ESP32 Agent Dev Kit Specification

Version 1.3

November 21,2024

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Modification Record

Version Number	Drafting person / Modified by	preparation / revision	Reason for change	Main changes (Just write the main points)
V 1.3	Panacea	2024 . 11 . 21	First creation	Create a document

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1. Overview

ESP32 Agent Dev Kit is a new generation of desktop pet based on ESP32-S3-WROOM-1 launched by Wireless-Tag Co., Ltd. It has rich peripheral interfaces and is suitable for various application scenarios in the AIoT field, such as wake-up word detection and voice command recognition, smart home, smart appliances, smart control panels, smart speakers, etc.

2. Characteristic

CPU and on-chip memory

• Built-in ESP32-S3 series chip, Xtensa® dual-core 32-bit LX7 microprocessor (supports single-precision floating-point unit), supporting clock frequency up to 240 MHz.

• 384 KB ROM

• 512 KB SRAM

• 16 KB RTC SRAM

• 8 MB PSRAM

• 16 MB FLASH

Wi-Fi

• 802.11 b/g/n

• Data rates up to 150 Mbps in 802.11n mode

• Frame aggregation (TX/RX A-MPDU, TX/RX A-MSDU)

• 0.4 μs guard interval

• Working channel center frequency range: 2412 ~2484MHz

Bluetooth

• Bluetooth LE: Bluetooth 5, Bluetooth mesh

• Supports 125 Kbps, 500 Kbps, 1 Mbps, 2 Mbps

• Advertising Extensions

• Multiple Advertisement Sets

• Channel Selection Algorithm #2)

• Wi-Fi and Bluetooth coexist, sharing the same antenna

microphone

• The microphone integrates a specialized pre-amplification ASIC to provide high sensitivity, high signal-to-noise ratio output from the capacitive audio sensor .

LCD screen

• Fully laminated 3.5-inch high-resolution IPS screen

• RGB interface, resolution: 320x480

• Supports multi-touch

Proximity Sensor

• 16bit standard IIC interface , maximum communication speed 400KHz

• Software-corrected approach detection of dark objects such as black , without optical structure processing.

• Response speed adjustable from 3ms to ultra-low 1uA standby power consumption.

speaker

• Large sound chamber, high fidelity speakers

• Integrated filter-free digital modulation technology to minimize distortion and noise of pulse output signals

• Anti-clipping distortion (ACF) output control function can detect and suppress output signal clipping distortion (sound cracking) caused by excessive amplitude of input music and voice signals. It can also adaptively prevent the output signal from being damaged by the power supply in battery applications. The output clipping caused by the voltage drop significantly improves the sound quality.

3. Hardware specifications

3.1 System block diagram

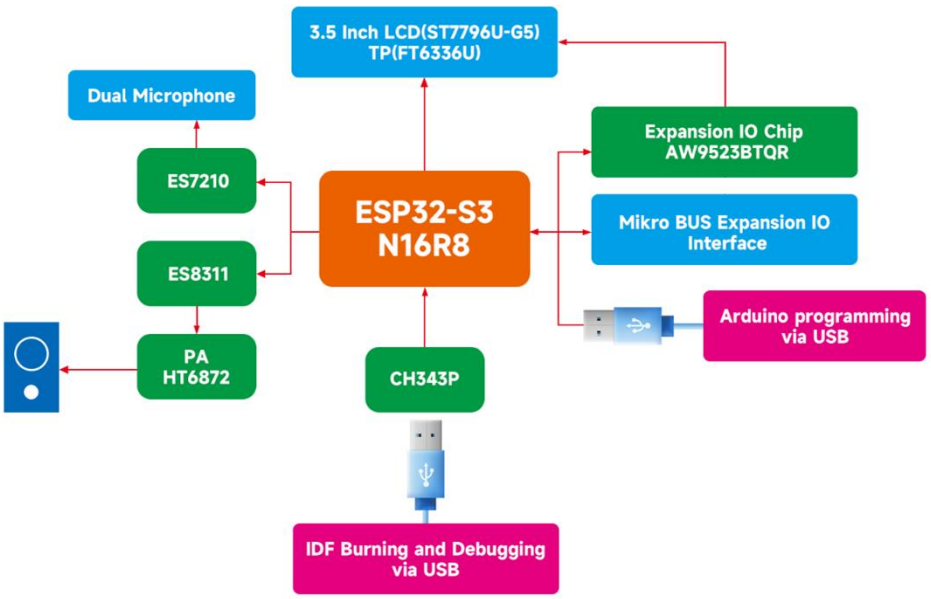

Figure -1 System block diagram

3.2 Physical picture

Figure -2 Product actual picture

3.3 Extended interface description

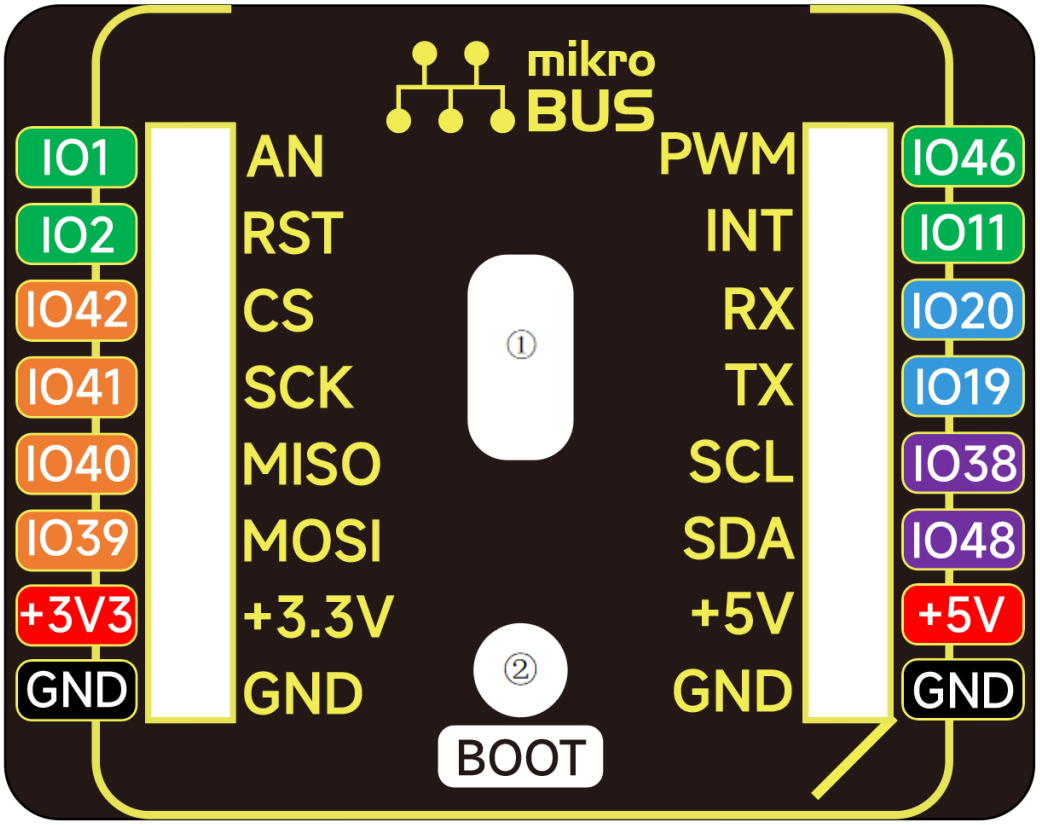

Figure - 3 Expansion interface diagram on the back of the product

Note:
① This is USB-Type-C, which supports master-slave switching. It can be used to burn programs in Arduino IDE and connect to peripherals such as USB protocol cameras.
② Press the button here to switch the startup mode of this product

3.4 Power supply characteristics

3.4.1 Power Supply Voltage

The power supply voltage is 5V, which can be selected using either the Type-C port or the rear expansion interface 5V.

3.4.2 Power Supply Modes

Users can freely choose according to their needs:
a.Type-C Interface:
• Bottom Type-C interface;
• Rear Type-C interface;
b. Rear expansion interface 5V pin.

4. Interface Description

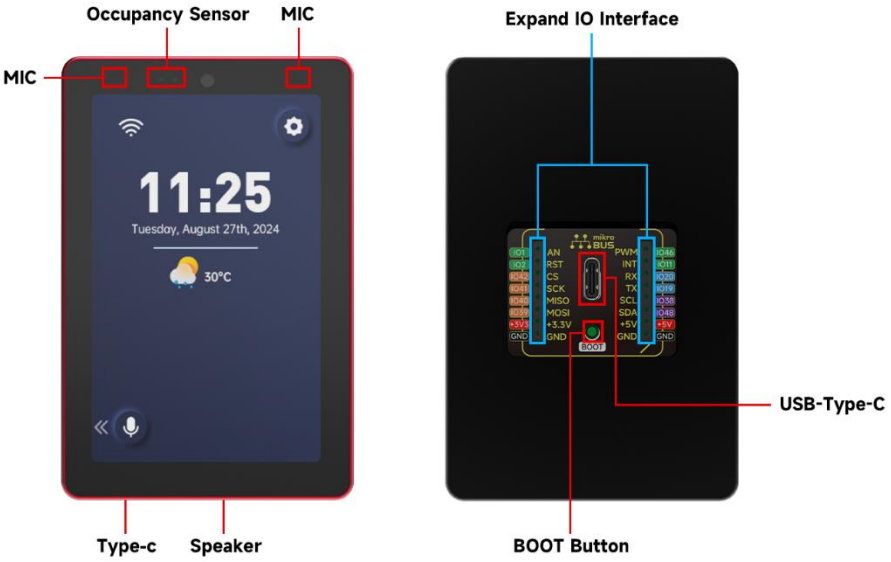

Figure - 4 Interface Description