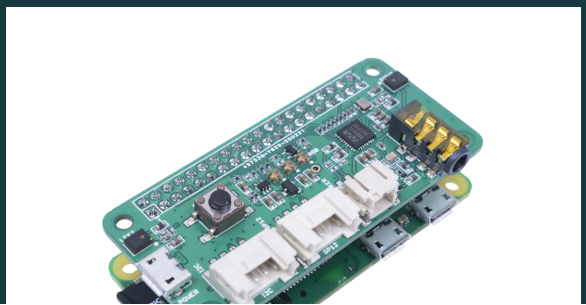
seeed studio

INDUSTRIAL PRODUCT DATASHEET

reSpeaker 2-Mics Pi HAT V2.0 for Raspberry Pi - TLV320AIC3104 Audio Codec, 2 Analog Microphones, 3 APA102 RGB LEDs, 3.5mm Audio Jack, User Button, attached with NLU software algorithms, VAD,DOA, KWS

reSpeaker 2-Mics Pi HAT V2.0: Voice interface with TLV320AIC3104 codec, NLU algorithms (VAD/DOA/KWS) for Raspberry Pi voice projects.

SKU	UPDATED	PRICE
107100001	2026-04-29 09:05:32	$12.90(Excl. VAT)



Overview

The reSpeaker 2-Mics Pi HAT V2.0 upgrades to a TLV320AIC3104 codec, supporting Raspberry Pi 5 and sampling rates from 8 kHz to 96 kHz, and includes 2 analog microphones, 3 RGB LEDs, audio jack, and button. It features NLU algorithms for VAD, DOA, and KWS, catering to voice interaction learning and Google Assistant projects.

Key Features

Note:

- The reSpeaker 2-Mics Pi HAT has been upgraded to **version 2.0**. The codec chip has been replaced from WM8960 to TLV320AIC3104, enabling support for Raspberry Pi 5 and expanding the sampling rate range from 8 kHz to 96 kHz.
- While the Pi HAT is a classic for DIY, the **XVF3800 USB** takes your project to the next level. No more kernel compiling or I2S troubleshooting. Plug it into your Pi 4, Pi 5, or PC, and it works instantly with professional hardware-grade noise cancellation.

- **Voice User Interface for Raspberry Pi Series**: Placed by 4 analogue microphones, which come with the **Voice Interaction algorithms** of VAD(Voice Activity Detection), DOA(Direction of Arrival), KWS(Key Word Spotting)
- **TLV320AIC3104 Audio Codec**: Low power, high-quality stereo Codec designed for portable digital audio applications
- **Controllable Peripherals**: Provide 3 programable APA102 RGB LEDs and 1 User Button for attached Speech Recognition usage
- **Easy Assembly**: Simply pop up on the Raspberry Pi to use

The reSpeaker 2-Mics Pi HAT is the **voice user interface** for Raspberry Pi Series, which has been equipped **2 analogue microphones** and **TLV320AIC3104 Audio Codec** for high-definition voice capture. Attach with **NLU software algorithms** and **noise reduction algorithms**, it has the abilities of Voice Activity Detection, Direction of Arrival and Key Word Spotting, widely used in Voice Interaction applications.

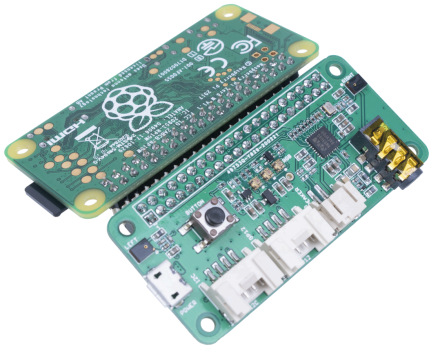
How does reSpeaker work?

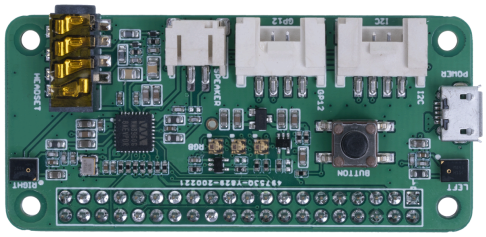
There are analogue microphones mounted on each corner of the square reSpeaker, to receive audio data around then transmit them to the codec. The codec integrates synchronized ADCs with mic boost amplifier, to deliver valid channel data to the Raspberry Pi/ Pi Zero, where it transits them over I2S ports by standard I2S or PCM format, along with a single port by TDM format.

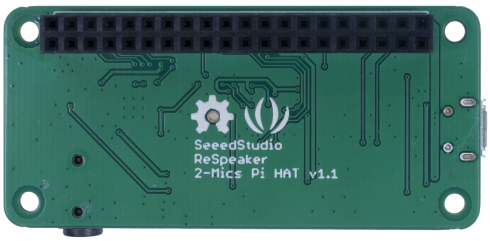
The NLU algorithms will be applied to the Raspberry Pi once the audio data has arrived. The main functions include Voice Activity Detection(VAD), Direction of Arrival(DOA), and Key Word Spotting(WKS), suitable for various Voice Interaction applications such as **voice-based remote control cars**, **voice user interface, keywords wake up** and so on.

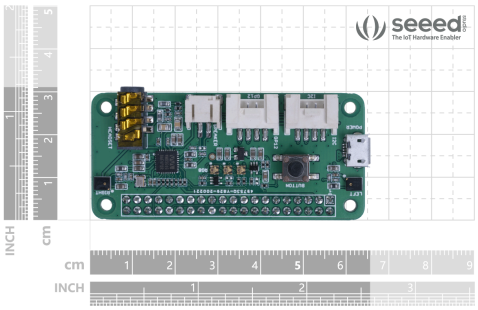
Since the audio data transmitted may contain the noise as well, the reSpeaker comes with the functions of Auto Echo Cancellation (AEC), Beamforming, Webrtc Noise Suppression (NS), and Automatic Gain Control (AGC) to reduce noise and perform better audio data to the Raspberry Pi.

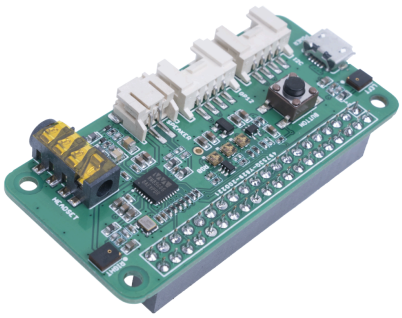
Product Gallery











Specification

Specification	Details
MIC	2 analog microphones
LED	3 APA102 RGB LEDs
Raspberry Pi 40-Pin Headers	Support Raspberry Pi5, Raspberry Pi Zero, Raspberry Pi 1B+/2B/3B/3B+/4B
TLV320AIC3104 codec	Low power, high quality stereo Codec designed for portable digital audio applications
Software Algorithm	VAD(Voice Activity Detection), DOA(Direction of Arrival) and KWS(Keyword Search)
User button	1 programmable button
Voice Capture Distance	3 meters radius voice capture
Battery	Exclude
Dimensions	65mm x 30mm x 15mm
Weight	G.W 33g

Applications

- **Voice Interaction Learning**
- **Secondary software Development**
- **Voice-based remote control cars**
- **Get started with Google Assistant**
- **How to use button to trigger Google Assistant**

Part List

ReSpeaker 2-Mics Pi HAT V2.0	x1

Compliance & Logistics

HSCODE	8518900090
USHSCODE	8543903500
UPC	841454120018
EUHSCODE	8517180000
COO	CHINA

Resource Links

- https://www.seeedstudio.com/ReSpeaker-2-Mics-Pi-HAT.html
- Respeaker_2_Mics_Pi_HAT_SCH
- Respeaker_2_Mics_Pi_HAT_PCB
- Respeaker_2_Mics_Pi_HAT_SCH
- Respeaker_2_Mics_Pi_HAT_PCB
- ReSpeaker 2 Mics Pi HAT 3D
- Seeed-Voice Driver
- Algorithms includes DOA, VAD, NS
- Voice Engine project, provides building blocks to create voice enabled objects
- AEC

Seeed Technology Co.,Ltd.
9F, Building G3, International E City,
Zhongshanyuan Road, Nanshan, Shenzhen, China

Tel: +86 0755-80695676
Web: www.seeed.cc
Shop: www.seeedstudio.com