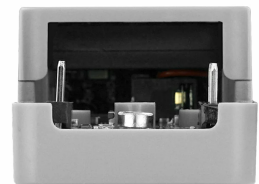
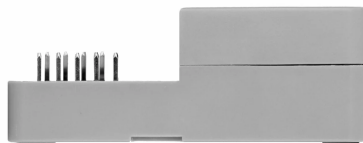
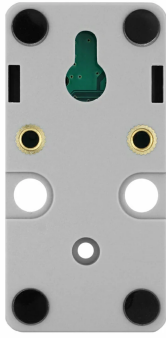


# Atomic Audio-3.5 Base

SKU:A166





## Description

**Atomic Audio-3.5 Base** is a voice recognition and audio playback base designed for the Atom series controllers (not compatible with Atom Voice). It integrates an ES8311 mono audio codec, a MEMS microphone, and an NS4150B power amplifier, equipped with a standard 3.5mm audio jack and a 4-segment TRRS connector (CTIA standard) to support both audio output and microphone input. The ES8311 supports 24-bit audio resolution with a sampling rate range of 16kHz ~ 64kHz and communicates via the I2S interface, enabling high-fidelity audio processing. The onboard MEMS microphone offers a high signal-to-noise ratio and digital output capability, optimized for automatic speech recognition scenarios, while the integrated speaker delivers efficient audio output. This base supports full-duplex communication for simultaneous audio transmission and reception, making it suitable for applications such as voice assistants, voice control terminals, smart home voice gateways, and voice interaction devices.

## Features

- Built-in microphone and speaker
- 3.5mm audio jack
  - Supports audio output + microphone input
  - Built-in insertion detection with automatic switching to external microphone line
- Integrated ES8311 hi-fi audio codec, supporting 24-bit high-resolution audio processing
- Supports full-duplex voice communication with simultaneous audio transmission and reception

## Includes

- 1 x Atomic Audio-3.5 Base
- 1 x Hex Key L-Shape 1.5mm (For M2 Screw)
- 1 x M2 \* 8mm cap head machine screw

## Applications

- Atom expansion base
- DIY node controller
- Peripheral interface expansion

## Specifications

Specification	Parameter
Audio Codec	ES8311
MEMS Microphone	ME1502AM5G
Speaker	1W@8Ω NS4150B
Audio Interface	3.5mm headphone jack, 4-pole TRRS interface (CTIA standard), compatible with 15mm standard plug
Voltage Regulator	TPS7A2033PDQNR
GPIO Expander	PI4IOE5V6408ZTAEX
Power Consumption	Standby Mode: 5V@1.83mA Recording Mode: 5V@12.71mA 50% Volume Playback: 5V@21.19mA 100% Volume Playback: 5V@26.46mA
Product Size	48.0 x 24.0 x 17.5mm
Product Weight	12.0g
Package Size	138.0 x 93.0 x 18.0mm
Gross Weight	15.5g

## Learn

### Microphone Switch

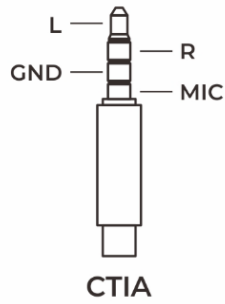
The onboard microphone toggle switch allows adaptation to different use cases:

- ON: Keeps the onboard microphone powered; continues to use the built-in microphone when an external speaker is connected.
- OFF: When a peripheral is connected to the 3.5mm jack, automatically switches to the external microphone — ideal for use with external headsets.



### Headphone Plug Type and Wiring Standard

The audio interface adopts a four-contact TRRS (Tip-Ring-Ring-Sleeve) structure, supporting simultaneous stereo playback and microphone input to achieve integrated audio output and voice input. The interface follows the CTIA (American standard) wiring specification.



## | Schematics

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- [Atomic Audio-3.5 Base Schematics PDF](#)



# PinMap

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## Power Amplifier Control

PI4IOE5V6408 (0x43)	P0
NS4150B	PW_AMP

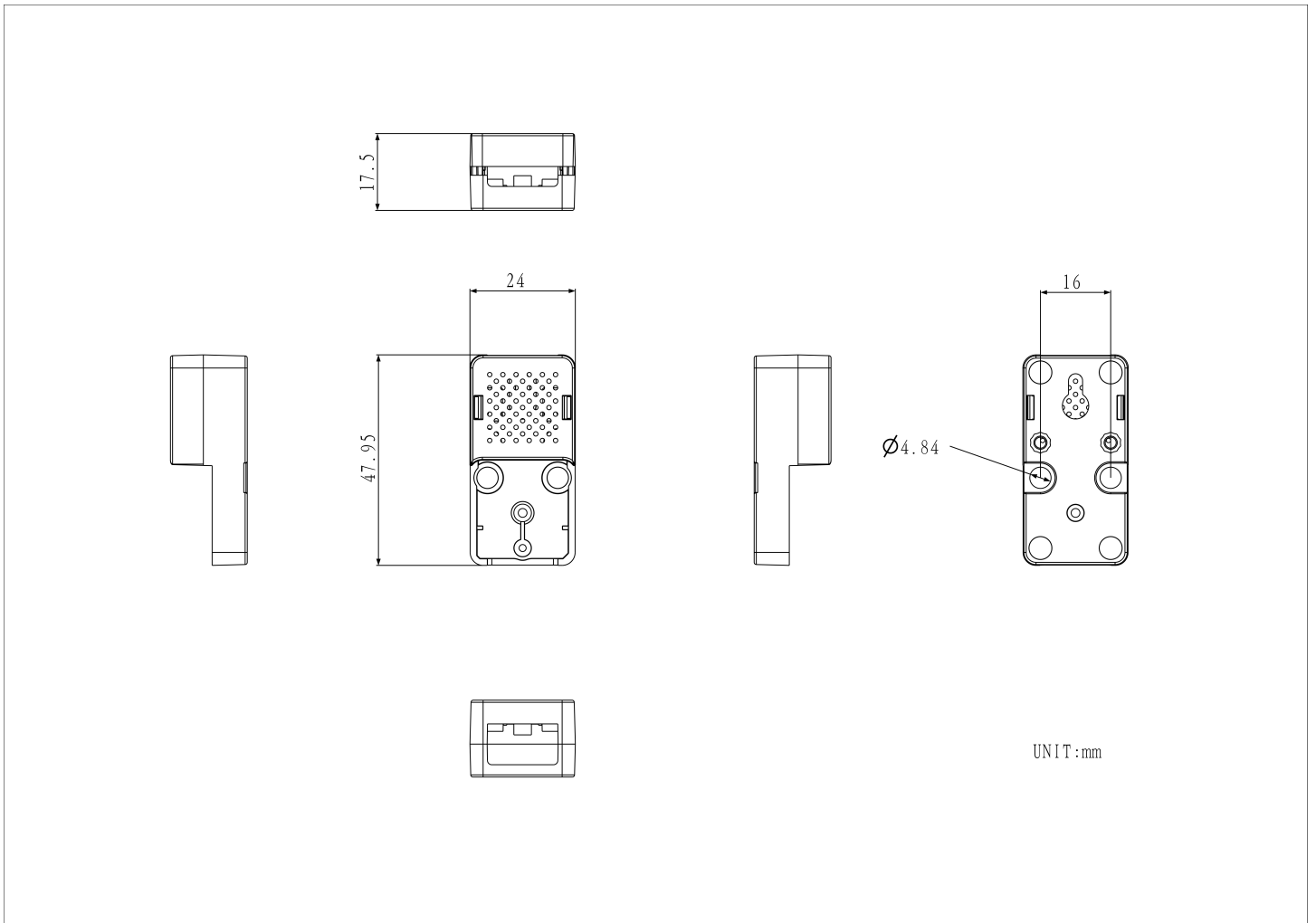
## Atomic Audio-3.5 Base-Bus

PIN	LEFT	RIGHT	PIN
		1	3V3
SCL	2	3	DSDIN
SDA	4	5	LRCK
5V	6	7	ASDOUT
GND	8	9	SCLK

## Model Size

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- [Atomic Audio-3.5 Base Model Size PDF](#)



## Datasheets

- [ES8311](#)
- [NS4150B](#)
- [PI4IOE5V6408ZTAEX](#)

## Softwares

### Arduino

- [Atomic Audio-3.5 Base Arduino Guide](#)
- [Atomic Audio-3.5 Base Arduino Library](#)

## Video

- [Atomic Audio-3.5 Base Product Introduction and Feature Demonstration](#)

[A166-Atomic-Audio-3.5-Base-video\\_EN.mp4](#)