Espressif AT Instruction Set

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Author: Xu Jingjie
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[ ] CONFIDENTIAL
[ ] INTERNAL
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Version Information

<table>
<thead>
<tr>
<th>Date</th>
<th>Version</th>
<th>Authors</th>
<th>Reviewer</th>
<th>Modify the description</th>
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<tr>
<td>2014.6.27</td>
<td>0.1</td>
<td>Xu Jing Jie</td>
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</table>

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1 Introduction

This article provides Espressif AT instruction set.
### AT Instruction Category

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<th>Instruction format</th>
<th>Command functions</th>
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<tr>
<td>Test Command</td>
<td>AT + &lt;x&gt; =?</td>
<td>This command is used to query the set command or the internal procedures set Parameters and their ranges.</td>
</tr>
<tr>
<td>Query command</td>
<td>AT + &lt;x&gt;?</td>
<td>This command returns the current value of the parameter.</td>
</tr>
<tr>
<td>Set command</td>
<td>AT + &lt;x&gt; = &lt;...&gt;</td>
<td>This command is used to set the value of user-defined parameters.</td>
</tr>
<tr>
<td>Run</td>
<td>AT + &lt;x&gt;</td>
<td>Variable parameters used to perform under the command module's internal control procedures Number of immutable functions.</td>
</tr>
</tbody>
</table>

Note:
1) Not every AT commands are equipped with the above four categories command.
2) later instruction [] the data to the default value, do not have to fill out, or may not appear.
3) 57600 baud.
### 3.1. AT + RST

<table>
<thead>
<tr>
<th>Instruction</th>
<th>Response</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT + RST</td>
<td>OK</td>
<td>None</td>
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4. Wifi Function | AT Instruction

<table>
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<th>Description</th>
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<td>Select WIFI application mode</td>
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<tr>
<td>AT + CWJAP</td>
<td>Join AP</td>
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<tr>
<td>AT + CWLAP</td>
<td>Lists currently available AP</td>
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<tr>
<td>AT + CWQAP</td>
<td>Exit connection with the AP</td>
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<tr>
<td>AT + CWSAP</td>
<td>AP mode setting parameters</td>
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</table>

4.1. AT + CWMODE

AT + CWMODE: Select WIFI application mode

Test command: 

<table>
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<tr>
<th>+ CWMODE: (&lt;mode&gt; value list)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT + CWMODE =?</td>
</tr>
</tbody>
</table>

Response: OK
Description: What response returns the current mode can support?

Query command: 

<table>
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<th>+ CWMODE: &lt;mode&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT + CWMODE?</td>
</tr>
</tbody>
</table>

Response: OK
Description: Response is currently in which mode?

Set command: 

<table>
<thead>
<tr>
<th>Command parameter &lt;mode&gt;=:</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT + CWMODE = &lt;mode&gt;</td>
</tr>
</tbody>
</table>

Description: Command parameter <mode>:
1 - Station mode;
2 - AP mode;
3 - AP and Station mode.
4.2. AT + CWJAP

AT + CWJAP: Join AP
+ CWJAP: <ssid>

Query command: AT + CWJAP?
Response
OK
Description Response returns the currently selected AP
Response  OK or ERROR

Set command: AT + CWJAP = <ssid>, <pwd>
Description <Ssid> string parameter, the access point name
<Pwd> string parameter, passwords up to 64 bytes
ASCII

4.3. AT + CWLAP

AT + CWLAP: lists currently available AP
Successful return AP list
+ CWLAP: <ecn>, <ssid>, <rssi>[, <mode>]

Response OK
Or
Fails, the return
ERROR

Instruction:
AT + CWLAP
Response parameters:
<Ecn> 0 OPEN
1 WEP
Description 2 WPA_PSK
3 WPA2_PSK
4 WPA2_WPA2_PSK
<Ssid> string parameter, the access point name
<Rssi> signal strength
<Mode> 0 manually connect
An automatic connection

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4.4. AT + CWQAP

AT + CWQAP: Exit connection with AP

Test command: AT + CWQAP =?
Response OK

Instruction:
AT + CWQAP
Response OK

4.5. AT + CWSAP
AT + CWSAP: AP mode setting parameters

Test instructions

Query command: AT + CWSAP?
Response Returns the current AP parameter
Description + CWSAP: <ssid>, <pwd>, <chl>, <ecn>

Set command:
AT + CWSAP = ERROR
Command parameters:
AT + CWSAP = Command parameters:
<Ssid>, <pwd>, <chl>, <Ecn>
Description <Ecn> Encryption
Command parameters:
<Ssid> string parameter, the access point name
<Pwd> string parameter, passwords up to 64-byte ASCII
<Chl> channel number
Description None
Response OK
Response

AT + CWSAP: Returns the current AP parameter

Description

Set command:
AT + CWSAP = ERROR
Command parameters:
5.1. AT + CIPSTATUS

5.1. AT + CIPSTATUS

Test instructions

Response OK
Description None
Response

Returns connection status and connection parameters of the current module.

Command

<table>
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<tr>
<th>Command</th>
<th>Description</th>
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<td>AT + CIPSTATUS</td>
<td>Get the connection status</td>
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<tr>
<td>AT + CIPSTART</td>
<td>Establish a TCP connection or UDP port numbers registered</td>
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<tr>
<td>AT + CIPSEND</td>
<td>Send Data</td>
</tr>
<tr>
<td>AT + CIPCLOSE</td>
<td>Close TCP or UDP</td>
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<tr>
<td>AT + CIFSR</td>
<td>Get Local IP Address</td>
</tr>
<tr>
<td>AT + CIPMUX</td>
<td>Start multiple connections</td>
</tr>
<tr>
<td>AT + CIPSERVER</td>
<td>Configured as a server</td>
</tr>
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</table>

5.1. AT + CIPSTATUS

AT + CIPSTATUS: get the connection status

Test instructions

Response OK
Description None
Response

Returns connection status and connection parameters of the current module.
### 5.2. AT + CIPSTART

AT + CIPSTART: establish a TCP connection or UDP port numbers registered

**Test instructions**

AT + CIPSTART =?

**Response**

OK

**Description**

None

OK - the format is correct and the connection is successful

Or

**Set command**

1) Single Connection

(+ CIPMUX = 0)

AT + CIPSTART = <Type>, <addr>, <port>

**Response**

ERROR - Failed

Or

ALREADY CONNECT - connection already exists

**Description**

Command parameters:

<Id> 0-4 id number of the connection

2) multi-channel connection

(+ CIPMUX = 1)

AT + CIPSTART = <Id> <type>, <addr>, <Port>

**Description**

<Type> string parameter indicates the connection type

Type. "TCP" established tcp connection; "udp" establish UDP Connection

No. 0 client or server connection can be connected to other id can only be used Connect to a remote server

- `<Id>` id number of the connection 0-4
- `<Type>` string parameter, type TCP or UDP
- `<Addr>` string parameter, IP address
- `<Port>` port number
5.3. AT + CIPSEND

Test command:  
AT + CIPSEND =?

Response: OK

Description: None

Response Returns the specified length of data.  
After receiving the instruction to wrap return ">" and then start
Receive serial data, when the data length when full length

Set command:
1) Single Connection
(+ CIPMUX = 0)
AT + CIPSEND = <length>

Response: Sending data.
If you do not establish a connection or connection is disconnected, the return
ERROR
If the data is sent successfully, the return SEND OK

2) multi-way connector
(+ CIPMUX = 1)
AT + CIPSEND = <Id>, <length>

Description: Command parameters:
<Id> id number needed for transport connection
LENGTH numeric parameter, indicating that long to send data
Degree
5.4. AT + CIPCLOSE

AT + CIPCLOSE: Close TCP or UDP

Test command:

AT + CIPCLOSE =?

Response: OK

Description: None

If the input is correct, return OK

Set command:

When multiple connections

AT + CIPCLOSE = <id>

Response: Link is not

If the connection is not, returns

If you turn off No. 0 connection, and the connection is used server returns

Can't close (Close 0 No server connection requires heavy Kai)

Description: Command parameters:

<id> id need to close the connection

If the input is correct, return OK

Instruction:

When single connection

AT + CIPCLOSE

Response: ERROR

If no connection is to return

If you want to turn off the server to return

we must restart (connection requires restart)

Description: None

After the state closed for unlink

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AT + CIFSR: Get Local IP Address

Test command:
AT + CIFSR =?

Response  OK
Description  None

+ CIFSR: <IP address>
Response

Execute the command:
AT + CIFSR

OK
Or
ERROR

Description  Response Returns:
<IP address> - the IP address of the machine currently
(Station)

5.6. AT + CIPMUX

AT + CIPMUX: start multiple connections

Query command:
AT + CIPMUX?

Response  + CIPMUX: <mode>
Description  None

OK

Response  If already in the connected state, the return
Link is builded

Set command:
AT + CIPMUX = <mode>

Description  Command parameters:
<Mode>
0 single connection mode
More than one-way connection mode

Instruction  Response  None
Description  None

5.7. AT + CIPSERVER

AT + CIPSERVER: configured as a server

Automatically create a server monitor server after opening

OK

Instruction  Response  If the number 0 connection is occupied, return
AT + CIPSERVER =
<Mode> [, <port>]

Link is builded

Close need to restart the server

Command parameters:
Description

<Mode>
0 off server mode
An open server mode

<Port> port number, the default value is 333

6 › + IPD Receiving network data

+ IPD: receiving network data

Reference

1) Single Connection (+ CIPMUX = 0)
+ IPD, <len>: <data>

<Id> id number received connection

1) connected to the multiplexer (+ CIPMUX = 1)
+ IPD, <Id>, <len>: <data>

<Len> Data Length

<Data> data received

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