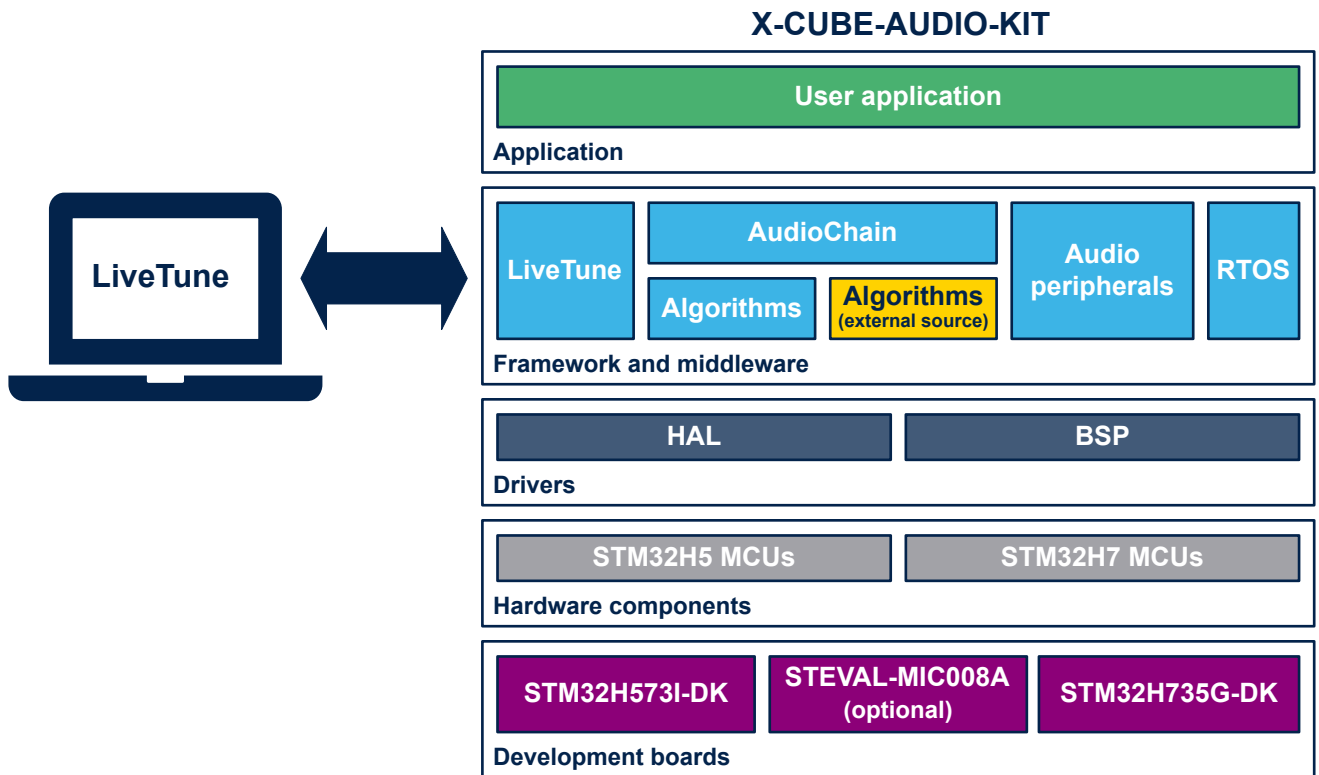


Audio kit software expansion for STM32Cube



DT73515V1

[Product status link](#)

X-CUBE-AUDIO-KIT



Features

- Framework to support audio processing data flow
 - Up to 48 kHz
 - 16-bit fixed PCM, 32-bit fixed PCM, 32-bit floating-point PCM, 8-bit compressed samples (G.711 μ -law and A-law)
 - Mono, stereo, or a wider range of channels, interleaved or not
 - Configurable audio buffer sizes
 - Time and frequency domains
- Library of audio processing algorithms
 - Generic processing algorithms such as FIR and IIR filters, and equalizers
 - Voice use case oriented such as noise reduction, echo cancellation, and beamforming
 - Audio out such as multiband compressor and mixer
 - Musical effects such as echo, reverb, delay, and distortion
- Tool to design and tune audio processing data flow and algorithm parameters
 - Real-time testing on the board
 - Automatic generation of an equivalent C code for the final product
- Capability to integrate the user's algorithms
- Use cases and examples of data flows
- Management of different audio peripherals
 - On-board microphone and audio output
 - [STEVAL-MIC008A](#) dual microphone extension (optional)
 - USB audio interface
- Support for [STM32H735G-DK](#)
- Support for [STM32H573I-DK](#)

Description

The [X-CUBE-AUDIO-KIT](#) Expansion Package provides an integrated platform for designing, implementing, and fine-tuning audio processing data flows on supported series of STM32 microcontrollers.

With LiveTune, a graphical user interface accessible through an HTML5 navigator, users can design and fine-tune data flows in real time on STM32 devices.

The Expansion Package includes a library of algorithms from STMicroelectronics and external sources.

Additionally, the users can integrate their own custom algorithms into the environment, allowing their execution and fine-tuning within the data flows.

This Expansion Package aims at use cases such as voice denoising, audio conditioning and effects, and any other audio processing use case.

X-CUBE-AUDIO-KIT includes one generic designer firmware for each of the [STM32H573I-DK](#) and [STM32H735G-DK](#) Discovery kits. Each firmware features a set of algorithms, the AudioChain framework, and the LiveTune interface.

1 General information

The X-CUBE-AUDIO-KIT STM32Cube Expansion Package runs on the STM32H7 microcontrollers based on the Arm® Cortex®-M7 processor, and on the STM32H5 microcontrollers based on the Arm® Cortex®-M33 processor.

Note: Arm is a registered trademark of Arm Limited (or its subsidiaries) in the US and/or elsewhere.



1.1 Ordering information

X-CUBE-AUDIO-KIT is available for free download from the www.st.com website.

1.2 What is STM32Cube?

STM32Cube is an STMicroelectronics original initiative to improve designer productivity significantly by reducing development effort, time, and cost. STM32Cube covers the whole STM32 portfolio.

STM32Cube includes:

- A set of user-friendly software development tools to cover project development from conception to realization, among which are:
 - STM32CubeMX, a graphical software configuration tool that allows the automatic generation of C initialization code using graphical wizards
 - STM32CubeIDE, an all-in-one development tool with peripheral configuration, code generation, code compilation, and debug features
 - STM32CubeCLT, an all-in-one command-line development toolset with code compilation, board programming, and debug features
 - STM32CubeProgrammer (STM32CubeProg), a programming tool available in graphical and command-line versions
 - STM32CubeMonitor (STM32CubeMonitor, STM32CubeMonPwr, STM32CubeMonRF, STM32CubeMonUCPD), powerful monitoring tools to fine-tune the behavior and performance of STM32 applications in real time
- STM32Cube MCU and MPU Packages, comprehensive embedded-software platforms specific to each microcontroller and microprocessor series (such as STM32CubeH5 for the STM32H5 series), which include:
 - STM32Cube hardware abstraction layer (HAL), ensuring maximized portability across the STM32 portfolio
 - STM32Cube low-layer APIs, ensuring the best performance and footprints with a high degree of user control over hardware
 - A consistent set of middleware components such as ThreadX, FileX / LevelX, NetX Duo, USBX, USB-PD, mbed-crypto, secure manager API, MCUboot, and OpenBL
 - All embedded software utilities with full sets of peripheral and applicative examples
- STM32Cube Expansion Packages, which contain embedded software components that complement the functionalities of the STM32Cube MCU and MPU Packages with:
 - Middleware extensions and applicative layers
 - Examples running on some specific STMicroelectronics development boards



2 License

X-CUBE-AUDIO-KIT is delivered under the [SLA0048](#) software license agreement and its Additional License Terms.

Revision history

Table 1. Document revision history

Date	Revision	Changes
07-Dec-2023	1	Initial release.
10-Apr-2024	2	Updated Features and Description with details on formats, algorithms, toolkit features, and target use cases.

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