**PO4\_DGELV\_DIGITAL ELEVATOR**

**HSI DOCUMENT**

**Version 1.3**

**Current Document Status**

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**Revision History**

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| 1/24/2020 | Initial Draft, specifying used hardware. | 1.0 | Sara Abdallah Ahmed | Draft |
| 1/25/2020 | Updated Block Diagram | 1.1 | Ahmed Zoher | Proposed |
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| 2/8/2020 | Update Block Diagram and update hardware connection | 1.3 | Sara Abdallah Ahmed | Reviewed |
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**Reference Documents**

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# 1 Introduction

This section introduces the Hardware Software Interface (HSI) for a digital Elevator with lock system and specify the hardware used in the system.

## 1.2 Specification Objectives

The objectives of this specification are to:

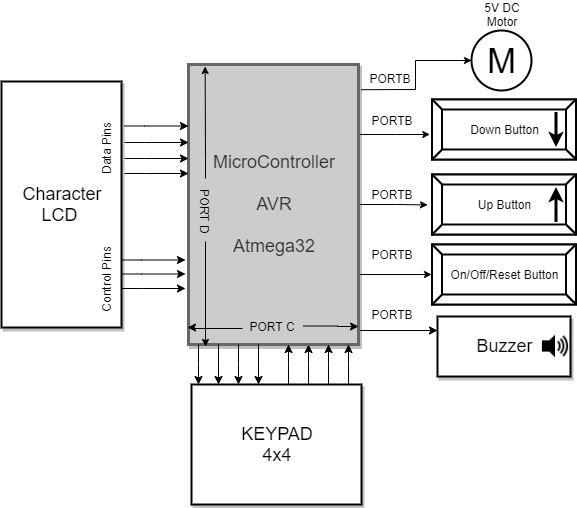
* Provide a Hardware system design system overview for the digital Elevator with lock system

# 2 System Overview:

## 2.1 Definition:

The digital Elevator has lock system for 10 users that can be configured and edited by the user with high security sequence to ensure that only approved users can use the elevator.

## 2.2 Block Diagram:



## 2.3 Hardware Requirement

|  |  |  |
| --- | --- | --- |
| **Feature** | **REQ\_ID** | **Used Hardware** |
| **Microcontroller** | - | The system will be controlled using AVR microcontroller Atmega32. |
| **Simulation Model** | REQ\_ PO4\_DGELV \_HSI\_02\_V1\_1 | The system will have 5v DC motor to Indicate the movement of the elevator clock wise direction for moving up and anti-clock wise for moving down. |
| **elevator direction selection** | REQ\_ PO4\_DGELV \_HSI\_03\_V1 | The system will have two push buttons to select direction up and down. |
| **System on, off and reset.** | REQ\_ PO4\_DGELV \_HSI\_04\_V1\_1 | The system will have one push button for both on and off mode, in addition to a reset mode upon holding the same button for 2 seconds. |
| **Screen for displaying data** | REQ\_ PO4\_DGELV \_HSI\_05\_V1 | The system will have LCD screen CLCD (Character Liquid Crystal Diodes) That will show the user name and password. |
| **Alarm subsystem** | REQ\_ PO4\_DGELV \_HSI\_06\_V1 | The system will use buzzer to indicate for wrong password after three trial. |
| **Display Login Status** | REQ\_ PO4\_DGELV \_HSI\_07\_V1\_1 | The system will Display OK upon successful login, while NOK upon unsuccessful one. |
| **Username and password input hardware** | REQ\_ PO4\_DGELV \_HSI\_08\_V1\_1 | The system will have keypad to enter a username and a password. |

# 3. Hardware connection:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Feature** | **REQ\_ID** | **Ports** | **Pins** | **Direction** | **Initial Value** |
| **5v DC Motor** | REQ\_ PO4\_DGELV \_HSI\_02\_V1 | Port B | PINB0 | Output | 0 |
| **Up/down push buttons** | REQ\_ PO4\_DGELV \_HSI\_03\_V1 | PortB | PINB0 | Input | 1 |
| PINB1 | Input | 1 |
| **ON/OFF/Reset push button** | REQ\_ PO4\_DGELV \_HSI\_04\_V1\_1 | PortB | PINB2 | Input | 1 |
| **CLCD** | REQ\_ PO4\_DGELV \_HSI\_05\_V1 | PortD | PIND0 | Output | 0 |
| PIND1 | Output | 0 |
| PIND2 | Output | 0 |
| PIND3 | Output | 0 |
| PIND4 | Output | 0 |
| PIND5 | Output | 0 |
| PIND6 | Output | 0 |
| PIND7 | Output | 0 |
| **Buzzer** | REQ\_ PO4\_DGELV \_HSI\_06\_V1 | PortB | PINB3 | Output | 0 |
| **KEYPAD** | REQ\_ PO4\_DGELV \_HSI\_08\_V1 | PortC | PINC0 | Input | 1 |
| PINC1 | Input | 1 |
| PINC2 | Input | 1 |
| PINC3 | Input | 1 |
| PINC4 | Output | 1 |
| PINC5 | Output | 1 |
| PINC6 | Output | 1 |
| PINC7 | Output | 1 |