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/I 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 steaming for camera, Wi-Fi & Bluetooth enabled devices, Home automation and mesh network applications, aimed at makers, hardware engineers, software engineers and solution providers.

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.
CPU and Memory: Xtensa® 32-bit LX6 Dua-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/PCI)
- Ethernet MAC interface with dedicated DMA and IEEE 1588 support
- CAN 2.0
- IR (TX/RX)
- Motor PWM, LED PWM up to 16 channels
- Hall sensor
- Ultra low power analog pre-amplifier

Security
- 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 speech recognition devices
- Audio headsets
- Smart power plugs
- Home automation
- Mesh network

Size:
The size of ESP-32S WiFi module is 16mm x 24mm x 3mm.
The ESP-32S deploys 4MB SPI Flash with WSOP—8 package. It also uses 3DBi PCB antenna on board.

Best-sellers

Technical Details

Downloaded from Arrow.com.
## Dimensions
16mm x 24mm x 3mm

## Weight
G.W 1.5g N.W 1.5g

## Battery
Exclude

### Part List

<table>
<thead>
<tr>
<th>Component</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESP-32S Wifi Bluetooth Combo Module</td>
<td>1</td>
</tr>
<tr>
<td>ESP-32S Breakout Board</td>
<td>1</td>
</tr>
</tbody>
</table>

### Specifications

<table>
<thead>
<tr>
<th>Category</th>
<th>Feature</th>
<th>Spec</th>
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</thead>
<tbody>
<tr>
<td>Wireless Parameters</td>
<td>Certifications</td>
<td>FCC/CE coming soon</td>
</tr>
<tr>
<td></td>
<td>Wireless Standard</td>
<td>802.11 b/g/n/e/i</td>
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<tr>
<td></td>
<td></td>
<td>Bluetooth 4.2 (BR/EDR/BLE)</td>
</tr>
<tr>
<td></td>
<td>Frequency</td>
<td>2.4GHz-2.5GHz (2400M-2483.5M)</td>
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<tr>
<td>Hardware Parameters</td>
<td>Data Interface</td>
<td>UART/SP/I2C/I2S/IR/IR/CAN</td>
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<td></td>
<td></td>
<td>GPIO/PWM</td>
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<tr>
<td></td>
<td>Working Voltage</td>
<td>3.0~3.6V</td>
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<tr>
<td></td>
<td>Working Current</td>
<td>Average : 90mA</td>
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<tr>
<td></td>
<td>Working Temperature</td>
<td>-40~125°</td>
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<tr>
<td></td>
<td>Storage Temperature</td>
<td>normal temperature</td>
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<tr>
<td></td>
<td>Size</td>
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<td>Software Parameter</td>
<td>Wireless Network Model</td>
<td>Station/SoftAP/SoftAP+station</td>
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<tr>
<td></td>
<td>Security</td>
<td>WPA, WPA2, WAPI</td>
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<tr>
<td></td>
<td>Encryption Type</td>
<td>WEP/TKIP/AES</td>
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<td></td>
<td>Update Firmware</td>
<td>Local Serial Download /OTA /Host Download Burn</td>
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<tr>
<td></td>
<td>Software Development</td>
<td>Support customized servers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Provide SDK for secondary development</td>
</tr>
<tr>
<td></td>
<td>Network Protocol</td>
<td>IPv4, TCP/UDP/HTTP/FTP</td>
</tr>
<tr>
<td></td>
<td>User Configuration</td>
<td>AT+ instructions, cloud server, Android/iOS AP P</td>
</tr>
</tbody>
</table>
Questions and Answers

Have a question about this? Ask people who own it.

Clearly the third batch is NOT shipping out at the end of November. Do you have a new shipping date?

rich on Dec 01, 2016

Hello, just got 1k piece and the 3rd batch will post out soon. Thanks for your patience.

ae on Dec 05, 2016 16:24 PM

Will these ship by the end of the week?

@ae Will these ship by the end of the week?

rich on Dec 08, 2016 10:06 AM

Sooo, Seeedstudio... Ordered on September 7th. Three months later, no delivery. Tell us again why we should trust buying from you?

linusti on Dec 10, 2016 22:16 PM

@ae Apparently soon = some random date in the future whenever you get around to it. Why should it take a week to ship out? It has been almost 3 months now since I placed order.

rich on Dec 11, 2016 06:38 AM

Now, don’t take me wrong. I'm not angry, just miffed and waiting patiently. The gifts will probably take the sting off... a bit... But you're going to have to do better because your stellar rep's being tarnished by this all the same.

linusti on Dec 11, 2016 13:25 PM

Here is the latest email from seeed on the subject: Hi dear friend, Thanks for your patient waiting. We have to ship the product in sequence but the stock is not enough, so sorry that your order did not shipped out yet. We get the newest feedback from vendor, the shipping date for the rest ESP orders is to be confirmed now, for that vendor can not confirm and feedback the date to us, we can not inform customer about the estimated shipping date. We will keep communication with vendor for any update and push the process, and will inform customer about the shipping date once it is confirmed (publish notification at product page) and arrange shipment ASAP. Sorry for the uncertainty currently. Sincerely apologize for the inconvenience caused, any other questions or request pls feel free to contact us. Best regards, Seeed Customer Support Team

mishafarms on Dec 16, 2016 20:52 PM

@mishafarms I am very disappointed that the September order has not yet been shipped. Taobao.com has been shipping fast! I would like to ask how to deal with a refund?

sparkfuture on Dec 21, 2016 11:16 AM

So the first, second and third batches have shipped but there are those of us who still haven't gotten our units. What is the present timetable for filling the outstanding orders?

Downloaded from Arrow.com
Is there any way to see when one's order is expected to ship? You talk about first, second and third batch, but I have no way to relate this to my order, and know which batch my order is in. I placed my order on the 13th of September. Am I in the third batch then?

Hi stefan please write to order@seeed.cc they will help in updating your order status

I ordered 10 on 9/6 and 20 more on 9/9. My first ten arrived about a month ago (first batch?), the second group has not arrived or shipped (third batch?)

Third batch. Ordered 5 on September 7th. STILL not shipped to me.

I just received a shipping notice for my 3212's. As the page has partially updated to mention the 32s instead of the 3212, could you explain more on what is being shipped?

Sorry for the confusion. We want to reassure you that ESP32S is the exact same as ESP3212. Name changed due to official production requirement. Please enjoy the product soon. Happy hacking!

I placed my order on the 6th of September 2016 but today on the 28th of October my order is still only confirmed and not shipped, even though according to your description it should have been shipped either around the 23rd of September or around the 10th of October depending on the time of the day that I placed the order. I'd like to get a new estimate on when my order will be shipped.
Hi Erik. Please accept our sincerest apology. The shipment was delayed due to production issues. We've been working hard to restore production and prepare shipments. Lastest update of shipment date are as below:The 1st batch had been shipped on 28, October. The 2nd batch will be in limited quantity. Hence, part of the orders will be shipped within the first week of November. Rest of the orders are expecting to ship with the 3rd batch at the end of November. To express our apology, please kindly accept our gift, which will be in equal amount of your order quantity. Gifts will be shipped along with each remaining order. Sorry again for any inconvience that caused. If there's any further question, please do not hesitate to contact us at order@seeed.cc.

Law Yan on Oct 28,2016 19:06 PM

@Law Yan Considering that TaoBao and Adafruit claim they've got ESP32 series devices "IN STOCK", what gives guys? Gifts at some point doesn't un-do or make up for what's being done here. You appeared to be the first shipping..NOW, you're the **LAST** ones.

linusti on Jan 04,2017 23:43 PM

is this thing ever getting shipped? the order was placed on Sep 13, 2016, and its getting 2017...

palatis on Dec 31,2016

Nope. Email went out today saying they're cancelling all the orders and doing a refund. Whomever got the ones that went out in the initial lot are the only ones getting this one for the time being. I know I won't be buying any of them from them- I'll spend a couple of dollars more if I can source elsewhere now.

linusti on Jan 05,2017 21:56 PM

When you will ship our orders? I placed an order on 9.9.2016 and you receive the money and nothing. Why are you lying us?

mitkot on Dec 23,2016

Email went out today saying they're cancelling all the orders and doing a refund. Whomever got the ones that went out in the initial lot are the only ones getting this one for the time being. I know I won't be buying any of them from them- I'll spend a couple of dollars more if I can source elsewhere now.

linusti on Jan 05,2017 21:56 PM

Hi, how do i find out if my esp32s are going out with the third shipment?

prieto.andy on Dec 14,2016

There probably won't BE a third shipment.

linusti on Jan 05,2017 21:58 PM

when is the third batch ship out? Is there any problem?

Gökhan Taşçı on Dec 06,2016

Hello, the third batch had arrived days ago and we will ship them out soon.Thanks.

ae on Dec 07,2016 10:14 AM

Your description says it the third batch should be send end of november. Today it is the last day of November, but according to my order status in my account, it still hasn't been send. When do you expect it to actually arrive? I ordered it at september 11th.I was hoping to have it in my home around christmas so I can use the free time to give it a test run.
Dear Rob, I am sorry for the delay. We don’t get the ESP module from your supplier yet, please send an email to techsupport@seeed.cc for more details. Thanks.

ae on Dec 05, 2016 14:37 PM