**PO2EBL\_ELECTRIC BLENDER**

**HSI DOCUMENT**

**Version 2**

**Proposed**

# Document Status:

|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **Version** | **Document Status** | **Author** |
| 02/19/2020 | 2 | Proposed | Amira Zaher |

# Revision History

|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **Version** | **Description** | **Author** |
| 01/23/2020 | 1.1 | Initial Draft, mentioning all the hardware components needed for the system. | Amira Zaher |
| 01/26/2020 | 1.2 | Update Pin Mode Representation | Ali Samir |
| 01/31/2020 | 1.3 | Update the functional requirement | Amira Zaher |
| 02/1/2020 | 1.4 | Update the document header | Amira Zaher |
| 02/5/2020 | 1.5 | Adding Table of Content | Amira Zaher |
| 02/6/2020 | 1.6 | Update Functional Requirements with the number 5 requirement (Transistor) | Amira Zaher |
| 02/8/2020 | 1.7 | Update the Pin representation and the Functional Requirements | Amira Zaher |
| 02/8/2020 | 1.8 | Remove the AVR component from the functional requirement , Update the block diagram | Amira Zaher |
| 02/8/2020 | 1.9 | Update Reference Table and the Revision History | Amira Zaher |
| 02/19/2020 | 2 | Update The Hardware System Section | Amira Zaher |

Contents

[Document Status: 2](#_Toc33020604)

[Revision History 3](#_Toc33020605)

[1. Introduction 6](#_Toc33020606)

[1.1 Hardware Requirement 6](#_Toc33020607)

[2. Hardware System: 7](#_Toc33020608)

[2.1 The System Block Diagram 7](#_Toc33020609)

[2.2 Atmega32 Pinout 7](#_Toc33020611)

[2.2 Pin Mode Representation 8](#_Toc33020612)

[3. Functional Requirements: 8](#_Toc33020613)

[4. Reference Table: 9](#_Toc33020614)

# Introduction

This section introduces the hardware specification for the project.

## 1.1 Hardware Requirement

This specification documents all the hardware requirements for the Electric Blender including:

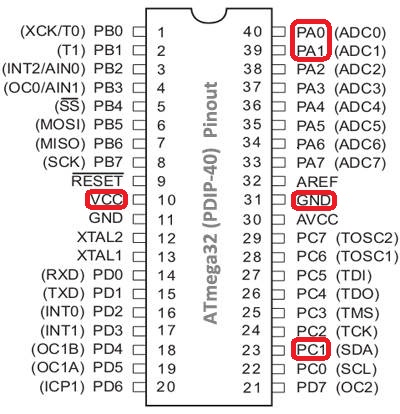
* Microcontroller (AVR Atmega32)
* Push button
* LED
* DC motor
* Transistor

# Hardware System:

## 2.1 The System Block Diagram

## C:\Users\Amira Zaher\Downloads\Untitled Diagram (2) (4).png

## 2.2 Atmega32 Pinout



## 2.3 Pin Mode Representation

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Component Name** | **Req\_ID** | **Pin** | **Mode** | **Function** |
| Motor | REQ\_PO2EBL\_HSI\_01\_V02 | 2 Pins: - VCC - Transistor Collector | 5V Input | Operates when the Transistor base is HIGH |
| LED | REQ\_PO2EBL\_HSI\_03\_V02 | 2 Pins:  - PA1 - GND | Digital Output | Operate when it receives HIGH based on the state of the Motor |
| Push Button | REQ\_PO2EBL\_HSI\_02\_V02 | 2 Pins: - PC0 - GND | Digital Input pull up | Gives the signal to the motor pin |
| Transistor | REQ\_PO2EBL\_HSI\_04\_V02 | 3 Pins:  - PA0 (B) - Motor (C) - GND (E) | Digital Output | Maintain the level of isolation between the microcontroller and the motor |

# Functional Requi­­rements:

|  |  |  |
| --- | --- | --- |
| **REQ\_ID** | **Component Name** | **Description** |
| REQ\_PO2EBL\_HSI\_01\_V02 | Speed Change | In order to get the motor speed from speed 1,2,3 and finally the OFF mode, DC motor will be used.  #imp HW |
| REQ\_PO2EBL\_HSI\_02\_V02 | Speed Control | In order to control the speed of the blender, with each click the mode will be changed from one state to another, push button will be used.  #imp HW |
| REQ\_PO2EBL\_HSI\_03\_V02 | State Indicator | In order to show the speed level of the blender, the LED intensity would change with respect of the blender mode, a LED will be used.  #imp HW |
| REQ\_PO2EBL\_HSI\_04\_V02 | Safety Monitoring | In order to maintain the isolation level between the microcontroller and the motor acts as Safety Monitor, a Transistor will be used.  #imp HW |

# Reference Table:

|  |  |  |  |
| --- | --- | --- | --- |
| **ID** | **Version** | **Document** | **Status** |
| 1 | 1.0 | Electric Blender customer requirement | Released |
| 2 | - | SIQ | - |