

ESP32-C2 AT Release v3.1.0.0

Documentation for Release v3.1.0.0 is available at <https://docs.espressif.com/projects/esp-at/en/release-v3.1.0.0/esp32c2/index.html>

ESP32-C2 AT v3.1.0.0 is a major update for ESP32C2-AT [v3.0.0.0](#).

Changelog

This is the list of changes since release v3.0.0.0:

Breaking Changes

- **AT+SYSFLASH**: If you previously used v3.0.0.0 firmware and now directly flash v3.1.0.0 firmware with 2MB or 4MB, and MCU reads/writes parameters through **AT+SYSFLASH** command, the two versions will return different data, causing incompatibility (because v3.0.0.0 reads/writes parameters using partition method, while v3.1.0.0 uses NVS method). You can choose any of the following methods to resolve the compatibility issue:
 - Modify MCU code. For v3.0.0.0 firmware version, use **AT+SYSFLASH** command to read/write parameters; for v3.1.0.0 firmware version, use **AT+SYSMFG** command to read/write parameters.
 - Upgrade to v3.1.0.0 firmware using **AT+USEROTA** or **AT+CIUPDATE** command instead of directly flashing 2MB or 4MB firmware.
 - Customize AT firmware. In the firmware released with v3.0.0.0, replace the esp-at.bin file with the esp-at.bin file from v3.1.0.0, and recompile it into a new 2MB or 4MB firmware.

Known Issue

- Cannot set ble tx power.
- Wi-Fi and Bluetooth commands cannot be used at the same time.
- The time obtained by SNTP will be reset to 1970 after the chip soft restart.

1. Feature

Basic AT Commands

- Added **AT+RST** setup command to enable the chip to enter firmware downloading mode.
- **AT+SYSMGFFILTER**: Enable or disable the system message filter.
- **AT+SYSMGFFILTERCFG**: Query/Set the system message filters.
- **AT+SYSMFG**: Query/Set manufacturing NVS User Partitions.
- Added **AT+TRANSINTVL** command to support configurable interval in passthrough mode.

Wi-Fi AT Commands

TCP/IP AT Commands

- **AT+CIUPDATE** supports CDN network

Bluetooth® Low Energy AT Commands (ESP32C2-4MB only)

The following commands are not supported in default ESP32C2-4MB firmware, but you can enable them according to [guide](#).

- **AT+BLEINIT**: Bluetooth LE initialization.
- **AT+BLEADDR**: Query/Set Bluetooth LE device address.
- **AT+BLENAM**: Query/Set Bluetooth LE device name.
- **AT+BLESCANPARAM**: Query/Set parameters of Bluetooth LE scanning.
- **AT+BLESCAN**: Enable Bluetooth LE scanning.
- **AT+BLESCANRSPDATA**: Set Bluetooth LE scan response.
- **AT+BLEADVPARAM**: Query/Set parameters of Bluetooth LE advertising.
- **AT+BLEADVDATA**: Set Bluetooth LE advertising data.
- **AT+BLEADVDATAEX**: Automatically set Bluetooth LE advertising data.
- **AT+BLEADVSTART**: Start Bluetooth LE advertising.
- **AT+BLEADVSTOP**: Stop Bluetooth LE advertising.
- **AT+BLECONN**: Establish Bluetooth LE connection.
- **AT+BLECONNPARAM**: Query/Update parameters of Bluetooth LE connection.
- **AT+BLEDISCONN**: End Bluetooth LE connection.
- **AT+BLECFGMTU**: Set Bluetooth LE MTU length.
- **AT+BLEGATTSSRV**: GATTS discovers services.
- **AT+BLEGATTSSCHAR**: GATTS discovers characteristics.
- **AT+BLEGATTSSNTFY**: Notify a client of the value of a characteristic value from the server.
- **AT+BLEGATTSSIND**: Indicate the characteristic value from the server to a client.
- **AT+BLEGATTSSSETATTR**: GATTS sets characteristics.
- **AT+BLEGATTSPRIMSrv**: Generic Attributes Client (GATTC) discovers primary services.
- **AT+BLEGATTSCINCLSRV**: GATTC discovers included services.
- **AT+BLEGATTSCCHAR**: GATTC discovers characteristics.
- **AT+BLEGATTSCRD**: GATTC reads characteristics.
- **AT+BLEGATTSCWR**: GATTC writes characteristics.
- **AT+BLESPPCFG**: Query/Set Bluetooth LE SPP parameters.
- **AT+BLESPP**: Enter Bluetooth LE SPP mode.
- **AT+BLESECPARAM**: Query/Set Bluetooth LE encryption parameters.
- **AT+BLEENC**: Initiate Bluetooth LE encryption request.
- **AT+BLEKEYREPLY**: Reply the key value to the peer device.
- **AT+BLECONFREPLY**: Reply the confirm value to the peer device in the legacy connection stage.
- **AT+BLEENCDEV**: Query bonded Bluetooth LE encryption device list.
- **AT+BLEENCCLEAR**: Clear Bluetooth LE encryption device list.
- **AT+BLESETKEY**: Set Bluetooth LE static pair key.

MQTT AT Commands

HTTP AT Commands (ESP32C2-4MB only)

- **AT+HTTPHEAD**: Set/Query HTTP request headers.

User AT Commands

WebSocket AT Commands

The following commands are not supported in default ESP32C2-4MB firmware, but you can enable them according to [guide](#).

- **AT+WSCFG**: Set the WebSocket configuration.
- **AT+WSOPEN**: Query/Open a WebSocket connection.
- **AT+WSEND**: Send data to a WebSocket connection.
- **AT+WSCLOSE**: Close a WebSocket connection.

2. Bugfix

Basic AT Commands

- Fixed the high power consumption if the wake-up was set.

Wi-Fi AT Commands

- Fixed that Wi-Fi could not auto-reconnect after **AT+BLUFI** command was sent.

TCP/IP AT Commands

- Fixed the potential crash if the hostname length was greater than or equal to 64 bytes.
- Fixed that UDP could not establish multiple connections on the same port.
- Fixed that TLS connection could not be established due to no SNI.
- Fixed the issue of returning OK when setting **AT+CIPSERVER** command for the second time with a different configuration.

Bluetooth® Low Energy AT Commands (ESP32C2-4MB only)

- Fixed that BluFi could not set the device name.
- Fixed that BluFi could not encrypt customer data.

MQTT AT Commands

- Fixed the memory leak when MQTT used a long client ID, username, or password.

User AT Commands

3. Optimization

- Provided more free heap size for users.
 - For 2MB flash size: free heap size increased from 83068 bytes to 98248 bytes. (About 15 KB)
 - For 4MB flash size: free heap size increased from 59628 bytes to 74964 bytes. (About 15 KB)
- Refactored the storage mode of factory parameters to use the manufacturing NVS operation instead of partition operation. (This optimization is compatible with previous firmware versions and does not affect the functionality after upgrading via OTA for users, except for the AT+SYSFLASH command.)
- Added the parameters validity check for **AT+RFPOWER** command.