## AT : Test command

- Response: <cr><lf>OK<cr><lf>

## AT+RST: Restart module

- Response: <cr><lf>OK<cr><lf>

## AT+GMR : view version info

- Response: version info, OK

## AT+CWMODE : WiFi mode (station, AP, station+AP)

- Ex: AT+CWMODE=? : list valid modes (1-3)
- Ex.: AT+CWMODE? : Query current WiFI mode
- Ex.: AT+CWMODE=mode ; set WiFi mode to station mode
- mode:
  - 1 = Station mode
  - 2 = softAP mode
  - 3 = softAP + Station mode

## AT+CWLAP : list available Aps

## AT+CWJAP : connect to an AP

- AT+CWJAP=ssid,passwd : connect a SSID with the password
  - Ex.: AT+CWJAP="iptime_ljw","1234test"
- AT+CWJAP? ; query which AP is connected

## AT+CWQAP : disconnect from the connected AP

## AT+CIFSR : get local IP and MAC address

## AT+CWSAP : configuration of softAP mode

- AT+CWSAP=ssid,pwd,ch,ecn
  - ssid: string, softAP SSID
  - pwd: string, password
  - ch: WiFi channel ID
  - ecn: security mode
    - 0 = open
    - 2 = WPA_PSK
    - 3 = WPA2_PSK
    - 4 = WPA_WPA2_PSK
- Ex.: AT+CWSAP="esp_ap","1234test",5,3

## AT+CWLIF : list clients connected to its softAP

## AT+CIPSTA : set IP address of the station

## AT+CIPAP : set IP address of the softAP

- Ex.: AT+CIPAP="192.168.0.1"

## AT+CIPSTAMAC : set MAC address of the station

## AT+CIPAPMAC : set MAC address of the softAP

- Ex.: AT+CIPSTAMAC="2c:aa:35:97:d4:7b"

## AT+CIPSTATUS : information about connection

- Parameters
  - Status: 2: Got IP, 3: Connected, 4: Disconnected
  - Id: id of the connection (0~4), for multi-connect
  - Type: String, "TCP" or "UDP"
  - Port: port number
  - Tetype: 0 = ESP8266 runs as a client,
    1 = ESP8266 runs as a server

[To connect a TCP or to register UDP server]

## AT+CIPSTART=[id],type,addr,port

- Ex.: AT+CIPSTART=0,"TCP","192.168.0.61",50000
- Ex.: AT+CIPSTART="TCP","192.168.0.61",50000
- Ex.: AT+CIPSTART=0,"UDP","192.168.0.61",50000
- Ex.: AT+CIPSTART="UDP","192.168.0.61",50000
- Ex.: AT+CIPSTART="UDP","192.168.0.61",50000,50001
    - Local port number: 50001
- Parameters:
    - Id: 0-4: id of connection
    - Type: string, "TCP" or "UDP"
    - Addr: string, server IP address
    - Port: server port number

To use multi-connection (id), set AT+CIPMUX=1

[To send data]

## AT+CIPSEND=[id],length

- Ex.: AT+CIPSEND=0,10
- Ex.: AT+CIPSEND=10
- Parameters:
    - Id: 0-4: id of TX connection
    - Length: data length, MAX. 2048

[Display received data]

+IPD, len:data : receive data from a single connection

+IPD, id, len:data : receive data from the connection of ID

[Close a connection]

**AT+CIPCLOSE : close the single TCP connection or unregister the single UDP server**

**AT+CIPCLOSE=id : close the TCP connection with id or unregister the UDP server with id.**

[Normal mode vs. Transpararent mode]

### AT+CIPMODE=0 : noraml mode

### AT+CIPMODE=1 : transparent mode (only in single connection)

In transparent mode, to send data, give the AT command, "AT+CIPSEND" (with no specified length). After that, all input data is transmitted to remote. To exit the transparent mode, three consecutive "+", that is, "+++"are given without time spacing between "+" characters.