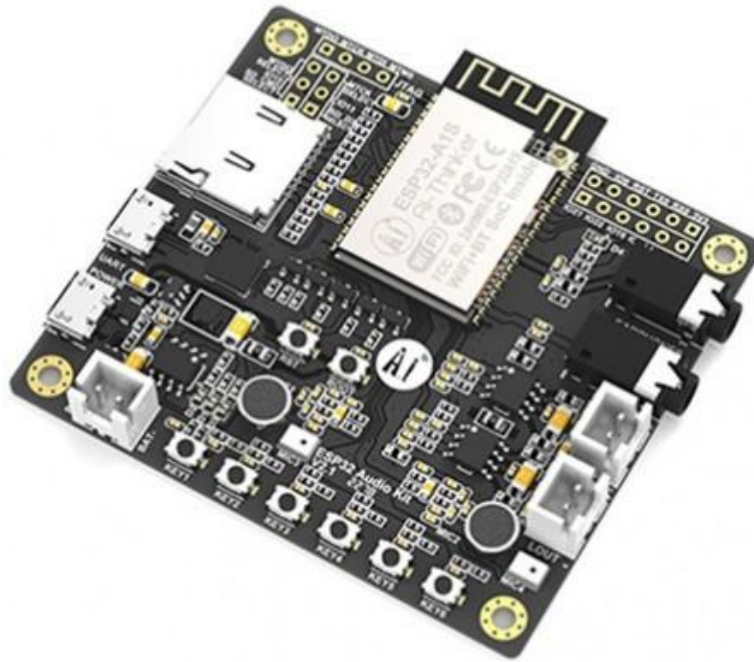# ESP32-AUDIO-KIT

ESP32-A1S WiFi+BT Audio Development Kit

ESP32-Audio-kit is a small size audio development board based on ESP32-A1S from Ai-Thinker; most of the interfaces are distributed at the edges. Supports TF card, LINEIN, and 2-way Mic input; support 1 channel headphone output and 1 channel left and right speaker output, facilitate rapid development, can be widely used in various IoT applications, suitable for home smart devices, smart Audio, story machine solutions, etc.

The core part of the ESP32 Audio Kit is ESP32- A1S module, it can work as a minimum independent system. Most audio interfaces are distributed on both sides of the development board for easy access, include 3.5mm headphone jack, 3.5mm line-in jack, a pair of 2-pin headers for left/right speakers (up to 4Ω/3W output), and a couple of built-in microphones. The ESP32-Audio-Kit is outfitted with a dual-core Xtensa LX6 CPU (520Kb SRAM, 8Mb of PSRAM), micro SD slot (up to 64Gb of storage), and 802.11 b/g/n Wi-Fi + Bluetooth 4.2 LE.
The ESP32-Audio-Kit is compatible with Espressif's ESP-ADF framework, which offers support for Google's Assistant and Amazon's Alexa. It is an ideal solution for IOT Audio applications, it's suitable for smart home devices, smart audio,etc.

Recommended Working Environment

Working Environment	Name	Min.	Typical	Max.	Unit
Operating Temperature	/	-40	20	85	℃
Power Supply Range	VDD	4.7	5	5.3	V

WiFi Emission

Description	Min.	Typical	Max.	Unit
Input frequency	2412	-	2484	MHz
Input impedance	-	50	-	ohm
Input reflection	-	-	-10	dB
PA output power	15.5	16.5	21.5	dBm

Bluetooth Emission

Parameter	Condition	Min.	Typical	Max.	Unit
RF transmit power	-	-	+7.5	+10	dBm
RF power control range	-	-	25	-	dB
Adjacent channel transmit power	F = F0 + 1MHz	-	-14.6	-	dBm
	F = F0 - 1 MHz	-	-12.7	-	dBm
	F = F0 + 2 MHz	-	-44.3	-	dBm
	F = F0 - 2 MHz	-	-38.7	-	dBm
	F = F0 + 3 MHz	-	-49.2	-	dBm
	F = F0 - 3 MHz	-	-44.7	-	dBm
	F = F0 + > 3 MHz	-	-50	-	dBm
	F = F0 - > 3 MHz	-	-50	-	dBm

Features:

- Low power dual-core 32-bit CPU, can also serve the application processor
- Up to 240MHz clock speed, Summary computing power up to 600 DMIPS
- Built-in 520 KB SRAM, external 8MPSRAM
- Supports UART/SPI/I2C/PWM
- 3.5mm headphone jack, support left and right channel output.
- left/right channel of speaker, support max 4Ω3W output
- Support LINEIN and 2-way Mic input

- Support 3.7V Li-ion battery or up to 5V2A power input, support battery charging
- Support 64G SD card; 6 onboard buttons
- Supports multiple sleep modes
- Embedded Lwip and FreeRTOS
- Supports STA/AP/STA+AP operation mode
- Support Smart Config/AirKiss technology
- Support secondary development

Package List:

- 1 x ESP32-A1S WiFi+BT Audio Development Kit

Documents:

- Schematic
- ESP-ADF