ESP-32S Wifi Bluetooth Combo Module

SKU 114990772

Xtensa® 32-bit LX6 Dua-core processor, up to 600 DMIPS
448 KByte ROM, 520 KByte SRAM
SDK Firmware for on-line programming

ESP32-S Wifi Bluetooth Combo Module has no difference with ESP3212 Wifi Bluetooth Combo Module, ESP3212 is replaced with ESP-32S.
ESP-32S Wifi Bluetooth combo module is ultra high performance and ultra low-power consumption Wi-Fi and Bluetooth combo wireless platform based on ESPRESSIF ESP32 chipset. ESP-32S integrates dual-core processor, 448 KByte ROM, 520 KByte SRAM, 16 KByte SRAM in RTC, 802.11 b/g/n/e/l Wi-Fi, Bluetooth v4.2 BR/EDR & BLE, clocks & Times, abundant peripheral Interfaces and security mechanism.

ESP-32S Wifi Bluetooth combo module provides SDK Firmware for fast on-line programming and open source toolchains based on GCC for development support. It is designed for Generic low power IoT sensor hub, loggers, video streaming for camera, Wi-Fi & Bluetooth enabled devices, Home automation and mesh network applications, aimed at makers, hardware engineers, software engineers and solution provides.

ESP32 is a single chip 2.4 GHz Wi-Fi and Bluetooth combo chip designed with TSMC ultra low power 40 nm technology. It is designed and optimized for the best power performance, RF performance, robustness, versatility, features and reliability, for a wide variety of applications, and different power profiles.

ESP32 is the most integrated solution for Wi-Fi + Bluetooth applications in the industry with less than 10 external components. ESP32 integrates the antenna switch, RF balun, power amplifier, low noise receive amplifier, filters, and power management modules. As such, the entire solution occupies minimal Printed Circuit Board (PCB) area.

ESP32 is designed for mobile, wearable electronics, and Internet of Things (IoT) applications. It has many features of the state-of-the-art low power chips, including fine resolution clock gating, power modes, and dynamic power scaling.
Key Features

CPU and Memory: Xtensa® 32-bit LX6 Dual-core processor, up to 600 DMIPS.
448 KByte ROM
520 KByte SRAM
16 KByte SRAM in RTC.
QSPI can connect up to 4* Flash/SRAM, each flash should be less than 16 Mbytes.
Supply Voltage: 2.2V~3.6V

Wifi:

802.11 b/g/n/e/i
802.11 n (2.4 GHz), up to 150 Mbps
802.11 e: QoS for wireless multimedia technology.
WMM-PS, UAPSD
MPDU and A-MSDU aggregation
Block ACK
Fragmentation and defragmentation
Automatic Beacon monitoring/scanning
802.11 i security features: pre-authentication and TSN
Wi-Fi Protected Access (WPA)/WPA2/WPA2-Enterprise/Wi-Fi Protected Setup (WPS)
Infrastructure BSS Station mode/SoftAP mode
Wi-Fi Direct (P2P), P2P Discovery, P2P Group Owner mode and P2P Power Management
UMA compliant and certified
Antenna diversity and selection

Bluetooth:

Compliant with Bluetooth v4.2 BR/EDR and BLE specification
Class-1, class-2 and class-3 transmitter without external power amplifier
Enhanced power control
+10 dBm transmitting power
NZIF receiver with -98 dBm sensitivity
Adaptive Frequency Hopping (AFH)
Standard HCI based on SDIO/SPI/UART ? High speed UART HCI, up to 4 Mbps
BT 4.2 controller and host stack
Service Discover Protocol (SDP)
General Access Profile (GAP)
Security Manage Protocol (SMP)
Bluetooth Low Energy (BLE)
ATT/GATT
HID
All GATT-based profile supported
SPP-Like GATT-based profile
BLE Beacon
A2DP/AVRCP/SPP, HSP/HFP, RFCOMM
CVSD and SBC for audio codec
Bluetooth Piconet and Scatternet

Clocks and Timers

- Internal 8 MHz oscillator with calibration
- Internal RC oscillator with calibration
- External 2 MHz to 40 MHz crystal oscillator
- External 32 kHz crystal oscillator for RTC with calibration
- Two timer groups, including 2 x 64-bit timers and 1 x main watchdog in each group
- RTC watchdog

Peripheral Interface:

- 12-bit SAR ADC up to 18 channels
- 2 x 8-bit D/A converters
- 10 x touch sensors
- Temperature sensor
- 4 x SPI, 2 x I2S, 2 x I2C, 3 x UART
- 1 host (SD/eMMC/SDIO), 1 slave (SDIO/SPI)
- Ethernet MAC interface with dedicated DMA and IEEE 1588 suppor
- CAN 2.0
- IR (TX/RX)
- Motor PWM, LED PWM up to 16 channels
- Hall sensor
- Ultra low power analog pre-amplifier
IEEE 802.11 standard security features all supported, including WFA, WPA/WPA2 and WAPI
Secure boot
Flash encryption
1024-bit OTP, up to 768-bit for customers
Cryptographic hardware acceleration: -AES-HASH(SHA-2) library-RSA-ECC-Random Number
Generator (RNG)

Development Support

SDK Firmware for fast on-line programming
Open source toolchains based on GCC

Application

Generic low power IoT sensor hub
Generic low power IoT loggers
Video streaming from camera
Over The Top (OTT) devices
Music players - Internet music players - Audio streaming devices
Wi-Fi enabled toys - Loggers - Proximity sensing toys
Wi-Fi enabled speech recognition devices
Audio headsets
Smart power plugs
Home automation
Mesh network
The size of ESP-32S Wifi module is 18mm x 25mm x 3mm.
The ESP-32S deploys 4MB SPI Flash with WSOP—8 package. It also uses 3DBi PCB antenna on board.
PART LIST

• 1x ESP-32S Wifi Bluetooth Combo Module