ESP8266 AT Command Reference (with Responses & Notes)
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1. Basic Commands

- AT
• Test command to verify UART communication.
• Response: OK

- AT+RST
• Restart the module (soft reset).
• Response: OK, then the module reboots and prints boot info.

- AT+GMR
• Get current firmware version.
• Response: SDK and firmware version, then OK.

- AT+GSLP=
• Enter deep sleep for milliseconds.
• Response: OK, then no reply until wake-up.

2. Wi-Fi Configuration

- AT+CWMODE=
• Set Wi-Fi mode: 1=Station, 2=SoftAP, 3=Both.
• Response: OK
• Example: AT+CWMODE=1 → Module acts as client (station).

- AT+CWLAP
• List available Wi-Fi networks.
• Response: Multiple lines showing SSID, RSSI, encryption, then OK.

- AT+CWJAP="ssid","pwd"
• Connect to access point.
• Response: WIFI CONNECTED, WIFI GOT IP, then OK or FAIL.

- AT+CWQAP
• Disconnect from access point.
• Response: OK

- AT+CIFSR
• Get local IP and MAC address.
• Response: +CIFSR:STAIP,"192.168.x.x" +CIFSR:STAMAC,"xx:xx:xx:xx:xx:xx" then OK.

3. TCP/IP Commands

- AT+CIPMUX=
• Enable multi-connection (0=single, 1=multi).
• Response: OK

- AT+CIPSTART="type","addr",port
• Start TCP or UDP connection.
• Response: CONNECT or ERROR.
• Example: AT+CIPSTART="TCP","192.168.1.10",8080

- AT+CIPSEND=

- Notify module to expect bytes of data.
- Response: >
- Then send data (e.g. "HELLO").
- Response: SEND OK if successful.

- AT+CIPCLOSE
- Close current TCP/UDP connection.
- Response: CLOSED, then OK.

- AT+CIPSTATUS
- Show current connection status.
- Response: Multiple +CIPSTATUS lines then OK.

4. System & Info Commands

- AT+UART?
- Show current UART configuration.
- Response: +UART:115200,8,1,0,0

- AT+UART=,8,1,0,0
- Change UART baud rate and settings.
- Response: OK

- AT+RESTORE
- Restore factory default settings.
- Response: OK, then module restarts.

- AT+SLEEP=
- Set sleep mode: 0=disabled, 1=light, 2=modem sleep.
- Response: OK

5. Typical Command Sequence
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1. AT → OK
2. AT+RST → OK
3. AT+CWMODE=1 → OK
4. AT+CWJAP="SSID","PASS" → WIFI CONNECTED + OK
5. AT+CIFSR → Get IP
6. AT+CIPSTART="TCP","192.168.1.5",8080 → CONNECT
7. AT+CIPSEND=5 → >
8. HELLO → SEND OK
9. AT+CIPCLOSE → CLOSED + OK

6. Common Responses

- OK: Success
- ERROR: Command not recognized or failed
- FAIL: Connection or join failed
- BUSY: Module processing, wait and retry
- SEND OK: Data sent successfully
- CLOSED: Connection closed
- WIFI CONNECTED / GOT IP: Wi-Fi joined successfully

All commands must end with CRLF ("\r\n").