# P3610-2MIC board

High-performance dual-microphone algorithm, USB drive-free microphone, long-distance pickup

How to obtain clean human voices in noisy environments (classed as kitchen/living room/gym environments) is a problem that smart devices must solve in applications such as voice interaction and voice calls. However, in real life, the presence of multiple noises in noisy environments also hinders smart devices from effectively acquiring human voices. These noises contain:

- The sound played by the device itself, such as TV/set-top box/Sound bar and other smart devices are playing music.
- Steady state and non-steady state, dispersive noise in the environment, such as fan/air conditioning and other environmental base noise.
- Point noise in the ambient space, such as the noise from a TV fixed in a certain position

The P3610-2MIC, in addition to solving the noise problem, provides both long-range pickup and voice interruption (Barge-in). Such a front-end voice interface can output clean and effective human voice for ASR and Communication.

In smart devices, P3610-2MIC is a cost-effective voice interface device that can be applied to ASR and voice call communication very quickly. Especially, it is specially optimized for front-end processing of ASR, which greatly improves the performance of voice barge-in and voice recognition. It is ideal for use in smart audio, smart TVs, set-top boxes and smart gateways.
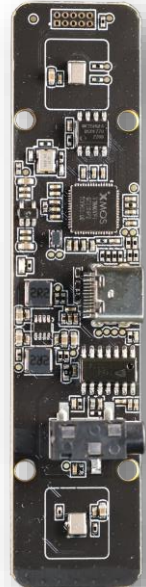
Features

High performance microphone array

Three noise reduction algorithms is integrated to maximize the capture of clear voice signals.

In order to be able to capture voice signals in complex and harsh acoustic environments, the P3610-2MIC integrates three noise reduction algorithms that minimize the device's own sound and environmental noise to provide high-quality voice input

- Automatic Echo Cancellation (AEC): Eliminate the device's own playback sound to enable voice interruption and improve SNR

- Interference canceller (IC): Scan the sound situation in the space where the device is located and removes all point noise from the room

- Noise Suppression (NS): Remove all background (including diffuse and reflected) noise

Flexible applications

The algorithm pipeline is optimized for speech recognition and audio calls separately, providing two types of speech output at the same time

Features

The P3610-2MIC provides two types of voice signal outputs, enabling different voice processing for both ASR and communication, and the USB Type-C interface can be quickly applied to various smart terminal devices

- ASR speech recognition: improve the signal-to-noise ratio of human voice in complex noise environment to enhance the recognition rate

- Comms conference call: greater suppression of background sound and noise, cleaner spectrum, to improve the clarity of the human voice (relative to the ASR output has greater distortion, not recommended for voice recognition)

- ADEC algorithm can adjust the AEC reference signal delay in real time, and can flexibly move the speaker position

Easy to integrate

The size of the device is only finger-sized, which makes it easy to embed small and medium-sized devices and facilitate the design of acoustic structures

P3610 is very compact in size and can be quickly embedded in soundbar, video conference camera and other devices. And the structure of the microphone gasket is reserved for customers.

- Reserved fixing holes for users to fix the development board and quickly develop the structure

- Reserved space next to the MEMS microphone for users to do acoustic shielding and improve the sealing of the microphone

- Provides 2ch stereo 3.5mm audio analog output for easy access to external speakers

Application Diagram

PC

USB Type-C

Stereo Playback Line-out

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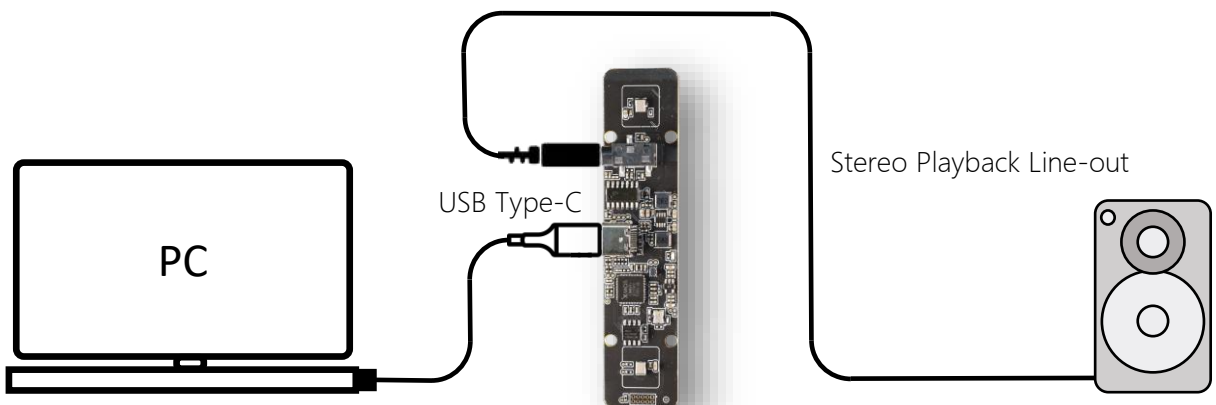
Specification

48kHz/16kHz

Real-time transmission of input and output audio signals in PCM audio format.

Supports 48kHz/16kHz audio sample rate and 24-bit depth audio. These two sample rate pick-up are implemented via different firmware (USB DFU to update firmware)

DSP

Using the XMOS XVF3610 master with 2400 MIPS speed, it can run multiple DSP algorithms such as AEC, IC, NS, AGC and ADC in high performance while providing two high quality voice outputs

Driver-free operation for all platforms. Transmission latency as low as ~70ms.

Size & Distance

- Board size: 90mm x 18mm x 6mm (maximum height)

- Microphone: Bottom pickup, 71 mm spacing between two microphones, 1 mm aperture diameter

Audio Interface

- Support USB Type-C interface 5V (current Max 143mA) power supply and UAC1.0 audio transmission

- Stereo Line-out (2V rms) analog playback with 3.5 mm headphone jack

Order Information

The P3610-2MIC board is available for personal/enterprise applications and is ideal for speech recognition related applications such as smart audio, smart TV, and soundbar, home center consoles, etc.

Pawpaw Electronics provides pre-sales and after-sales technical services for users, learn more at: www.pawpaw.cn or check Hardware Usage.

Order platform: Pawpaw Electronics official Taobao Mall or Alibaba.

Product Name	Product Model	Products & Accessories
P3610-2MIC board	P3610-2MIC	P3610-2MIC x1, Gasket x2 Type-C cable x1 , Aux line x1

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