

文件编号 Document No.	ESP-07-2-007-03	文件名称 Document Name	产品/工艺变更通知 Product/Process Change Notice (PCN)
文件版本 Document Version	1.4	保存期限 Retention Period	5 年 5 years

发布 ESP32-C3-MINI-1 模组通用 AT 固件 V2.4.0.0 Release ESP32-C3-MINI-1 module Default Common AT firmware V2.4.0.0			
PCN 编号 PCN No.	PCN20220601	提出日期 Issue Date of PCN	2022/06/27
变更日期 Proposed Date of Change	2022/07/04	预计变更后产品首次出货日期 Proposed Date of First Shipment After Change	2022/08/01
PCN 类型 / PCN Category	<input checked="" type="checkbox"/> 客户需要批准/Customer Approval Required <input type="checkbox"/> 客户通知/Customer Notification		
1. 影响产品名称/ Affected Product Name ESP32-C3-MINI-1-N4, ESP32-C3-MINI-1-H4			
2. 变更原因/ Reason for Change 正式发布段落 1 列出模组对应的 AT 固件。 Officially release the AT firmware of the modules listed in Para 1.			
3. 变更描述/ Description of Change 正式发布模组默认烧写通用版本 AT 固件。 Official release default common version AT firmware on modules listed in Para 1.			
4. 变更对比/ Change Comparison 请见附录 I: 变更对比。Please refer to Appendix I: Change comparison. 通过包装标签信息识别该变更。Identify the change by querying the Package Label Information.			
5. 变更影响/ Impact of Change <ol style="list-style-type: none"> 1) 品质和性能/ Quality & Performance: 由于产品的硬件未做变更，理论上此变更对产品品质、性能及使用均无影响，实际应用中客户可基于自身应用场景再次进一步测试。 Since the hardware of the product has not been changed, theoretically this change has no impact on the product quality, performance and use cases of those products listed in Para 1. In practical applications, customers can further test based on their own application scenarios. 2) 成本/ Cost: 对直接使用通用 AT 固件的客户，可降低后续生产环节的烧录成本。 If you directly use the common AT firmware, the programming cost in subsequent production can be reduced. 3) 交期/ Delivery: 无/ None 4) 生产料号/ Material Part Numbers (MPN): 无/ None 5) 认证/ Certification: 无/ None 			
6. 变更前后产品处理/ How to Deal with Products FIFO。针对客户特殊要求的 AT 版本，按照客户实际要求执行。 FIFO. Please proceed as requested if customers request a particular AT firmware version.			

7. 变更验证结果/ Test Verification Result

- Related ECN No. ECN-2022-004
Performance Test Performance Test is Pass.





8. 给使用者的验证建议/ Verification Suggestion To Users

建议使用者根据实际应用场景、真实应用环境，如实际应用的网络、路由器设备、温湿度环境等，对产品用到的功能做整机测试。

It is suggest that users conduct a complete machine test of the functions used in the product according to the actual application scenarios and real application environment, such as the actual application network, routers, temperature and humidity environment, etc.

Appendix I 变更对比/Change Comparison

1. ESP32-C3-MINI-1 模组变更信息 ESP32-C3-MINI-1 Modules Change Information

项目 Item	变更前 Before Change	变更后 After Change
产品名称 Product Name	无变化 No Change	
丝印 Marking	无变化 No Change	
标签固件版本信息 SDK Version on Label Information	 <p>乐鑫信息科技（上海）股份有限公司</p> <p>生产工单 PW Number XXXXXXXXXX</p> <p>产品型号 Product Name XXXXXXXXXX</p> <p>产品料号 Part Number XXXXXXXXXX</p> <p>数量 Quantity 3250 pcs</p> <p>固件版本 Firmware Ver IDF: NA AT: NA FW P/N: NA</p> <p>原产国 Country of Origin CHINA</p> <p>生产日期 Seal Date YYYY-MM-DD</p> <p>XXXXXXXXXX XXXXXXXXXX XXXXXXXXXX XXXXXXXXXX XXXXXXXXXX</p> <p>批次号 Lot Number</p> <p>出货检验 OQC 产品条码 QR code</p> <p>QC PASS</p> 	 <p>乐鑫信息科技（上海）股份有限公司</p> <p>生产工单 PW Number XXXXXXXXXX</p> <p>产品型号 Product Name XXXXXXXXXX</p> <p>产品料号 Part Number XXXXXXXXXX</p> <p>数量 Quantity 3250 pcs</p> <p>固件版本 Firmware Ver IDF: V4.3.3 AT: V2.4.0.0 FW P/N: C3MINIA001</p> <p>原产国 Country of Origin CHINA</p> <p>生产日期 Seal Date YYYY-MM-DD</p> <p>XXXXXXXXXX XXXXXXXXXX XXXXXXXXXX XXXXXXXXXX XXXXXXXXXX</p> <p>批次号 Lot Number</p> <p>出货检验 OQC 产品条码 QR code</p> <p>QC PASS</p> 
固件 Firmware	NA	通过串口 AT 命令查询 AT 版本号 Query AT version number through serial AT command 发送 Send: AT+GMR 返回 Reply: V2.4.0.0

2. ESP32- C3-MINI-1 AT v2.4.0.0 发布说明

ESP32- C3-MINI-1 AT v2.4.0.0 Release Note

Features

Base AT command

- AT: Test AT startup.
- AT+RST: Restart a module.
- AT+GMR: Check version information.
- AT+CMD: List all AT commands and types supported in current firmware.
- AT+GSLP: Enter Deep-sleep mode.
- ATE: Configure AT commands echoing.
- AT+RESTORE: Restore factory default settings of the module.
- AT+UART_CUR: Current UART configuration, not saved in flash.
- AT+UART_DEF: Default UART configuration, saved in flash.
- AT+SLEEP: Set the sleep mode.
- AT+SYSRAM: Query current remaining heap size and minimum heap size.
- AT+SYSMSG: Query/Set System Prompt Information.
- AT+SYSFLASH: Query/Set User Partitions in Flash.
- AT+FS: Filesystem Operations.
- AT+RFPOWER: Query/Set RF TX Power.
- AT+SYSROLLBACK: Roll back to the previous firmware.
- AT+SYSTIMESTAMP: Query/Set local time stamp.
- AT+SYSLOG: Enable or disable the AT error code prompt.
- AT+SLEEPWKCFG: Query/Set the light-sleep wakeup source and awake GPIO.
- AT+SYSSTORE: Query/Set parameter store mode.
- AT+SYSREG: Read/write the register.
- AT+SYSTEMP: Read the internal chip Celsius temperature value.

Wi-Fi command

- AT+CWMODE: Set the Wi-Fi mode (Station/SoftAP/Station+SoftAP).
- AT+CWSTATE: Query the Wi-Fi state and Wi-Fi information.
- AT+CWJAP: Connect to an AP.
- AT+CWRECONNCFG: Query/Set the Wi-Fi reconnecting configuration.
- AT+CWLAPOPT: Set the configuration for the command AT+CWLAP.
- AT+CWLAP: List available APs.
- AT+CWQAP: Disconnect from an AP.

- AT+CWSAP: Query/Set the configuration of an ESP32-C3 SoftAP.
- AT+CWLIF: Obtain IP address of the station that connects to an ESP32-C3 SoftAP.
- AT+CWQIF: Disconnect stations from an ESP32-C3 SoftAP.
- AT+CWDHCP: Enable/disable DHCP.
- AT+CWDHCPS: Query/Set the IP addresses allocated by an ESP32-C3 SoftAP DHCP server.
- AT+CWAUTOCONN: Connect to an AP automatically when powered on.
- AT+CWAPPROTO: Query/Set the 802.11 b/g/n protocol standard of SoftAP mode.
- AT+CWSTAPROTO: Query/Set the 802.11 b/g/n protocol standard of station mode.
- AT+CIPSTAMAC: Query/Set the MAC address of an ESP32-C3 station.
- AT+CIPAPMAC: Query/Set the MAC address of an ESP32-C3 SoftAP.
- AT+CIPSTA: Query/Set the IP address of an ESP32-C3 station.
- AT+CIPAP: Query/Set the IP address of an ESP32-C3 SoftAP.
- AT+CWSTARTSMART: Start SmartConfig.
- AT+CWSTOPSMART: Stop SmartConfig.
- AT+WPS: Enable the WPS function.
- AT+MDNS: Configure the mDNS function.
- AT+CWJEAP: Connect to a WPA2 Enterprise AP.
- AT+CWHOSTNAME: Query/Set the host name of an ESP32-C3 station.
- AT+CWCOUNTRY: Query/Set the Wi-Fi Country Code.

TCP/IP command

- AT+CIPV6: Enable/disable the network of Internet Protocol Version 6 (IPv6).
- AT+CIPSTATE: Obtain the TCP/UDP/SSL connection information.
- AT+CIPSTATUS (deprecated): Obtain the TCP/UDP/SSL connection status and information.
- AT+CIPDOMAIN: Resolve a Domain Name.
- AT+CIPSTART: Establish TCP connection, UDP transmission, or SSL connection.
- AT+CIPSTARTEX: Establish TCP connection, UDP transmission, or SSL connection with an automatically assigned ID.
- [Data Mode Only] +++: Exit from the data mode.
- AT+CIPSEND: Send data in the normal transmission mode or Wi-Fi normal transmission mode.
- AT+CIPSENDL: Send long data in parallel in the normal transmission mode.
- AT+CIPSENDLCFG: Set the configuration for the command AT+CIPSENDL.
- AT+CIPSENDEX: Send data in the normal transmission mode in expanded ways.
- AT+CIPCLOSE: Close TCP/UDP/SSL connection.
- AT+CIFSR: Obtain the local IP address and MAC address.
- AT+CIPMUX: Enable/disable the multiple connections mode.
- AT+CIPSERVER: Delete/create a TCP/SSL server.
- AT+CIPSERVERMAXCONN: Query/Set the maximum connections allowed by a server.

- AT+CIPMODE: Query/Set the transmission mode.
- AT+SAVETRANSLINK: Set whether to enter Wi-Fi normal transmission mode on power-up.
- AT+CIPSTO: Query/Set the local TCP Server Timeout.
- AT+CIPSNTPCFG: Query/Set the time zone and SNTP server.
- AT+CIPSNTPTIME: Query the SNTP time.
- AT+CIPSNTPTIME: Query/Set the SNTP time synchronization interval.
- AT+CIUPDATE: Upgrade the firmware through Wi-Fi.
- AT+CIPDINFO: Set “+IPD” message mode.
- AT+CIPSSLCCONF: Query/Set SSL clients.
- AT+CIPSSLCCN: Query/Set the Common Name of the SSL client.
- AT+CIPSSLCSNI: Query/Set SSL client Server Name Indication (SNI).
- AT+CIPSSLCALPN: Query/Set SSL client Application Layer Protocol Negotiation (ALPN).
- AT+CIPSSLCPK: Query/Set SSL client Pre-shared Key (PSK).
- AT+CIPRECONNINTV: Query/Set the TCP/UDP/SSL reconnection interval for the Wi-Fi normal transmission mode.
- AT+CIPRECVMODE: Query/Set socket receiving mode.
- AT+CIPRECVDATA: Obtain socket data in passive receiving mode.
- AT+CIPRECVLEN: Obtain socket data length in passive receiving mode.
- AT+PING: Ping the remote host.
- AT+CIPDNS: Query/Set DNS server information.
- AT+CIPTCPOPT: Query/Set the socket options.

BT&BLE command

- AT+BLEINIT: Bluetooth LE initialization.
- AT+BLEADDR: Query/Set Bluetooth LE device address.
- AT+BLENAME: 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+BLEDATALEN: Set Bluetooth LE data packet length.

- AT+BLECFGMTU: Set Bluetooth LE MTU length.
- AT+BLEGATTSSRVCRE: Generic Attributes Server (GATTS) creates services.
- AT+BLEGATTSSRVSTART: GATTS starts services.
- AT+BLEGATTSSRVSTOP: GATTS Stops Services.
- AT+BLEGATTSSRV: GATTS discovers services.
- AT+BLEGATTSSCHAR: GATTS discovers characteristics.
- AT+BLEGATTSENTFY: 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+BLEGATTCPRIMSRV: Generic Attributes Client (GATTC) discovers primary services.
- AT+BLEGATTCINCLSRV: GATTC discovers included services.
- AT+BLEGATTCCHAR: GATTC discovers characteristics.
- AT+BLEGATTCRD: GATTC reads characteristics.
- AT+BLEGATTCWR: 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+BLEENCRSP: Respond to the pairing request from the peer device.
- 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.
- AT+BLEHIDINIT: Bluetooth LE Human Interface Device (HID) profile initialization.
- AT+BLEHIDKB: Send Bluetooth LE HID keyboard information.
- AT+BLEHIDMUS: Send Bluetooth LE HID mouse information.
- AT+BLEHIDCONSUMER: Send Bluetooth LE HID consumer information.
- AT+BLUFI: Start or Stop BluFi.
- AT+BLUFINAME: Query/Set BluFi device name.
- AT+BLEPERIODICDATA: Set Bluetooth LE periodic advertising data.
- AT+BLEPERIODICSTART: Start Bluetooth LE periodic advertising.
- AT+BLEPERIODICSTOP: Stop Bluetooth LE periodic advertising.
- AT+BLESYNCSTART: Start to synchronize with periodic advertising.
- AT+BLESYNCSTOP: Stop synchronizing with periodic advertising.
- AT+BLEREADEPHY: Query the current transmitter PHY.
- AT+BLESETPHY: Set the current transmitter PHY.

MQTT command

- AT+MQTTUSERCFG: Set MQTT user configuration
- AT+MQTTCLIENTID: Set MQTT client ID
- AT+MQTTUSERNAME: Set MQTT username
- AT+MQTTPASSWORD: Set MQTT password
- AT+MQTTCONNCFG: Set configuration of MQTT connection
- AT+MQTTALPN: Set MQTT Application Layer Protocol Negotiation (ALPN)
- AT+MQTTCONN: Connect to MQTT Brokers
- AT+MQTTPUB: Publish MQTT Messages in string
- AT+MQTTPUBRAW: Publish long MQTT messages
- AT+MQTTSUB: Subscribe to MQTT topics
- AT+MQTTUNSUB: Unsubscribe from MQTT topics
- AT+MQTTCLEAN: Close MQTT connections

HTTP command

- AT+HTTPCLIENT: Send HTTP Client Request
- AT+HTTPGETSIZE: Get HTTP Resource Size
- AT+HTTPCGET: Get HTTP Resource
- AT+HTTPCPOST: Post HTTP data of specified length
- AT+HTTPPURLCFG: Set/Get long HTTP URL

邮件订阅
Espressif Email Notifications

乐鑫为注册用户提供电子邮件通知服务，用户可通过[乐鑫订阅系统](#)接收技术文档更新、新闻通讯、PCN 等邮件通知。

Espressif sends email notifications of technical documentation changes, along with newsletters, PCNs and other valuable information, to subscribed customers only. If you wish to stay updated on our products and services, please subscribe [here](#).

客户响应要求
Customer Response Requirements
需客户批准的变更/ Change Requiring Customer Approval:

a) 客户须在乐鑫发出 PCN 后的 30 天内告知乐鑫已收到 PCN。如客户未在接收到 PCN 后的 30 天内告知已收到，则视为客户收到变更。

Customers are requested to acknowledge receipt of the PCN within 30 calendar days from the date of issue of the PCN. Customers would be considered as notified 30 calendar days after issue of the PCN if no acknowledgement is received.

b) 自发布 PCN 之日起 90 天内，客户没有任何其他反馈，则表示客户接受该 PCN。

The lack of any additional responses from customers within 90 calendar days from the date of issue of the PCN constitutes acceptance of the proposed changes.

客户通知/ Customer Notification:

a) 客户需在乐鑫发出 PCN 后 14 天内通知乐鑫收到该 PCN。如客户未在接收到 PCN 14 日反馈乐鑫，则视为客户确认该 PCN。

Customers are requested to acknowledge receipt of the PCN within 14 calendar days from the date of issue of the PCN. Customers would be considered as having acknowledged the PCN if no response is received after 14 calendar days.

请反馈至 pcn@espressif.com。

Please send feedback to pcn@espressif.com.

客户批准/确认信息
Customer Approval/Acknowledgement and Remarks

客户公司全称:

Customer's Company Name:

PCN 评审结果/PCN Review Result:

批准/确认 Accepted/Acknowledged

不批准/Rejected

需要分析/Further Analysis Required

客户意见/Comment:

公司代表人姓名
Representative's Name:

公司代表人职责
Representative's Job Title:

公司代表人签名
Representative's Signature:

日期
Date: