Espressif ESP8266EX:

AT COMMAND EXAMPLES

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[   ] **CONFIDENTIAL**

[   ] **INTERNAL**

[√] **PUBLIC**

Version Info

Date	Version	Author	Comments/Changes
2014.7.16	0.1	Fei Yu	Draft
2014.9.12	0.2	Fei Yu	Add unvarnished transmission (AT_v019)
2014.11.28	0.3	Fei Yu	Add UDP transmission (AT_v020)

Table of Content

1、 Foreword

Herein contains examples for the usage of Espressif AT Commands. For the complete instruction set, please refer to Espressif AT Instruction Set documentation.

If you have any question about AT, please contact us support-at@espressif.com

2、 User Guide

(1) First flash in blank.bin (contains default Wi-Fi parameter settings) into the ESP8266EX device, then flash in the BIN program that supports AT commands (\esp_iot_sdk\bin\at).

(2) Power on device and set serial baud rate to 115200. Enter AT commands.
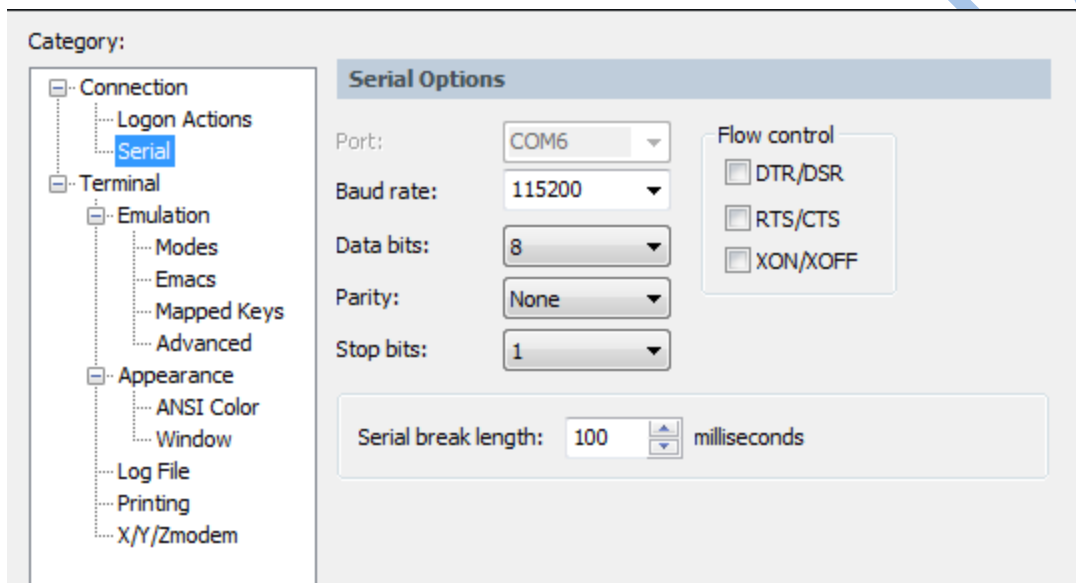
Pay attention to the new line mode, AT command need "\r\n" to be the end.

2.1. Single connection as TCP client

1） Set wifi mode：

　　AT+CWMODE=3　　　// softAP+station mode

　　Response：OK

2） Connect to router
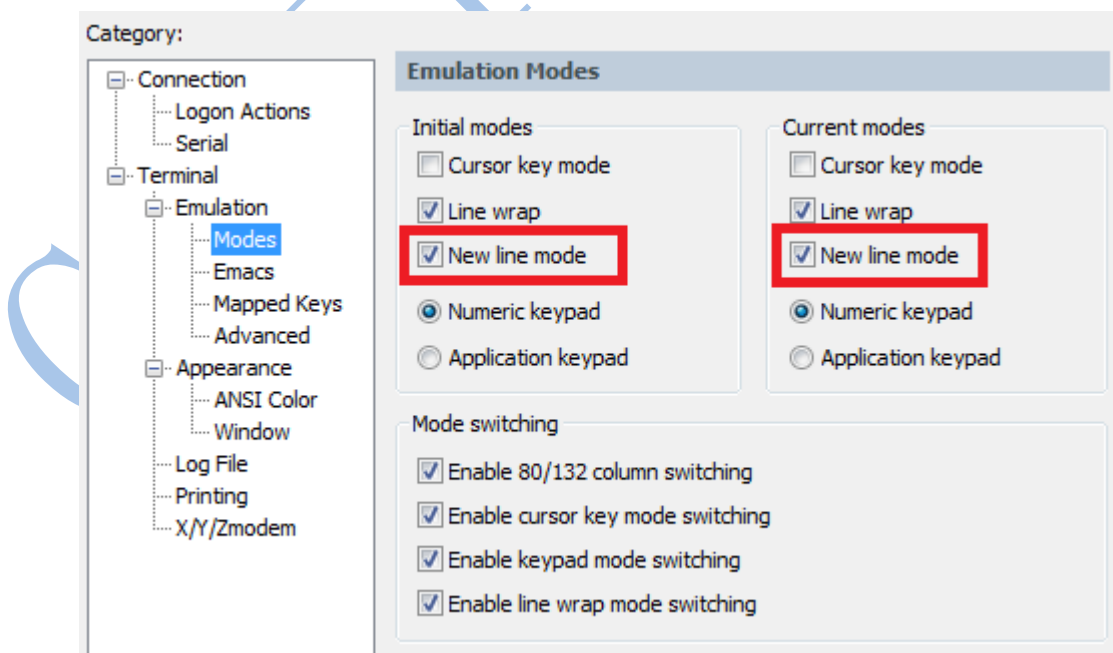
　　AT+CWJAP="ssid","password"　　　// ssid and password of router

　　Response：OK

3） Query device's IP

　　AT+CIFSR

　　Response：192.168.3.106　　// Device got an IP from router.

4） PC connects to the same router which ESP8266 connects to. Using a network tool (eg: "NetAssist.exe") on the computer to create a server.

5） ESP8266EX connect to server as a client

AT+CIPSTART="TCP","192.168.3.116",8080   //protocol、server IP & port

Response：OK

6） Send data

AT+CIPSEND=4   // set date length which will be sent, such as 4 bytes

>DGFY   // enter the data, no CR

Response：SEND OK

Note: If the number of bytes sent is bigger than the size defined (n), will reply

busy, and after sending n number of bytes, reply SEND OK.

7） Receive data:

+IPD,n:xxxxxxxxxx   // received n bytes, data=xxxxxxxxxx

2.2. Transparent transmission

In AT Demo, transparent transmission only enables when it is "single connection as client" mode.

Here takes ESP8266EX station as an example, you can take ESP8266EX softAP as the same way according to document "4A-AT-Espressif AT Instruction Set".

1） Set wifi mode：

AT+CWMODE=3   // softAP+station mode

Response：OK

2） Connect to router

AT+CWJAP="ssid","password"   // ssid and password of router

Response：OK

3） Query device's IP

AT+CIFSR

Response：192.168.101.105   // Device's ip that got from router.

4） PC connects to the same router which ESP8266 connects to. Using a network tool (eg: "NetAssist.exe") on the computer to create a server.

5） Device connect to server

AT+CIPSTART="TCP","192.168.101.110",8080   // protocol、server IP & port

Response：OK

Linked

6） Enable transparent transmission mode

AT+CIPMODE=1

Response：OK

7） Start send

AT+CIPSEND

Response： >

Note: From now on, data received from uart will be transparent transmitted to server.

```
AT+CIFSR
192.168.101.105
AT+CIPSTART="TCP","192.168.101.110",8080

OK
Linked
AT+CIPMODE=1

OK
AT+CIPSEND

>
```

网络设置
（1）协议类型
TCP Server

（2）本地IP地址
192.168.101.110

（3）本地端口号
8080

◉ 断开

接收区设置
☐ 接收转向文件...
☐ 显示接收时间
☐ 十六进制显示
☐ 暂停接收显示

网络数据接收
【Receive from 192.168.101.105 : 29713】: abcd

8） Stop send

Data packet contains only "+++" exits transparent transmission.

NOTE: Input +++ directly by keyboard, may not be continually, suggest using tool

as below:

Input ： +++

New Line Mode ： **don't** select

Click "Send"

Note: We send "+++" to exit transparent transmission mode, back to normal AT command mode, TCP connection is still maintain, we can use command "AT+CIPSEND" back to transparent transmission mode.

9） Delete TCP connection

AT+CIPCLOSE

Response：CLOSED　　OK

2.3. Multiple connection as TCP server

It has to be multiple connection when ESP8266EX runs as server, then there can be more than one client connects to ESP8266EX.

For example,

1） Set wifi mode：

AT+CWMODE=3　　　 // softAP+station mode

Response：OK

2） Enable multiple connection

AT+CIPMUX=1

Response：OK

3） Setup server

AT+CIPSERVER=1　　　 // default port = 333

Response：OK

4） PC connects to ESP8266EX softAP as station, then PC connects to ESP8266EX server as client.

NOTE: ESP8266EX acting as server has a timeout mechanism. When connection is established and no data is transmitted within a period of time, it will disconnect the client. Please setup a recurring packet transmission every 2s on the computer

to ensure connection is maintained.

5）Send data

// id number of connection is default to be 0.

AT+CIPSEND=0,4   // send 4 bytes to connection NO.0

>iopd   // enter the data, no CR

Response：SEND OK

Note: If the number of bytes sent is bigger than the size defined (n), will reply

busy, and after sending n number of bytes, reply SEND OK.

6）Receive data:

+IPD,0,n:xxxxxxxxxx   // received n bytes, data = xxxxxxxxxx

7）Delete TCP connection

AT+CIPCLOSE=0   // Delete NO.0 connection.

Response：0,CLOSED   OK

2.4. UDP Transmission

AT+CIPSTART can create a UDP transmission, the last parameter of this command to decide whether remote ip and port of this UDP transmission can be changed or not. More details in documentation "Espressif AT Instruction Set".

1） Set wifi mode：

   AT+CWMODE=3   // softAP+station mode

   Response：OK

2） Connect to router

   AT+CWJAP="ssid","password"   // ssid and password of router

   Response：OK

3） Query device's IP

   AT+CIFSR

   Response：+CIFSR:STAIP,"192.168.101.104" // IP address of ESP8266 station

4） PC connects to the same router which ESP8266 connects to. Using a network tool (eg: "NetAssist.exe") on the computer to create UDP .

5） Enable multiple connection

   AT+CIPMUX=1

Response：OK

6）Create a UDP transmission, for example, id is 4.

AT+CIPSTART=4,"UDP","192.168.101.110",8080,1112,0

Response：4,CONNECT   OK

Note：

"192.168.101.110",8080 here is the remote ip and port of UDP transmission which create on PC in step 4;

1112 is the local port of ESP8266, user-define, if user does not define it, it will be a random value;

0 means destination peer entity of UDP will not change. For example, in this case, if another PC also creates a UDP entity and sends data to ESP8266 port 1112, ESP8266 can receive these data, but when we send data with command "AT+CIPSEND=4,X", it will still be sent to the first PC. If this parameter is not 0, it will send to the new PC.

7）Send data

AT+CIPSEND=4,5   // Send 5 bytes to transmission NO.4

>DGFYQ   // enter the data, no CR

Response：SEND OK

Note: If the number of bytes sent is bigger than the size defined (n), will reply busy, and after sending n number of bytes, reply SEND OK.

8）Receive data:

+IPD,4,n:xxxxxxxxxx   // received n bytes, data=xxxxxxxxxxx

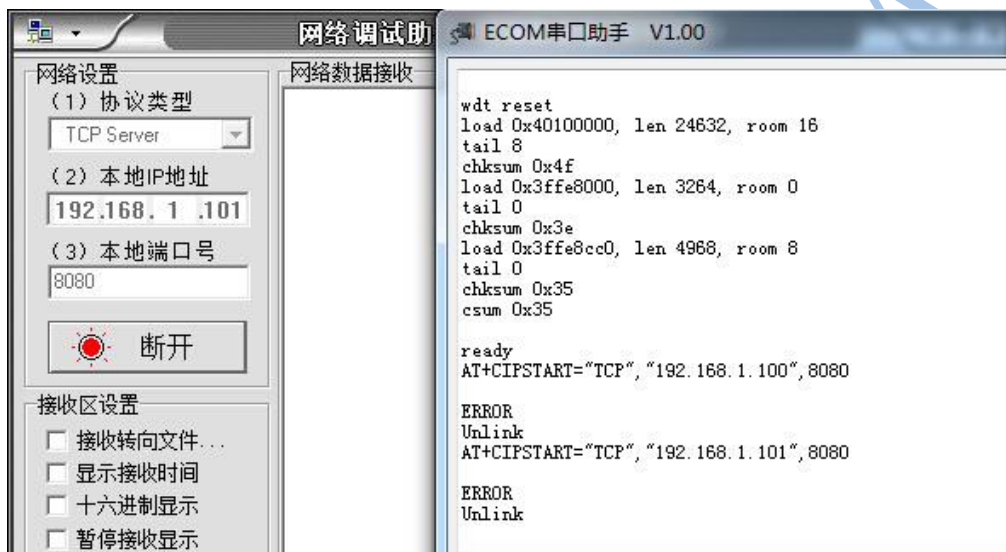9）Delete transmission NO.4

AT+CIPCLOSE=4

Response：4,CLOSED   OK

3、 Q&A

If you have any question about AT instructions, please contact us (support-at@espressif.com) with information as follows:

（1） Version info or AT

Using "AT+GMR" to get the version info.

（2） Screenshot of the test steps, for example:

（3） If possible, please offer the test log, such as:

ets Jan　8 2013,rst cause:1, boot mode:(3,3)

load 0x40100000, len 26336, room 16
tail 0
chksum 0xde
load 0x3ffe8000, len 5672, room 8
tail 0
chksum 0x69
load 0x3ffe9630, len 8348, room 8
tail 4
chksum 0xcb
csum 0xcb
SDK version:0.9.1
addr not ack when tx write cmd
mode : sta(18:fe:34:97:d5:7b) + softAP(1a:fe:34:97:d5:7b)