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| PES Institute of Technology Department of Electronics and Communication |
| Audio Effects Processor |
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Release Manual



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| **Project:** | Audio Effects Processor |
| **Department:** | EC and TE |
| **Date:** | 30/7/2014 |
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**1 Scope**

This document has been created to define the user requirements for the purchase of Audio effects processorfor the generation of sound effects like echo, tempo etc for anyof the home entertainment purpose or professional use***.***Any user who is a beginner to musical systems should be able to operate the jukebox to its maximum usage. Or any professional users like disc jockey can use it as their turn table to produce best effects.

* 1. **Objectives**

1. To generate various sound effects like echo, etc. using the OMAP 3530 processor.
2. To use a hardware processor to produce audio effects as most of the software process like using Matlab causes a lot of latency to appear.
   1. **Benefits**

There are plenty of audio processors in the market. Our main aim was to make a low cost, user friendly and interactive system which any user can use in his/her house at his/her comfort.

**2 Terminology**

This document refers to the features and attributes the product should have and how it should perform from the user perspective.

The document can be used as a “contract” between the client and the equipment supplier who will provide and install the system.

Key words used within the user manual include “must”, “must not”, “should”, “should not”, “recommended”, and “may” or “optional” and are to be interpreted as follows:

**Must** this word means that the definition is an absolute requirement of the specification.

**Must not** This phrase means that the definition is an absolute prohibition of the specification.

**Should** This word or the adjective “Recommended” means that there may exist valid reasons in particular circumstances to ignore a particular item, but the full implications must be understood and carefully weighed before choosing a different course.

**Should not** This phrase means that there may exist valid reasons in particular circumstances when the particular behaviour is acceptable or even useful but the full implications should be understood and the case carefully weighed.

**May** This word, or the adjective “optional” means that an item is truly optional

**3 Regulations**

* The volume of the speakers should not exceed high values as repeatedly listening to music at high volume will damage the ears.
* The user must not touch the board when it is powered on.

### 4 Use

This product will be used for generating musical effects like echo, reverb, tempo, etc. The user has to first do the basic initial setup like connecting audio data from any audio source to the ULK board using audio cables (to the 3.5mm audio mic input jack) and also connect speakers to the board through the audio jack. On powering on the board, the user will be greeted with a small introductory message. Then a number of rows and columns of white rectangles will be displayed on the graphic LCD. Here each column corresponds to an audio effect and each row in a specific column can be used to vary the gain. The user has to then press on any required rectangle to according to his/her requirement.

### 4.1 Capacity/Specification

# CORE SPECIFICATION

* VOLTAGE: 230 volt 50/60 Hz

PHYSICAL

* CAPACITY : Not waterproof
* SIZE : 1 x 1 ft
* ORIENTATION : Landscape
* AMBIENT CONDITIONS REQUIRED FOR SATISFACTORY OPERATION

The equipment needs a minimum space of 1 x 1 ft.

The equipment must be able to produce sound up to a range of 1 metre.

The unit will have 2 speakers and one audio source.

The unit must be capable of being sited in an area 5ft, width of 5ft, depth of 5 ft.

* 1. **Operational Requirements.**
* Audio source x 1
* Speakers x 2
* 3.5mm audio cable x 1
* Graphical LCD x 1
* 5V power supply x 1

**4.3 Process Requirements**

For best user experience, the system has be used in a noise free environment. The room too has to designed in an acoustic way.

**5 Functions**

**5.1 Operation**

Connect the audio input to the audio in line and connect the speakers to the audio out line. Connect the DC adapter to the power jack and switch on the power supply. Use the stylus to select the audio effect as per requirement.

**5.2 Control System requirements**

* Audio input
* Speakers
* Power supply
* Microphone

**5.3 Power Failure/Recovery**

* Noise produced - Recovery method - Check the audio cable, if broken replace it with a new one.
* Power failure - Recovery method - Check the DC adapter and replace if burnt.
* Reset button is provided to recover in case the audio effect is not applied to the song. Press the reset button and try again.

**5.6 User interfaces**

* LCD touch screen
* Audio input

**5.7 Environment**

* It should be used in a space of at least 5 x 5 x5 ft.
* It must be used in a dry environment.
* The effects are best experienced when the room is designed in an acoustic way.

**5.8 Physical conditions**

All audio and speaker cables must be connected tightly to get the best output. It is also

not waterproof.

**5.10 Biohazard level**

Not applicable.

**5.11 Cleaning Requirements**

Clean the speaker half yearly.

**5.12 Intended Operating Environment**

Indoor use only.

1. **Requirements for Installation**

**6.1 Calibration**

No calibration required***.***

**6.2 Deliverables**

a) Juke Box or the music system

b) Audio cable to connect the jukebox to tape recorder or other audio devies.

c) Speaker

d) Microphone for voice recording.

**6.3 Documentation**

Appropriate user manuals and schematics will be provided

**6.4 Training**

Appropriate training will be given to the customer on how to use the jukebox at the time of the delivery. User must read the user manual before using the product.

**6.5 Tools and Spares**

No tools and spare parts will be given other than the above mentioned deliverables.

**6.6 Calibration/Servicing**

No calibration or servicing required.

CONSTRUCTION FEATURES:

a) 3.5mm Stereo Jack (SJ1-3535NG).

b) 24 bit RGB 3.5 inch LCD screen for display.

c) Touch controller (TSC2046)

d) OMAP 3530

e) PMIC (TPS65930)

f) Class-D amplifier (TPA2010D1)

CONTROL FEATURES:

Touch screen is provided to control the effects on the audio. User can select an effect from the touch screen using the stylus and increase or decrease that effect on the audio by sliding the stylus on the touch screen.

GENERAL:

* LOW ENERGY CONSUMPTION
* EASY CLEAN SURFACES (EXTERNAL AND INTERNAL)
* QUIET OPERATION
* TOUCHPAD OPERATION
* HIGHLY VISIBLE DISPLAYS