

The bin in the ESP32xxx_AT_Bin/factory folder is the combined bin of all AT binaries, so you can only download the factory_xxx.bin to flash address 0 for example testing.

ESP32-AT V2.1.0.0 20200728 Release Note

[Documentation for Release v2.1.0.0](#)

[Click to download the official AT firmware](#) `ESP32-PICO-D4_AT_Bin_V2.1.0.0.zip`

ESP32-AT v2.1.0.0 is a major update for ESP32-AT v2.0.0.0.

This is the list of changes since ESP32-AT Release v2.0.0.0.

SDK Update and Known issue

- Wakeup fail from light sleep

1.Feature

- esp-idf version update to release v4.0(e7ac221b)

1.1 WiFi

- AT+CWCOUNTRY: configurate and query the WiFi country code
- AT+CWSTAPROTO: set and query the 802.11 b/g/n protocol standard of station mode
- AT+CWAPPROTO: set and query the 802.11 b/g/n protocol standard of SoftAP mode
- Support automatically connect to AP in the command AT+CWMODE after changed to station mode
- Support scan mode configuration in the command AT+CWJAP

1.2 TCP/IP

- AT+CIPTCPOPT: configurate and query the TCP socket options, include `SO_LINGER`, `TCP_NODELAY`, `SO_SNDTIMEO` options
- Support multicast address in the command AT+CIPSTART

1.3 TLS

- AT+CIPSSLCCN: configurate and query SSL client common name(CN)
- AT+CIPSSLSNI: configurate and query SSL client server name indication(SNI)

- AT+CIPSSLCALPN: configure and query SSL client application layer protocol negotiation(ALPN)
- AT+CIPSSLCPSK: configure and query SSL client pre-shared key(PSK)

1.4 BT & BLE

- Enable BLE HID commands by default
- AT+BTCOD: Configure class of BT device
- AT+BLUFI: start and stop BLUFI function(configure Wi-Fi information by BLE)
- AT+BLEADVDATAEX: set BLE advertising data automatically
- Add AT+BTSCANMODE query command: query BT scan mode
- Add AT+BLEGATTSSRVCRE multiple services
- Support scan filter in the command AT+BLESCAN
- Support discoverable but not connectable mode in the command AT+BTSCANMODE
- Support retransmission for BT SPP
- Support some BT and BLE parameters store to flash
- Support BLE connection callback for user to customize it

1.5 MQTT

- Enable MQTT commands by default
- AT+MQTTCLIENTID: set and query MQTT client ID
- AT+MQTTUSERNMAE: set and query MQTT username
- AT+MQTTPASSWORD: set and query MQTT password
- Add AT+MQTTUSERCFG query command
- Add AT+MQTTCONNCFG query command
- Add AT+MQTTUSERNAME query command
- Add AT+MQTTCLIENDID query command
- Add AT+MQTTPASSWORD query command
- Add MQTT authentication method configuration in menuconfig

1.6 HTTP

- Enable HTTP commands by default
- AT+HTTPGETSIZE: get HTTP resource size
- Support custom request headers in the command AT+HTTPCLIENT

1.7 System

- AT+SLEEPWKCFG: configure the light-sleep wakeup source and awake GPIO
- AT+SYSSTORE: control if store parameter into flash
- Separate WPS, PING, SmartConfig and MDNS commands in menuconfig
- Support cmake to compile esp-at project

- OTA use esp-tls instead of openSSL
- Add uart port configuration in the factory parameter binary
- change factory parameter version to v2

1.8 Example

- Add STM32 example for SDIO SPI AT
- Add STM32 SDIO host example

2. Bugfix

2.1 WiFi

- Fix AT+RFPOWER set failed when disable WiFi command
- Fix AT+CWLAP scan fail when WiFi is connecting
- Fix missing WiFi status information if AT+CIPMODE=1
- Fix WiFi state is error after AT+CWJAP failed
- Fix AT+CIPRECONNINTV set range [1, 36000]

2.3 UART

- Fix UART parity configuration error

2.4 BT & BLE

- Fix crash if the notification value of BLE is too long
- Fix BLE service discovery works bad in multiple connections status
- Fix crash when re-create BLE services
- Fix re-enter BLE SPP fail
- Fix AT+BLESCAN=2 return OK
- Fix hid init fail
- Fix the data is lost when in BLE SPP
- Fix exit from bluetooth throughput mode failed
- Fix GATT server re-enter SPP mode fail
- Fix write characteristic value fail
- Fix exit automatically reconnect status fail after terminating BLE SPP mode
- Fix establish a new connection fail after BLE connection timeout
- Fix BT default device name is empty
- Fix BT scan result is out of order
- Fix BT SPP exit throughput mode fail after disconnection
- Fix some MAC address informations is missing quotes

2.5 MQTT

- Fix crash when running AT+MQTTCONN?
- Fix crash when running AT+MQTTPUB if the data is too long
- Fix block when running AT+MQTTPUB
- Fix crash when MQTT is disconnected
- Fix MQTT can not automatically reconnect
- Fix crash when running AT+MQTTPUBRAW if the topic length is too long
- Fix the length of the topic is error if the received MQTT data is too large
- Fix AT+MQTTPUB failed when Wi-Fi is reconnected
- Fix the length of the data for AT+MQTTPUBRAW is limited
- Fix the state responded by AT+MQTTCONN? is error when WiFi is reconnected
- Fix AT+MQTTCONN fails when MQTT close and re-build the link
- Fix crash when running AT+MQTTCONNCFG if MQTT is disconnected
- Fix crash when mqtt is established if Wi-Fi is reconnected

2.6 HTTP

- Fix print the data downloaded by HTTP error
- Fix check if http transport type is valid in the command AT+HTTPCLIENT
- Fix crash if some URL is special in the command AT+HTTPCLIENT

2.7 System

- Fix busy sometimes after AT+CIPSEND returned OK
- Fix incorrect information in the factory_parameter.log if module name not defined
- Fix AT command end with CR responses OK
- Fix missing "+QUIT" when quit transmission mode if AT+SYSMSG=1
- Fix AT+CIPSTATUS state unmatched when WiFi disconnected
- Fix AT+SYSMSG parameter check

2.8 DNS

- Fix the last DNS configuration is error when running AT+CIPDNS

2.9 PING

- Fix it returns ERROR when running AT+PING

Optimizations

- Optimize sockets process workflow

- Optimize AT+CIPSTATUS command process
 - Optimize transmit terminal process
 - check the default max tx power validity
-

ESP32 AT V2.0.0.0 20191104 Release Note

Feature

- Update ESP-IDF to version 3.3(6ccb4cf5).

Base command

- AT+SYSROLLBACK: Roll back to the previous firmware.
- AT+SYSTIMESTAMP: Set local time stamp.

Wi-Fi command

- AT+CWHOSTNAME: Configures the host name of ESP station
- AT+CWQIF: Disconnect station from the ESP softAP.
- Update command AT+CWJAP, add a parameter of listen interval

TCPIP command

- AT+CIPSTARTEX: Establishes TCP connection, UDP transmission or SSL connection by auto assigning ID.
- AT+CIPSSLCONF: Config SSL client.
- AT+CIPRECONNINTV: Set the interval of auto-reconnecting in Wi-Fi UART passthrough mode.
- AT+CIPRECVMODE: Set socket receive Mode.
- AT+CIPRECVDATA: Get socket data in passive receive mode.
- AT+CIPRECVLEN: Get socket data length in passive receive mode.
- AT+PING: Ping packets
- AT+CIPDNS: Configures Domain Name System. The configuration will be saved in flash
- Update command AT+CIUPDATE, support SSL OTA and version parameter

BLE command

- AT+BLESETKEY: Set BLE static pair key
- AT+BLEHIDINIT: BLE HID device profile initialization
- AT+BLEHIDKB: Send BLE HID Keyboard information
- AT+BLEHIDMUS: Send BLE HID mouse information
- AT+BLEHIDCONSUMER: Send BLE HID consumer information

Classic Bluetooth command [Disabled by default]

More details about Classic BT commands are in the [docs/ESP32 AT Classic Bluetooth.md](https://docs.espressosystems.com/ESP32_AT/ClassicBluetooth.md)

- AT+BTINIT : Classic Bluetooth initialization
- AT+BTNAME : Sets BT device's name
- AT+BTSCANMODE : Sets BT SCAN mode
- AT+BTSTARTDISC : Start BT discovery
- AT+BTSPPINIT : Classic Bluetooth SPP profile initialization
- AT+BTSPPCONN : Establishes SPP connection
- AT+BTSPPDISCONN : Ends SPP connection
- AT+BTSPSTART : Start Classic Bluetooth SPP profile
- AT+BTSPSEND : Sends data to remote bt spp device
- AT+BTA2DPINIT : Classic Bluetooth A2DP profile initialization
- AT+BTA2DPCONN : Establishes A2DP connection
- AT+BTA2DPDISCONN : Ends A2DP connection
- AT+BTA2DPSRC : Set or query the audio file URL
- AT+BTA2DPCTRL : control the audio play
- AT+BTSECPARAM :Set and query the Classic Bluetooth security parameters
- AT+BTKEYREPLY :Input the Simple Pair Key
- AT+BTPINREPLY :Input the Legacy Pair PIN Code
- AT+BTSECCFM: Reply the confirm value to the peer device in the legacy connection stage
- AT+BTENCDEV : Query BT encryption device list
- AT+BTENCCLEAR : Clear BT encryption device list

MQTT command [Disabled by default]

The MQTT AT commands are disabled by default, but can be enabled in menuconfig: make menuconfig -> Component config -> AT -> AT MQTT command support.

- AT+MQTTUSERCFG : Set MQTT User Config
- AT+MQTTCONNCFG : Set configuration of MQTT Connection
- AT+MQTTCONN : Connect to MQTT Broker
- AT+MQTTPUB : Publish MQTT Data in string
- AT+MQTTPUBRAW : Publish MQTT message in binary
- AT+MQTTSUB : Subscribe to MQTT Topic
- AT+MQTTUNSUB : Unsubscribe from MQTT Topic
- AT+MQTTCLEAN : Close the MQTT Connection

HTTP command[Disabled by default]

The HTTP AT commands are disabled by default, but can be enabled in menuconfig: make menuconfig —> Component config —> AT —> AT http command support.

- AT+HTTPCLIENT - Send HTTP Client Request

Bugfix

- fix: It may crash if AT command ends without '\r\n'
 - fix: Sometimes it may fail to quit from UART-WiFi passthrough mode
 - fix: AT+CIPSTART does not work if just enable ethernet
- =====

ESP32 AT V1.2 20190627 Release Note

Features

- Update version number to ESP-IDF v3.2.0
- Solve an issue that an ESP device working in SoftAP may reboot unexpectedly under certain special environment.
- Support multiple BLE connections, with a maximum connection number of 3.

Bug fixes

- Fix a bug that an SSL connection is sometimes established even when the CA certificate is incorrect.
 - Fix a bug that the auto connecting sometimes fails in the UART-WiFi throughput mode.
 - Fix a bug that the URC message that indicates Wi-Fi is disconnected may get lost, when the Wi-Fi router is turned off unexpectedly.
 - Fix a bug that the BLE sometimes fails to write Characteristic values, when this remote Characteristic supports multiple properties.
 - Fix a bug that the BLE connection parameters sometimes are still inquired even when the BLE connection is ended already.
 - Fix a bug that is related to setting the BLE scan parameters.
 - Fix a bug that the command of establishing a BLE connection may get stuck.
 - Revise the document for the description of the BLE security parameter.
- =====

ESP32 AT V1.1.3 20181224 Release Note

The ESP32 AT changed to use `customized_partitions/factory_param_XXX.bin` to distinguish different ESP32 modules. No more release of different AT firmwares for different modules since this version. It is "general AT firmware + different `factory_param_XXX.bin`".

Features

- Update ESP-IDF to version 3.0.7, and solve the reboot issue of an ESP device when it's in softAP mode under certain special environment.
- Add factory parameter partition to adapt the AT firmware to different modules without recompilation.

Bug fixes

- Fix the bug of the possible system crash when TCP server is closed.
- ////////////////////////////////////

ESP32 AT V1.1.2 20180904 Release Note

Feature

- Update ESP-IDF to version 3.0.3(054e82b4).

Bug fixes

- Fix an issue that system will crash if too many devices are scanned in BLE.
 - Fix an issue that system will crash if an end mark '\r\n' is missed in AT command.
- ////////////////////////////////////

ESP32 AT V1.1.1 20180703 Release Note

Bug fix

- Fix bug that ESP32-AT get crushed when been sent AT with 2 "\r\n"
- ////////////////////////////////////

ESP32 AT V1.1 20180612 Release Note

BLE AT

Features

- AT+BLESPPCFG : Sets BLE spp parameters

- AT+BLESPP : Enter BLE spp mode
- AT+BLESECPARAM : Set BLE encryption parameters
- AT+BLEENC : Initiate BLE encryption request
- AT+BLEENCRSP : Grant security request access.
- AT+BLEKEYREPLY : Reply the key value to the peer device in the lagecy connection stage.
- AT+BLECONFREPLY : Reply the comfirm value to the peer device in the lagecy connection stage.
- AT+BLEENCDEV : Query BLE encryption device list
- AT+BLEENCCLEAR : Clear BLE encryption device list

Bug fixes

- Fix bug that gatt client exception after disconnect
- Fix gatt Server did not get correct write result code
- Fix gatt cmd will not report error when disconnected
- Fix ble incorrect optional parameter checking
- Fix ble incorrect param type checking
- Fix ble read/write to char/descriptor without permission did not return error
- Fix ble Set ATTR value fail
- Fix ble 128bit uuid crash
- Fix bug that when deinit the ble, do not free gatts list
- Fix ble autoconnect in passthrough mode

Optimizations

- support char write long and add param for multi connection
- support gatts initiate disconnect from client
- support multi conn for server
- update connection param command support gatt server

WiFi AT

Features

- AT+RFPOWER : Set RF TX Power
- AT+CIPSSLCCONF : Config SSL client

Bug fixes

- Fix bug that UDP packet loss is serious when transparent transmission
- Fix bug that print error log when startup
- Fix bug restart problem after boot-strap

- Fix bug that reconnect to TCP server twice in passthrough mode
- Fix bug the throughput is very low when uart baudrate is 2000000
- Fix bug that ssl connection doesn't reconnect to server when disconnected
- Fix bug the current is about 77uA after deep sleep
- Fix ping repeatedly cause reboot
- Fix bug It crashes when UART baudrate and mcu mismatch
- Fix bug tcp server will be closed when connections reach max
- Fix bug that crash if the parameter number of AT command is less than `espatgetparaas_digit` parameter number
- Fix bug that it doesnot work when configure server max connection
- Fix bug that it print CLOSED after link disconnect when in transparent transmittion
- Fix bug that remote port is incorrect.
- Fix bug the type of execution command parses error
- Fix Bug that it will reboot after restarting if setting AT+SAVETRANSLINK
- Fix Bug that works bad if delayed among each character when sending command
- Fix bug it crash when smartconfig,if SSID length is 32
- Fix connected UDP display wrong IP
- Fix bug that SSL server accepts fail
- Fix bug that Print 'CONNECT' when ssl connect fail
- Set the range of AT+CWLAPOPT
- Fix bug that Print wifi status when wifi status change
- Fix bug that Sometimes AT+CIPCLOSE cannot return
- Fix bug that TCP doesn't disconnect when WiFi station disconnected
- Fix bug that the static param `conning_flag` was not reset after deinit
- Fix bug that WiFi reconnect after AT+CWQAP
- Fix Delay time is incorrect
- Fix Dns servers change when connecting different AP

Optimizations

- Set Default uart is flow control,and add uart query cmd
- Add AT command line terminator
- Add `espatcustomnetopsregist` in `espat.h` to callback some status about socket
- add query cmd for `blescanparam`
- Add multi-ca support for ssl client
- Add save SSID when using WPS
- Add prefix in the string by AT+CWLIF responded
- Optimize ssl memory in AT module

ESP32 AT V1.0 20171117 Release Note

BLE AT

- AT+BLEINIT : Bluetooth Low Energy (BLE) initialization
- AT+BLEADDR : Sets BLE device's address
- AT+BLENAME : Sets BLE device's name
- AT+BLESCANPARAM : Sets parameters of BLE scanning
- AT+BLESCAN : Enables BLE scanning
- AT+BLESCANRSPDATA : Sets BLE scan response
- AT+BLEADVPARAM : Sets parameters of BLE advertising
- AT+BLEADVDATA : Sets BLE advertising data
- AT+BLEADVSTART : Starts BLE advertising
- AT+BLEADVSTOP : Stops BLE advertising
- AT+BLECONN : Establishes BLE connection
- AT+BLEDISCONN : Ends BLE connection
- AT+BLEDATALEN : Sets BLE data length
- AT+BLECFGMTU : Sets BLE MTU length
- AT+BLEGATTSSRVCRE : Generic Attributes Server (GATTS) creates services
- AT+BLEGATTSSRVSTART : GATTS starts services
- AT+BLEGATTSSRV : GATTS discovers services
- AT+BLEGATTSSCHAR : GATTS discovers characteristics
- AT+BLEGATTSENTFY : GATTS notifies of characteristics
- AT+BLEGATTSSIND : GATTS indicates characteristics
- AT+BLEGATTSSSETATTR : GATTS sets attributes
- AT+BLEGATTCPRIMSRV : Generic Attributes Client (GATTC) discovers primary services
- AT+BLEGATTCCINCLSRV : GATTC discovers included services
- AT+BLEGATTCCCHAR : GATTC discovers characteristics
- AT+BLEGATTCCRD : GATTC reads characteristics
- AT+BLEGATTCCWR : GATTC writes characteristics

System AT

Bug fixes

- Fix a bug that error log is printed when startup
- Fix restart problem after boot-strap
- Fix crash after use hardware AES driver

Optimizations

- AT+FS : fatfs is supported
- Add custom partitions table

- Rename at customize area and add command to operate partition
- Set frequency 80Mhz to reduce power consumption
- Add ESP32 AT custom partitions table
- Add firmware version in AT+GMR
- Change the configuration of UART flow control
- Enable ble in sdkconfig.defaults
- **partition:** Adjust partition table for ble
- Set xtal freq to be 40Mhz by default

WiFi AT

Bug fixes

- Fix a bug that fail to send UDP packet in some cases
- Fix wrong IP format
- Fix error server timeout
- Fix AT+CWQAP shows OK in ap mode
- Fix a bug that system may crash if the SSID length is 32 in smartconfig
- Fix a bug that server timeout does not work for SSL connection in some scenarios
- Fix a bug that "+IPD" is apart from data
- Fix a bug that sometimes AT+CIPCLOSE cannot return

Optimizations

- AT+CWSTARTSMART : Airkiss + ESP-TOUCH
- AT+PING : ping function
- AT+MDNS : mdns function
- AT+CIPSERVERMAXCONN : set the max connections allowed by server
- Add AT+CWMODE=0 to stop WiFi
- Add prefix in the string by AT+CWLIF responded
- Modify the information of query server
- Support more ssl protocol version
- SSL client supports transparent transmission
- Support ssl server and add AT+CIPSERVER? command
- Optimize AT+CIUPDATE to support ssl update
- Add parameter for AT+CIUPDATE to specify ota version
- Configure six sockets by default
- Modify README of tools for AT, and provide ssl cert bin for testing
- Optimize UART-WiFi passthrough mode for autoconnection and UDP transmission
- Optimize smartconfig to save SSID and password into flash
- Optimize SSL connection.

Tools

- Add tool for PKI bin
- Add GATT service bin generation tool

ESP32 AT V0.10 20170918 Release Note

This is the first release of ESP32 AT firmware, which supports AT commands through UART.

Basic AT Commands

- AT : Tests AT startup.
- AT+RST : Restarts a module.
- AT+GMR : Checks version information.
- AT+GSLP : Enters Deep-sleep mode.
- ATE : Configures echoing of AT commands.
- AT+RESTORE : Restores the factory default settings of the module.
- AT+UART : UART configuration.
- AT+UART_CUR : Current UART configuration.
- AT+UART_DEF : Default UART configuration, saved in flash.
- AT+SLEEP : Sets the sleep mode.
- AT+SYSRAM : Checks the remaining space of RAM.

Wi-Fi AT Commands

- AT+CWMODE : Sets the Wi-Fi mode (STA/AP/STA+AP).
- AT+CWJAP : Connects to an AP.
- AT+CWLAPOPT : Sets the configuration of command AT+CWLAP.
- AT+CWLAP : Lists available APs.
- AT+CWQAP : Disconnects from the AP.
- AT+CWSAP : Sets the configuration of the ESP32 SoftAP.
- AT+CWLIF : Gets the Station IP to which the ESP32 SoftAP is connected.
- AT+CWDHCP : Enables/disables DHCP.
- AT+CWDHCPS : Sets the IP range of the ESP32 SoftAP DHCP server. Saves the setting in flash.
- AT+CWAUTOCONN : Connects to the AP automatically on power-up.
- AT+CIPSTAMAC : Sets the MAC address of ESP32 Station.
- AT+CIPAPMAC : Sets the MAC address of ESP32 SoftAP.
- AT+CIPSTA : Sets the IP address of ESP32 Station.
- AT+CIPAP : Sets the IP address of ESP32 SoftAP.
- AT+CWSTARTSMART : Starts SmartConfig.

- AT+CWSTOPSMART : Stops SmartConfig.
- AT+WPS : Enables the WPS function.

TCP/IP-Related AT Commands

- AT+CIPSTATUS : Gets the connection status.
- AT+CIPDOMAIN : DNS function.
- AT+CIPSTART : Establishes TCP connection, UDP transmission or SSL connection.
- AT+CIPSEND : Sends data.
- AT+CIPSENDEX : Sends data when length of data is , or when \0 appears in the data.
- AT+CIPCLOSE : Closes TCP/UDP/SSL connection.
- AT+CIFSR : Gets the local IP address.
- AT+CIPMUX : Configures the multiple connections mode.
- AT+CIPSERVER : Deletes/Creates TCP server.
- AT+CIPMODE : Configures the transmission mode.
- AT+SAVETRANSLINK : Saves the transparent transmission link in flash.
- AT+CIPSTO : Sets timeout when ESP32 runs as a TCP server.
- AT+CIUPDATE : Updates the software through Wi-Fi.
- AT+CIPDINFO : Shows remote IP and remote port with +IPD.
- AT+CIPSNTPCFG : Configures the time domain and SNTP server.
- AT+CIPSNTPTIME : Queries the SNTP time.