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| Document Title | Specification of ULTRASONIC Driver |
| **Document Owner** |  |
| **Document Responsibility** | Yasmin Mohamed Alaa Al-Din |
| **Document Identification No** |  |
| **Document Classification** |  |
|  |  |
| **Document Version** |  |
| **Document Status** |  |
| **Part of Release** |  |
| **Revision** |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Document Change History** | | |
| **Date** | **Version** | **Changed by** | **Change Description** |
| 20.04.2017 | 1.0.1 | Yasmin Mohamed Alaa Al-Din | Adding state machine |
| 20.04.2017 | 1.0.0 | Yasmin Mohamed Alaa Al-Din | Initial Release |

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**Table of Contents**

Contents

[1 Introduction and functional overview 5](#_Toc512010987)

[1.1 Objective 5](#_Toc512010988)

[1.2 Context Diagram 5](#_Toc512010989)

[1.3 Acronyms and abbreviations 5](#_Toc512010990)

[2 External interfaces 6](#_Toc512010991)

[2.1 Std\_Types.h 6](#_Toc512010992)

[2.1.1 Types 6](#_Toc512010993)

[2.1.2 Interfaces 6](#_Toc512010994)

[2.1.3 Constants 6](#_Toc512010995)

[2.1.4 Variables 6](#_Toc512010996)

[2.2 ICU\_MCAL.h 6](#_Toc512010997)

[2.2.1 Types 6](#_Toc512010998)

[2.2.2 Interfaces 6](#_Toc512010999)

[2.2.3 Constants 7](#_Toc512011000)

[2.2.4 Variables 7](#_Toc512011001)

[2.3 DIO.h 7](#_Toc512011002)

[2.3.1 Types 7](#_Toc512011003)

[2.3.2 Interfaces 7](#_Toc512011004)

[2.3.3 Constants 7](#_Toc512011005)

[2.3.4 Variables 7](#_Toc512011006)

[3 Static Design 7](#_Toc512011007)

[3.1 File structure 7](#_Toc512011008)

[3.1.1 Used Files 7](#_Toc512011009)

[3.1.2 File inclusion 8](#_Toc512011010)

[3.2 Types 8](#_Toc512011011)

[3.2.1 Imported types 8](#_Toc512011012)

[3.2.2 Types Definitions 8](#_Toc512011013)

[3.3 Symbol Definition 9](#_Toc512011014)

[3.4 Function definitions 9](#_Toc512011015)

[3.4.1 9](#_Toc512011016)

[3.5 Call-back notifications 10](#_Toc512011017)

[3.6 Scheduled functions 10](#_Toc512011018)

[4 Dynamic Design 10](#_Toc512011019)

[4.1 Mode Management 11](#_Toc512011020)

[4.2 Sequence Diagram 11](#_Toc512011021)

[4.2.1 Trigger mode 11](#_Toc512011022)

[5 Shared Resources 12](#_Toc512011023)

[6 Configuration specification 12](#_Toc512011024)

[6.1 Containers and configuration parameters 12](#_Toc512011025)

[6.1.1 Variants 12](#_Toc512011026)

[6.1.2 Parameters 12](#_Toc512011027)

[7 Configuration Constraints 13](#_Toc512011028)

[8 Integration Constraints 13](#_Toc512011029)

[9 History 13](#_Toc512011030)

[9.1 Initial version 13](#_Toc512011031)

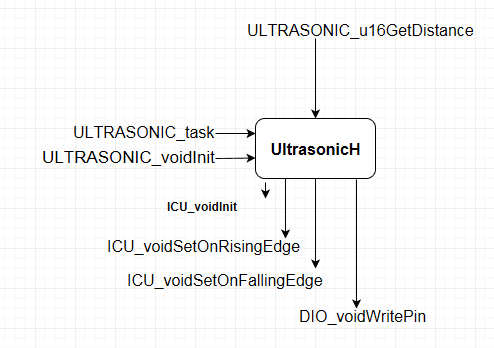
[9.2 Any update for ULTRASONIC\_CDD will determine in this section. 13](#_Toc512011032)

# Introduction and functional overview

## Objective

It’s used for calculating distance between object and ultrasonic sensor using ICU in timer1

## Context Diagram



## Acronyms and abbreviations

Acronyms and abbreviations that have a local scope.

|  |  |
| --- | --- |
| ***Abbreviation / Acronym:*** | ***Description:*** |
| ICU | Input capture unit |

# External interfaces

## Std\_Types.h

### Types

|  |  |
| --- | --- |
| Name | Description |
| U8 | Unsigned char. |
| U16 | Unsigned short Int. |
| U32 | Unsigned long Int. |

### Interfaces

None

### Constants

None.

### Variables

None.

## ICU\_MCAL.h

### Types

None

### Interfaces

|  |  |
| --- | --- |
| Name | Description |
| **Void ICU\_voidInitialize(void)** | This function initiates all register which related to the ICU module |
| Void ICU\_voidSetOnRisingEdge(void) | This function shall enable the ICU interrupt on rising edge |
| Void ICU\_voidSetOnFallingEdge(void) | This function shall enable the ICU interrupt on falling edge |
| **Void ICU\_voidEnableInterrupt(void)** | This function shall enable the ICU interrupt |
| **Void ICU\_voidDisableInterrupt(void)** | This function shall disable the ICU interrupt |

### Constants

None.

### Variables

None.

## DIO.h

### Types

|  |  |
| --- | --- |
| Type | ***Description*** |
| DIO\_pin\_Name\_t | Enum has the names of the pins used in the DIO |

### Interfaces

|  |  |
| --- | --- |
| Function | ***Description*** |
| DIO\_writePin | This function is used to write on a specific pin |

### Constants

None

### Variables

None

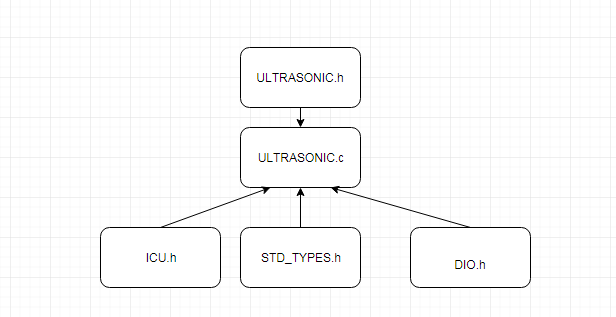
# Static Design

## File structure

### Used Files

|  |  |
| --- | --- |
| ***File*** | ***Description*** |
| UltrasonicSensor.h | This file includes all prototype of function, #defines, extern constant, types which will be accessible to the other modules. |
| UltrasonicSensor.c | Contains the implementation of all the interfaces of the Ultrasonic interfaces. |

### File inclusion



## Types

### Imported types

|  |  |
| --- | --- |
| ***Module*** | ***Imported Type*** |
| STD\_TYPES.h | U8 |
| U16 |
| U32 |

|  |  |
| --- | --- |
| ***Module*** | ***Imported Type*** |
| DIO.h | U8 |
| U16 |
| U32 |

### Types Definitions

|  |  |  |  |
| --- | --- | --- | --- |
| ***Name:*** |  | | |
| ***Type:*** |  | | |
| ***Range:*** |  |  |  |
| ***Description:*** |  | | |

## Symbol Definition

|  |  |
| --- | --- |
| ***Name:*** |  |
| ***Type:*** |  |
| ***Value:*** |  |
| ***Description:*** |  |

## Function definitions

This is a list of functions provided for upper layer modules.

### 

|  |  |  |
| --- | --- | --- |
| ***Service name:*** | **Ultrasonic\_voidInit** | |
| ***Syntax:*** | **voidULTRASONIC\_voidInit(void)** | |
| ***Service ID[hex]:*** | Ultrasonic-001 | |
| ***Sync/Async:*** | Sync | |
| ***Reentrancy:*** | None | |
| ***Parameters (in):*** | None |  |
| ***Parameters***  ***(in/out):*** | None | |
| ***Parameters (out):*** | None | |
| ***Return value:*** | None |  |
| ***Description:*** | This function initiates all modules which related to the Ultrasonic module | |

|  |  |  |
| --- | --- | --- |
| ***Service name:*** | **Ultrasonic\_u16GetDistance** | |
| ***Syntax:*** | Void **Ultrasonic\_u16GetDistance**(void) | |
| ***Service ID[hex]:*** | Ultrasonic -002 | |
| ***Sync/Async:*** | Sync | |
| ***Reentrancy:*** | None | |
| ***Parameters (in):*** | None |  |
| ***Parameters***  ***(in/out):*** |  | |
| ***Parameters (out):*** | None | |
| ***Return value:*** | U16 | This value represents distance between ultrasonic sensor and object |
| ***Description:*** | This function shall get the value of duration time of pulse generated by echo pin using ICU module and then use it in a specific equation to calculate distance and return that value to caller | |

## Call-back notifications

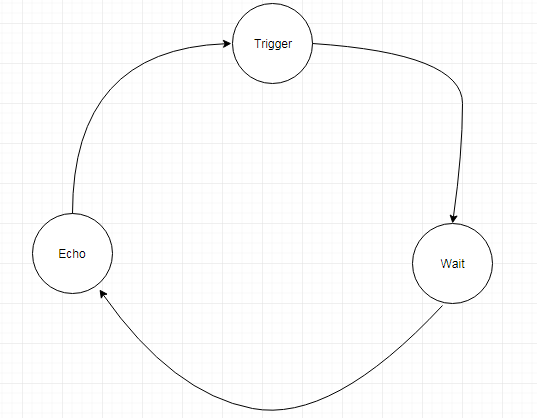
The Ultrasonic module does not provide any callback notifications.

## Scheduled functions

The Ultrasonic module has no scheduled functions.

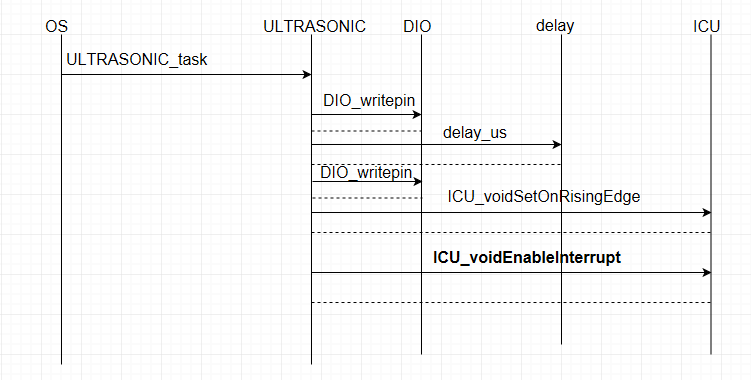
# Dynamic Design

## Mode Management



## Sequence Diagram

### Trigger mode



# Shared Resources

There are no shared resources between ICU module and other modules.

# Configuration specification

This chapter defines configuration parameters and their clustering into containers.

## Containers and configuration parameters

The following chapters summarize all configuration parameters.

### Variants

Configuration variants describe sets of configuration parameters:

* VARIANT-PRE-COMPILE (PC)

Only parameters with "Pre-compile time" configuration are allowed in this variant.

* VARIANT-LINK-TIME (LT)

Only parameters with "Pre-compile time" and "Link time" are allowed in this variant.

* VARIANT-POST-BUILD (PB)

Parameters with "Pre-compile time", "Link time" and "Post-build time" are allowed in this variant.

Parameters

### 

### Parameters

#### 

|  |  |  |  |
| --- | --- | --- | --- |
| ***Name*** |  | | |
| ***Description*** |  | | |
| ***Multiplicity*** | 1 | | |
| ***Type*** |  | | |
| ***Default value*** | -- | | |
| ***Configuration Class*** | ***Pre-compile time*** | | |
| ***Configuration Class***  ***Scope / Dependency*** | ***Link time*** | X | All Variants |
| ***Post-build time*** | -- |  |
| scope: local | -- |  |
|  |  | | |

# Configuration Constraints

There is no configuration need for ULTRASONIC module until any update.

# Integration Constraints

Initialization function is required to use the ULTRASONIC module.

# History

## Initial version

## Any update for ULTRASONIC\_CDD will determine in this section.