Arduino Distance Driver

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Contents

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1.1 Class Hierarchy

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

2 Class Index

2.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

3 File Index

3.1 File List

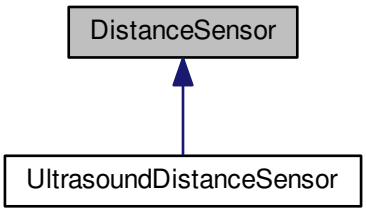
Here is a list of all files with brief descriptions:

4 Class Documentation

4.1 DistanceSensor Class Reference

`#include <DistanceSensor.h>`

Inheritance diagram for DistanceSensor:



Public Member Functions

- virtual float getDistance ()=0

4.1.1 Detailed Description

Arduino - Distance sensor.

DistanceSensor.h

The abstract class for the distance sensors.

Author

Dalmir da Silva dalmirdasilva@gmail.com

Definition at line 14 of file DistanceSensor.h.

4.1.2 Member Function Documentation

4.1.2.1 virtual float DistanceSensor::getDistance ( ) [pure virtual]

Gets the distance o the device from whatever is in front of it.

The distance in centimeters.

Implemented in UltrasoundDistanceSensor.

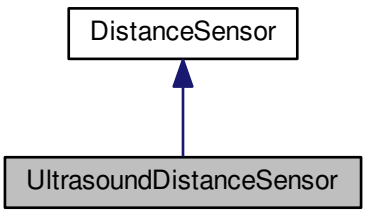
The documentation for this class was generated from the following file:

- DistanceSensor.h

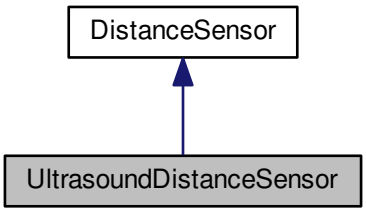
4.2 UltrasoundDistanceSensor Class Reference

`#include <UltrasoundDistanceSensor.h>`

Inheritance diagram for UltrasoundDistanceSensor:



Collaboration diagram for UltrasoundDistanceSensor:



Public Member Functions

- UltrasoundDistanceSensor (unsigned char echoPin, unsigned char trigPin)
- unsigned long getEchoTime ()
- float getDistance ()

Private Attributes

- unsigned char echoPin
- unsigned char trigPin

4.2.1 Detailed Description

Definition at line 44 of file UltrasoundDistanceSensor.h.

4.2.2 Constructor & Destructor Documentation

4.2.2.1 UltrasoundDistanceSensor::UltrasoundDistanceSensor (unsigned char *echoPin,* unsigned char *trigPin*)

Public constructor.

Parameters

echoPin	The echo pin.
trigPin	The trigger pin.

Definition at line 17 of file UltrasoundDistanceSensor.cpp.

4.2.3 Member Function Documentation

4.2.3.1 float UltrasoundDistanceSensor::getDistance ( ) [virtual]

Gets the distance o the device from whatever is in front of it.

The distance in centimeters.

Implements DistanceSensor.

Definition at line 29 of file UltrasoundDistanceSensor.cpp.

4.2.3.2 unsigned long UltrasoundDistanceSensor::getEchoTime ( )

Gets the time between the send and reice the sound.

The time between the send and reice the sound.

Definition at line 22 of file UltrasoundDistanceSensor.cpp.

4.2.4 Member Data Documentation

4.2.4.1 unsigned char UltrasoundDistanceSensor::echoPin [private]

The echo pin.

Definition at line 50 of file UltrasoundDistanceSensor.h.

4.2.4.2 unsigned char UltrasoundDistanceSensor::trigPin [private]

The trig pin.

Definition at line 55 of file UltrasoundDistanceSensor.h.

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

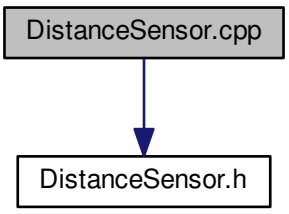
- UltrasoundDistanceSensor.h
- UltrasoundDistanceSensor.cpp

5 File Documentation

5.1 DistanceSensor.cpp File Reference

```
#include <DistanceSensor.h>
```

Include dependency graph for DistanceSensor.cpp:



Macros

- #define __ARDUINO_DRIVER_DISTANCE_SENSOR_CPP__ 1

5.1.1 Macro Definition Documentation

5.1.1.1 #define __ARDUINO_DRIVER_DISTANCE_SENSOR_CPP__ 1

Arduino - Distance sensor.

DistanceSensor.cpp

The abstract class for the distance sensors.

Author

Dalmir da Silva dalmirdasilva@gmail.com

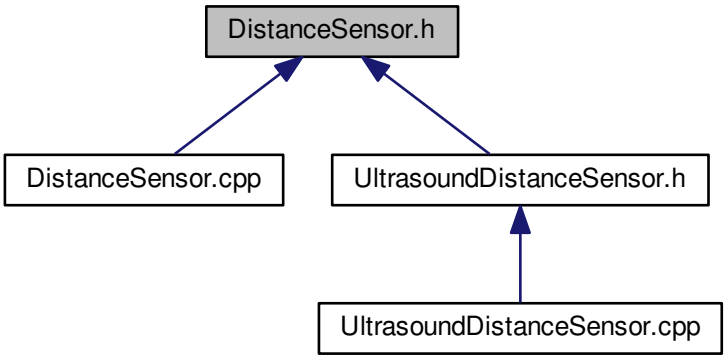
Definition at line 12 of file DistanceSensor.cpp.

5.2 DistanceSensor.cpp

```
00001
00011 #ifndef __ARDUINO_DRIVER_DISTANCE_SENSOR_CPP__
00012 #define __ARDUINO_DRIVER_DISTANCE_SENSOR_CPP__ 1
00013
00014 #include <DistanceSensor.h>
00015
00016 #endif /* __ARDUINO_DRIVER_DISTANCE_SENSOR_CPP__ */
```

5.3 DistanceSensor.h File Reference

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



Classes

- class DistanceSensor

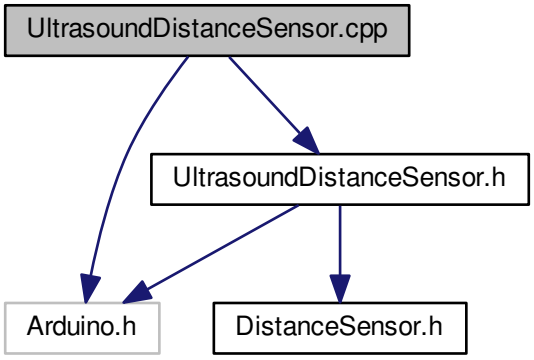
5.4 DistanceSensor.h

```
00001
00011 #ifndef __ARDUINO_DRIVER_DISTANCE_SENSOR_H__
00012 #define __ARDUINO_DRIVER_DISTANCE_SENSOR_H__ 1
00013
00014 class DistanceSensor {
00015 public:
00016
00022     virtual float getDistance() = 0;
00023 };
00024
00025 #endif /* __ARDUINO_DRIVER_DISTANCE_SENSOR_H__ */
```

5.5 UltrasoundDistanceSensor.cpp File Reference

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

Include dependency graph for UltrasoundDistanceSensor.cpp:



Macros

- #define __ARDUINO_DRIVER_ULTRASOUND_DISTANCE_SENSOR_CPP__ 1

5.5.1 Macro Definition Documentation

5.5.1.1 #define __ARDUINO_DRIVER_ULTRASOUND_DISTANCE_SENSOR_CPP__ 1

Arduino - Ultrasound distance sensor.

UltrasoundDistanceSensor.cpp

The abstract class for the ultrasound distance sensor.

Author

Dalmir da Silva dalmirdasilva@gmail.com

Definition at line 12 of file UltrasoundDistanceSensor.cpp.

5.6 UltrasoundDistanceSensor.cpp

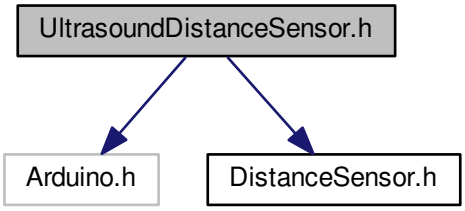
```
00001
00011 #ifndef __ARDUINO_DRIVER_ULTRASOUND_DISTANCE_SENSOR_CPP__
00012 #define __ARDUINO_DRIVER_ULTRASOUND_DISTANCE_SENSOR_CPP__ 1
00013
00014 #include <Arduino.h>
00015 #include <UltrasoundDistanceSensor.h>
00016
00017 UltrasoundDistanceSensor::UltrasoundDistanceSensor(
      unsigned char echoPin, unsigned char trigPin) : echoPin(echoPin), trigPin(trigPin) {
00018     pinMode(echoPin, INPUT);
00019     pinMode(trigPin, OUTPUT);
00020 }
00021
00022 unsigned long UltrasoundDistanceSensor::getEchoTime() {
00023     digitalWrite(trigPin, HIGH);
```

```
00024     delayMicroseconds(100);
00025     digitalWrite(trigPin, LOW);
00026     return pulseIn(echoPin, HIGH, US_SENSOR_PULSE_IN_TIMEOUT);
00027 }
00028
00029 float UltrasoundDistanceSensor::getDistance() {
00030     float time = (float) getEchoTime();
00031     return time / US_SENSOR_2_TIMES_US_PER_CM;
00032 }
00033
00034 #endif /* __ARDUINO_DRIVER_ULTRASOUND_DISTANCE_SENSOR_CPP__ */
```

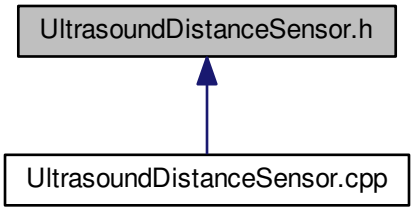
5.7 UltrasoundDistanceSensor.h File Reference

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

Include dependency graph for UltrasoundDistanceSensor.h:



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



Classes

- class UltrasoundDistanceSensor

Macros

- #define US_SENSOR_CM_PER_US 0.03463
- #define US_SENSOR_US_PER_CM 28.8
- #define US_SENSOR_2_TIMES_US_PER_CM 57.7
- #define US_SENSOR_PULSE_IN_TIMEOUT 11540.0

5.7.1 Macro Definition Documentation

5.7.1.1 #define US_SENSOR_2_TIMES_US_PER_CM 57.7

Doubles the time, counting the time to go and back.

(US_SENSOR_US_PER_CM∗2)

Definition at line 34 of file UltrasoundDistanceSensor.h.

5.7.1.2 #define US_SENSOR_CM_PER_US 0.03463

Arduino - Ultrasound distance sensor.

UltrasoundDistanceSensor.h

The abstract class for the ultrasound distance sensor.

Author

Dalmir da Silva dalmirdasilva@gmail.com Centimeters per microsecond.

Definition at line 20 of file UltrasoundDistanceSensor.h.

5.7.1.3 #define US_SENSOR_PULSE_IN_TIMEOUT 11540.0

2 meters How many microseconds can wait.

Enough to go and back 2 meters of distance.

(US_SENSOR_2_TIMES_US_PER_CM∗2∗100)

Definition at line 42 of file UltrasoundDistanceSensor.h.

5.7.1.4 #define US_SENSOR_US_PER_CM 28.8

Microseconds in 1 centimeter.

(1/US_SENSOR_CM_PER_US)

Definition at line 27 of file UltrasoundDistanceSensor.h.

5.8 UltrasoundDistanceSensor.h

```
00001
00011 #ifndef __ARDUINO_DRIVER_ULTRASOUND_DISTANCE_SENSOR_H__
00012 #define __ARDUINO_DRIVER_ULTRASOUND_DISTANCE_SENSOR_H__ 1
00013
00014 #include <Arduino.h>
00015 #include <DistanceSensor.h>
00016
00020 #define US_SENSOR_CM_PER_US 0.03463
00021
00027 #define US_SENSOR_US_PER_CM 28.8
00028
00034 #define US_SENSOR_2_TIMES_US_PER_CM 57.7
00035
00042 #define US_SENSOR_PULSE_IN_TIMEOUT 11540.0
00043
00044 class UltrasoundDistanceSensor : public DistanceSensor {
00045 private:
00046
00050     unsigned char echoPin;
00051
00055     unsigned char trigPin;
00056
00057 public:
00058
00065     UltrasoundDistanceSensor(unsigned char echoPin, unsigned char trigPin);
00066
00072     unsigned long getEchoTime();
00073
00079     float getDistance();
```

```
00080 };
00081
00082 #endif /* __ARDUINO_DRIVER_ULTRASOUND_DISTANCE_SENSOR_H__ */
```

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