

Atom Voice

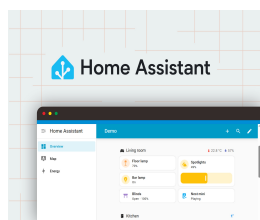
SKU:C008-C



Description

Atom Voice is a programmable smart speaker based on the ATOM design. Extremely compact at just **24 x 24 x 17 mm**, it can stream music by connecting—via the ESP32’ s wireless functions—to a phone, tablet, etc., or play designated streaming media over Wi-Fi. To simplify voice usage, **Atom Voice** integrates an STT (speech-to-text) service. Flash the dedicated firmware to enable it and issue voice commands to perform diverse operations. You can also write your own code to connect to cloud platforms such as AWS or Google; using the built-in microphone and speaker, **Atom Voice** can provide AI capabilities for voice control, smart interaction, IoT, and more. An on-board RGB LED (SK6812) clearly indicates connection status. In addition to serving as a smart speaker, it retains the control abilities of the ATOM series—you can connect external devices through the GROVE port. An M2 screw hole on the back facilitates mounting.

Tutorial



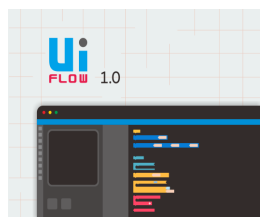
Home Assistant

This tutorial shows how to connect Atom Voice to Home Assistant.



Arduino IDE

This tutorial shows how to program and control the Atom Voice with the Arduino IDE.



UIFlow Echo STT

This tutorial shows how other M5 devices can obtain Atom Voice STT recognition results via UIFlow.



Atom Voice Bluetooth Speaker

This tutorial explains how to flash the Bluetooth speaker firmware to Atom Voice using M5Burner, and covers how to use it as a wireless speaker.

Note

Pin Usage Notes

Note

Pins G19, G22, G23, and G33 on the Atom Voice bottom bus are reserved for the device's internal audio I2S interface. External reuse, expansion modules, or additional wiring on these pins is strictly prohibited. When connecting Atomic series peripherals, do not occupy the above pins. Improper use may cause audio path abnormalities and, in severe cases, permanent hardware damage.

Playback Notes

To prevent damage to Atom Voice, avoid the following operations during use.

- Outputting DC signals through the I2S channel
- Playing white noise for extended periods
- Do not play full-scale square wave audio.

| Features

- Compact and lightweight
- Built-in STT service
- ESP32-based, supporting A2DP and BLE 4.0
- Wi-Fi protocol IEEE 802.11 b/g/n
- Integrated microphone and speaker
- RGB LED status indication
- GROVE expansion connector
- Audio recording and playback
- Independent programmable button
- Development platforms: Arduino, ESP-IDF / ADF

| Includes

- 1 x Atom Voice

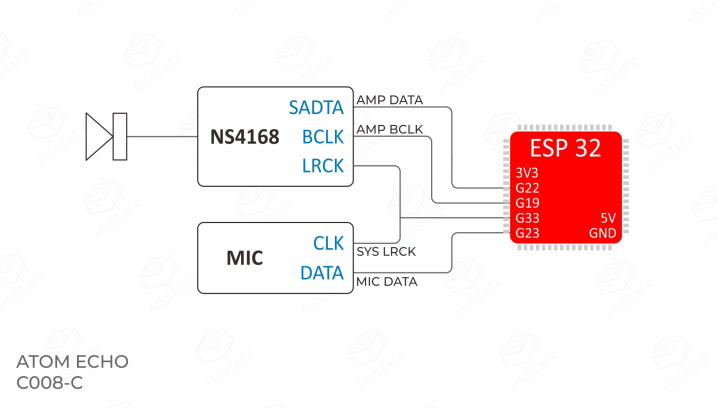
| Applications

- Wireless speaker
- Voice control
- Internet of Things (IoT)

| Specifications

Specification	Parameter
SoC	ESP32-PICO-D4, 240 MHz, Dual Core, Wi-Fi
Flash	4 MB
Interface	1 x IR-TX, 1 x Button, 1 x Reset Button
PinOut	G21/G25/5V/GND, 3V3/G22/G19/G23/G33
RGB LED	SK6812
Speaker	0.8 W / NS4168 (I ² S)
Microphone	SPM1423 (PDM)
Enclosure	Plastic (PC)
Product Size	24.0 x 24.0 x 16.8mm
Product Weight	9.0g
Package Size	85.0 x 65.0 x 17.0mm
Gross Weight	15.5g

Schematics



PinMap

SPK & MIC

Atom Voice	G22	G19	G33	G23
NS4168	AMP DATA	AMP BCLK	AMP LRCK	
SPM1423			MIC CLK	MIC DATA

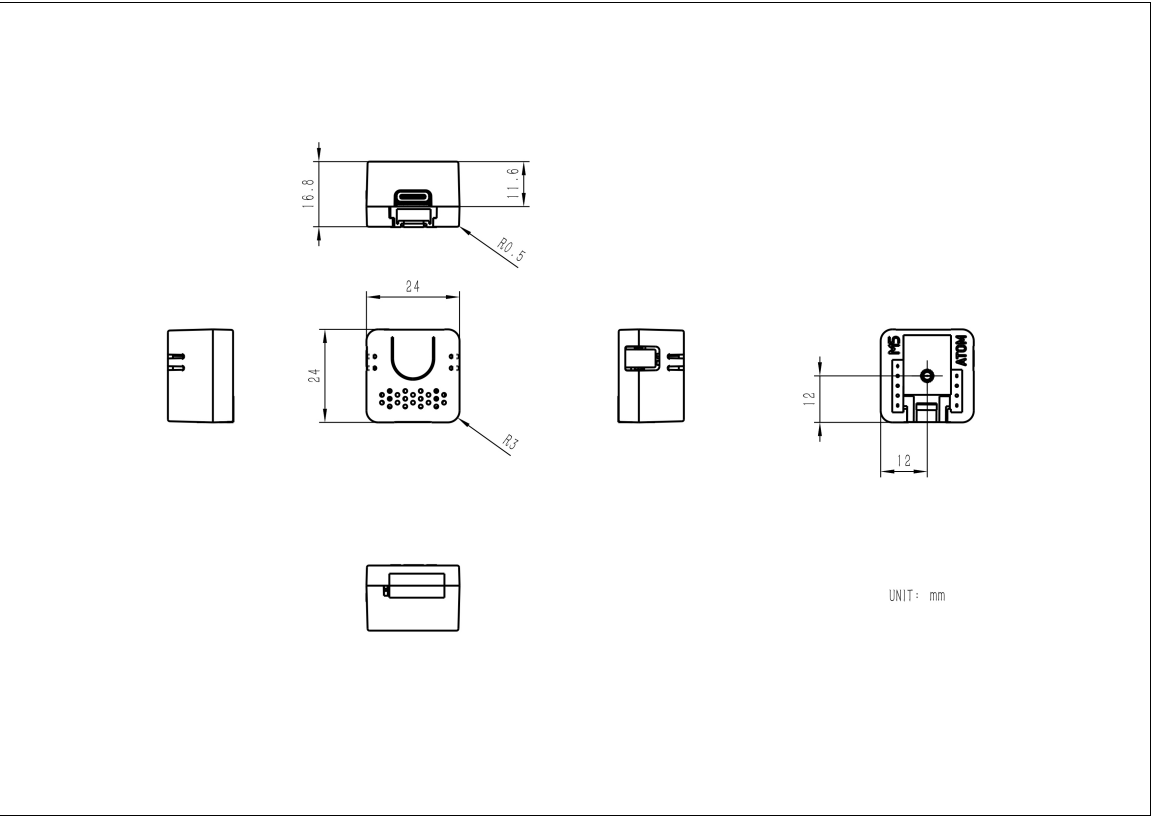
HMI

Atom Voice	G27	G39
RGB LED	Data	
Button		Input

HY2.0-4P

HY2.0-4P	Black	Red	Yellow	White
PORT.CUSTOM	GND	5 V	G26	G32

Model Size



Datasheets

- [ESP32-PICO-D4](#)
- [SPM1423](#)
- [NS4168](#)

Softwares

Quick Start

- [Atom Voice Bluetooth Speaker](#)

Arduino

- [Atom Voice Arduino Quick Start](#)
- [Atom Voice Record & Play Example](#)
- [Atom Voice Play Music Example](#)
- [Atom Voice EchoSTT Example](#)

ESP-IDF

- [Factory Bluetooth Speaker Firmware](#)

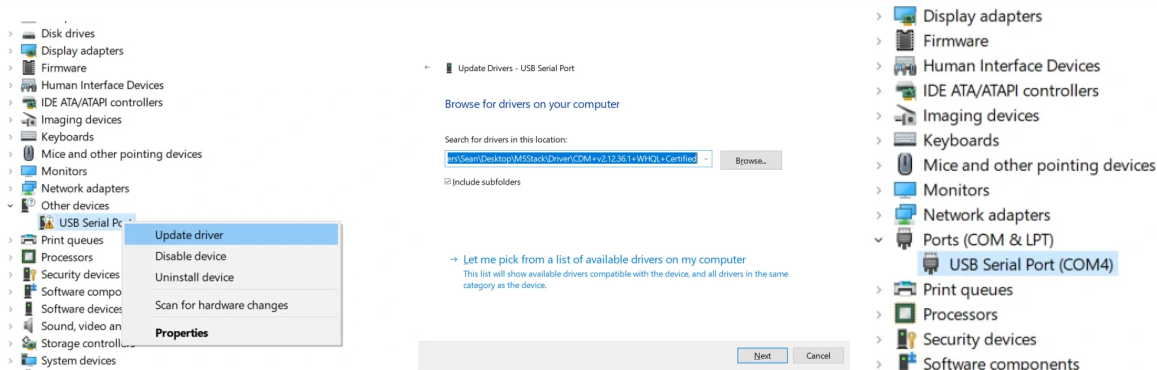
USB Driver

Driver Installation

Connect the device to a PC and install the [FTDI driver](#) via Device Manager. Using Windows 10 as an example: download the driver that matches your OS, unzip it, and install it through Device Manager. (Note: On some systems you may need to install twice before the driver takes effect. Unrecognized devices usually appear as **M5Stack** or **USB Serial**. Windows users are recommended to install via Device Manager (custom update); the executable installer may not work properly.) [Click here to download the FTDI driver](#)

macOS User Notice

Before installation on macOS, go to **System Preferences** → **Security & Privacy** → **General** → **Allow apps downloaded from** and select **App Store and identified developers**.



Easyloader

Wireless Speaker

Uses the A2DP protocol to transmit audio data (phone calls are not supported). The LED is red when powered on; after connecting to a wireless device it turns green, and audio can then be output through the Atom Voice. When disconnected, the LED returns to red. This firmware is compiled under ESP-IDF. Regular users can flash it directly via Easyloader. Advanced users can build their own functions by setting up the ESP-IDF environment following Espressif's documentation. Factory firmware source code and BIN files are provided below; the BIN burn address is 0x0000.

Easyloader	Download	Note
Atom Voice RecordPlay Example Easyloader	download	/
Atom Voice BT Speaker Firmware Easyloader	download	/

Video

[AtomEcho.mp4](#)

[ATOM_ECHO.mp4](#)

Tutorial: Set up M5Stack Atom Voice as a Home Voice Assistant

[Atom-Echo-Home-Assistant-VIDEO.mp4](#)

Product Comparison

To compare information on the Atom series products, you can visit the [Product Selection Table](#), check the target products, and get the comparison results. The selection table covers key information such as core parameters and functional features, and supports comparison of multiple products simultaneously.