Data sheet: RS232 to WLan Board

RS232 to WLan Board RTL8711AF

Technical Informations:

This product is an embedded module based on the universal serial interface network standard, built-in TCP / IP protocol stack, enabling the user serial port, wireless network (wifi) interface between the conversions.

Through the RS232 to WLan Board module, the traditional serial devices do not need to change any configuration, data can be transmitted through the network.

Features:

- ✓ Low power consumption; Quick start;;network connect quickly
- ✓ Perfect support 802.11b/g/n
- ✓ Support all wifi encryption:WEP/WPA-TKIP/WPA-AES/WPA2-TKIP/ WPA2-AES
- ✓ No driver need serial port configuration
- ✓ Support STA/AP mode
- ✓ Support TCP Server/TCP Client/UDP Server/UDP Client
- ✓ Support DHCP DNS HTTP
- ✓ Support serial at command also network at command
- ✓ Support search module in LAN
- ✓ Support SmartLink function,use app to config the module connect the wireless router
- ✓ CE/FCC support,ROHS standard support

Module Parameters:

Parameter	Description / Values
Wireless	IEEE 802.11n、IEEE 802.11g、IEEE 802.11b
Wireless Rate	11n:up to 150Mbps 11g: up to 54Mbps 11b: up to 11Mbps
Channel	1-14
Frequency range	2.4-2.4835G
Send Power	15-18 DBM
Antenna	
Antenna Type	External antenna I-PEX connector
WiFi	
WiFi mode	Sta/soft ap
Encryption	64/128/WEP encryption WPA-PSK/WPA2-PSK、WPA/WPA2
RS232 to TCP / IP	
Max Serial rate	115200 bps
TCP max. connection	4
UDP max. connection	4

RS232 to WLan Board Buttons:

Button Number	Description
S1 (firmware update)	press > 7 seconds for firmware update over UART Interface
S2 (reset and factory default reset)	press < 3 seconds reset / reboot press > 5 seconds reset to factory default
S3 (transmit parameter)	press for query and transmit configuration parameters

RS232 to WLan Board Pinout:

U1 JTAG CONNECTOR

Pin Number	Description
1	GND
2	JTAG_CLK
3	n/c
4	JTAG_TMS
5	JTAG_TDO
6	JTAG_TDI
7	RST
8	JTAG_TRST
9	+3.3V_IF
10	+3.3V_IF

P2 UART CONNECTOR

Pin Number	Description
1	+3.3V
2	UART0 IN
3	UART0 OUT
4	GND

P3 UART CONNECTOR

Pin Number	Description
1	+3.3V
2	UART LOG IN
3	UART LOG OUT
4	GND

P4 UART CONNECTOR

Pin Number	Description
1	+3.3V
2	UART2 IN
3	UART2 OUT
4	GND

General Functions:

WIRELESS

RS232 to WLan Board can be configured STA or AP mode. There are two serial to wifi mode, serial to WIFI(STA mode) and serial to WiFi(SoftAp mode)

Note:

AP: The center of a wireless network node. Commonly a wireless router.

STA: Wireless node, a end device, like notebook, PDA are both STA device.

TRANSPARENT TRANSMISSION MODE

The RS232 to WLan Board supports serial transparent transmission mode. This has the advantage of plug and play serial, to reduce the user's complexity. Module in transparent transmission mode, the user only need to configure the necessary parameters. After power on, module automatically connect to the default wireless network and server.

Because in this mode, the module serial port always work in transparent transmission mode, so the user just use it as a virtual serial port.

In view words, the module is a wireless serial port, without any change, the user's equipment can be easily add wireless data transceiver.

Transparent transmission mode is fully compatible with the user's own software platform, reduce integration of wireless data transmission software development.

For enable Transparent Transmission Mode parameters as follows required:

- Wireless Parameters
  - Target AP's SSID and SSID'S length.
  - Target AP's encryption
  - Target AP's key and key's length
- TCP/UDP parameters
  - Network Protocol
  - Remoto IP
  - Port
- Serial Parameters
  - Baudrate
  - Byte / Data length
  - Checksum bit
  - Stop bit

AT COMMAND MODE

During start AT Command Mode is disabled. For enable AT Command Mode, for transferring AT Commands

press S3 button.

Factory default configuration:

During first start RS232 to WLan Board default configuration is STA Mode as follow:

Parameter	Value
SSID	AN-EGG_Module
Encryption Type	WPA2_AES
SSID Password	androegg123
IP Address	192.168.16.254
Gateway	192.168.16.254
DNS	192.168.16.254
Port	8080
Baudrate	115200
Byte Length	8
Parity	0 (none)
Stopbits	1

Windows Configuration Tool:

For Windows OS a configuration tool can be downloaded as Zip File here:

RS232 to WLan Board Windows Configuration Tool

Note:
To query or set module configuration parameter, S3 Button must be pressed!

1. Download RS232 to WLan Configuration Tool
2. unzip download file
3. execute unzipped HLK-RL05_Kit-EN.exe
4. connect RS232 to WLan Board to Host RS232 Interface / USB TTL Converter
5. turn on RS232 to WLan Board / connect 5V Power Supply to RS232 to WLan Board
6. start RS232 to WLan Board Configuration Tool
7. in RS232 to WLan Board **Configuration Tool select connected serial Port**
8. **press S3 button** on RS232 to WLan Board and **press Search button in Configuration tool**
9. for *query actual parameters* **press S3 button** on RS232 to WLan Board and **press Query button** in Configuration tool
10. *set individual parameters* by **pressing S3 button** on RS232 to WLan Board and **pressing Submit button** in Configuration tool

Parameters for Windows Configuration Tool are described in Section AT Commands.

Web Interface Configuration Tool:

The RS232 to WLan Board Firmware got an integrated Web Interface for SoftAP Configuration.

1. After connecting RS232 to WLan Board to Power a new SSID AN-EGG_Module appears. For reaching RS232 to WLan Board Web Interface a SSID Login is required, based on parameters as follows:

   Default SSID Login Parameters:
   SSID: **AN-EGG_Module**
   SSID Password: **androegg123**

   Client network setting should be based on DHCP. For manual Client network settings network parameters as follows should be configured:

2. After connection to SSID AN-EGG_Module is established, RS232 to WLan Board Web Interface is reachable over web browser http://192.168.16.254 .

3. For creating an individual SoftAP change
   SoftAP SSID
   Security Type
   Password

Channel
based on new SSID parameters. Soon as configuration is submitted RS232 to WLan Board will reboot and restart new Network.

4. For factory default reset press S2 for 5 seconds

Serial Configuration

CONTROL CHARACTER

AT Commands are based on control characters as end of line signal also executing command line. The RS232 to WLan Board control character is a CR (carriage return). Usual Terminal Programs are use ↵ (Enter Key) for setting end of line command based on formats as follows:

CR Carriage Return Type / Format	Value
Decimal	13
Hexadecimal	0x0D
Keyboard Shortcut	^M (ctrl + M)
C	\r
ISO	CR

PORT SETTINGS

The RS232 to WLan Board RS232 Interface is based on UART (Universal Asynchronous Receiver/ Transmitter serial communication. Therefore serial communication must be configured as follows:

Parameter	Value
Baudrate	115200 b/s
Parity	none
Byte length	8
Stopbits	1

AT Commands

AT COMMAND SYNTAX

AT Commands are based on 2 types

- query actual parameter
- set parameter

In general every command is based on

- **at+COMMAND**

To query actual parameter

- **at+COMMAND=?**

will return actual value of requested parameter

To set a parameter

- **at+COMMAND=value**

will return OK or if command fail ERROR

Every command is case sensitiv!

AT COMMAND EXAMPLES:

Function	at command	Return
query actual UART configuration	**at+SUAR=?**	115200,8,1,none
set UART	**at+SUAR=57600,8,1,none**	OK

Note:
To query or set module configuration parameter, S3 Button must be pressed!

QUERY RS232 TO WLAN MODULE

Function	at command	Return
query Module	**at+SECH=1**	OK

SET SMART CONFIGURATION MODE

Function	at command	Return
enable smart configuration mode	**at+SICF=1**	OK
disable smart configuration mode	**at+SICF=0**	OK

FIRMWARE VERSION

Function	at command	Return
query Version	**at+VERS=?**	actual Firmware Version

SYSTEM REBOOT

Function	at command	Return
reboot module	**at+REBT=1**	OK, restart module

STATION WIFI NETWORK MODE

Function	at command	Return	Value
query Station Network Mode	**at+SSTA=?**	ssid, pwd	Station SSID Name Station SSID Password
		Description	
set Station Network Mode	**at+SSTA=SSID,pwd**	Station SSID Name Station SSID Password	

ACCESS POINT WIFI NETWORK MODE

Function	at command	Return	Value
query Access Point Network Mode	**at+STAP=?**	AP ssid, AP pwd, ssid Channel	Access Point SSID Name Access Point SSID Password Access Point SSID Channel
		Description	
set Access Point Network Mode	**at+STAP=SSID,pwd, channel**	Access Point SSID Name Access Point SSID Password Access Point SSID Channel	

ACCESS POINT AND STATION WIFI NETWORK MODE

Function	at command	Return	Value
query Access Point Station Network Mode	**at+STSA=?**	AP ssid, AP pwd, AP ssid Channel, STA SSID, STA SSID pwd	Access Point SSID Name Access Point SSID Password Access Point SSID Channel Station SSID Station SSID Password
		Description	
set Access Point Network Mode	**at+STSA=APSSID, APpwd, APchannel, STASSID,STASSIDpwd**	Access Point SSID Name Access Point SSID Password Access Point SSID Channel Station SSID Station SSID Password	

TCP SERVER TCP CLIENT CONFIGURATION

Function	at command	Description
enable TCP Client Mode	**at+SNMO=TCP_CLIENT,ip,port**	TCP_CLIENT Module as TCP Client ip TCP Client IP Address port TCP Client local port
enable TCP Server Mode	**at+SNMO=TCP_SERVER,ip,port**	TCP_Server Module as TCP Server ip TCP Server IP Address port TCP Server local port

UDP SERVER UDP CLIENT CONFIGURATION

Function	at command	Description
enable UDP Client Mode	**at+SNMO=UDP_CLIENT,ip,port**	UDP_CLIENT Module as UDP Client ip UDP Client IP Address port UDP Client local port
enable UDP Server Mode	**at+SNMO=UDP_SERVER,ip,port**	UDP_Server Module as UDP Server ip UDP Server IP Address port UDP Server local port

IP ADDRESS NETMASK CONFIGURATION

Function	at command	Return	Value
query actual IP Configuration	**at+STAP=?**	IP address, Netmask	IPv4 Address Netmask
		Description	
set IP Configuration	**at+STAP=ip,netmask**	IPv4 Address Netmask	

UART INTERFACE CONFIGURATION

Function	at command	Return	Value
query actual UART Configuration	**at+SUAR=?**	baudrate,byte length,stopbits, parity	baudrate length of byte stopbits parity
		Description	
set UART Configuration	**at+SUAR=baudrate,byte length,stopbits,parity**	baudrate 9600 - 115200 length of byte stopbits 0,1 parity none **or** odd **or** even	