

TinyCon_AT Instruction

Ver : V1.1.4

Date : 2015/06/10

AT

Introduce

AT is a user terminal interface for TinyCon2005, which provides users a set of the command operation interface, convenient user testing and checking information.

How to enable AT

Hardware connection

AT work on TinyCon2005 UART interface, so you need to TinyCon2005 UART interface and through the derivation of additional circuit or device connected to a computer ; If you are using a TinyWiEV - 1000 development board, then TinyWiEV - 1000 development board has UART derivation, using a mini USB cable to connect to the computer.

Enter AT

Enter AT , Must make TinyWiEV - 1000 board dial switch to 1 (high level) or input “\$\$\$”at UART interface. In this case, the TinyCon2005 is powered on or reset automatically enter AT mode.

Note: WiFi module to enter configuration mode to enter \$\$\$, frame wait time defaults value is 50 ms.

```
TINYCON S2W APP
at
OK
AT
OK
```

AT Command Classification

TinyCon2005 AT instruction has five instruction set :

- serial port control instruction set
- WiFi interface instruction set
- Network control instruction set
- Auto connect instruction set
- Other instruction set

Serial port control instruction set

AT instruction	Description
ATB	UART parameters take effect after reset
ATS_n=p	Set various adapter interface parameters

ATB=

Function : UART parameters take effect after reset.

Format

Settings

ATB=<baudrate>

[[,<databits>][,<parity>][,<stopbits>][,<flowcontrol>]]

Parameter

baudrate Baud rate : **115200** (support 9600~921600)

databits Data bits : **7** (7bit) **8** (8bit)

parity Parity : **n** (none) **e** (even parity) **o** (odd parity)

stopbits Stop bits **1** (1 stop bit) **2** (2 stop bits)

flowcontrol Flow control **nfc** (none) **fc** (hardware)

Example: setting up the serial port parameters (baud rate 115200, the data bits of 8, no check, 1 stop bit, and none flow control)

```
ATB=115200,8,n,1,nfc
OK
```

ATS_n=p

Function : Set various adapter interface parameters

Format

Settings

ATS_n=p

Parameter

n=0 to 2

0=auto frame length

1=auto frame wait time

2=auto frame interval

p=parameter value

Example: Set the frame trigger a length of 1400

```
ATS0=1400
OK
```

WiFi interface instruction set

AT instruction	Description
at+wa	Associate to specified SSID, optionally using specified security parameters.
at+wd	Disassociate from the current network.
at+ws	Network scan, returns list of found networks in the format.
at+wcountry	Set 802.11 country code.
at+wphymode	Set 802.11 PHY mode:
at+wrssi=?	Current RSSI as ASCII
at+wsetting=?	Adapter reports the current wireless settings to the serial host
at+nstat=?	Current wireless and network configuration.
at+wap	Create a network on specified channel (only open and WAP2-PSK supported).
at+sc	Start the simple-config process. Optionally specify the PIN code to protect the process.

at+wa

Function : Associate to specified SSID, optionally using specified security parameters.

Format

Settings

at+wa=< ssid >[,<password>,<wep keyindex>]

Parameter

ssid specify the SSID to connect the AP

password set the key, if the security type for wep type 5 or 13 ASCII characters; If the security type for wpa_psk, wpa2_psk input 8 ~ 32 ASCII characters.

wep keyindex set the wep key SN , for 0 ~ 3.

Example: Join a AP ,SSID is rlwap, encryption for the open

```
at+wa=rlwap
Joining Network...
Connected to rlwap
DHCP: started
IP address: 192.168.1.103
OK
```

Example: Join a AP , SSID is sytest, the secret key for 123456789, encryption for wpa2

```
at+wa=sytest,123456789
Joining Network...
Connected to sytest
DHCP: started
IP address: 192.168.2.158
OK
```

TinyCon_AT Instruction

at+wd

Function : Disassociate from the current network.

Format

Settings

at+wd

Example:

```
at+wd
Disassociated
OK
```

at+ws

Function : Network scan, returns list of found networks in the format.

Format

Settings

at+ws

Example:

```
at+ws
Scanning...
[1] c8:3a:35:49:04:e0 -42    1    6  WPA2 AES    SC_TEST_AP
[2] 08:10:79:11:cc:5e -44    2    6  Open        rlwap
[3] 00:22:c3:81:98:3a -52    1    6  WPA2 AES    New AP
[4] 14:75:90:09:42:26 -52    6    6  WPA2 AES    sun
[5] d4:ca:6d:87:28:ba -56    1    6  WPA2 AES    aibo
[6] b8:c7:5d:0c:5d:81 -62    11   6  WPA2 AES    AppleYao
[7] e4:d3:32:ac:a7:8e -62    11   6  Open        testTCP
[8] 64:e4:25:11:00:84 -74    1    6  WPA2 AES    RLW_LED_64e42511084
[9] 64:e4:25:11:00:9d -84    1    6  WPA2 AES    sunwenhaoudptest

WLAN SCAN END
```

at+wcountry

Function : Set 802.11 country code.

Format

Settings

at+wcountry=< contry string>

Parameter

contry string :

US

The United States

EU

Europe

JP

Japan

CN

China

Example:

```
at+wcountry=us
OK
```

TinyCon_AT Instruction

at+wphymode

Function : Set 802.11 PHY code.

Format

Settings

at+wphymode=n

Parameter

n:

1

802.11 b

3

802.11 b/g

11

802.11 b/g/n

Example: set up to BG mode

```
at+wphymode=3
```

```
OK
```

at+wrssi=?

Function : Current RSSI as ASCII

Format

Settings

at+wrssi= ?

Parameter

none

Example:

```
at+wrssi=?
```

```
-45
```

```
OK
```

at+wsetting=?

Function : Adapter reports the current wireless settings to the serial host

Format

Settings

at+wsetting= ?

Parameter

None

Example:

```
at+wsetting=?
```

```
WMODE=STA
```

```
SSID=rlwap
```

```
CHANNEL=2
```

```
SECURITY=OPEN
```

```
PASSWORD=
```

```
OK
```

at+nstat=?

Function : Current wireless and network configuration.

Format

TinyCon_AT Instruction

Settings

at+nstat=?

Parameter

None

Example:

```
at+nstat=?
MAC=00:E0:4C:87:00:00
WSTATE=CONNECTED WMODE=STA
BSSID=E4:D3:32:AC:A7:8E SSID="rlwap" CHANNEL=2
SECURITY=OPEN
IP addr=192.168.1.103 SubNet=255.255.255.0 Gateway=192.168.1.1
DNS1=192.168.1.1
O
```

at+wap

Function : Create a network on specified channel (only open and WAP2-PSK supported).

Format

Settings

at+wap =<SSID>,<Channel>[,<WPA2Password >]

Parameter

ssid To create an AP SSID specified

channel Channel Settings (1~13)

password 8~32 ASCII character

Example:

set the AP ssid is sun, channel 1, encryption mode for the open

```
at+wap=sun,1
Creating network...
"sun" created
IP address: 192.168.1.165
DHCP: started
OK
```

set the AP ssid to sun, channel 1, encryption mode for wpa2 ,key is 12345678

```
at+wap=sun,1,12345678
Creating network...
"sun" created
IP address: 192.168.1.165
DHCP: started
```

at+sc

Function : Start the simple-config process. Optionally specify the PIN code to protect the process.

Format

Settings

TinyCon_AT Instruction

at+sc=[<custom PIN code>]

Parameter

custom PIN code : Set the PIN protection configuration program

Example:

```
at+sc
OK
Joining network...
Connected to rlwap
DHCP: started
IP address: 192.168.1.103
```

Auto connect instruction set

AT instruction	Description
at+nauto	Sets network parameters to be used for Auto Connect.
at+wauto	Sets WiFi parameters to be used for Auto Connect.
ato	Return to Auto-Connect mode.
ata	Initiate auto connection using parameters set by AT+WAUTO and AT+NAUTO.
ata2	Initiate auto connection when the adapter is already associated with an AP.
atd	Disconnect current network Auto-Connect session.
atn	Returns the current status of network Auto-Connect.

at+nauto

Function : Sets network parameters to be used for Auto Connect.

Format

Settings

at+nauto=<Type>,<Protocol>,<Destination IP/ Host Name> ,
<Destination Port>,[<Src port>]

Parameter

Type	<u>0</u> client	<u>1</u> server
Protocol	<u>0</u> UDP	<u>1</u> TCP
Destination ip	Destination IP	e.g.:192.1.168.1.1
/Host Name	/ Host Name	e.g. : www.ralinwi.com
Destination Port	Destination Port	e.g.:8080
Src port	Src port	e.g.:4096

Example:

```
at+nauto=0,1,192.168.1.101,5001,5002
OK
```


TinyCon_AT Instruction

at+wauto

Function : Sets WiFi parameters to be used for Auto Connect.

Format

Settings

STA mode:

at+wauto=<mode><SSID>[,<Password>,<WEP Key Index>]

AP mode:

at+wauto=<mode><SSID>,<channel>[,<WPA2 Password>]

Parameter

mode 0 STA 1 AP

SSID specify the SSID to connect the AP

Password The STA mode, key of the AP

WEP Key Index the STA mode, if you need to connect the AP for

WEP encryption type mode, enter 0

channel AP mode, automatic reconnection channel set (1 ~ 13)

WPA2 Password AP mode keys: set the key security type for wpa_psk,

wpa2_psk, input 8 ~ 32 ASCII characters.

Example:

```
at+wauto=0,test
OK
```

```
at+wauto=0,test,12345,0
OK
```

```
at+wauto=0,test,12345678
OK
```

```
at+wauto=1,testAP,12
OK
```

```
at+wauto=1,testAP,12,12345678
OK
```

ato

Function : Return to Auto-Connect mode.

Format

Settings

ato

Parameter

None

Example:

TinyCon_AT Instruction

```
ato
OK
```

ata

Function : Initiate auto connection using parameters set by AT+WAUTO and AT+NAUTO.

Format

Settings

ata

Parameter

None

Example:

```
ata
Joining Network...
Connected to New AP
DHCP: started
IP address: 192.168.2.168
CONNECTING TO REMOTE...
ESTABLISHED
OK
```

ata2

Function : Initiate auto connection when the adapter is already associated with an AP.

Format

Settings

ata2

Parameter

None

Example:

```
ata2
CONNECTING TO REMOTE...
ESTABLISHED
OK
```

atd

Function : Disconnect current network Auto-Connect session.

Format

Settings

atd

Parameter

None

Example:

TinyCon_AT Instruction

```
atd
NWCONN DIS
OK
```

atn

Function : Returns the current status of network Auto-Connect.

Format

Settings

atn

Parameter

None

Example:

```
atn
NO NWCONN
OK
```

Network control instruction set

AT instruction	Description
at+mac=?	Returns the current adapter MAC address.
at+ipset	Static network parameters overrides previous values.
at+dhcp=n	If 1, DHCP is enabled
at+dhcpsrvr=n	Prior to start the server, the adapter should be configured with a valid static IP address.
at+dnsset	Sets the DNS server addresses to be used.
at+dnslookup	Queries DNS server for address of hostname URL.

at+mac=?

Function : Returns the current adapter MAC address.

Format

Settings

at+mac=?

Parameter

None

Example:

```
at+mac=?
00:E0:4C:87:00:00
OK
```

at+ipset

Function : Static network parameters overrides previous values.

Format

Settings

at+ipset =<Local ip>,<Net Mask>,<Gateway>

TinyCon_AT Instruction

Parameter

Local ip	IP address :	e.g. 192.168.1.101
Net Mask	mask :	e.g. 255.255.255.0
Gateway	gateway:	e.g. 192.168.1.1

Example:

```
at+ipset=192.168.1.122,255.255.255.0,192.168.1.1
OK
```

at+dhcp

Function : If 1, DHCP is enabled

Format

Settings

at+dhcp=n

Parameter

n	0	disable dhcp client
	1	enable dhcp client

Example:

```
at+dhcp=0
OK
```

at+dhcpsrvr

Function : Prior to start the server, the adapter should be configured with a valid static IP address.

Format

Settings

at+dhcpsrvr=n

Parameter

n	0	disabled dhcp server
	1	enable dhcp server

Example:

```
at+ dhcpsrvr =0
OK
```

at+dnsset

Function : Sets the DNS server addresses to be used.

Format

Settings

at+dnsset=<DNS1 ip>

Parameter

DNS1 ip	DNS
---------	-----

Example:

```
at+dnsset=114.114.114.114
OK
```

at+dnslookup

Function : Queries DNS server for address of hostname URL.

Format

Settings

at+ dnslookup=<url>

Parameter

url domain

Example:

```
at+dnslookup=www.mtime.com
59.151.32.20
OK
```

Other instruction set

AT instruction	Description
at+dsv	if Enable = 1,device discover enable
at+webcfgen=n	if n = 1,web config enabled
ATEn	If 1, echo all inputs
at+fwup=ip,port	The adapter will enter the OTA upgrade mode.
at+reset	Reset the adapter.
at&f	Restore profile settings to factory default values.
at+ver=?	Return the current adapter firmware versions.
at+ping	PING the host provided. Optionally specify the count.
at&w	Save current profile to NV memory.
at&v	Output current and saved profile values in ASCII.

at+dsv

Function : if Enable = 1,device discover enable

Format

Settings

at+dsv= <Enable>[<Device Name>, <User ID>]

Parameter

Enable 0 disabled device discovery

1 enable device discovery

Device Name device name

User ID device ID

Example:

```
at+dsv=1,RLWLED,9527
OK
```

at+webcfgen=n

Function : if n = 1,web config enabled

Format

TinyCon_AT Instruction

Settings

at+webcfgen=n

Parameter

n 0 disabled web config
 1 enable web config

Example:

```
at+webcfgen=1
OK
```

ATEn

Function : If 1, echo all inputs

Format

Settings

ATEn

Parameter

n 0 disabled echo
 1 enable echo

Example:

```
ATE0
OK
```

at+fwup

Function : The adapter will enter the OTA upgrade mode.

Format

Settings

at+fwup=ip,port

Parameter

ip: The target OTA server address

port : The target server port

Example:

```
at+fwup=192.168.2.198,8082
OK
```

at+reset

Function : Reset the adapter.

Format

Settings

at+reset

Parameter

None

Example:

```
at+reset
OK
```

TinyCon_AT Instruction

at&f

Function : Restore profile settings to factory default values.

Format

Settings

at&f

Parameter

None

Example:

```
at&f
OK
```

at+ver=?

Function : Return the current adapter firmware versions.

Format

Settings

at+ver= ?

Parameter

None

Example:

```
at+ver=?
APP VERSION=2.1.0b1
WLAN VERSION=2.6a
APP TYPE=S2W
BUILD TIME=15:51:44
BUILD DATE=Mar 31 2015
OK
```

at+ping

Function : PING the host provided. Optionally specify the count.

Format

Settings

at+ping=<ip/hostname><n>

Parameter

ip/hostname Enter domain name or IP address

n The number of ping

Example:

```
at+ping=8.8.8.8
PING 8.8.8.8(8.8.8.8): 120(148) data bytes
72 bytes from 8.8.8.8: icmp_seq=1 time=349 ms
72 bytes from 8.8.8.8: icmp_seq=2 time=332 ms
72 bytes from 8.8.8.8: icmp_seq=3 time=330 ms
72 bytes from 8.8.8.8: icmp_seq=4 time=331 ms
--- 8.8.8.8 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time=1000 ms
rtt min=330 ms max=349 ms avg=333 ms
```

```
at+ping=8.8.8.8,10
PING 8.8.8.8(8.8.8.8): 120(148) data bytes
72 bytes from 8.8.8.8: icmp_seq=1 time=263 ms
72 bytes from 8.8.8.8: icmp_seq=2 time=331 ms
72 bytes from 8.8.8.8: icmp_seq=3 time=330 ms
72 bytes from 8.8.8.8: icmp_seq=4 time=331 ms
72 bytes from 8.8.8.8: icmp_seq=5 time=434 ms
72 bytes from 8.8.8.8: icmp_seq=6 time=322 ms
72 bytes from 8.8.8.8: icmp_seq=7 time=236 ms
72 bytes from 8.8.8.8: icmp_seq=8 time=330 ms
72 bytes from 8.8.8.8: icmp_seq=9 time=331 ms
72 bytes from 8.8.8.8: icmp_seq=10 time=330 ms
--- 8.8.8.8 ping statistics ---
10 packets transmitted, 10 received, 0% packet loss, time 3238 ms
OK
```

at&w

Function : Save current profile to NV memory.

Format

Settings

at&w

Parameter

None

Example:

```
at&w
OK
```

at&v

Function : Output current and saved profile values in ASCII.

Format

Settings

at&v

Parameter

None

Example:


```
at&v
E1 B=115200,8,N,1,NFC
+DHCP=1 +IPSET=192.168.1.122,255.255.255.0,192.168.1.1
+DNS1=114.114.114.114
+DHCPSTVR=1
+WAUTO=0,rlwap
+NAUTO=0,1,192.168.1.101,8086,8087
+DISCOVER=1,rlw,www.ralinwi.com
+WEBCFGEN=1
S0=1400 S1=500 S2=0
OK
```

This module is intended for OEM integrator. The OEM integrator is still responsible for the FCC compliance requirement of the end product which integrates this module.

20cm minimum distance has to be able to be maintained between the antenna and the users for the host this module is integrated into. Under such configuration, the FCC radiation exposure limits set forth for an population/uncontrolled environment can be satisfied.

Antenna used should be limited to same type with equal or lesser antenna gain.

This module is not for sale with antenna, it requires the OEM to complete the antenna. This device has been tested to operate with a external antenna having a maximum gain of 1dBi.

According to FCC Part 15 Subpart C Section 15.212, the radio elements of the modular transmitter must have their own power supply. However, due to there is no power supply for this WIFI Module, this module is granted as a Limited Modular Approval. When this WIFI Module is installed into the end product, a Class II Permissive Change or a New FCC ID submission is required to ensure the full compliance of FCC relevant requirements.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules.

Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

15.105 Information to the user.

(b) For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

The availability of some specific channels and/or operational frequency bands are country dependent and are firmware programmed at the factory to match the intended destination.

The firmware setting is not accessible by the end user.

The final end product must be labelled in a visible area with the following:

“Contains Transmitter Module 2ADGHCON2005A”