE<<16)
```

Definition at line 115 of file Zmotor2.h.

5.2.2.50 PIN_MOTOR2_PWM_11

```
#define PIN_MOTOR2_PWM_11 (PCA9685_LED4 | PCA9685_ADDR_BASE<<16)
```

Definition at line 116 of file Zmotor2.h.

5.2.2.51 PIN_MOTOR2_PWM_12

```
#define PIN_MOTOR2_PWM_12 (PCA9685_LED3 | PCA9685_ADDR_BASE<<16)
```

Definition at line 117 of file Zmotor2.h.

5.2.2.52 PIN_MOTOR2_PWM_13

```
#define PIN_MOTOR2_PWM_13 (PCA9685_LED2 | PCA9685_ADDR_BASE<<16)
```

Definition at line 118 of file Zmotor2.h.

5.2.2.53 PIN_MOTOR2_PWM_14

```
#define PIN_MOTOR2_PWM_14 (PCA9685_LED1 | PCA9685_ADDR_BASE<<16)
```

Definition at line 119 of file Zmotor2.h.

5.2.2.54 PIN_MOTOR2_PWM_15

```
#define PIN_MOTOR2_PWM_15 (PCA9685_LED0 | PCA9685_ADDR_BASE<<16)
```

Definition at line 120 of file Zmotor2.h.

5.2.2.55 PIN_MOTOR2_PWM_2

```
#define PIN_MOTOR2_PWM_2 (PCA9685_LED13 | PCA9685_ADDR_BASE<<16)
```

Definition at line 106 of file Zmotor2.h.

5.2.2.56 PIN_MOTOR2_PWM_3

```
#define PIN_MOTOR2_PWM_3 (PCA9685_LED12 | PCA9685_ADDR_BASE<<16)
```

Definition at line 107 of file Zmotor2.h.

5.2.2.57 PIN_MOTOR2_PWM_4

```
#define PIN_MOTOR2_PWM_4 (PCA9685_LED11 | PCA9685_ADDR_BASE<<16)
```

Definition at line 108 of file Zmotor2.h.

5.2.2.58 PIN_MOTOR2_PWM_5

```
#define PIN_MOTOR2_PWM_5 (PCA9685_LED10 | PCA9685_ADDR_BASE<<16)
```

Definition at line 109 of file Zmotor2.h.

5.2.2.59 PIN_MOTOR2_PWM_6

```
#define PIN_MOTOR2_PWM_6 (PCA9685_LED9 | PCA9685_ADDR_BASE<<16)
```

Definition at line 110 of file Zmotor2.h.

5.2.2.60 PIN_MOTOR2_PWM_7

```
#define PIN_MOTOR2_PWM_7 (PCA9685_LED8 | PCA9685_ADDR_BASE<<16)
```

Definition at line 111 of file Zmotor2.h.

5.2.2.61 PIN_MOTOR2_PWM_8

```
#define PIN_MOTOR2_PWM_8 (PCA9685_LED7 | PCA9685_ADDR_BASE<<16)
```

Definition at line 113 of file Zmotor2.h.

5.2.2.62 PIN_MOTOR2_PWM_9

```
#define PIN_MOTOR2_PWM_9 (PCA9685_LED6 | PCA9685_ADDR_BASE<<16)
```

Definition at line 114 of file Zmotor2.h.

5.2.2.63 PIN_MOTOR2_PWM_A

```
#define PIN_MOTOR2_PWM_A PIN_MOTOR2_PWM_10
```

Definition at line 122 of file Zmotor2.h.

5.2.2.64 PIN_MOTOR2_PWM_B

```
#define PIN_MOTOR2_PWM_B PIN_MOTOR2_PWM_11
```

Definition at line 123 of file Zmotor2.h.

5.2.2.65 PIN_MOTOR2_PWM_C

```
#define PIN_MOTOR2_PWM_C PIN_MOTOR2_PWM_12
```

Definition at line 124 of file Zmotor2.h.

5.2.2.66 PIN_MOTOR2_PWM_D

```
#define PIN_MOTOR2_PWM_D PIN_MOTOR2_PWM_13
```

Definition at line 125 of file Zmotor2.h.

5.2.2.67 PIN_MOTOR2_PWM_E

```
#define PIN_MOTOR2_PWM_E PIN_MOTOR2_PWM_14
```

Definition at line 126 of file Zmotor2.h.

5.2.2.68 PIN_MOTOR2_PWM_F

```
#define PIN_MOTOR2_PWM_F PIN_MOTOR2_PWM_15
```

Definition at line 127 of file Zmotor2.h.

5.2.2.69 ROS_USED

```
#define ROS_USED
```

Definition at line 39 of file Zmotor2.h.

5.2.3 Variable Documentation

5.2.3.1 MOTOR2_IO

```
uint32_t MOTOR2_IO[]
```

Definition at line 28 of file Zmotor2.cpp.

Referenced by Zmotor2::cmd().

5.2.3.2 MOTOR2_PWM

```
uint32_t MOTOR2_PWM[]
```

Definition at line 27 of file Zmotor2.cpp.

Referenced by Zmotor2::cmd().

Index