Requirement Specification

Project group 2, TSIU03
Version 1.0

Status	Name	Date
Reviewed	G2	2023-09-18
Reviewed	Mikael Henriksson	2023-09-15

MIDI and Stereo

Group 2, HT-23
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Document history

Version	Date	Changes	By	Reviewed
1.0	2023-09-18	Second version	G2	G2
0.2	2023-09-15	Addressed suggested changes by supervisor	G2	G2
0.1	2023-09-06	First version	G2	G2
0.01	2023-09-05	First draft	G2	G2

1 INTRODUCTION

1.1 Party

1.1.1 Party 1: Client

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1.1.2 Party 2: Product creators

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1.2 Purpose and aim

The course includes methods and tools for the design and implementation of electronic systems using VLSI techologies. The design methods aim at reducing the design time and guarantee correct designs as well as ensuring that performance requirements are met.

1.3 Definitions

Priority levels in the requirement specifications categorize and rank the importance of individual project requirements.

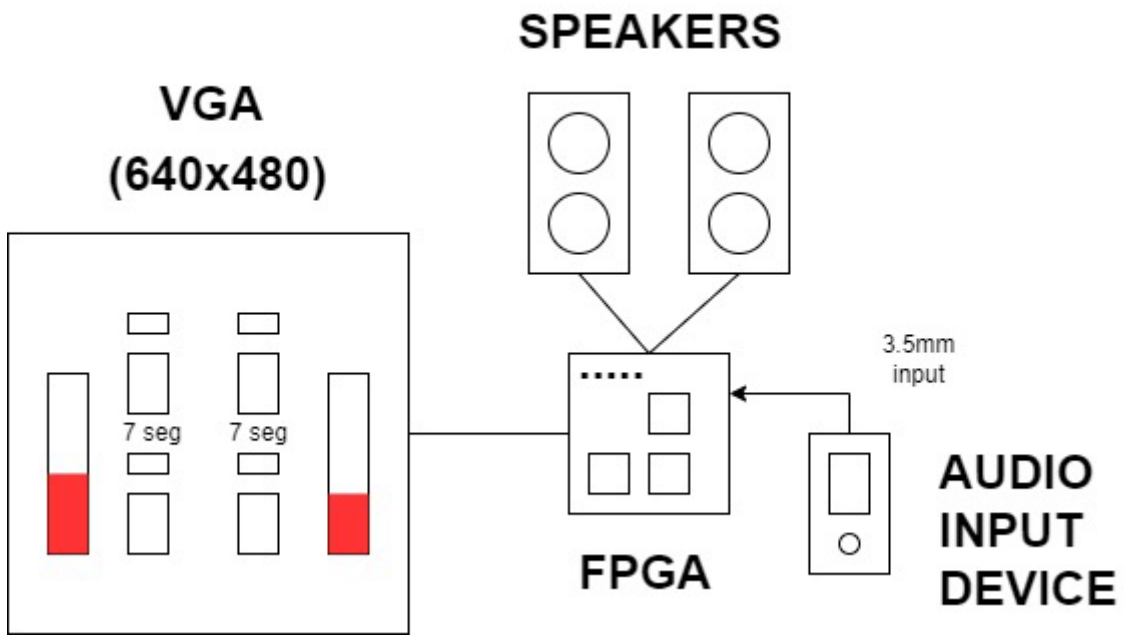
1.3.1 Priority levels

Priority 1: Basic requirements, must be implemented.

Priority 2: Additional requirements, to be fulfilled if there is time left when the basic requirements are completed. Some of them must be implemented.

Priority 3: Requirement for future development, to be fulfilled if there is time when all requirements with priority 1 and 2 are fulfilled.

2 OVERVIEW OF SYSTEM



Figur 2. *This image shows an overview of the system.*

2.1 Rough description of product

The product is a digital audio processing system designed to interface with the WM8731 chip, a digital-to-analog converter and analog-to-digital converter. It is capable of digital audio input word lengths from 16 – 32 bits and sampling rates from 8 - 96 KHz. It offers controls through both a VGA screen and a PS/2 keyboard.

2.2 Requirements

2.2.1 Basic requirements

Req. #	Requirement	Priority
1	The system shall process an audio signal digitally.	1
2	The audio signal is read from, and sent back to the WM8731 chip.	1
3	The system shall display all settings on a VGA screen. The left and right volume control will be shown as column on the screen. Overall volume is included in those columns.	1
4a	The user shall be able to control all settings from a PS/2 keyboard.	1
4b	The keyboard should use both make and break codes.	1
5a	The system shall have a volume control.	1
5b	The volume control shall have at least 10 levels.	1
5c	The volume control shall be logarithmic with at most 4dB per step.	1
5d	The colume control shall span at least 27dB between lowest and highest level.	1
6a	The system shall have a balance control with at least 10 levels.	1
6b	The balance shall be linear between only left, middle and only right.	1

2.2.2 Alternative task MIDI

Req #	Requirement	Priority
1	The user shall be able to produce soundnotes when pressing buttons on the keyboard.	1
2	The notes played shall be visible on the VGA screen, as text symbols corresponding to the note played.	1
3	The user should be able to play all notes on the chromatic scale within one ocatave.	1
4	A symbol denoting that the note played is a sharp # should be shown on the VGA screen.	2
5	The keyboard notes shall be able to be played simultaneously as the sound from the external source.	1

3 DOCUMENTATION

Document	Language	Purpose	Format/ media
Requirement specification	English	Describe what the product should do.	Text document
Designspecifikation	English	A detailed plan of the structure and theory of the system.	Technical document
Projektplan	English	That the project is implemented over an allocated period of time.	Text document
Project report	English	Summarize a project's key aspects, including its goals, timeline, budget, progress, and outcomes.	Technical document
Project presentation	English	Explaining the project - both the product and the process - to the evaluators	Technical document

REFERENCES

Unpublished sources

Electronic sources

[1] M. Krysander, Projektmodellen Lips, https://lips.isy.liu.se/lipsmallar.html (accessed Sep. 11, 2023

[2] P. Källström, Requirement Specification, Reqirement Specification.odt (sharepoint.com) (accessed Sep. 13, 2023)