



# lib\_mic\_array: PDM microphone array library (README)

Publication Date: 2026/3/30  
Document Number: XM-010267-UG v7.0.0

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vendor	XMOS
version	7.0.0
scope	General Use
description	PDM microphone array library
category	Audio
keywords	Microphone
devices	xcore.ai

## 1 Summary

The XMOS microphone array library is designed to allow interfacing to PDM microphones coupled with efficient decimation to user configurable output sample rates.

This library is only available for XS3 devices due to requiring the XS3 vector unit. It will build without errors for XS2 targets however no mic\_array APIs will be available. Please see versions prior to v5.0.0 for XS2 support.

## 2 Features

- The microphone array library has the following features:
- ▶ 48, 32, 16 kHz output sample rates by default (3.072 MHz PDM clock)
  - ▶ 44.1, 29.4, 14.7 kHz output samples using 2.8224 MHz PDM clock
  - ▶ Other sample rates possible using custom decimation filter
  - ▶ 1 to 16 PDM microphones



- ▶ Supports up to 8 microphones using only a single thread
- ▶ Configurable MCLK to PDM clock divider
- ▶ Supports both SDR and DDR microphone configurations
- ▶ Framing with configurable frame size
- ▶ DC offset removal
- ▶ Extensible C++ design

### 3 Known issues

- ▶ PDM receive can lock-up in ISR mode when `ma_frame_rx` is not called isochronously after first transfer.

### 4 Development repo

- ▶ `lib_mic_array` ([https://www.github.com/xmos/lib\\_mic\\_array](https://www.github.com/xmos/lib_mic_array))

### 5 Required tools

- ▶ XMOS XTC Tools: 15.3.1

### 6 Required libraries (dependencies)

- ▶ `lib_xcore_math` ([https://www.xmos.com/file/lib\\_xcore\\_math](https://www.xmos.com/file/lib_xcore_math))

### 7 Related application notes

The following application notes use this library:

- ▶ AN00248 - Using `lib_xua` with `lib_mic_array`

### 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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