Atom VoiceS3R

SKU:C126-ECHO















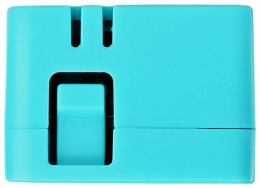


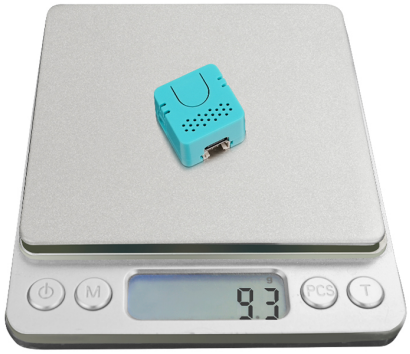












Description

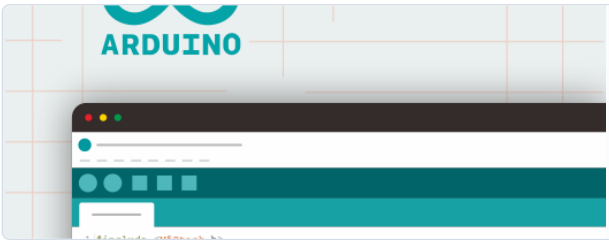
Atom VoiceS3R is a programmable IoT voice interaction controller designed for intelligent voice control and human-computer interaction scenarios. It is powered by the **ESP32-S3-PICO-1-N8R8** main control chip, supports 2.4GHz Wi-Fi wireless communication, and comes with 8MB Flash and 8MB PSRAM to meet diverse application development needs, offering excellent performance and scalability. The audio system adopts an **ES8311** mono codec, combined with a high-sensitivity **MEMS microphone** and an **NS4150B** power amplifier, enabling clear voice pickup and high-fidelity audio output to enhance voice recognition and interactive experiences. It is suitable for voice interaction scenarios such as AI voice assistants and smart home control.

Tutorial



UiFlow2

This tutorial will introduce how to control the Atom VoiceS3R device through the UiFlow2 graphical programming platform.



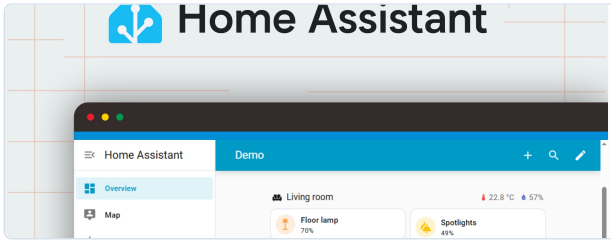
Arduino IDE

This tutorial will introduce you to programming and controlling the Atom VoiceS3R device using the Arduino IDE.



Atom VoiceS3R XiaoZhi Voice Assistant

This tutorial introduces how to use the Atom VoiceS3R device to build a personal voice assistant application by flashing the XiaoZhi Voice Assistant firmware through M5Burner.



Home Assistant

This tutorial shows how to add Atom VoiceS3R into Home Assistant and build you own Voice Assistant for your smart home.

Features

- Integrated ESP32-S3-PICO-1-N8R8 main controller
- 8MB Flash and 8MB PSRAM
- ES8311 mono audio codec
- MEMS microphone
- Class D amplifier
- Integrated infrared transmitter
- Expandable pins and interfaces
- Development Platform
  - Arduino
  - UiFlow2
  - ESP-IDF
  - PlatformIO

Includes

- 1 x Atom VoiceS3R

Applications

- AI Voice Assistant
- Smart Home
- Human-Computer Interaction
- Audio Playback

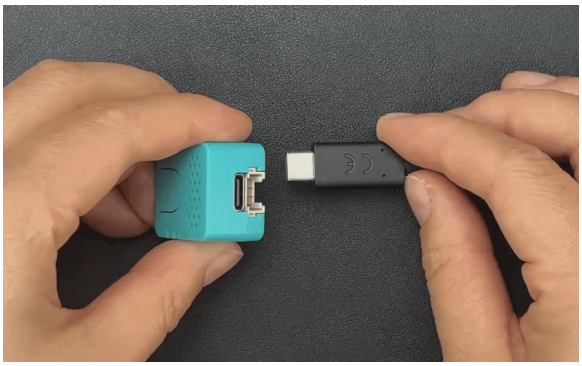
Specifications

Specification	Parameter
SoC	ESP32-S3-PICO-1-N8R8 @ Xtensa® 32-bit LX7 dual-core processor, clock frequency 240MHz
PSRAM	8MB Octal
Flash	8MB
Power Input	DC 5V
Audio Codec	ES8311: 24-bit resolution, I2S protocol
Microphone	MEMS microphone, Signal-to-Noise Ratio (SNR): 65dB
Speaker	NS4150B amplifier chip + 8Ω@1W 1318 cavity speaker
Operating Temp	0 ~ 40°C
Product Size	24.0 x 24.0 x 16.8mm
Product Weight	9.3g
Package Size	85.0 x 65.0 x 17.0mm
Gross Weight	15.6g

Learn

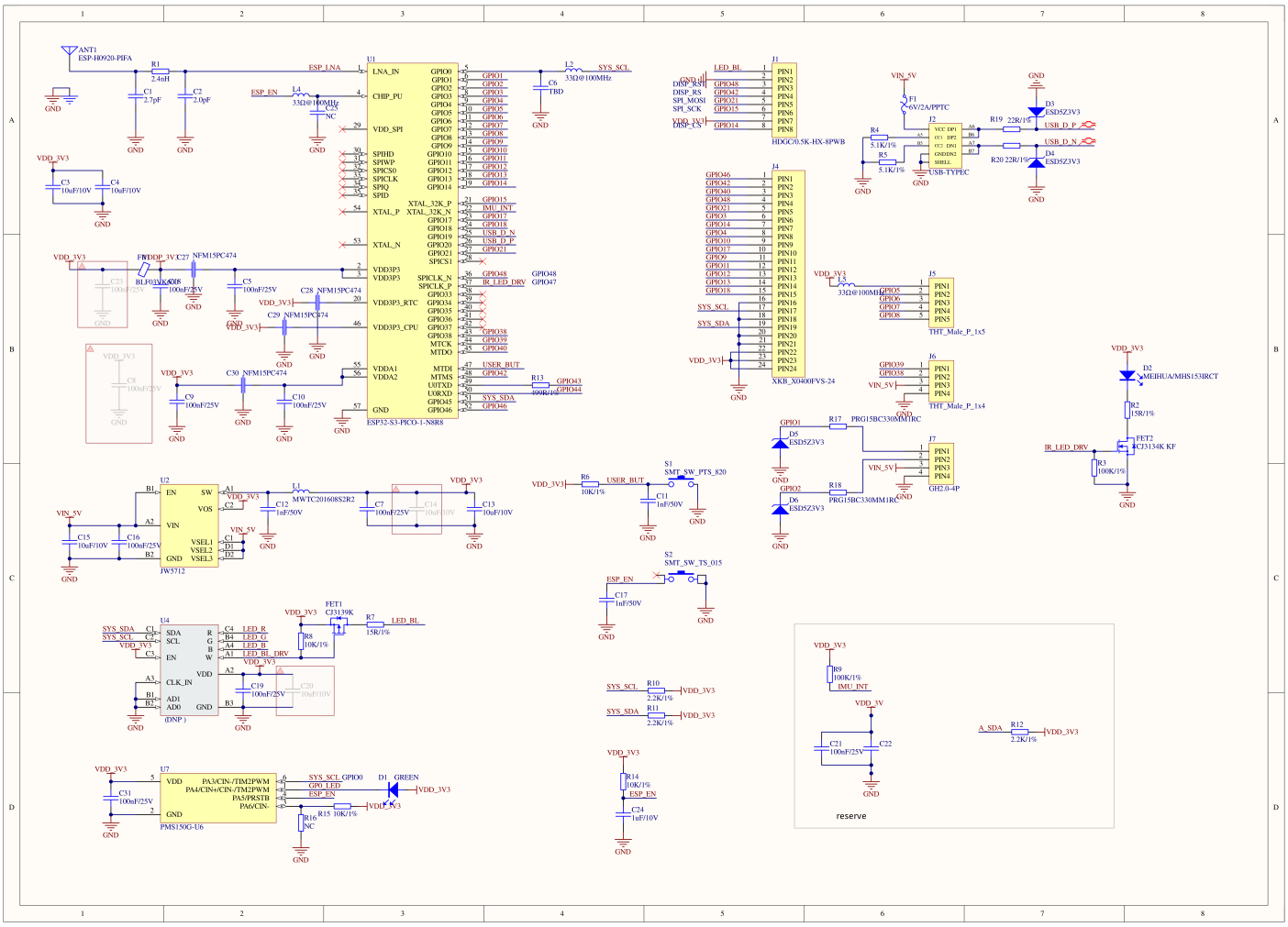
Enter Download Mode

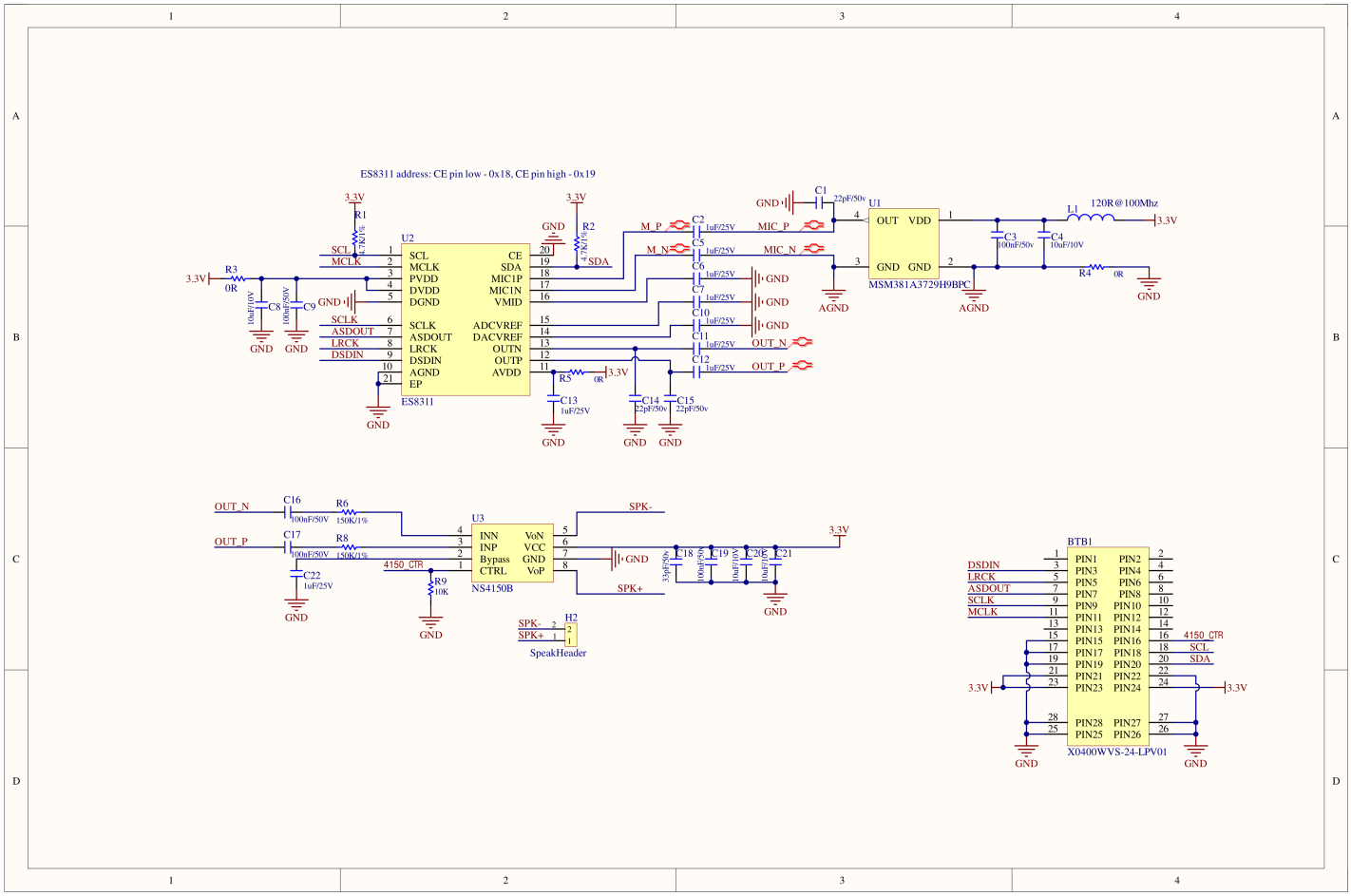
To flash the firmware, press and hold the reset button (about 2 seconds) until the internal green LED lights up, then release the button. After release, the green LED turns off, indicating that the device has entered download mode and is ready for flashing.



Schematics

- Atom VoiceS3R Mainboard Schematics PDF
- Atom VoiceS3R Baseboard Schematics PDF


ANT1
ESP-H0920-PIFA
ESP32-S3-PICO-1-N8R8
JW5712
MWTC201608S2R2
PMS150G-U6
(DNP)
reserve


ES8311 address: CE pin low - 0x18, CE pin high - 0x19
ES8311
MSM381A3729H9BPC
NS4150B
SpeakHeader
X0400WVS-24-LPV01

PinMap

Audio

ESP32-S3	G45	G0	G48	G4	G3	G17	G11	G18
ES8311	SDA	SCL	DOUT	DIN	WS	BCLK	MCLK	
NS4150B								NS4150_CTR

IR TX

ESP32-S3	G47
IR_TX	IR_LED_DRV

BUTTON

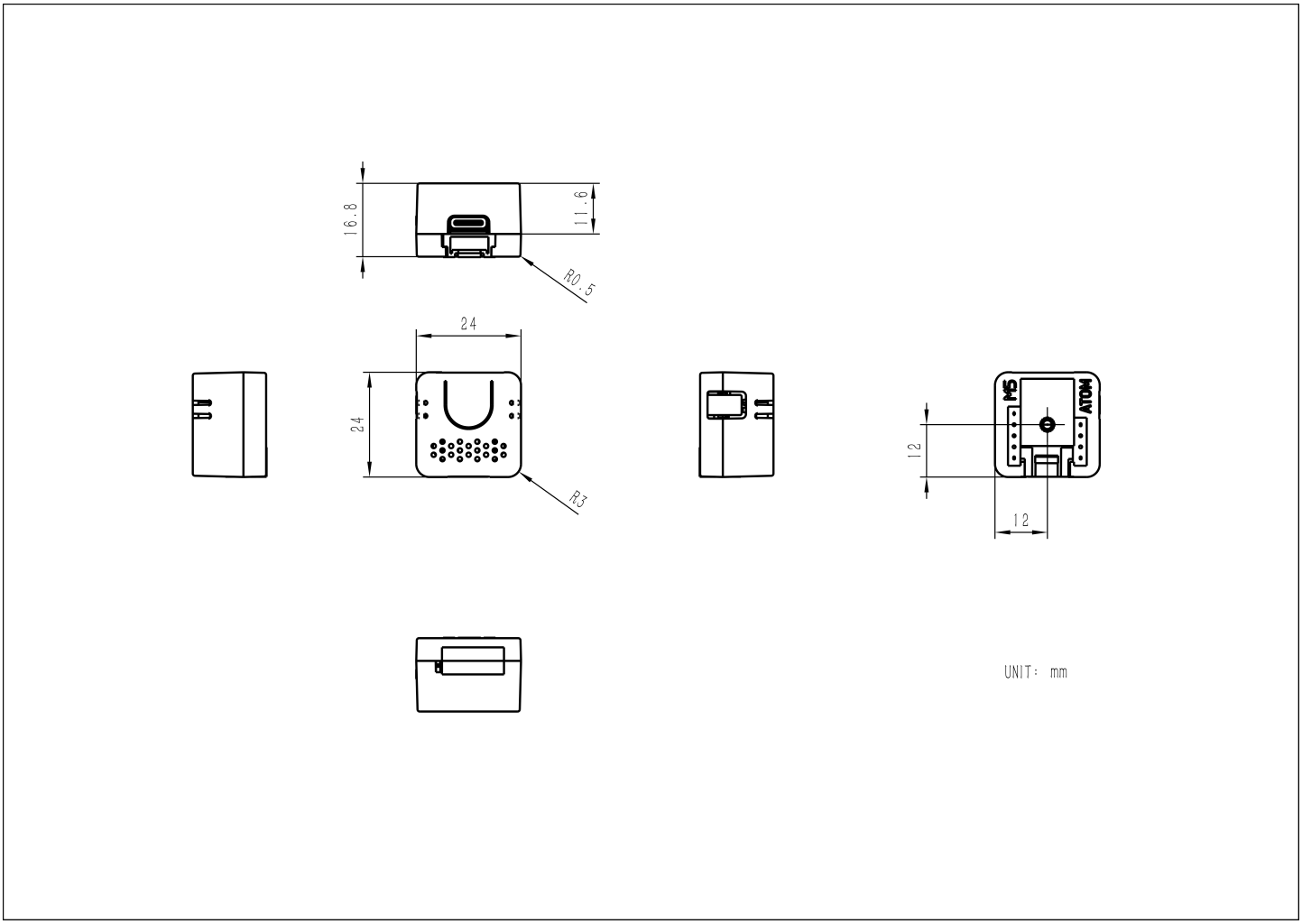
ESP32-S3	G41
BUTTON	USER_BUT

HY2.0-4P

HY2.0-4P	Black	Red	Yellow	White
PORT.CUSTOM	GND	5V	G2	G1

Model Size

- Atom VoiceS3R Model Size PDF



Structure

- Atom VoiceS3R Structure Files

Datasheets

- ES8311
- MEMS MIC
- NS4150B

Softwares

Arduino

- Atom VoiceS3R Arduino Quick Start
- M5Unified Driver Library
- M5GFX Driver Library

UiFlow2

- Atom VoiceS3R UiFlow2 Quick Start

PlatformIO

```
[env:m5stack-atoms3r]
platform = espressif32@6.7.0
board = esp32-s3-devkitc-1
framework = arduino
board_build.arduino.memory_type = qio_opi
build_flags =
    -DESP32S3
    -DBOARD_HAS_PSRAM
    -mfix-esp32-psram-cache-issue
    -DCORE_DEBUG_LEVEL=5
    -DARDUINO_USB_CDC_ON_BOOT=1
    -DARDUINO_USB_MODE=1
lib_deps =
    M5Unified=https://github.com/m5stack/M5Unified
```

Easyloader

Easyloader	Download	Note
Atom VoiceS3R Factory UAC Firmware Easyloader	download	/

Other

- Atom VoiceS3R XiaoZhi Voice Assistant

Video

Product Comparison

Product Compare		
	Atom VoiceS3R	**Atom Voice**
SoC	ESP32-S3-PICO-1-N8R8	ESP32-PICO-D4
Flash	8MB	4MB
PSRAM	8MB	/
Audio Solution	ES8311 + NS4150B	NS4168 + SPM1423
RGB LED	/	WS2812 x1

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.