



lib_audio_dsp: Audio DSP Library (README)

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version	1.3.0
scope	General Use
description	Audio DSP Library for xcore.ai
category	Audio
keywords	library, DSP, Audio, Audio Effects, Audio Pipeline
devices	xcore.ai

1 Summary

Note: Some software components in this tool flow are prototypes and will be updated in Version 2 of the library. The underlying Digital Signal Processing (DSP) blocks are however fully functional. Future updates will enhance the features and flexibility of the design tool.

lib_audio_dsp is a DSP library for the XMOS xcore architecture. It facilitates the creation of multithreaded audio DSP pipelines that efficiently utilise the xcore architecture.

The library is built around a set of DSP function blocks, referred to in the documentation as "Stages", which have a consistent API and can be combined to create many different designs.

2 Features

lib_audio_dsp includes common signal processing functions optimised for the xcore, such as:



- ▶ biquads and FIR filters
- ▶ compressors, limiters, noise gates and envelope detectors
- ▶ adders, subtractors, gains, volume controls and mixers
- ▶ delays and reverb.

These can be combined together to make complex audio pipelines for many different applications, such as home audio, music production, voice processing, and AI feature extraction.

3 Known Issues

- ▶ None

4 Host System Requirements

- ▶ None

5 Required Tools

- ▶ XMOS XTC Tools: 15.3.1

6 Required Libraries (dependencies)

- ▶ lib_xcore_math (www.github.com/xmos/lib_xcore_math)
- ▶ lib_logging (www.github.com/xmos/lib_logging)
- ▶ lib_locks (www.github.com/xmos/lib_locks)

7 Related Application Notes

The following application notes use this library:

- ▶ [AN02014: Integrating DSP Into The XMOS USB Reference Design.](#)
- ▶ [AN02015: Run-time DSP control in a USB Audio Application.](#)

8 Support

This package is supported by XMOS Ltd. Issues can be raised against the software at: <http://www.xmos.com/support>



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