

iWM021 User Manual

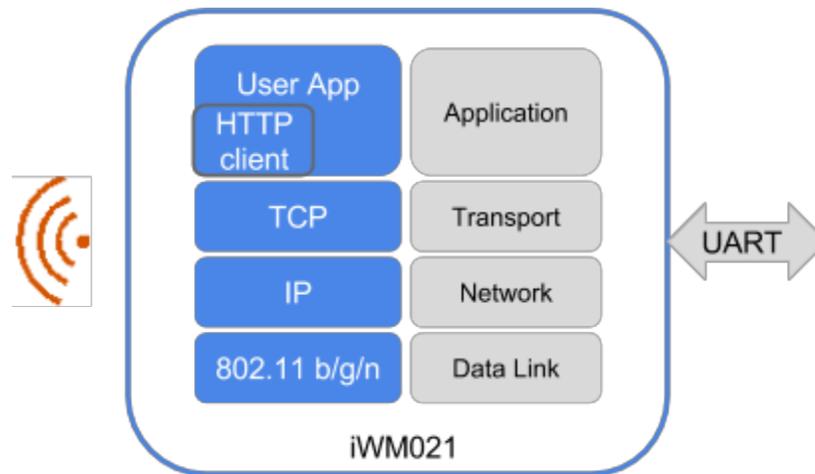
iWM021 is a ready to use serial WiFi module with embedded TCP/IP stack. All you have to do is to connect your system/device/asset to iWM021 through UART and manage your connection through provided web user interface. This manual is to help user to figure out what iWM021 can do and how to manage your connection.

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Overview



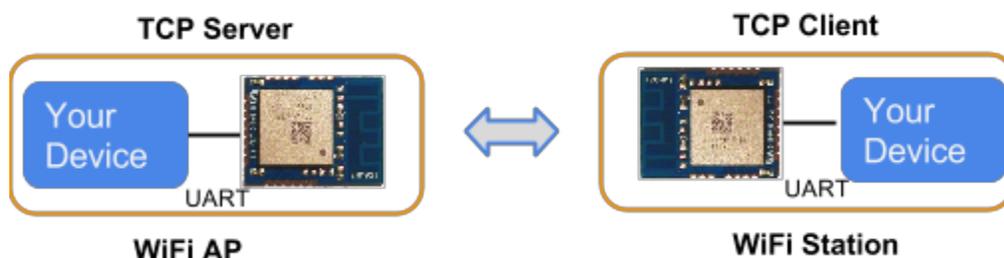
Above is the structure diagram of iWM021. For wireless connection, iWM021 provides three modes -- Access Point mode(AP mode), Station mode, and Dual mode. In AP mode, it acts like a simple AP supporting DHCP. In Station mode, it is a client device waiting to join other AP. **Please note that iWM021 only support 20MHz channel bandwidth. Please make sure the channel bandwidth of your AP is set as 20MHz.** In Dual mode, it is an AP and also a client device.

In application, one can set iWM021 as a TCP server, TCP client, or HTTP client for his needs.

Connection Examples

Direct Link

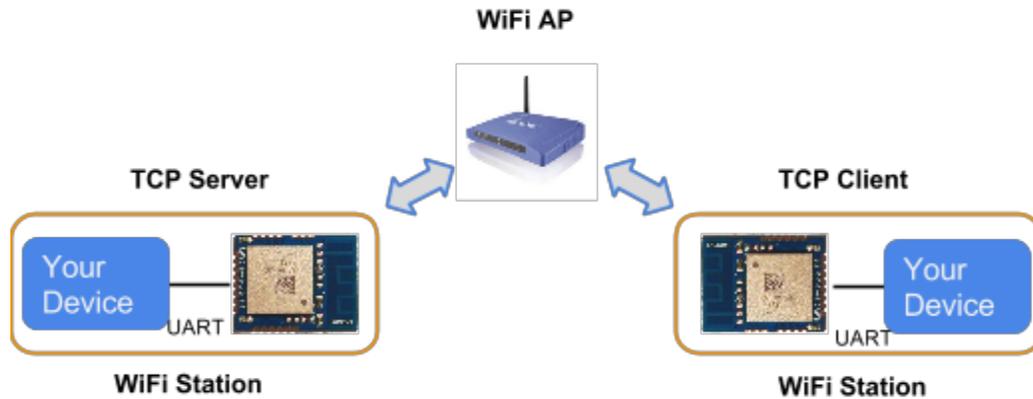
At wireless layer, iWM021 could be WiFi AP or WiFi Station. At application layer, it could be TCP server or TCP client. When iWM021 plays as master role(WiFi AP or TCP server), up to 5 clients(WiFi Station or TCP client) can connect to it.



Local Network

In this example, iWM021s are WiFi Stations connecting to a general WiFi AP. One is a TCP server

and the other is a TCP client. The TCP server or client is not necessary to be an iWM021. It could be another PC/laptop/tablet/smartphone or any device with TCP ability. When iWM021 is a TCP server, it could support up to 5 TCP clients.



Input and Output

UART

One UART with hardware flow control is the main interface for user application. It is in 0~3.3V level. An external transceiver logic is necessary if it is connected to RS232/RS485/RS422.

Multi-function button

One multi-function button is used to act WPS, reset to default settings, and FW upgrade function.

Below is how it functions.

Function	Mode	Trigger Condition
WPS	Station or Dual	short press for over 1sec
Reset to default settings	Any	long press for over 5 sec
FW upgrade	Boot up	press then power on, keep pressing till LEDs flash in turn

WPS

When iWM021 is in Station or Dual mode, you may use WPS to connect it to your Access Point. First press the WPS button on your Access Point, when it ready, then press the WPS button on the iWM021 device(the WPS button need to be pressed for over 1 sec) to join it.

Reset to Default

In case you need to go back to the original settings, keep pressing the reset/default button in your device for over 5 secs no matter in which mode the device is. The status LED and active LED will be both turned off and when you release the button, the iWM021 will reboot to its default settings(AP mode).

Firmware Upgrade

Check *AP002_iWM021_Firmware_Upgrade* for details.

GPOs

There are two GPOs(general purpose outputs) could be used as on/off control signals. This could be managed through the web user interface. These signals are in 0-3.3V level and with 4mA driving strength. External driving logic is necessary in higher driving application.

IDs

There are two ID inputs for identifying different serial interface.

	RS232	RS485/422	TBD	TBD
ID0	1	0	1	0
ID1	1	1	0	0

LEDs

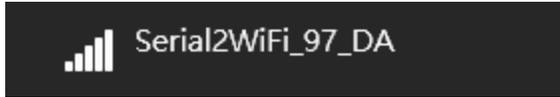
There are two LEDs to help to indicate current status. One is status and the other is activity. The status LED indicates the device ready or not and the activity LED indicates the communication through WiFi is happening. Below is the detail behavior in specific mode.

	LEDs	Note
*power on to ready	status: off->on->off->off ->on activity:off->on->off->flash->off	
press WPS	status: flash, activity: off, then follow *	WPS button need to be pressed over 1 sec
reset to default settings	status and activity both off then follow *	reset/default button need to be pressed for over 5 sec
FW upgrade	status: flash->flash in turn->off	keep press the button until the LEDs

	activity: off ->flash in turn->on	flash in turn
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Web User Interface

Create Connection



To manage the iWM021, a web user interface(UI) is provided. iWM021 is in Access Point(AP) mode defaultly. It's name is just like above figure with part of the mac address. You can connect it by using the WiFi connection of your NB/PC/Mac/Tablet/Smartphone(In the WiFi setting, you should see the AP. Select it and join) . The default key to connect with it is “12345678”. You can change it later when you get into the web UI.

To get into the web UI, enter **192.168.10.1** in your browser. The default account/password are both “**admin**”. You can change it later. In web UI, any change need to be saved first. After all changes made, click reboot to make the changes effective. When In Station mode, you can get into the web UI by entering the assigned IP address in your browser. The following sections describe details of the web UI.

Serial

In serial page, you can manage the RS232/RS485(RS422) settings. Depends on the ID settings, The serial webpage will be in RS232 mode or RS485(RS422) mode.

RS232

Data Baud Rate: 9600, 19200, 38400, 57600, 115200, 230400, 460800, 576000, 921600 bps supported. User could also customize the number between 9600~921600.

Data Bits: 8 bit only

Data Parity: None, Odd, Even

Data Stop Bits: 1 bit only

Flow Control: None, Hardware(RTS/CTS). It is suggested to enable hardware flow control in higher baud rate application(>115200bps).

The screenshot shows the SERIAL-WIFI configuration interface. At the top, there are tabs for SERIAL, Wi-Fi, Network, Applications, and System, with a Reboot button. The SERIAL tab is active, and the RS232 configuration page is displayed. The settings are as follows:

- Data Baud Rate: 9600 (with a Custom Baud option for min. 9600bps)
- Data Bits: 8
- Data Parity: None
- Data Stop Bits: 1
- Flow Control: None

At the bottom of the configuration area, there are Save and Cancel buttons.

RS485

Most of the setting is the same with RS232. One setting need to be take care is the RS485 Mode. It is a switch between RS485 - Single Twisted Pair(Half Duplex) and RS422 - Double Twisted Pair(Full Duplex)

Wi-Fi

iWM021 can work in Simple AP mode, Station mode, and Dual mode in wireless networking. These modes and the related settings can be managed in this page.

Simple AP

SSID: The default name is Serial2WiFi plus the last digits of the mac address. User can change to what they want.

Security Protocol: Open, WPA TKIP, WPA AES, WPA2 TKIP, WPA2 AES supported. WPA2 AES is recommended.

Security Key: 8-63 characters can be inputed

Channel: 1~11(ch12 and ch13 could be supported by request)

Station

Scan: Click it to scan available APs.

Site Survey: The scan result is listed here and user can choose the correct AP from the list. The WiFi channel of the AP is also

listed.

SSID: No manual input required. It is automatically selected once you choose the AP from the scan list.

Security Protocol: Basically it is automatically detected and selected after you choose the AP from the scan list. But in case the AP setting is in WEP open or WEP shared, user has to confirm it by himself.

Security Key: Type the one assigned in your AP. 8-63 characters can be inputed.

Dual

In this mode, iWM021 is a WiFi AP also a station. To manage it, one should connect to its AP to get into the web UI.

Network

This setting is mainly for Station or the Station in Dual mode. Normally DHCP client is enabled to join a WiFi AP w/ DHCP. If one wants to manually assign an IP address for iWM021, the DHCP client should be disabled. Once disabled, user should assign the IP, Netmask, Gateway, and/or DNS server.

Applications

TCP Server

iWM021 is a TCP server with fixed IP address 192.168.10.1. The default port is 8080 and user can also assign the port. iWM021 can support up to 5 clients.

TCP Client

If there is already a TCP server, one can set iWM021 as a TCP client to communicate with the server. Enter the address and port number of the TCP server to connect them.

HTTP Client

Another connection in application is through setting iWM021 as a HTTP client. In this scenario, one has to assign the HTTP host address and port number. Also a query string is necessary to bring the serial data to the HTTP server through iWM021. Finally, assign GET or POST in the HTTP method.

SERIAL-WIFI Serial Wi-Fi Network **Applications** System **Reboot**

Application: M2M

Connection Type: TCP Server

Server Port: 8080

Modbus RTU (RS485 only):

Save **Cancel**

SERIAL-WIFI Serial Wi-Fi Network **Applications** System **Reboot**

Application: M2M

Connection Type: TCP Client

Client Destination Host/IP:

Client Destination Port: 8080

Save **Cancel**

SERIAL-WIFI Serial Wi-Fi Network **Applications** System **Reboot**

Application: HTTP Client

HTTP Host/IP: api.example.com

HTTP Port: 80

HTTP Query String: /user.prog?data=

HTTP Method: GET

Save **Cancel**

System

Firmware and device information, including mac address and IP address in station mode.

GPOs: Control the two GPOs by click off/on.

Change password: Web UI password setting.

NTP Setting: When enabled, iWM021 will add time information in the input data of UART. A preset “#” character in the data string of UART will be replaced by the time information, e.g., 2015-01-16T12:20:45+08:00. The setting of time server, zone, and time update period is here.

NTP Setting

Enable NTP Enable ▾

Time Server

Time Zone GMT ▾

Update Period 1 day ▾

Save NTP Setting
Cancel

Logout

SERIAL-WIFI Serial Wi-Fi Network Applications **System** Reboot

Firmware Revision: IWM021-v1.1.0
 MAC: B0:38:29:15:97:B6

Send MAC to serial port

Station IP: 0.0.0.0

GPO 0: Off On

GPO 1: Off On

Change Password

Current Password

New Password

Change Password

NTP Setting

Enable NTP Disable ▾

Save NTP Setting
Cancel

Logout

Revision History

DATE	REVISION	CHANGES
Jan 23, 2015	1	Initial release