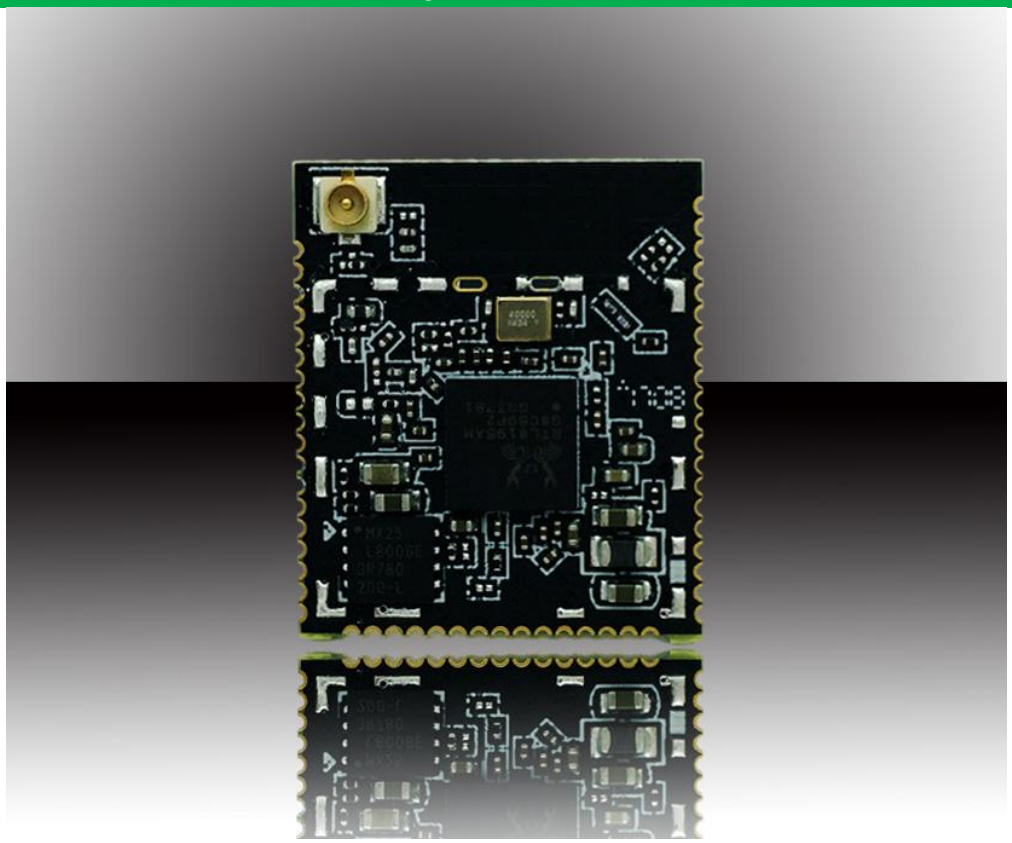
MJ-IOT

AT instruction manual



MJIOT-AMB-02 WIFI MODULE APPEARANCE

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2 Common Command

2.1 AT – Test AT command ready

AT	
Description	This command is used to test system boot successfully
Response	[AT] OK

2.2 ATS? – List all AT command

ATS?	
Description	This command will list all usable AT command
Response	[ATS?] <command list> [ATS?] OK [ATS?] ERROR: <error_no>
Error Number	1: get command list fail

2.3 ATSR – Restart module

ATSR	
Description	This command is used to restart the module
Response	[ATSR] OK

2.4 ATSV – Query version info

ATSV	
Description	This command is used to query module AT version as well as SDK version
Response	[ATSV] <at-version>,<sdk-version> [ATSV] OK [ATSV] ERROR:<error_no>
Error Number	1: get version info fail

2.5 ATSP – Set power saving mode

ATSP=<mode>	
Description	This command is used to set module power saving mode
Response	[ATSP] <OS wakelock status (0/1)> [ATSP] OK [ATSP] ERROR:<error_no>
Parameter	<mode> a : acquire OS wakelock (OS sleep forbidden) r : release OS wakelock (OS sleep permission) ? : get OS wakelock status
Error Number	1: command format error 2: command parameter error
Note	1. This module maybe not sleep immediately because other modules (Wi-Fi, SDIO, LOG_UART) may hold the wakelock, only when all module release its wakelock, the OS begin to sleep 2. when OS is sleeping, an extra gpio interrupt pin should be parallel to RX to wake up OS

2.6 ATSE – Set AT command echo mode

ATSE=<mode>		
Description	This command is used to enable/disable AT command echo	
Response	[ATSE] OK	
Parameter	<mode>	0 : disable echo 1 : enable echo
Note	AT command echo is enabled by default	

2.7 ATSY – Factory Reset

ATSY	
Description	This command is used to clean flash data, module will restore to factory setting
Response	[ATSY] OK [ATSY] ERROR:<error_no>
Error Number	1: restore default data fail 2: restore default image fail
Note	System will reboot

2.8 ATSU – UART configuration

ATSU=<baudrate>,<databits>,<stopbits>,<parity>,<flowcontrol>,<configmode>		
Description	This command is used to setup uart mode	
Response	[ATSU] OK [ATSU] ERROR:<error_code>	
Parameter	<baudrate>	2400,4800,9600,19200,38400,57600, 115200,921600,1152000
	<databits>	5: 5 bit data 6: 6 bit data 7: 7 bit data 8: 8 bit data
	<stopbits>	1: 1 bit stop 2: 2 bit stop
	<parity>	0: None parity 1: Odd parity 2: Even parity
	<flowcontrol>	0: disable flowcontrol 1: enable RTS and CTS
	<configmode>	0: set the current configuration and will not save to flash 1: save configuration to flash and take effect immediately 2: save configuration to flash and take effect after reboot
Error number	1: command format error 2: command parameter error	
Note		

2.9 ATSW – Start Webserver

ATSW=<mode>	
Description	This command is used to start and stop webserver
Response	[ATSW] OK [ATSW] ERROR:<error_code>
Parameter	<mode> c : create webserver s : stop webserver
Error number	1: command format error 2: command parameter error
Note	Module should be configured as AP mode using command ATPA

2.10 ATSO – OTA upgrade

ATSO=<ip>,<port>		
Description	This command is used to upgrade firmware	
Response	[ATSO] OK [ATSO] ERROR:<error_code>	
Parameter	<ip>	Download server ip address
	<port>	Download server port number
Error number	1: command format error 2: command parameter error	
Note	1: download server should run first 2: module should connect to the same network as download server	

2.11 ATSC – Choose Activated Image

ATSC=<image ID>		
Description	This command is used to choose the activated image	
Response	[ATSC] OK [ATSC] ERROR:<error_code>	
Parameter	<image ID>	0: default image 1: OTA upgrade image
Error number	1: command format error 2: command parameter error	
Note	System will reboot	

3 Wifi command

3.1 ATPW – Set wifi mode

ATPW=<mode>	
Description	This command is used to set wifi mode, when executing ATPN and ATPA command must check mode first
Response	[ATPW] OK [ATPW] ERROR:<error_no>
Parameter	<mode> 1 : Station mode 2 : AP mode 3 : Concurrent mode
Error Number	1: command format error 2: command parameter error
Note	Concurrent mode must do ATPA first then ATPN

3.2 ATPN – Connect to AP

ATPN=<ssid>,<pwd>,<key_id>(,<bssid>)		
Description	This command is used to connect to AP for station	
Response	[ATPN] OK [ATPN] ERROR:<error_code>	
Parameter	<ssid>	This parameter can't be empty Format: "ssid" Must add prefix '\' for special character(',' , '\' , '"')
	<pwd>	1. WPA/WPA2 : length is 8~64 2. WEP : length is 5 or 13
	<key_id>	For WEP security, must be 0~3
	<bssid>	Format : 6 bytes hex number e.g. 112233445566
Error number	1: command format error 2: command parameter error 3: wifi initial error 4: connect to AP failed 5: wifi mode error	
Note	1. Execute ATPW first, must be STA or Concurrent mode. 2. If no password, remain the parameter <pwd> NULL e.g. ATPN="SSID" or ATPN="SSID",,,112233445566	

3.3 ATWD - Disconnect from AP

ATWD	
Description	This command is used to disconnect with AP for station
Response	[ATWD] OK [ATWD] ERROR:<error_code>
Error number	3: operation failed 4: disconnect timeout

3.4 ATWS - Scan AP

ATWS	
Description	This command is used to scan AP in the air
Response	[ATWS] AP : <num>,<ssid>,<chl>,<sec>,<rssi>,<bssid>
Note	The information of AP in order are number, SSID, channel, security mode, strength of signal, BSSID

3.5 ATPA - Set AP mode

ATPA=<ssid>,<pwd>,<chl>,<hidden>		
Description	This command is used to config AP mode	
Response	[ATPA] OK [ATPA] ERROR:<error_no>	
Parameter	<ssid>	This parameter can't be empty Format: "ssid" Must add prefix '\' for special character(',' , '\' , '"')
	<pwd>	WPA/WPA2 : length is 8~64
	<chl>	Channel : 1~11
	<hidden>	0 : Not hidden SSID 1 : hidden SSID
Error number	1: command format error 2: command parameter error 3: wifi initial error 4: start AP failed 5: wifi mode error	
Note	1. Execute ATPW first, must be AP or Concurrent mode 2. If no password, remain the parameter NULL. e.g. ATPA="SSID",,11,0	

3.6 ATW? - Wifi information

ATW?	
Description	This command is used to list wifi information
Response	[ATW?] <mode>,<SSID>,<chl>,<sec>(,<key_id>),<pwd>,<mac>,<ip>,<gw> CLIENT : <num>,<mac>
Note	1. The information in order are wifi mode, SSID, channel, security mode, (key id for WEP), password, device mac, device IP, gateway. 2. In AP mode, show extra client information, number and the BSSID of client

3.7 ATPH - Set DHCP mode

ATPH=<mode>,<enable>	
Description	This command is used to set DHCP function for both mode
Response	[ATPH] OK [ATPH] ERROR:<error_no>
Parameter	<mode> 1 : AP mode 2 : STA mode <enable> 1 : DHCP 2 : Static IP
Error number	1: command format error 2: command parameter error
Note	1. Default is DHCP for both mode 2. Use ATPE to set static IP for station 3. Use ATPF to set DHCP rule for AP

3.8 ATPE - Set static IP for STA

ATPE=<ip>(,<gateway>,<mask>)		
Description	This command is used to set static IP for station	
Response	[ATPE] OK [ATPE] ERROR:<error_no>	
Parameter	<ip> <gateway>	Static station IP, e.g. 192.168.1.2 [optional] set gateway IP
	<mask>	[optional] set mask IP
Error number	1: command format error 2: command parameter error	
Note	1. Default static IP of station is 192.168.1.80 2. Effective in static IP mode for station. (ATPH=2,2)	

3.9 ATPF - Set DHCP rule and gateway

ATPF=<start_ip>,<end_ip>,<gateway>	
Description	This command is used to set DHCP rule and gateway for AP
Response	[ATPF] OK [ATPF] ERROR:<error_no>
Parameter	<start_ip> Set the start IP for client <end_ip> Set the end IP for client
	<gateway> set gateway IP
Error number	1: command format error 2: command parameter error
Note	1. Default gateway IP is 192.168.43.1 2. For DHCP mode, config the DHCP rule of AP. (ATPH=1,1) 3. For static IP mode, config the IP of AP. (ATPH=1,2)

3.10 ATPG - Set Auto connect

ATPG=<enable>		
Description	This command is used to set the auto connection when device booting	
Response	[ATPG] OK [ATPG] ERROR:<error_no>	
Parameter	<enable>	0 : disable auto connect 1 : enable auto connect
Error number	1: command format error 2: command parameter error	
Note	Default is disable	

3.11 ATPM - Set MAC address

ATPM=<mac>		
Description	This command is used to set the mac address of device	
Response	[ATPM] OK [ATPM] ERROR:<error_no>	
Parameter	<mac>	Format : 6 bytes hex number e.g. 112233445566
Error number	1: command format error 2: command parameter error	
Note	Must restart system for effecting new MAC	

3.12 ATWQ - Start simple config

ATWQ	
Description	This command is used to start simple config
Response	[ATWQ] OK [ATWQ] ERROR:<error_no>
Error number	1: cannot get station information 2: cannot parse the station info 3: cannot scan the target channel 4: fail to connect to target AP 5: fail to get IP address from target AP 6: fail to create UDP socket to send info to controller

4 TCP/IP command

4.1 Complie guide

To enable transport TCP/IP command, please make sure the macro as follow are configured correctly.
Please configure CONFIG_TRANSPORT to 1 and CONFIG_EXAMPLE_UART_ATCMD to 1 in platform_opts.h.
The CONFIG_EXAMPLE_UART_ATCMD is used to configure the version of AT command.
Set CONFIG_EXAMPLE_UART_ATCMD to 0 to use the old version of AT command.
Set CONFIG_EXAMPLE_UART_ATCMD to 1 to use the new version of AT command.

4.2 ATPS – Create TCP/UDP Server

ATPS =<mode>,<Local Port>	
Description	This command is used to create TCP/UDP Server.
Response	[ATPS] OK [ATPS] con_id=x (x=1~65535) [ATPS] ERROR:<error_no>
Parameter	<mode> 0 : TCP mode 1 : UDP mode
	<Local Port> 1~65535
Error Number	1: command format error 2: command parameter error
Note	This command will assign a con_id to this TCP/UDP Server

Example	#ATPS=0,5555 //Create a TCP server on PORT 5555 #ATPS=1,6666 //Create a UDP server on PORT 6666

4.3 ATPC – Create TCP/UDP Client

ATPC =<mode>,< Remote IP>,< Remote Port>	
Description	This command is used to create TCP/UDP Client.
Response	[ATPC] OK [ATPC] con_id=x (x=1~65535) [ATPC] ERROR:<error_no>
Parameter	<mode> 0 : TCP mode 1 : UDP mode
	<Remote IP> xxx.xxx.xxx.xxx
	< Remote Port> 1~65535
Error Number	1: command format error 2: command parameter error
Note	This command will assign a con_id to this TCP/UDP Client
Example	#ATPC=0,192.168.1.101,5555 //Create a TCP client and connect to TCP server IP 192.168.1.101 on server's port 5555 #ATPC=1,192.168.1.101,6666 // Create a UDP client and connect to UDP server IP 192.168.1.101 on server's port 6666

4.4 ATPD – Close TCP or UDP connection

ATPD=<con_id>	
Description	This command is used to close TCP/UDP connection
Response	[ATPD] OK [ATPD] ERROR:<error_no>
Parameter	< con_id > 1~65535
Error Number	1: command format error 2: command parameter error
Note	Use the ATPI command to show the connection id
Example	#ATPI con_id 1,Server,TCP,ADDRESS 192.168.1.103,PORT 5555,socket 0 #ATPD=1

4.5 ATPT – Send data

ATPT=<con_id>,<data> Or ATPT=<Buffer Size> Or ATPT=<con_id>,<UDP Client IP>,<UDP Client Port>,<data>	
Description	**This command is used to send data to a specific connection**
Response	**[ATPT] OK** **[ATPT] con_id=xx (xx=1~65535) (For Parameter case 3)** **[ATPT] ERROR:<error_no>**
Parameter case 1	**<con_id> 1~65535** **<data> ASCII printable characters**
Parameter case 2	**<Buffer Size> Data length**
Parameter case 3	**<con_id> 1~65535** **<UDP Client IP> xxx.xxx.xxx.xxx** **<UDP Client Port> 1~65535** **<data> ASCII printable characters**
Error Number	**1: command format error** **2: command parameter error**
Note	**1.Use the ATPI command to show the connection status** **2.The parameter case 3 is used to send data to UDP client via a specific connection** **3.The ATPT command can't receive data via TCP and UDP server created at localhost.** **4. This parameter case 3 will create an UDP client node.**
Example	**#ATPI** **con_id 1,Server,TCP,ADDRESS 192.168.1.103,PORT 5555,socket 0**

	con_id 4,Seed,TCP,ADDRESS 192.168.1.101,PORT 59953,socket 3 con_id 2,Client,UDP,ADDRESS 192.168.1.101,PORT 7777,socket 1 con_id 3,Client,TCP,ADDRESS 192.168.1.101,PORT 7777,socket 2 con_id 5,Server,UDP,ADDRESS 192.168.1.103,PORT 6666,socket 4 con_id 6,Seed,UDP,ADDRESS 192.168.1.101,PORT 63653,socket 4 Parameter CASE 1: #ATPT=4,"Hello Realtek!" //Send data to TCP client(Seed) (con_id 4) #ATPT=2,"Hello Realtek!" //Send data to UDP Server via UDP clinet(con_id 2) #ATPT=3,"Hello Realtek!" //Send data to TCP Server via TCP clinet(con_id 3) #ATPT=6,"Hello Realtek!" //Send data to UDP client(Seed) (con_id 6) Parameter CASE 2: #ATPT=256 //Adjust the sending data buffer size to 256 bytes Parameter CASE 3: //Send data to UDP client via UDP Server before the UDP connection was created. #ATPT=5,192.168.1.104,1234,"Hello Realtek!" //Send data to UDP client via UDP server(con_id 5)

4.6 ATPR – Receive data

ATPR =<con_id>,<Buffer Size>	
Description	This command is used to receive data from a specific connection id
Response	[ATPR] OK [ATPR] ERROR:<error_no>
Parameter	<con_id> 1~65535
	<Buffer Size> Data length
Error Number	1: command format error 2: command parameter error
Note	1.Use the ATPR command to receive data from the specific connection id 2. The ATPT command can't receive data via TCP server created at localhost.
Example	#ATPI con_id 1,Server,TCP,ADDRESS 192.168.1.103,PORT 5555,socket 0 con_id 4,Seed,TCP,ADDRESS 192.168.1.101,PORT 59953,socket 3 con_id 2,Client,UDP,ADDRESS 192.168.1.101,PORT 7777,socket 1 con_id 3,Client,TCP,ADDRESS 192.168.1.101,PORT 7777,socket 2 con_id 5,Server,UDP,ADDRESS 192.168.1.103,PORT 6666,socket 4 con_id 6,Seed,UDP,ADDRESS 192.168.1.101,PORT 63653,socket 4 #ATPR=2,256 //Receive data of 256 bytes from UDP server via UDP client(con_id 2) #ATPR=3,256 //Receive data of 256 bytes from TCP server via TCP client(con_id 3) #ATPR=4,256 //Receive data of 256 bytes from TCP client(con_id 4) via TCP server

	#ATPR=5,256 //Receive data of 256 bytes from UDP client via UDP server (con_id 5) #ATPR=6,256 //Receive data of 256 bytes from UDP client(con_id 6) via UDP server

4.7 ATPI – Check network connection status

ATPI	
Description	This command is used to print network connection status
Response	[ATPI] con_id <con_id >,<Server/Seed(TCP client)/Client> <TCP/UDP>, ADDRESS <IP ADDRESS>, PORT <PORT>,socket <socket id>
Error Number	
Example	#ATPI con_id 1,Server,TCP,ADDRESS 192.168.1.103,PORT 5555,socket 0 con_id 4,Seed,TCP,ADDRESS 192.168.1.101,PORT 59953,socket 3 con_id 2,Client,UDP,ADDRESS 192.168.1.101,PORT 7777,socket 1 con_id 3,Client,TCP,ADDRESS 192.168.1.101,PORT 7777,socket 2 con_id 5,Server,UDP,ADDRESS 192.168.1.103,PORT 6666,socket 4 con_id 6,Seed,UDP,ADDRESS 192.168.1.101,PORT 63653,socket 4

4.8 ATPP – PING Command

ATPP=<xxxx.xxxx.xxxx.xxxx>,[y/loop] Or ATPP=<con_id>, [y/loop]		
Description	This command is used to PING a specific connection id, or PING a specific network address	
Response	[ping_test] PING 192.168.1.3 120(148) bytes of data [ping_test] Request timeout for icmp_seq 1 or [ping_test] 108 bytes from 192.168.1.1: icmp_seq=1 time=113 ms [ATPP] ERROR:<error_no>	
Parameter case 1	<Remote IP>	xxx.xxx.xxx.xxx
	[y/loop]	No assign: Only five ping requests will be sent. Loop: loop, no count Count: loop with count
Parameter case 2	<con_id>	1~65535
	[y/loop]	No assign: Only five ping requests will be sent. Loop: loop, no count Count: loop with count
Error Number	1: command format error 2: command parameter error	
Note Example	Use the ATPR command to receive data from the specific connection id Parameter case 1 #ATPP=192.168.1.1 // Only five ping requests will be sent #ATPP=192.168.1.1,loop // loop, no count #ATPP=192.168.1.1,10 // loop 10 times Parameter case 2 #ATPI con_id 1,Server,TCP,ADDRESS 192.168.1.103,PORT 5555,socket 0 con_id 4,Seed,TCP,ADDRESS 192.168.1.101,PORT 59953,socket 3 con_id 2,Client,UDP,ADDRESS 192.168.1.101,PORT 7777,socket 1	

	con_id 3,Client,TCP,ADDRESS 192.168.1.101,PORT 7777,socket 2 con_id 5,Server,UDP,ADDRESS 192.168.1.103,PORT 6666,socket 4 con_id 6,Seed,UDP,ADDRESS 192.168.1.101,PORT 63653,socket 4 #ATPP=4 //Ping TCP client(cond_id 4) #ATPP=2 //Ping UDP server via UDP client(cond_id 2) #ATPP=3 //Ping TCP server via TCP client(cond_id 3) #ATPP=6 //Ping UDP client(cond_id 6)