

ZMCP23017 Library

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1 Hierarchical Index

1.1 Class Hierarchy

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

PinExtender

ZMCP23017

2

2 Data Structure Index

2.1 Data Structures

Here are the data structures with brief descriptions:

[ZMCP23017](#)[2](#)

3 File Index

3.1 File List

Here is a list of all files with brief descriptions:

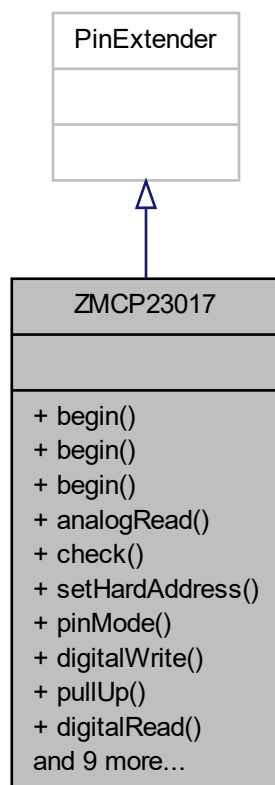
[ZMCP23017.cpp](#)[11](#)[ZMCP23017.h](#)[17](#)

4 Data Structure Documentation

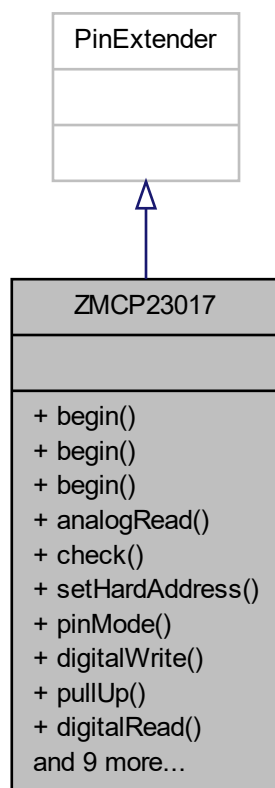
4.1 ZMCP23017 Class Reference

```
#include <ZMCP23017.h>
```

Inheritance diagram for ZMCP23017:



Collaboration diagram for ZMCP23017:



Public Member Functions

- void `begin` (TwoWire *MyWire, uint8_t addr)
- void `begin` (uint8_t addr)
- void `begin` (void)
- uint32_t `analogRead` (uint32_t pin)
- bool `check` ()
- void `setHardAddress` (uint8_t A210)
- void `pinMode` (uint32_t p, uint8_t d)
- void `digitalWrite` (uint32_t p, uint8_t d)
- void `pullUp` (uint32_t p, uint8_t d)
- uint8_t `digitalRead` (uint32_t p)
- word `digitalWordRead` ()
- void `digitalWordWrite` (word w)
- void `inputPolarityMask` (word mask)
- void `inputOutputMask` (word mask)
- void `internalPullupMask` (word mask)
- void `setWire` (TwoWire *MyWire)
- void `analogWrite` (uint32_t ulPin, uint32_t ulValue)
- void `analogWriteResolution` (int res)
- bool `acceptlocal` (uint32_t p)

4.1.1 Detailed Description

Definition at line 52 of file ZMCP23017.h.

4.1.2 Member Function Documentation

4.1.2.1 acceptlocal()

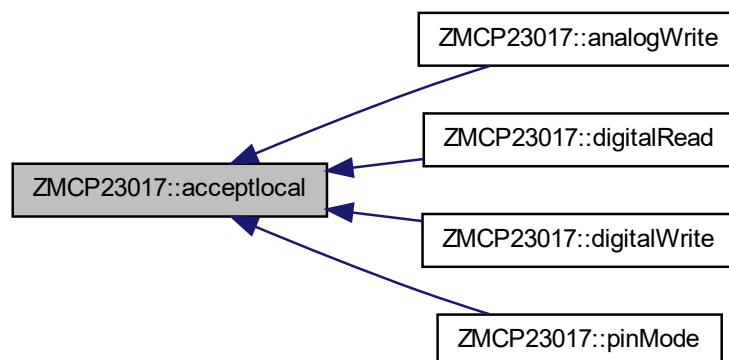
```
bool ZMCP23017::acceptlocal (
    uint32_t p )
```

this test if the arduino pin is a pin for this object a pin of this object is a ulPin value where the value is equal to this.getPin(channel) for a channel=0..15

Definition at line 279 of file ZMCP23017.cpp.

Referenced by analogWrite(), digitalRead(), digitalWrite(), and pinMode().

Here is the caller graph for this function:



4.1.2.2 analogRead()

```
uint32_t ZMCP23017::analogRead (
    uint32_t pin )
```

dummy function for compatibility with arduino API, always return 0

Definition at line 61 of file ZMCP23017.cpp.

4.1.2.3 analogWrite()

```
void ZMCP23017::analogWrite (
    uint32_t ulPin,
    uint32_t ulValue )
```

define the analog output value of the pin like arduino API ulValue can be 0..4096...

ulPin is a pin from this.getPin(x) where x=0..15 here not PWM are available so a value below _writeResolution/2 generate a LOW state else an HIGH state will be apply

Definition at line 221 of file ZMCP23017.cpp.

References acceptlocal().

Here is the call graph for this function:



4.1.2.4 analogWriteResolution()

```
void ZMCP23017::analogWriteResolution (
    int res )
```

define the analog Write Resolution of the components like arduino API res can be 1..16

Definition at line 208 of file ZMCP23017.cpp.

4.1.2.5 begin() [1/3]

```
void ZMCP23017::begin (
    TwoWire * MyWire,
    uint8_t addr )
```

Initializes the [ZMCP23017](#) given its HW selected address, see datasheet for Address selection. or use setHard↵ Address to over write it.

Definition at line 96 of file ZMCP23017.cpp.

References ZMCP23017_ADDRESS, ZMCP23017_ADDRESS_MASK, and ZMCP23017_IODIR.

4.1.2.6 `begin()` [2/3]

```
void ZMCP23017::begin (
    uint8_t addr )
```

Initializes the [ZMCP23017](#) given its HW selected address, see datasheet for Address selection.

Definition at line 125 of file ZMCP23017.cpp.

References `begin()`.

Here is the call graph for this function:



4.1.2.7 `begin()` [3/3]

```
void ZMCP23017::begin (
    void )
```

Initializes the default [ZMCP23017](#), with 000 for the configurable part of the address

Definition at line 132 of file ZMCP23017.cpp.

Referenced by `begin()`.

Here is the caller graph for this function:



4.1.2.8 `check()`

```
bool ZMCP23017::check ( )
```

Definition at line 64 of file ZMCP23017.cpp.

4.1.2.9 digitalRead()

```
uint8_t ZMCP23017::digitalRead (
    uint32_t ulPin )
```

return the digital value of the pin like arduino API

ulPin is a pin from this.getPin(channel) where channel=0..15 returns LOW or HIGH, in case of no pin it returns LOW

Definition at line 264 of file ZMCP23017.cpp.

References `acceptlocal()`, and `ZMCP23017_GPIO`.

Here is the call graph for this function:



4.1.2.10 digitalWordRead()

```
word ZMCP23017::digitalWordRead ( )
```

this function return a word that is the image to of the bus `GPIOB[7..0]:GPIOA[7..0]`

Definition at line 290 of file ZMCP23017.cpp.

References `ZMCP23017_GPIO`.

4.1.2.11 digitalWordWrite()

```
void ZMCP23017::digitalWordWrite (
    word w )
```

this function write a word that is applied to the bus `GPIOB[7..0]:GPIOA[7..0]`

Definition at line 296 of file ZMCP23017.cpp.

References `ZMCP23017_GPIO`.

4.1.2.12 digitalWrite()

```
void ZMCP23017::digitalWrite (
    uint32_t ulPin,
    uint8_t val )
```

define the output value of the pin like arduino API val can be LOW, HIGH ulPin is a pin from this.getPin(x) where x=0..15 if input mode is set, a High active pull up.

Definition at line 178 of file ZMCP23017.cpp.

References acceptlocal(), ZMCP23017_GPIO, and ZMCP23017_GPPU.

Here is the call graph for this function:



4.1.2.13 inputOutputMask()

```
void ZMCP23017::inputOutputMask (
    word mask )
```

this function define the direction of the bus GPIOB[7..0]:GPIOA[7..0], one bit for each pin 1 means input 0 means output

Definition at line 309 of file ZMCP23017.cpp.

References ZMCP23017_IODIR.

4.1.2.14 inputPolarityMask()

```
void ZMCP23017::inputPolarityMask (
    word mask )
```

Definition at line 301 of file ZMCP23017.cpp.

References ZMCP23017_IPOL.

4.1.2.15 internalPullupMask()

```
void ZMCP23017::internalPullupMask (
    word mask )
```

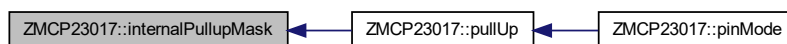
this function define the pull up activation of the bus GPIOB[7..0]:GPIOA[7..0], one bit for each pin 1 means enabled 0 means disabled

Definition at line 317 of file ZMCP23017.cpp.

References ZMCP23017_GPPU.

Referenced by pullUp().

Here is the caller graph for this function:



4.1.2.16 pinMode()

```
void ZMCP23017::pinMode (
    uint32_t ulPin,
    uint8_t mode )
```

Sets the pin mode to either INPUT or OUTPUT

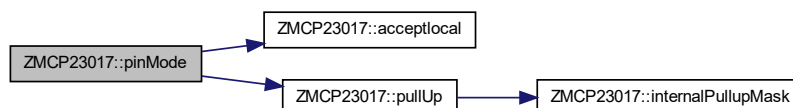
```
void ZMCP23017::pinMode(uint32_t p, uint8_t d) { if(acceptlocal( p)) { updateRegisterBit(p,(d==INPUT),ZMCP23017_IODIRA,ZMCP23017_IODIRB); } else if (_next) return _next->pinMode( p,d);
```

} define the mode of the pin like arduino API mode can be INPUT_PULLUP, INPUT,OUTPUT ulPin is a pin from this.getPin(x) where x=0..15

Definition at line 153 of file ZMCP23017.cpp.

References `acceptlocal()`, `pullUp()`, and `ZMCP23017_IODIR`.

Here is the call graph for this function:



4.1.2.17 pullUp()

```
void ZMCP23017::pullUp (
    uint32_t p,
    uint8_t d )
```

define the pull up of the pin d can be 0 for nio pull up and 1 to enable pull up p is a pin from 0..15

Definition at line 240 of file ZMCP23017.cpp.

References internalPullupMask().

Referenced by pinMode().

Here is the call graph for this function:



Here is the caller graph for this function:



4.1.2.18 setHardAddress()

```
void ZMCP23017::setHardAddress (
    uint8_t A210 )
```

define the address based of PIN A2 , A1,A0 value

Definition at line 70 of file ZMCP23017.cpp.

4.1.2.19 setWire()

```
void ZMCP23017::setWire (
    TwoWire * MyWire )
```

Definition at line 85 of file ZMCP23017.cpp.

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

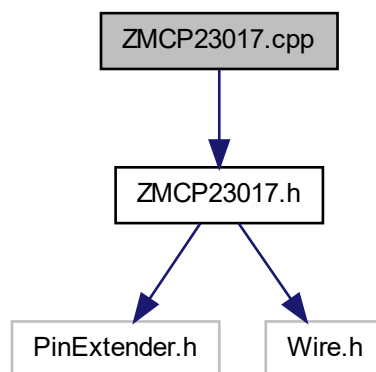
- [ZMCP23017.h](#)
- [ZMCP23017.cpp](#)

5 File Documentation

5.1 ZMCP23017.cpp File Reference

```
#include "ZMCP23017.h"
```

Include dependency graph for ZMCP23017.cpp:



Macros

- `#define ZMCP23017_ADDRESS 0x20`
- `#define ZMCP23017_ADDRESS_MASK 0x78`
- `#define ZMCP23017_IODIRA 0x00`
- `#define ZMCP23017_IPOLA 0x02`
- `#define ZMCP23017_GPINTENA 0x04`
- `#define ZMCP23017_DEFVALA 0x06`
- `#define ZMCP23017_INTCONA 0x08`
- `#define ZMCP23017_IOCONA 0x0A`
- `#define ZMCP23017_GPPUA 0x0C`
- `#define ZMCP23017_INTFA 0x0E`
- `#define ZMCP23017_INTCAPA 0x10`

- `#define ZMCP23017_GPIOA 0x12`
- `#define ZMCP23017_OLATA 0x14`
- `#define ZMCP23017_IODIRB 0x01`
- `#define ZMCP23017_IPOLB 0x03`
- `#define ZMCP23017_GPINTENB 0x05`
- `#define ZMCP23017_DEFVALB 0x07`
- `#define ZMCP23017_INTCONB 0x09`
- `#define ZMCP23017_IOCONB 0x0B`
- `#define ZMCP23017_GPPUB 0x0D`
- `#define ZMCP23017_INTFB 0x0F`
- `#define ZMCP23017_INTCAPB 0x11`
- `#define ZMCP23017_GPIOB 0x13`
- `#define ZMCP23017_OLATB 0x15`
- `#define ZMCP23017_INT_ERR 255`
- `#define ZMCP23017_IODIR 0x00`
- `#define ZMCP23017_IPOL 0x2`
- `#define ZMCP23017_GPPU 0x0C`
- `#define ZMCP23017_GPIO 0x12`

5.1.1 Macro Definition Documentation

5.1.1.1 ZMCP23017_ADDRESS

```
#define ZMCP23017_ADDRESS 0x20
```

Definition at line 17 of file ZMCP23017.cpp.

Referenced by ZMCP23017::begin().

5.1.1.2 ZMCP23017_ADDRESS_MASK

```
#define ZMCP23017_ADDRESS_MASK 0x78
```

Definition at line 18 of file ZMCP23017.cpp.

Referenced by ZMCP23017::begin().

5.1.1.3 ZMCP23017_DEFVALA

```
#define ZMCP23017_DEFVALA 0x06
```

Definition at line 26 of file ZMCP23017.cpp.

5.1.1.4 ZMCP23017_DEFVALB

```
#define ZMCP23017_DEFVALB 0x07
```

Definition at line 39 of file ZMCP23017.cpp.

5.1.1.5 ZMCP23017_GPINTENA

```
#define ZMCP23017_GPINTENA 0x04
```

Definition at line 25 of file ZMCP23017.cpp.

5.1.1.6 ZMCP23017_GPINTENB

```
#define ZMCP23017_GPINTENB 0x05
```

Definition at line 38 of file ZMCP23017.cpp.

5.1.1.7 ZMCP23017_GPIO

```
#define ZMCP23017_GPIO 0x12
```

Definition at line 56 of file ZMCP23017.cpp.

Referenced by ZMCP23017::digitalRead(), ZMCP23017::digitalWordRead(), ZMCP23017::digitalWordWrite(), and ZMCP23017::digitalWrite().

5.1.1.8 ZMCP23017_GPIOA

```
#define ZMCP23017_GPIOA 0x12
```

Definition at line 32 of file ZMCP23017.cpp.

5.1.1.9 ZMCP23017_GPIOB

```
#define ZMCP23017_GPIOB 0x13
```

Definition at line 45 of file ZMCP23017.cpp.

5.1.1.10 ZMCP23017_GPPU

```
#define ZMCP23017_GPPU 0x0C
```

Definition at line 55 of file ZMCP23017.cpp.

Referenced by ZMCP23017::digitalWrite(), and ZMCP23017::internalPullupMask().

5.1.1.11 ZMCP23017_GPPUA

```
#define ZMCP23017_GPPUA 0x0C
```

Definition at line 29 of file ZMCP23017.cpp.

5.1.1.12 ZMCP23017_GPPUB

```
#define ZMCP23017_GPPUB 0x0D
```

Definition at line 42 of file ZMCP23017.cpp.

5.1.1.13 ZMCP23017_INT_ERR

```
#define ZMCP23017_INT_ERR 255
```

Definition at line 48 of file ZMCP23017.cpp.

5.1.1.14 ZMCP23017_INTCAPA

```
#define ZMCP23017_INTCAPA 0x10
```

Definition at line 31 of file ZMCP23017.cpp.

5.1.1.15 ZMCP23017_INTCAPB

```
#define ZMCP23017_INTCAPB 0x11
```

Definition at line 44 of file ZMCP23017.cpp.

5.1.1.16 ZMCP23017_INTCONA

```
#define ZMCP23017_INTCONA 0x08
```

Definition at line 27 of file ZMCP23017.cpp.

5.1.1.17 ZMCP23017_INTCONB

```
#define ZMCP23017_INTCONB 0x09
```

Definition at line 40 of file ZMCP23017.cpp.

5.1.1.18 ZMCP23017_INTFA

```
#define ZMCP23017_INTFA 0x0E
```

Definition at line 30 of file ZMCP23017.cpp.

5.1.1.19 ZMCP23017_INTFB

```
#define ZMCP23017_INTFB 0x0F
```

Definition at line 43 of file ZMCP23017.cpp.

5.1.1.20 ZMCP23017_IOCONA

```
#define ZMCP23017_IOCONA 0x0A
```

Definition at line 28 of file ZMCP23017.cpp.

5.1.1.21 ZMCP23017_IOCONB

```
#define ZMCP23017_IOCONB 0x0B
```

Definition at line 41 of file ZMCP23017.cpp.

5.1.1.22 ZMCP23017_IODIR

```
#define ZMCP23017_IODIR 0x00
```

Definition at line 53 of file ZMCP23017.cpp.

Referenced by ZMCP23017::begin(), ZMCP23017::inputOutputMask(), and ZMCP23017::pinMode().

5.1.1.23 ZMCP23017_IODIRA

```
#define ZMCP23017_IODIRA 0x00
```

Definition at line 23 of file ZMCP23017.cpp.

5.1.1.24 ZMCP23017_IODIRB

```
#define ZMCP23017_IODIRB 0x01
```

Definition at line 36 of file ZMCP23017.cpp.

5.1.1.25 ZMCP23017_IPOL

```
#define ZMCP23017_IPOL 0x2
```

Definition at line 54 of file ZMCP23017.cpp.

Referenced by ZMCP23017::inputPolarityMask().

5.1.1.26 ZMCP23017_IPOLA

```
#define ZMCP23017_IPOLA 0x02
```

Definition at line 24 of file ZMCP23017.cpp.

5.1.1.27 ZMCP23017_IPOLB

```
#define ZMCP23017_IPOLB 0x03
```

Definition at line 37 of file ZMCP23017.cpp.

5.1.1.28 ZMCP23017_OLATA

```
#define ZMCP23017_OLATA 0x14
```

Definition at line 33 of file ZMCP23017.cpp.

5.1.1.29 ZMCP23017_OLATB

```
#define ZMCP23017_OLATB 0x15
```

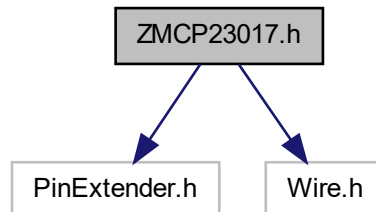
Definition at line 46 of file ZMCP23017.cpp.

5.2 ZMCP23017.h File Reference

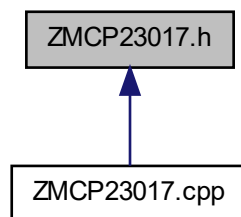
```
#include "PinExtender.h"
```

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

Include dependency graph for ZMCP23017.h:



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



Data Structures

- class [ZMCP23017](#)

Macros

- #define [MCP23017_GPA7](#) 7
- #define [MCP23017_GPA6](#) 6
- #define [MCP23017_GPA5](#) 5
- #define [MCP23017_GPA4](#) 4
- #define [MCP23017_GPA3](#) 3
- #define [MCP23017_GPA2](#) 2
- #define [MCP23017_GPA1](#) 1
- #define [MCP23017_GPA0](#) 0
- #define [MCP23017_GPB7](#) 15

- `#define MCP23017_GPB6` 14
- `#define MCP23017_GPB5` 13
- `#define MCP23017_GPB4` 12
- `#define MCP23017_GPB3` 11
- `#define MCP23017_GPB2` 10
- `#define MCP23017_GPB1` 9
- `#define MCP23017_GPB0` 8
- `#define NO_CHANNEL` 0xfe

5.2.1 Macro Definition Documentation

5.2.1.1 MCP23017_GPA0

```
#define MCP23017_GPA0 0
```

Definition at line 39 of file ZMCP23017.h.

5.2.1.2 MCP23017_GPA1

```
#define MCP23017_GPA1 1
```

Definition at line 38 of file ZMCP23017.h.

5.2.1.3 MCP23017_GPA2

```
#define MCP23017_GPA2 2
```

Definition at line 37 of file ZMCP23017.h.

5.2.1.4 MCP23017_GPA3

```
#define MCP23017_GPA3 3
```

Definition at line 36 of file ZMCP23017.h.

5.2.1.5 MCP23017_GPA4

```
#define MCP23017_GPA4 4
```

Definition at line 35 of file ZMCP23017.h.

5.2.1.6 MCP23017_GPA5

```
#define MCP23017_GPA5 5
```

Definition at line 34 of file ZMCP23017.h.

5.2.1.7 MCP23017_GPA6

```
#define MCP23017_GPA6 6
```

Definition at line 33 of file ZMCP23017.h.

5.2.1.8 MCP23017_GPA7

```
#define MCP23017_GPA7 7
```

Definition at line 32 of file ZMCP23017.h.

5.2.1.9 MCP23017_GPB0

```
#define MCP23017_GPB0 8
```

Definition at line 48 of file ZMCP23017.h.

5.2.1.10 MCP23017_GPB1

```
#define MCP23017_GPB1 9
```

Definition at line 47 of file ZMCP23017.h.

5.2.1.11 MCP23017_GPB2

```
#define MCP23017_GPB2 10
```

Definition at line 46 of file ZMCP23017.h.

5.2.1.12 MCP23017_GPB3

```
#define MCP23017_GPB3 11
```

Definition at line 45 of file ZMCP23017.h.

5.2.1.13 MCP23017_GPB4

```
#define MCP23017_GPB4 12
```

Definition at line 44 of file ZMCP23017.h.

5.2.1.14 MCP23017_GPB5

```
#define MCP23017_GPB5 13
```

Definition at line 43 of file ZMCP23017.h.

5.2.1.15 MCP23017_GPB6

```
#define MCP23017_GPB6 14
```

Definition at line 42 of file ZMCP23017.h.

5.2.1.16 MCP23017_GPB7

```
#define MCP23017_GPB7 15
```

Definition at line 41 of file ZMCP23017.h.

5.2.1.17 NO_CHANNEL

```
#define NO_CHANNEL 0xfe
```

Definition at line 50 of file ZMCP23017.h.

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