

EMERTXE TRAINING PROJECT DOCUMENTATION FRAMEWORK

# **REQUIREMENTS & DESIGN**

## **DOCUMENT**



**Emertxe Information Technologies (P) Ltd**

# **CAR BLACK BOX**

VERSION: 0.1

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Version	Date	Changed By	Modifications
0.1	16-06-2014	Adil S K	Initial Draft

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# 1 Overview

## 1.1 Purpose

*Specify the purpose of this Requirement and Design Document (RDD) and its intended audience.*

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The purpose of the document is to review and validate the requirements of “CBB”

The intended audience are all the stake holders of ECEP trainers and Students.

## 1.2 Scope

*Describe the scope of the system application to be produced.*

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The Car Back Box used to log the event activities which could be investigated upon crash.

The application could be extended to any transportation system.

## 2 Assumptions, Dependencies, Constraints

### 2.1 Assumptions

*Describe the assumptions that can affect the requirements specified in this document.*

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All the events will be generated in the Lab and no real interface will be available.

### 2.2 Dependencies

*Describe the dependencies that can affect the requirements specified in this RDD.*

⇒

None

### 2.3 Constraints

*Describe the constraints that can affect the requirements specified in this RDD.*

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The log should be stored in the EEPROM, so the max log will be dependent on the size of the EEPROM.

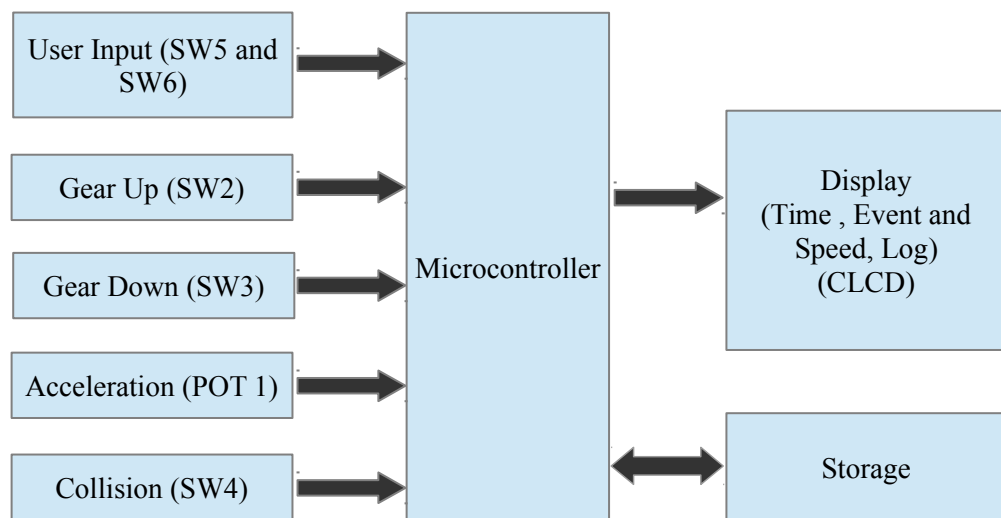
## 3 Requirements

### 3.1 Functional Requirements

- Block diagram
- For each major function specify the following

Please replicate table below for each of the major requirement under this section

Requirement Function	Requirement Name	
Description	Input	All possible inputs pertaining to this requirements in brief in details
	Process	Process sequence in detail to satisfy the requirement (E.g.: Validity checks for input, Exact sequence of operations, mode of execution etc.)
	Output	(including any specific error/information messages & reports)



Requirement No	1 – Log Restoration	
Description	Inputs	System Power ON
	Process	Restoration of the stored log
	Output	Restore the previous log

Requirement No	2 – Default Screen	
Description	Inputs	System Power ON or Idle
	Process	Default Screen
	Output	Display (CLCD) should display the default screen as Time        E     SPD XX:XX:XX  ZZ  YYY Where XX is current time, ZZ is current event and YYY current speed

Requirement No	3 – Log In	
Description	Inputs	Matrix Keypad (SW5 and SW6)
	Process	Detect the user password
	Output	Display (CLCD) should print Enter Password ■ on second line the cursor should blink intimating user for password entry A * is printed as soon as the user keys in the password. Enter Password **** If the user enters the wrong password the system prompts for password again. If the user leaves the key for approx 2 to 3 seconds the screen should change to default screen

Requirement No	4 – Main Menu	
Description	Inputs	Matrix Keypad (SW5 and SW6)
	Process	Menu item selection and navigation
	Output	<p>The main menu will contain the following displays</p> <p>* View Log</p> <p>Set Time</p> <p>using the keypad we can scroll between the options available.</p> <p>A long press of KEY1 (SW5) will select the option hi-lighted with *</p>

Requirement No	5 – View Log	
Description	Inputs	Matrix Keypad (SW5 and SW6)
	Process	Display Log
	Output	<p>The log screen will contain the following displays</p> <p># Time        E   SP</p> <p>N HH:MM:SS EE SS</p> <p>N is serial number, HH:MM:SS is time, EE is event, SS speed</p> <p>Scroll up happen by KEY1 (SW5) and down by KEY2 (SW6).</p> <p>On extreme ends log rolls over.</p> <p>A long press of KEY1 (SW5) will back to menu</p>

Requirement No	6 – Set Time	
Description	Inputs	Matrix Keypad (SW5 and SW6)
	Process	Modification of system time
	Output	<p>The time setting screen will have the following display</p> <p>HH:MM:SS</p> <p>hh :mm: ss</p> <p>The selected field will toggling with equal interval so the users knows which field he is changing</p> <p>KEY1 (SW5) is used to change the time.</p> <p>KEY2 (SW6) is used to select the field.</p> <p>A long press of KEY1 (SW5) will back to menu</p>

Requirement No	7 – Event Capture	
Description	Inputs	Digital Keypad SW2 – Gear Up SW3 – Gear Down SW4 – Collision Sensor POT1 - Speed
	Process	Detection of current event happening in the system
	Output	The time setting screen will have the following display HH:MM:SS hh :mm: ss The selected field will toggle with equal interval so the users knows which field he is changing KEY1 (SW5) is used to change the time. KEY2 (SW6) is used to select the field. A long press of KEY1 (SW5) will back to menu

Requirement No	8 – Event Storage	
Description	Inputs	Events
	Process	Storing the data
	Output	The data is stored in the external storage (EEPROM). Once the max log limit is reached the system starts overwriting the data from the first location of the memory.



## 3.2 User Interfaces

*Describe the user interface requirements for the system like snapshots, block diagram etc.,*

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*Fig 3.1: Idle Screen*

The fig 3.1 shows the idle screen when there is no user interactivity. This screen will show the latest event with time and current speed of the vehicle



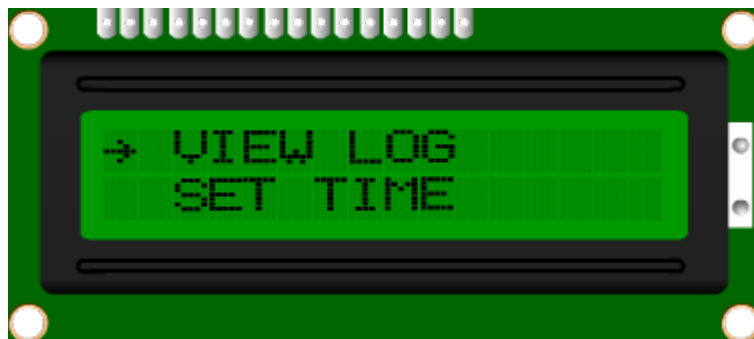
*Fig 3.2: Password Prompt*

The fig 3.2 is as soon as the user presses the navigation keys, starts prompting for password. The cursor should blink indicating for password entry. The password should be key press sequence using SW5 and SW6.



*Fig 3.3: Password Entry*

The fig 3.3 will be once the user enters the password. Max 4 presses are possible after which it will show the main screen if password is correct else it will reprint the password screen and wait for password entry.



*Fig 3.4: Main Screen*

The fig 3.4 is the main screen after correct password. The user should use SW5 and SW6 to navigate between both options.



*Fig 3.5: Log View*

The fig 3.5 shows the log screen. The first item would be always the latest entry and while navigating the it should increment toward the last log. The first character in second line is the log serial number and should start from 0 to 9. The maximum log entry is limited to 10. The log should roll off once the max entry is reached. SW5 is used to increment up and SW6 is used to decrement.



*Fig 3.6: Time Setting*

The fig 3.6 shows the time setting screen. The hours field should be blinking to indicate the user about selected field. The user should be using SW5 to choose field and SW6 to change the time.

### **3.3 Interfaces**

*Describe the logical characteristics of each interface between the application and other hardware, software, and communication protocols.*

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There are no external interface to this application.

## 4 Board Jumper Settings

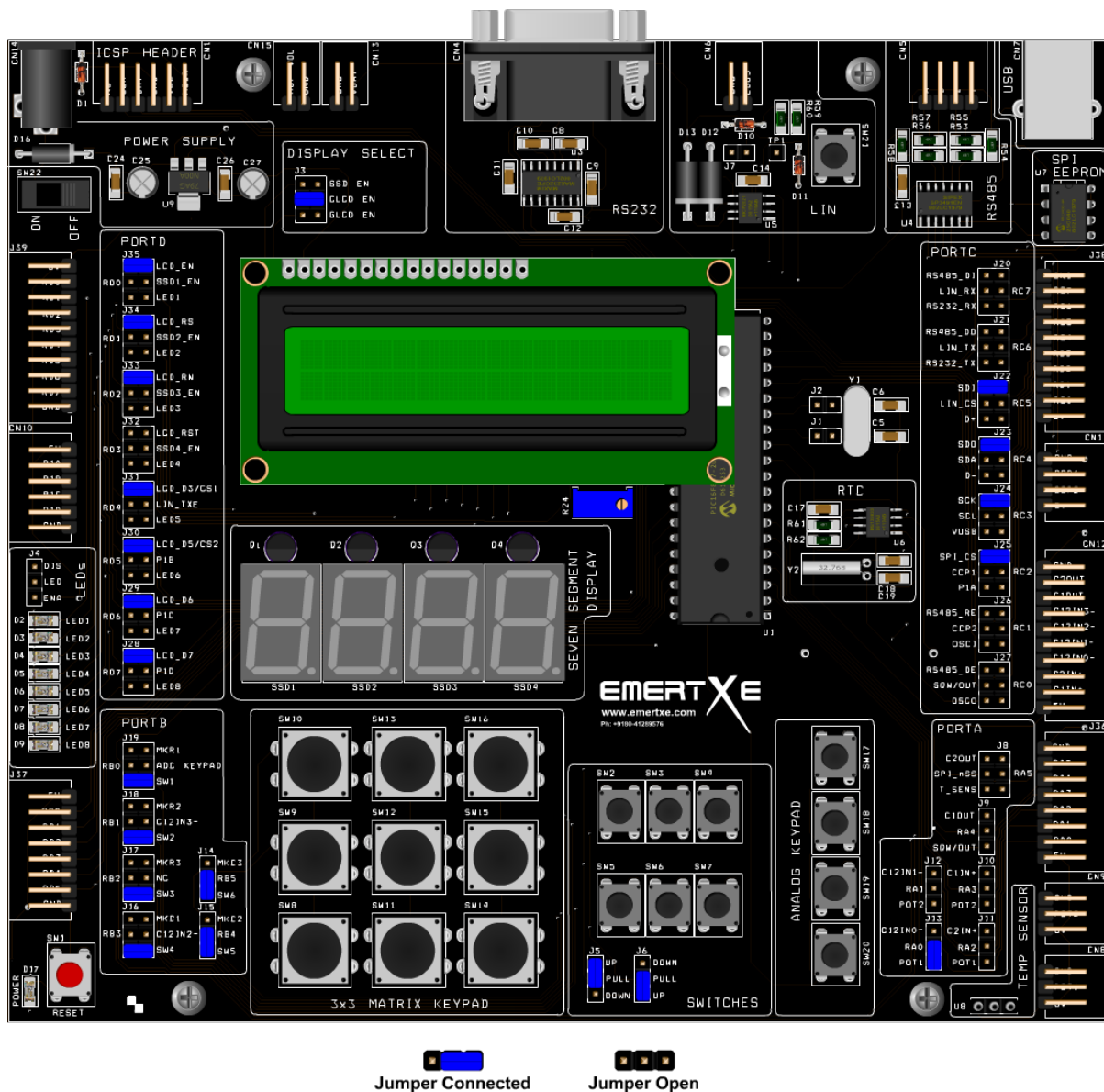


Fig 4.1: Project Jumper Configuration

## 5 References

*Provide a list of all documents and other sources of information referenced in this document.*

Document No.	Document Title	Date	Location

## 6 Glossary

*Define of all terms and acronyms required to interpret the RDD properly.*

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### 6.1 Abbreviations

The following abbreviation are used in this documents

EIDTC : Emertxe Internal Document Template Code

RDD : Requirement and Design Document

e.g. / E.g. : Example

etc., : et cetera

## 7 Appendices

*Include any relevant appendices.*

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