Model: UT-9061A

(Product Name: WIFI to RS-232/485/422 converter)

Datasheet

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1.Overview

UT-9061A is a wireless WIFI converter that can achieve the conversion between user RS-232, RS-485, RS-422, and wireless network (WIFI) interfaces. Data conversion adopts isolation technology, effectively ensuring the reliability of the product. There are multiple conversion modes to choose from and support AT command + WEB interface settings, making it easy for user devices to connect wired and wireless networks. The product has a certain level of surge protection and is widely used in data communication and industrial automation fields.

2. Technical Parameters

- Operating voltage: DC 12-36V
- Operating current: 200mA @ 12V max
- Operating humidity: 5% ~ 95% (non-condensing)
- Operating temperature: -40 ~ 85℃
- Storage temperature: -40 ~ 85℃
- Storage humidity: 5% ~ 95% (non-condensing)
- Surge protection: Power supply, differential mode 1KV, common mode 2KV (1.2/50us) Signal, RS-485/422: differential mode 1KV, common mode 2KV (10/700us) RS-232: 600W ESD protection: Contact 6kV, air 8kV
- Communication interface: RS-232/RS-485/RS-422
- Communication rate: 300-921600bps
- Operation modes: full-duplex asynchronous, half-duplex asynchronous
- Antenna impedance: 50Ω (rubber rod antenna)
- Dimensions: 97x65x22mm±1 (excluding antenna)
- Supports 802.11b/g/n wireless standards
- Supports wireless operating in STA/AP/AP+STA modes
- Supports heartbeat signals and WIFI connection indicators
- Provides Web configuration page + AT command.

3. Indicator definitions

Name	Color	Function
PWR	Red	Always on when power supply is normal.
nLink	Green	Wireless connection indicator (always on when a device is connected).
nReady	Green	Working status indicator (always on means startup success).
TXD	Green	Serial port transmission indicator (flashing when data is being sent).
RXD	Yellow	Serial port receiving indicator (flashing when data is being received).

4. Button

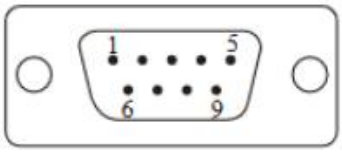
1. Reset: Restart button

Reload: Restore factory settings button (hold for 3 seconds, then release)

5. Terminal pin

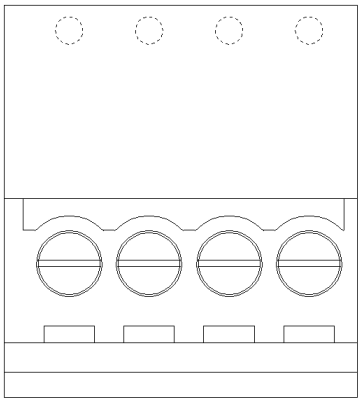
1. RS-232 pin definition

DB9 male



No.	Signal	Description
2	RXD	RS-232 Receive
3	TXD	RS-232 Send
5	GND	Signal Ground
7	RTS	Request to Send (RTS)
8	CTS	Clear to Send (CTS)
1、4、6、9	NC	Unconnected (Floating)

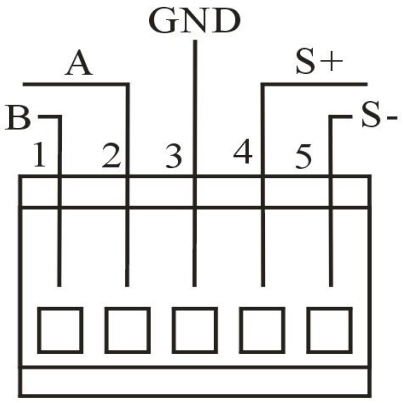
2. RS-485/422 Pin map：



No.	Signal	Description
1	T/R+	485+、422 Send+
2	T/R-	485-、422 Send-
3	RXD+	422 Receive+
4	RXD-	422 Receive-

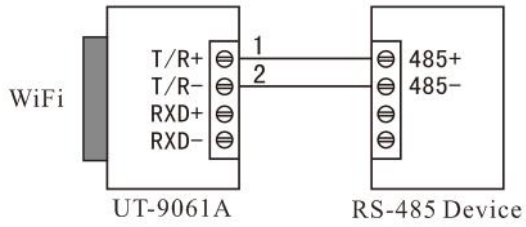
2. 5.08-5P terminal: RS-485 output signal and coaxial cable terminal pin assignment

5 position binding posts	RS-485 signal and coax signal
1	B (1 port 485B)
2	A (1 port 485A)
3	GND (RS-485)
4	S+
5	S-

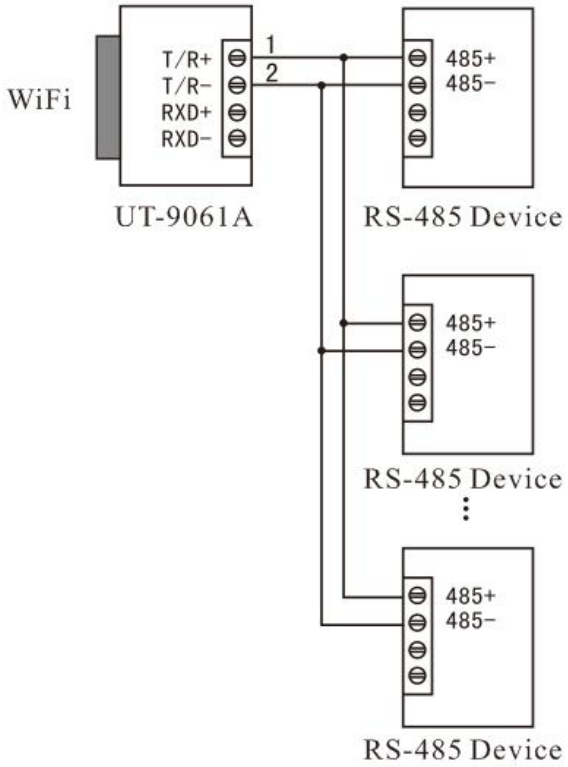


6. Communication connection diagram

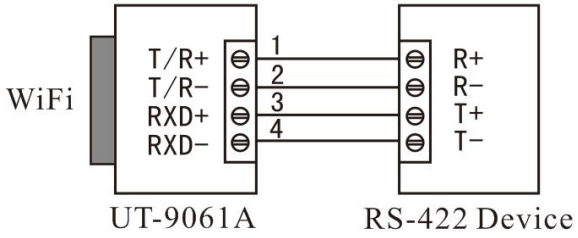
1. RS-485 point-to-point/two-wire half-duplex



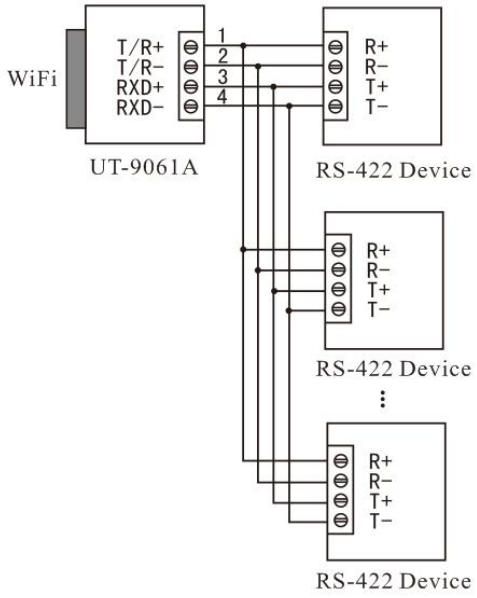
2. RS-485 point-to-multipoint/two-wire half-duplex



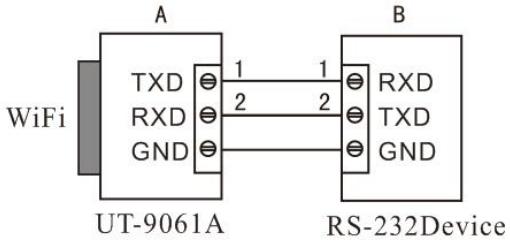
3. RS-422 point-to-point/four-wire full-duplex



4. RS-422 point-to-multipoint/four-wire full-duplex



5. UT-9061A RS-232 interface communication



7. Wireless specification parameters

Functional items	Functional description
Wireless standard	802.11 b/g/n
Frequency range	2412~2484MHz
Output power	72.2Mbps PA output power: 15dBm (Max) PA output power in 11b mode: 20.5dBm (Max)
Sensitivity	DSSS，1Mbps：-98 dBm
	CCK，11Mbps：-91 dBm
	DFDM，6Mbps：-93 dBm
	DFDM，54Mbps：-75 dBm
	HT20，MCS0：-93 dBm
	HT20，MCS7：-73 dBm
	HT40，MCS0：-90 dBm
	HT40，MCS7：-70 dBm
	MCS32：-89 dBm

8. Settings and usage

By default, the AP interface SSID of UT-9061A is UT-9061A, and the IP address, username, and password are as follows:

UT-9061A Network Default Settings Table

Parameters	Default settings
SSID	UT-9061A
IP address	192.168.0.125
Subnet mask	255.255.255.0
Username	admin
Password	admin

9. Quick Start Guide

(1) Turn on the power supply, and the red power indicator lights up to indicate that the device is powered normally.

(2) After powering on, wait for one minute for the system to initialize. The WiFi nReady green light will turn on, and you can use a wireless network card computer or mobile phone to search for nearby wireless networks. Find the network named UT-9061A and connect to it via wireless network. When connected, the nLink LED will

be constantly on.

(3) Enter 192.168.0.125 in your web browser and press enter. In the pop-up login window, enter admin, as shown in Figure 1.

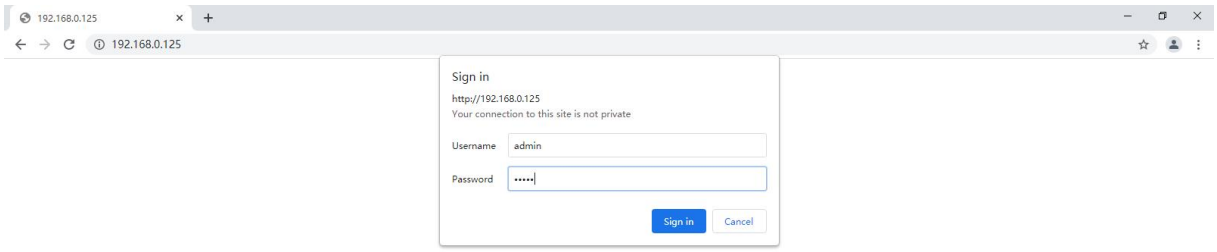


Figure 1. Login interface

(4) The interface after logging in is shown in Figure 2.

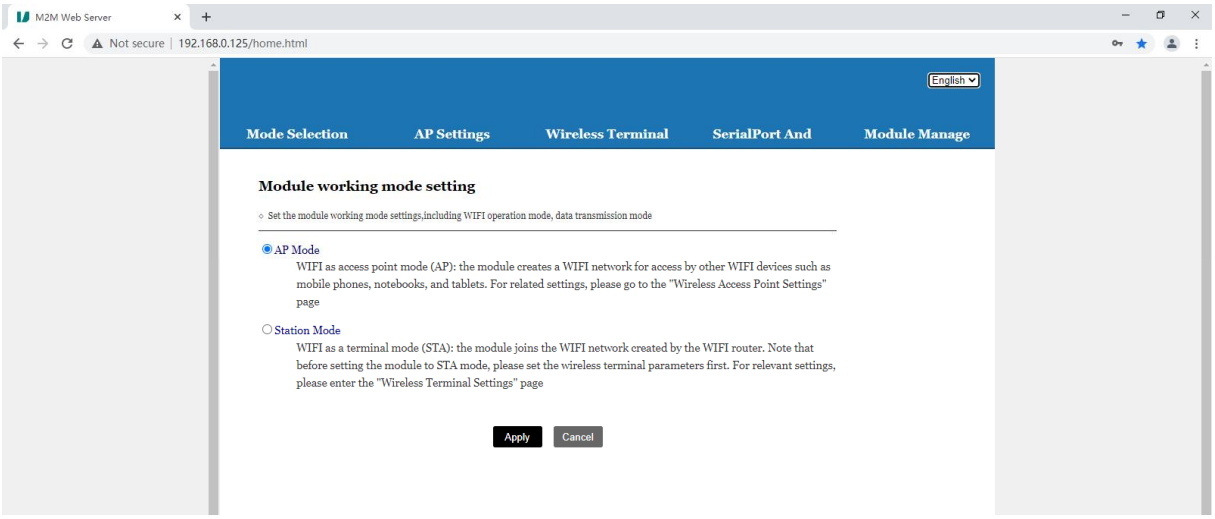


Figure 2. Configuration interface

◎ AP mode: The WiFi is used as an access point, which means that the device creates a WiFi network for other WiFi devices such as smartphones and laptops to connect to.

◎ Station mode: The device joins the WiFi network created by the WiFi router. If you need to use this mode, you need to set the wireless terminal parameters before setting the STA mode on the device.

(5) Wireless access point settings. UT-9061A supports the AP interface, which makes it easy to manage the module and form a self-organizing network. In this option, you can configure the wireless network parameters of the device, such as network mode, network name, wireless channel, WiFi key, and IP address, as shown in Figure 3.

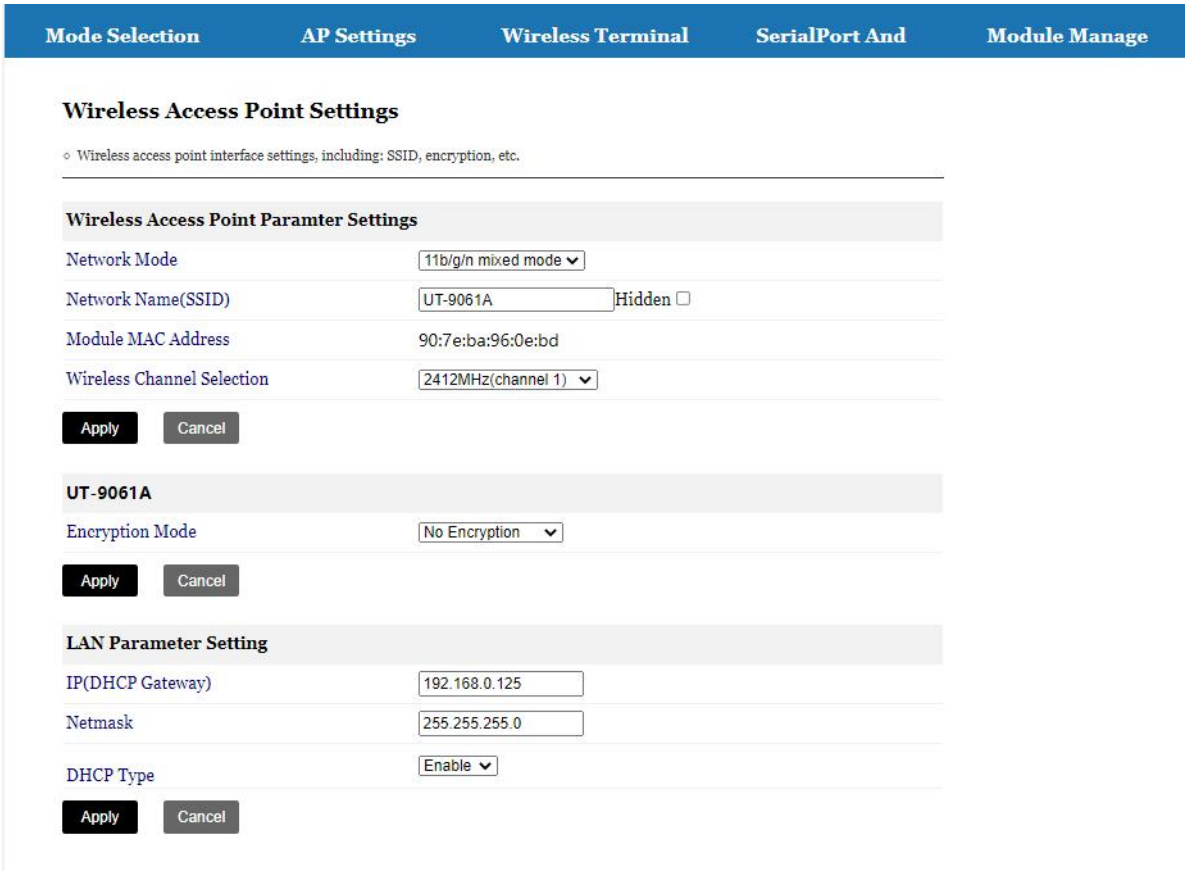


Figure 3. Wireless access point settings

(6) Wireless terminal settings. The wireless terminal interface, also known as the STA interface, allows UT-9061A to connect to other wireless networks through the STA interface. This option is used to set the parameters and access mode of the wireless device to be connected, including the network name and corresponding password to be accessed, as shown in Figure 4.

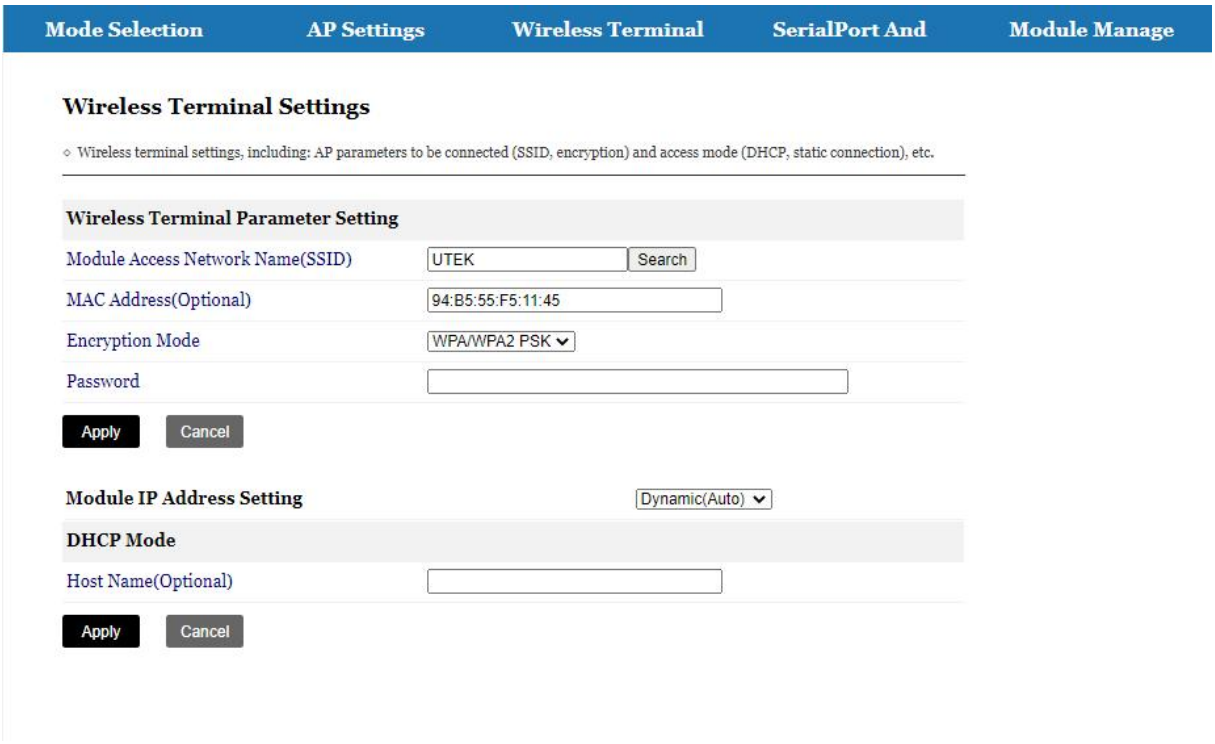


Figure 4. Wireless terminal settings

(7) Serial port and communication protocol. In this option, the parameters of the WiFi-to-serial port can be set, as shown in Figure 5.

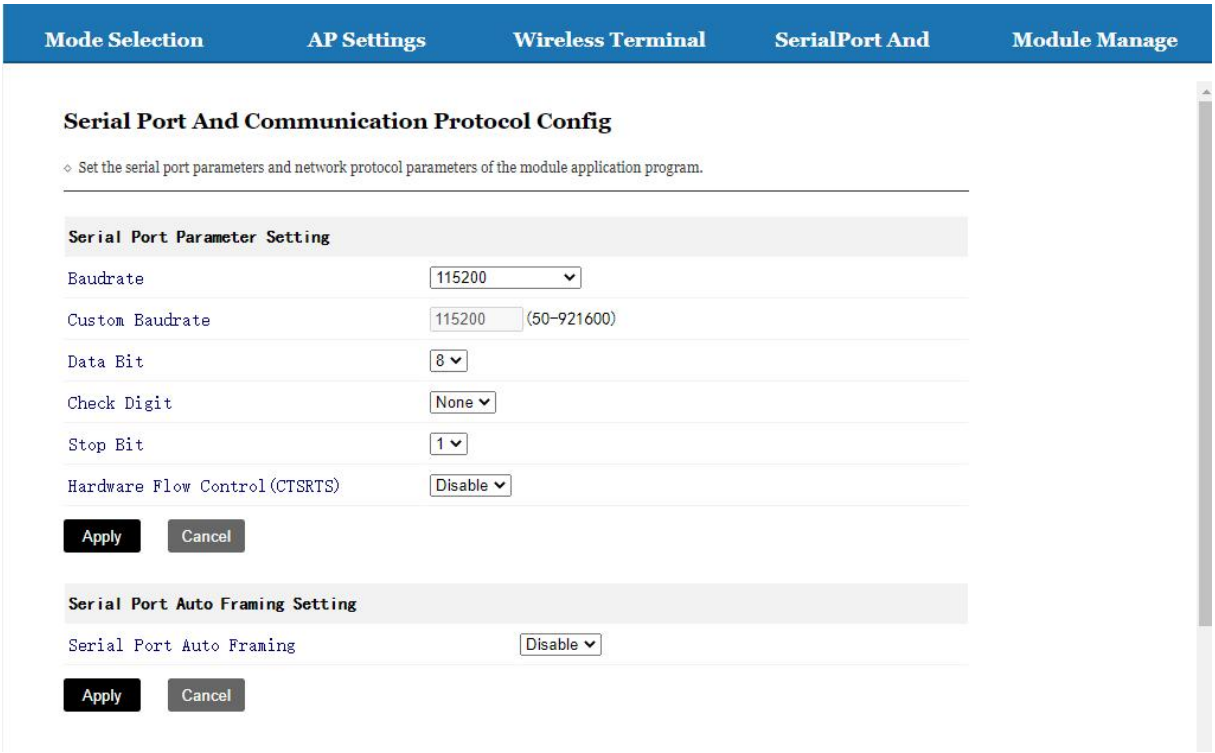


Figure 5. Serial port and communication protocol

(9) Module management. This option includes administrator settings, module restart, restore factory

settings, and software upgrade functions, as shown in Figure 6.

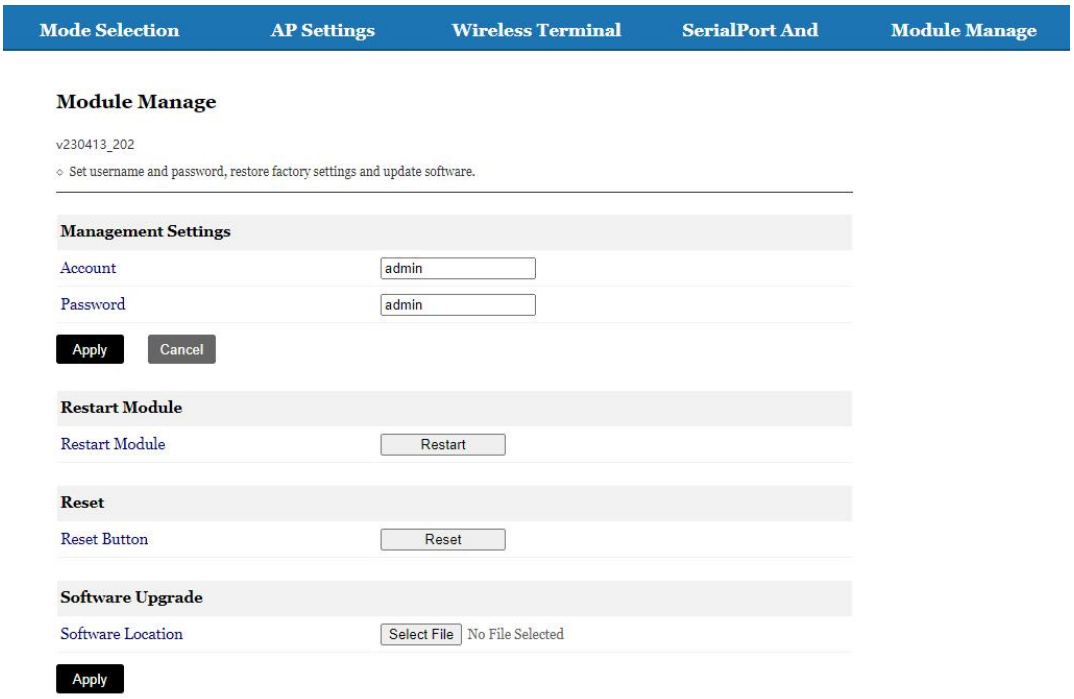


Figure 6 Module Management

- Manager Settings: You can set the account and password for the login interface here.
- Restart Module: You can restart the device here.
- Restore Factory Settings: You can restore the device to its factory settings here.
- Software Upgrade: You can upgrade the device's firmware here.

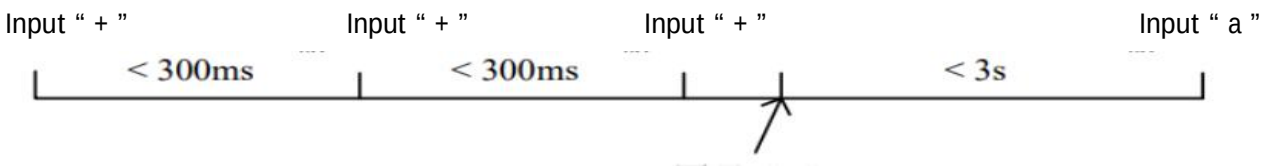
10. AT Command Instructions

UT-9061A module has two operating modes. By default (when powered on), the device operates in transparent mode, and users can switch the module to command mode through serial port commands.

In AT command mode, users can use AT commands via the serial port to configure the module. To switch from transparent mode to command mode, there are two steps:

(1) Enter "+++" into the device's serial port using a debugging tool. The module will respond with a confirmation code "a".

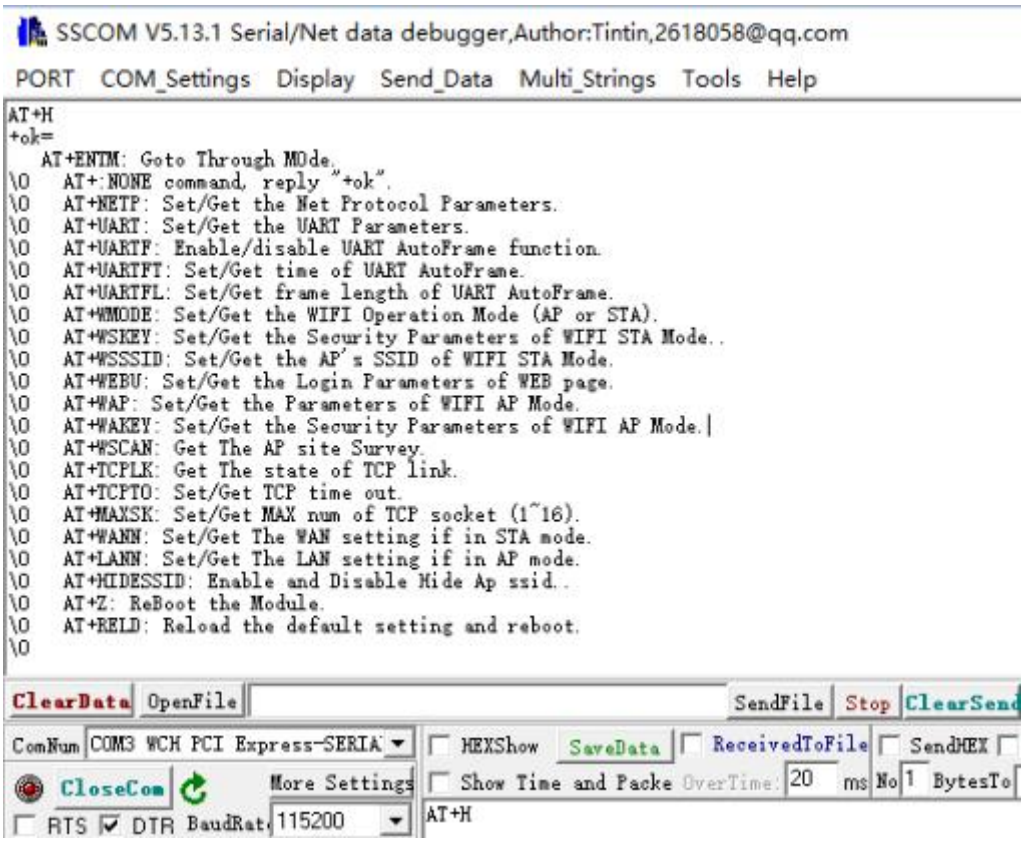
(2) Upon receiving the confirmation code "a" from the device, immediately send "a" back to the device. When the module receives the confirmation code, it will respond with "+ok", indicating that the device has entered command mode. Note: Entering "+++" and "a" must be completed within a certain time frame to prevent accidentally entering command mode during normal operation. Specific requirements are as follows:



Echo "a" In command mode, users can use AT commands via the serial port to configure or query the device, restart it, and return to transparent mode.

AT Command

Set AT commands can be inputted through serial debugging tools such as Hyper Terminal or through programming. As shown in the figure below, AT+H is a help command that lists all available commands and their descriptions when entered in a serial debugging tool.



Command Format

AT+ commands use ASCII-based command lines, and the format of the command is as follows: Format Explanation:

< >: Represents a required section.

[ ]: Represents an optional section.

Command Message

AT+<CMD>[OP][para-1, para-2, para-3, ..., para-n]<CR>

AT+: Command message prefix. CMD: Instruction string.

[OP]: Instruction operator, specifying whether it is a parameter setting or a query.

"=": Indicates parameter setting.

"none": Indicates query.

[para-n]: Input during parameter setting. Not needed for queries.

<CR>: End symbol; carriage return, ASCII code 0x0a or 0x0d.

<Explanation>:

During echo, the end symbol is automatically converted to 0x0a0d. When entering the command, the "AT+<CMD>" characters are automatically echoed in uppercase, while the parameter part remains unchanged.

Response Message: +<RSP>[OP][para-1, para-2, para-3, ..., para-n]<CR><LF><CR><LF>

+: Response message prefix.

RSP: Response string, including:

Ok: Indicates success.

ERR: Indicates failure.

[op]: =

[para-n]: Returns parameters when querying or error codes when there are errors.

<CR>: ASCII code 0x0d.

<LF>: ASCII code 0x0a.

Error Code

Error Code List	
Error Code	Description
-1	Invalid query command
-2	Invalid setting command
-4	Parameter error

Instruction	Description
AT+	Empty instruction
AT+ENTM	Enter transparent mode
AT+NETP	Set/query network protocol parameters
AT+UART	Set/query serial port parameters
AT+UARTF	Enable/disable automatic framing function
AT+UARTFT	Set/query automatic framing trigger time
AT+UARTFL	Set/query automatic framing trigger length
AT+WMODE	Query/set WIFI operation mode (AP or STA)
AT+WSKEY	Query/set encryption parameters in WIFI STA mode
AT+WSSSID	Query/set AP SSID in WIFI STA mode
AT+WEBU	Query/set login parameters for WEB page (username, password)
AT+WAP	Query/set parameters in WIFI AP mode
AT+WAKEY	Query/set encryption parameters in WIFI AP mode
AT+TCPLK	Check if TCP connection is established
AT+TCPTO	Query/set TCP timeout period
AT+MAXSK	Query/set maximum TCP connection count
AT+WANN	Query/set WAN settings (only valid in STA mode)
AT+LANN	Query/set LAN settings (only valid in AP mode)
AT+HIDESSID	Query/set whether to hide device AP's SSID
AT+Z	Restart device
AT+RELD	Restore factory settings
AT+H	Help command

Instruction Description

(1) AT+ENTM

Function: Enter transparent mode.

Format: AT+ENTM<CR> +ok<CR><LF><CR><LF>

After executing this command successfully, the module switches from command mode to transparent mode. To return to command mode, you can enter "+++" and the confirmation code.

(2) AT+NETP

Function: Set/query network protocol parameters.

Format:

Query: AT+NETP<CR> +ok=<protocol, cs, port, IP><CR><LF><CR><LF> Set: AT+NETP=<protocol, cs, port, IP><CR> +ok<CR><LF><CR><LF>

Parameters:

Protocol: Protocol type, including

TCP

UDP

CS: Server side or client side, including

SERVER

CLIENT. Port: Port number of the protocol, a decimal number less than 65535.

IP: When the module is a TCP client or UDP, it represents the address of the server (you can enter the IP address of the server or the server domain name).

After restarting the module, the parameters set will take effect.

(3) AT+UART

Function: Set/query serial port parameters.

Format:

Query: AT+UART<CR>

+ok=<baudrate, data_bits, stop_bit, parity, flowctrl><CR><LF><CR><LF>

Set: AT+UART=<baudrate, data_bits, stop_bit, parity><CR>

+ok<CR><LF><CR><LF>

Parameters:

Baudrate: Baud rate, 300-921600.

Data_bits: Data bits, 5,6,7,8.

Stop_bit: Stop bit, 1 or 2.

Parity: Parity bit, NONE for no parity; EVEN for even parity; ODD for odd parity.

Flowctrl: Hardware flow control, NFC for no flow control; FC for flow control.

(4) AT+UARTF

Function: Enable/disable automatic framing function.

Format:

Query: AT+UARTF<CR>

+ok=<para><CR><LF><CR><LF>

Set: AT+UARTF=<para><CR>

+ok<CR><LF><CR><LF>

Parameters:

Para: Can be disabled or enabled, indicating whether to disable or enable automatic framing function.

(5) AT+UARTFT

Function: Set/query automatic framing trigger time.

Format:

Query: AT+UARTFT<CR>

+ok=<time><CR><LF><CR><LF>

Set: AT+UARTF=<time><CR>

+ok<CR><LF><CR><LF>

Parameters:

Time: Automatic framing trigger time in milliseconds. Valid range: 100-10000.

(6) AT+UARTFL

Function: Set/query automatic framing trigger length.

Format:

Query: AT+UARTFL<CR>

+ok=<len><CR><LF><CR><LF>

Set: AT+UARTF=<len><CR>

+ok<CR><LF><CR><LF>

Parameters:

Len: Automatic framing trigger length, measured in bytes. Valid range: 16-4096.

(7) AT+WMODE

Function: Set/query WIFI operation mode (AP or STA).

Format:

Query: AT+WMODE<CR>

+ok=<mode><CR><LF><CR><LF>

Set: AT+WMODE=<mode><CR>

+ok<CR><LF><CR><LF>

Parameters:

Mode: WIFI operating mode, including AP and STA.

After restarting the module, the parameters set will take effect.

(8) AT+WSKEY

Function: Set/query authentication mode and encryption password in WIFI STA mode.

Format:

Query: AT+WSKEY<CR>

+ok=<auth, key><CR><LF><CR><LF>

Set: AT+WSKEY=<auth, key><CR>

+ok<CR><LF><CR><LF>

Parameters:

Auth: Authentication mode, including OPEN, WPAPSK, WPA2PSK, WPA_WPA2_PSK.

Key: Password.

This parameter is only valid in STA mode, and the parameters set will take effect after restarting the device. However, these parameters can also be set in AP mode.

(9) AT+WSSSID

Function: Set/query AP SSID in WIFI STA mode.

Format:

Query: AT+WSSSID<CR>

+ok=<ap, s ssid><CR><LF><CR><LF>

Set: AT+WSSSID=<ap, s ssid><CR>

+ok<CR><LF><CR><LF>

Parameters:

Ap, s ssid: The SSID of the AP.

This parameter is only valid in STA mode, and the parameters set will take effect after restarting the module. However, these parameters can also be set in AP mode.

(10) AT+WEBU

Function: Set/query login parameters (username, password) for the WEB page.

Format:

Query: AT+WEBU<CR>

+ok=<usr, password><CR><LF><CR><LF>

Set: AT+WEBU=<usr, password><CR>

+ok<CR><LF><CR><LF>

Parameters:

Usr: Username when accessing the WEB page.

Password: Password when accessing the WEB page.

(11) AT+WAP

Function: Set/query parameters in WIFI AP mode.

Format:

Query: AT+WAP<CR>

+ok=<wifi_mode, ssid, channel><CR><LF><CR><LF>

Set: AT+WAP=<wifi_mode, ssid, channel><CR>

+ok<CR><LF><CR><LF>

Parameters:

Wifi_mode: WIFI mode, including 11bg, 11b, 11g, 11bgn, and 11n.

Ssid: SSID in AP mode.

Channel: WIFI channel selection, AUTO or CH1-CH11.

This parameter is only valid in AP mode, and the parameters set will take effect after restarting the device.

(12) AT+WAKEY

Function: Set/query authentication mode and encryption password in WIFI AP mode.

Format:

Query: AT+WAKEY<CR>

+ok=<auth, key><CR><LF><CR><LF>

Set: AT+WAKEY=<auth, key><CR>

+ok<CR><LF><CR><LF>

Parameters:

Auth: Authentication mode, including OPEN, WPAPSK, WPA2PSK, WPA_WPA2_PSK.

Key: Password.

This parameter is only valid in AP mode, and the parameters set will take effect after restarting the device. However, these parameters can also be set in STA mode.

(13) AT+TCPLK

Function: Check if TCP connection is established.

Format:

Query: AT+TCPLK<CR>

+ok=<sta><CR><LF><CR><LF>

Parameters:

Sta: Return whether a TCP connection has been established, on indicating that a connection has been established, off indicating that no connection has been established.

(14) AT+TCPTO

Function: Set/query TCP timeout period.

Format:

Query: AT+TCPTO<CR>

+ok=<time><CR><LF><CR><LF>

Set: AT+TCPTO=<time><CR>

+ok<CR><LF><CR><LF>

Parameters:

Time: TCP timeout period, 0 ⩽ Time ⩽ 600, default value is 300.

(15) AT+MAXSK

Function: Set/query maximum number of TCP connections.

Format:

Query: AT+MAXSK<CR>

+ok=<num><CR><LF><CR><LF>

Set: AT+MAXSK=<num><CR>

+ok<CR><LF><CR><LF>

Parameters:

Num: Maximum number of TCP connections, ranging from 1 to 32. The default value is 32.

When set as a TCP server, the module can support up to 32 TCP connections.

(16) AT+WANN

Function: Set/query WAN settings, only valid in STA mode.

Format:

Query: AT+WANN<CR>

+ok=<mode, address, mask, gateway><CR><LF><CR><LF>

Set: AT+WANN=<mode, address, mask, gateway><CR>

+ok<CR><LF><CR><LF>

Parameters:

Mode: WAN IP mode, such as Static for static IP and DHCP for dynamic IP.

Address: WAN IP address.

Mask: WAN subnet mask.

Gateway: WAN gateway address.

(17) AT+LANN

Function: Set/query LAN settings, only valid in AP mode.

Format:

Query: AT+LANN<CR>

+ok=<address, mask><CR><LF><CR><LF>

Set: AT+LANN=<address, mask><CR>

+ok<CR><LF><CR><LF>

Parameters:

Address: LAN IP address.

Mask: LAN subnet mask.

(18) AT+HIDESSID

Function: Set/query whether to hide the device's AP SSID.

Format:

Query: AT+HIDESSID<CR>

+ok=<sta><CR><LF><CR><LF>

Set: AT+HIDESSID=<sta><CR>

+ok<CR><LF><CR><LF>

Parameters:

In query mode, sta can return whether the device's AP SSID is hidden or not, such as ON for not hiding the SSID and OFF for hiding the SSID.

In set mode, OFF is used to unhide the SSID and ON is used to hide the SSID.

(19) AT+Z

Function: Restart the device.

Format:

AT+Z<CR>

The device will restart.

(20) AT+RELD

Function: Restore factory settings.

Format:

AT+RELD<CR>

+ok=rebooting...<CR><LF><CR><LF>

This command restores the factory settings and then automatically restarts.

(21) AT+H

Function: Help command.

Format:

AT+H<CR>

+ok=<commod help><CR><LF><CR><LF>

Parameters:

Commod help: Command line description.

11. FAQ

Common Issues:	Solutions
Power indicator is not on.	1. Check if the power input is reversed. 2. Check if the input voltage is within the working range of the device.
Serial communication failure.	Check whether the wiring is correct or reversed, and whether the baud rate and other parameters are correct.
Forgot username and password.	Use the Reload button on the device, hold down for more than 3 seconds and release, and restore the factory settings.
Unable to log in through the Web page.	Check if the computer or phone is connected to the H9061A wireless network. Try logging in after restoring the factory settings.
Unable to obtain IP address.	Check whether the local system has enabled the DHCP server (enabled by default). Try restoring the factory settings using the Reload button on the device Set the PC or phone to use static IP.