ZEncoder Library

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1 ZEncoder

Arduino Lib for encoder of motor with ros. It work like a PDEC peripheal. just keep in mind that it is handler by interrupt and it cost in cpu time : for 1 motor at 10k rpm with 1 tick per revolutions it cost 66kcyc per seconde (10000/60∗450cyc) (without speed control) and it can create latency about 10s@48Mhz that could drop data on serial if serial interrupt happen to late.

2 Deprecated List

Global ZEncoder::attachEncoderInt (ZEncodervoidFuncPtr userFunc)

Global ZEncoder::simulate (signed int value)

3 Data Structure Index

3.1 Data Structures

Here are the data structures with brief descriptions:

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4 File Index

4.1 File List

Here is a list of all files with brief descriptions:

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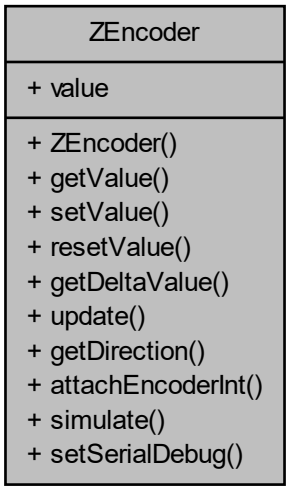
5 Data Structure Documentation

5.1 ZEncoder Class Reference

```
#include <ZEncoder.h>
```

Collaboration diagram for ZEncoder:



Public Member Functions

- ZEncoder (int pinA, int pinB, eMode mymode, void(∗optionalCallBack)(int))
- signed int getValue ()
- void setValue (int newValue)
- void resetValue ()
- signed int getDeltaValue ()
- void update ()
- int getDirection ()
- void attachEncoderInt (ZEncodervoidFuncPtr userFunc)
- void simulate (signed int value)
- void setSerialDebug (HardwareSerial ∗SerialDebug)

Data Fields

- volatile int value

5.1.1 Detailed Description

Definition at line 36 of file ZEncoder.h.

5.1.2 Constructor & Destructor Documentation

5.1.2.1 ZEncoder()

```
ZEncoder::ZEncoder (
            int pinA,
            int pinB,
            eMode mymode,
            void(*)(int) optionalCallBack )
```

constructor

This will enumerate a GroveEncoder on a particular pin. You can provide an optional callback, or poll the "get↩ Value()" API. mode equal to QUARTER count 4 for a cycle(1 per phase), equal to full it count 1 per cycle(less accurate, but support high frequency).

Parameters

mymode	the mode of accuracy

Definition at line 93 of file ZEncoder.cpp.

References setValue().

Here is the call graph for this function:

5.1.3 Member Function Documentation

5.1.3.1 attachEncoderInt()

```
void ZEncoder::attachEncoderInt (
            ZEncodervoidFuncPtr userFunc )
```

atttach manualy an interupt call back

Deprecated

Definition at line 181 of file ZEncoder.cpp.

References QUARTER.

5.1.3.2 getDeltaValue()

```
signed int ZEncoder::getDeltaValue ( )
```

get the delta of value since last call to this function.

Returns

the absolute value of encoder

Definition at line 69 of file ZEncoder.cpp.

References value.

5.1.3.3 getDirection()

```
int ZEncoder::getDirection ( )
```

get the current direction

give direction since last getDeltaValue()

Definition at line 11 of file ZEncoder.cpp.

References CLOCKWISE, COUNTERCLOCKWISE, UNCERTAIN, and value.

5.1.3.4 getValue()

```
signed int ZEncoder::getValue ( )
```

get teh absolute value

Returns

the absolute value of encoder

Definition at line 18 of file ZEncoder.cpp.

References value.

5.1.3.5 resetValue()

```
void ZEncoder::resetValue ( )
```

set the absolute value to 0

Definition at line 77 of file ZEncoder.cpp.

References setValue().

Here is the call graph for this function:

5.1.3.6 setSerialDebug()

```
void ZEncoder::setSerialDebug (
            HardwareSerial * SerialDebug )
```

setup a debug channel to have output on serial the drawback it that it waste cpu cycle, and you an lost some tick but usefull for debug.

Definition at line 150 of file ZEncoder.cpp.

5.1.3.7 setValue()

```
void ZEncoder::setValue (
            int newValue )
```

set the absolute value

Parameters

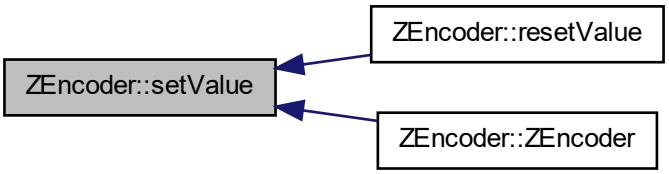
newValue	new value

Definition at line 81 of file ZEncoder.cpp.

References value.

Referenced by resetValue(), and ZEncoder().

Here is the caller graph for this function:



5.1.3.8 simulate()

```
void ZEncoder::simulate (
            signed int value )
```

Deprecated

Definition at line 157 of file ZEncoder.cpp.

References value.

5.1.3.9 update()

```
void ZEncoder::update (
            void  )
```

perform the processing on the interruption, it should be link to the call back.

Definition at line 283 of file ZEncoder.cpp.

References DIGITALREADIC1, DIGITALREADIC2, QUARTER, and value.

5.1.4 Field Documentation

5.1.4.1 value

```
volatile int ZEncoder::value
```

Definition at line 94 of file ZEncoder.h.

Referenced by getDeltaValue(), getDirection(), getValue(), setValue(), simulate(), and update().

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

- ZEncoder.h
- ZEncoder.cpp

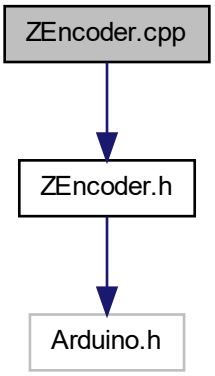
6 File Documentation

6.1 README.md File Reference

6.2 ZEncoder.cpp File Reference

```
#include <ZEncoder.h>
```

Include dependency graph for ZEncoder.cpp:



Macros

- #define DEBUG(a) {}
- #define DIGITALREADIC1() digitalRead(pinIC1)
- #define DIGITALREADIC2() digitalRead(pinIC2)

6.2.1 Macro Definition Documentation

6.2.1.1 DEBUG

```
#define DEBUG(
              a ) {}
```

Definition at line 7 of file ZEncoder.cpp.

6.2.1.2 DIGITALREADIC1

```
#define DIGITALREADIC1( ) digitalRead(pinIC1)
```

Definition at line 146 of file ZEncoder.cpp.

Referenced by ZEncoder::update().

6.2.1.3 DIGITALREADIC2

```
#define DIGITALREADIC2( ) digitalRead(pinIC2)
```

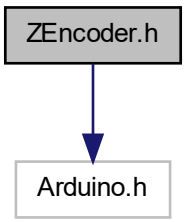
Definition at line 147 of file ZEncoder.cpp.

Referenced by ZEncoder::update().

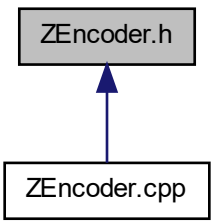
6.3 ZEncoder.h File Reference

```
#include <Arduino.h>
```

Include dependency graph for ZEncoder.h:



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



Data Structures

- class ZEncoder

Macros

- #define OPTIMIZE 1

Typedefs

- typedef void(∗ ZEncodervoidFuncPtr) (void)

Enumerations

- enum Rotation { CLOCKWISE = 2, COUNTERCLOCKWISE = 3, UNCERTAIN = 4 }
  Another piece of state for rotation state machine.
- enum eMode { QUARTER = 0, FULL = 1 }
  Mode accuracy.

6.3.1 Detailed Description

An library that manage encoder like PDEC peripheral but in software with pin interrupt.

6.3.2 Macro Definition Documentation

6.3.2.1 OPTIMIZE

```
#define OPTIMIZE 1
```

Definition at line 18 of file ZEncoder.h.

6.3.3 Typedef Documentation

6.3.3.1 ZEncodervoidFuncPtr

```
typedef void(* ZEncodervoidFuncPtr) (void)
```

Definition at line 35 of file ZEncoder.h.

6.3.4 Enumeration Type Documentation

6.3.4.1 eMode

```
enum eMode
```

Mode accuracy.

Enumerator

QUARTER	define a tick at each edge of waveform of IA ant IB pin, so 4 tick per rotation, it use 2 interruptions.
FULL	define a tick per 4 edges of waveform of IA ant IB pin, so 1 tick per rotation, it use 1 interruption.

Definition at line 29 of file ZEncoder.h.

6.3.4.2 Rotation

```
enum Rotation
```

Another piece of state for rotation state machine.

Enumerator

CLOCKWISE	
COUNTERCLOCKWISE	
UNCERTAIN	

Definition at line 24 of file ZEncoder.h.

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