



lib_audio_dsp: Audio DSP Library (README)

Publication Date: 2024/11/15

Document Number: XM-015103-UG v1.2.0

IN THIS DOCUMENT

1	Summary	1
2	Features	1
3	Known Issues	2
4	Host System Requirements	2
5	Required Tools	2
6	Required Libraries (dependencies)	2
7	Related Application Notes	2
8	Support	2

vendor

XMOS

version

1.2.0

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

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

4 Host System Requirements

5 Required Tools

- ▶ XMOS XTC Tools: 15.3.0

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>



Copyright © 2024, All Rights Reserved.

Xmos Ltd. is the owner or licensee of this design, code, or Information (collectively, the "Information") and is providing it to you "AS IS" with no warranty of any kind, express or implied and shall have no liability in relation to its use. Xmos Ltd. makes no representation that the Information, or any particular implementation thereof, is or will be free from any claims of infringement and again, shall have no liability in relation to any such claims.

XMOS, xCore, xcore.ai, and the XMOS logo are registered trademarks of XMOS Ltd in the United Kingdom and other countries and may not be used without written permission. Company and product names mentioned in this document are the trademarks or registered trademarks of their respective owners.

