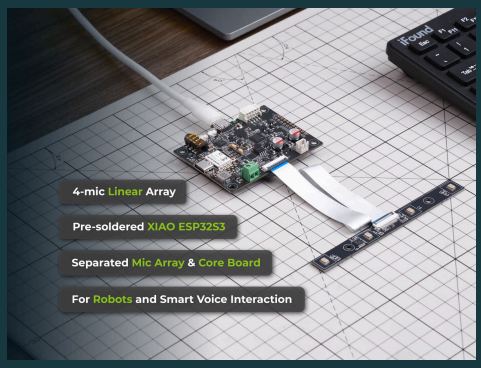
seeed studio

INDUSTRIAL PRODUCT DATASHEET

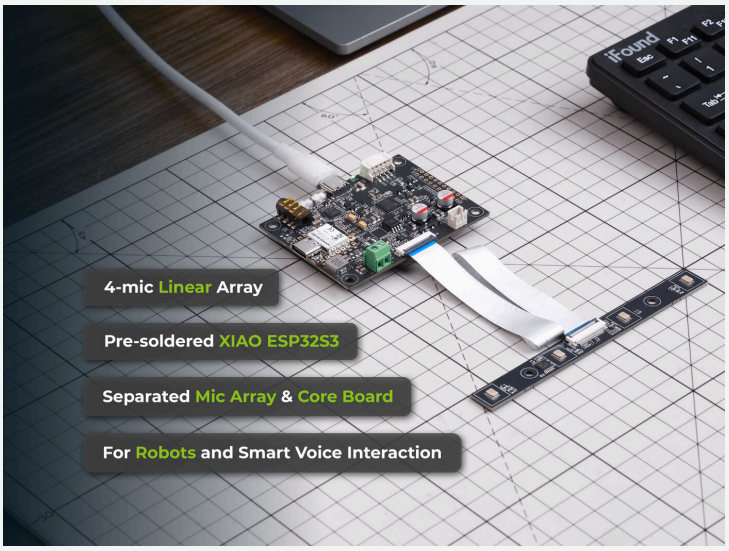
reSpeaker Flex XVF3800 Linear-4 with XIAO ESP32S3 | AI Mic Array for Robotics and Embodied AI

A versatile 4-mic array for robots and embodied AI applications like smart signage.

SKU	UPDATED	PRICE
100026178	2026-11-11 09:27:59	$60.90(Excl. VAT)



Overview



A versatile 4-mic array for robots and embodied AI applications like smart signage. Powered by XMOS XVF3800, it features on-board AI acoustic algorithms such as AEC, beamforming, and noise suppression. With a split design and options for circular or linear mic arrays, it supports both dual modes(I2S/USB), making it the smart ear for embodied AI projects requiring far-field and clear voice capture.

Key Features

01 **In robotics applications, the circular array can be mounted on the robot's head for omnidirectional voice capture.**

02 **For smart digital signage, the linear array is well-suited for front-facing placement, optimizing voice pickup for typical user interactions directly in front of the display.**

03 **AEC (Acoustic Echo Cancellation)**

04 **NS (Noise Suppression)**

05 **Far-field Voice Capture Up to 5m**

06 **Circular 4-Microphone Array**

Supports 360° DoA

07 **Bottom-Firing Microphones**

08 **Compact Size, Powerful Performance**

09 **Plug-and-Play via USB**

A standard USB interface enables quick connection to devices such as Raspberry Pi, NVIDIA Jetson, and PCs running Windows, Linux, or macOS, no drivers or complex setup required.

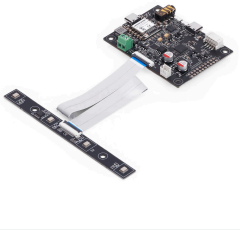
10 **I2S for MCU Integration**

Direct I2S support allows seamless integration with MCU platforms like the XIAO Series and Arduino, making it easy to build embedded voice-enabled applications with minimal hardware overhead.

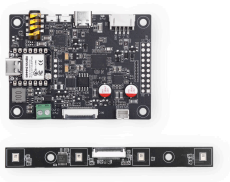
11 **XIAO ESP32S3 Pre-Soldered Options**

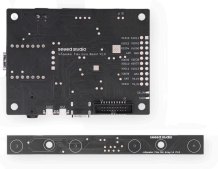
Two variants (100070894,100026178) come with a pre-soldered XIAO ESP32S3, enabling native support for ecosystems such as ESPHome and Home Assistant. This allows developers to easily extend applications into smart home scenarios and beyond.

Product Gallery

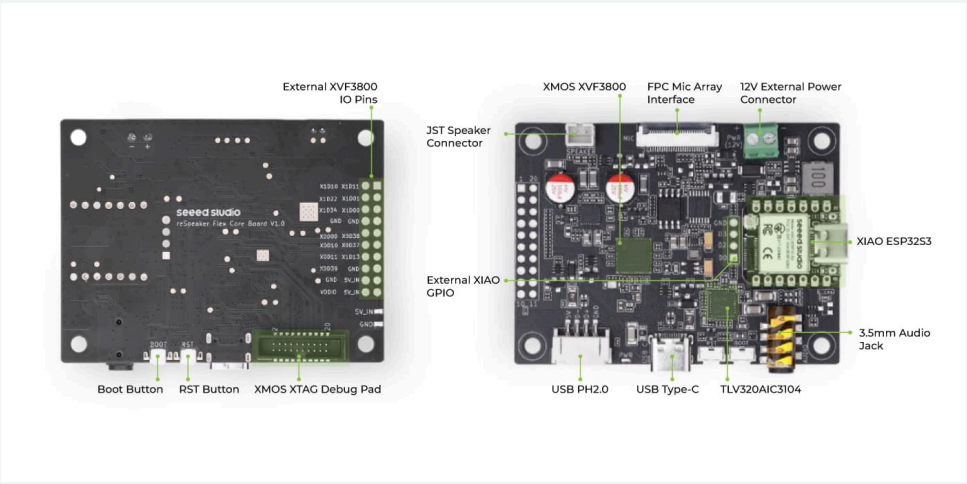


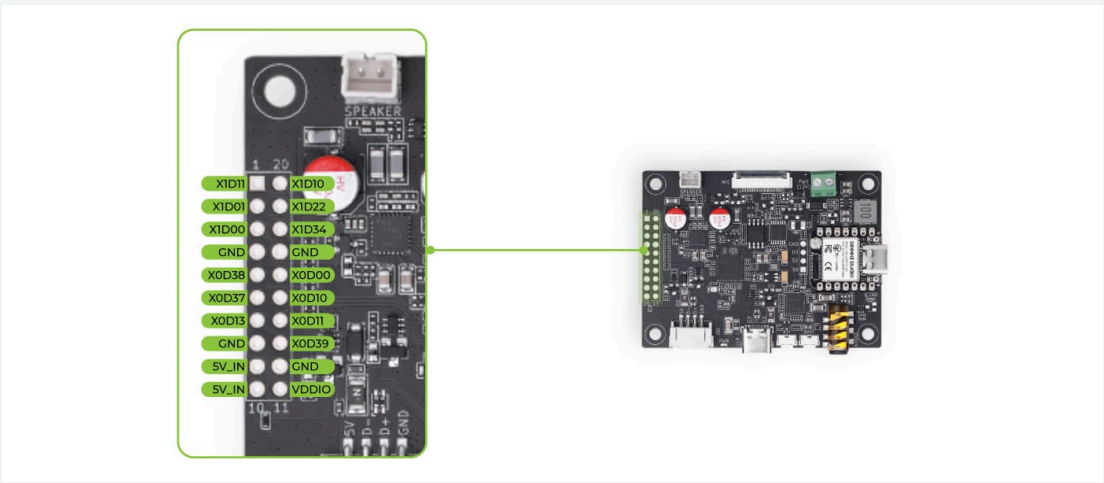


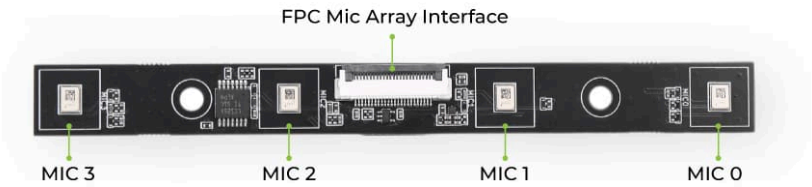




Hardware Overview







Applications

- **Application 1: Robotics Integration with reSpeaker Flex:** Its compactmicrophone array can be placed on a robot's head, ears, forehead, chest, or even externally (e.g., on a robotic arm) to capture sound closer to the source, while the core processing board remains safely inside the device enclosure. Combined with Seeed's strong customization capabilities, it enables seamless integration into a wide range of robotic platforms, including humanoid robots, desktop robots, companion robots, service robots, and robot pets such as robot dogs.
- **With support for ROS2, it streamlines system-level communication and development.Powered by the XMOS XVF3800 audio processor, reSpeaker Flex features on-board AI acoustic algorithms such as multi-beamforming and advanced noise suppression, enabling reliable wake word detection,speech-to-text (STT), speech-to-intent, voice command recognition, and other voice AI workflows.**
- **An upgraded design supports a 10W amplifier, enabling strong text-to-speech (TTS) performance and delivering clear, natural voice interaction even in larger spaces.**
- **Add Voice Interface to LeKiwi Robot with reSpeaker Flex%20with%20a%20Raspberry%20Pi%20(voice%20processing%20brain),%20enhanced%20by%20the%20reSpeaker%20Flex%20for%20high-quality%20audio%20capture%20and%20Voice%20Embeddings%20for%20smarter,%20more%20personalized%20voice%20interaction.%20Using%20natural%20language%20commands,%20free%20with%20improved%20accuracy%20and%20responsiveness.)**
- **This project combines a Seeed Studio XIAO ESP32 (motor controller) with a Raspberry Pi (voice processing brain), enhanced by the reSpeaker Flex for high-quality audio capture and Voice Embeddings for smarter, more personalized voice interaction. Using natural language commands, you can drive, steer, and control the robot completely hands-free with improved accuracy and responsiveness.**
- **Voice Control reBot Arm B601-DM with reSpeaker Flex:** We built a voice-driven intelligent robot arm control system from scratch. Now with reSpeaker Flex, the reBot Arm can listen and capture your voice while identifying which direction the sound is coming from. Then it can understand what you say and understand your intention. Finaly it can make corresponding actions accordingly (turn, nod, dance, wave, etc.)
- **Application 2: Build Private Secured Smart Toys withreSpeakerFlexfor Intuitive Voice Interaction:** Its compact and flexible microphone array can be seamlessly embedded into various toy form factors such as plush toys, educational devices, or handheld companions, allowing it to capture user's voices accurately even in dynamic and noisy environments.
- **Leveraging the XMOS XVF3800 audio processor, reSpeaker Flexenables more responsive and engaging interactions, from voice-controlled storytelling and learning activities to conversational AI companions.**
- **With support for locally running voice agents, reSpeaker Flex enables on-device processing of voice data, helping safeguard user privacy,especially important for companion toys and child-focused applications.**
- **Application 3: Build Smart Voice Terminals with Seamless and Reliable Interaction:** reSpeaker Flex brings reliable and intuitive interaction to self-service kiosks, smart vending machines, and smart digital signage. Its linear microphone array options (100099135, 100026178) are optimized for seamless integration into narrow screen bezels(e.g., screen edges, display frame) and compact enclosures, without compromising acoustic performance.
- **Itdelivers advanced noise suppression and directional far-field voice capture (up to 5m), ensuring accurate speech recognition even in acoustically challenging public and larger environments such as malls, transit hubs, and retail spaces. This enables faster, touch-free user interactions and improves overall accessibility.**
- **Application 4: Build Physical AI Voice Agent with reSpeakerFlex:** Through SDK and platform compatibility, reSpeakerFlex supports rapid integration with voice AI frameworks and cloud-based services, allowing devices to be quickly transformed into scalable voice agent solutions.

Resource Links

- https://www.seeedstudio.com/reSpeaker-Flex-XVF3800-Linear-4-with-XIAO-ESP32S3-p-6736.html
- reSpeaker Flex Flyer - EN
- reSpeaker Flex Flyer - CN
- XMOS XVF3800 v3.2.1
- reSpeaker Series Flyer - EN
- reSpeaker Series Flyer - CN
- reSpeaker Flex XVF3800 Circular.step
- reSpeaker Flex XVF3800 Linear.step
- reSpeaker Flex XVF3800 Core Board.step
- Amplifier

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