



## Product Introduction and Setup Examples

### RS232 to WIFI Converter

#### Part WF5000B





## Content

Product Introduction .....	3
AP and STA Modes .....	3
Auto- Frequency Function .....	3
Security .....	4
Address Binding .....	5
UART Frames .....	5
GPIO1 / GPIO2 .....	5
Setup Examples .....	6



## Product Introduction

The WF500B serial RS232 to WIFI Converter will allow you to connect any standard serial RS232 device to a computer, tablet or mobile phone over a WiFi network.



- Parameters configurable over WiFi or serial port
- Supports OPEN, OPENWEP, SHAREDWEP, WPA-PSK and WPA2-PSK
- Supports AP and STA network modes
- Protocols: TCP, UDP, ARP, ICMP, DHCP, DNS, HTTP
- Works with most mobile devices / operating systems
- Strong housing ideal for commercial applications
- LED control lights for TX, RX, Link and power
- Voltage: 5 VDC

Please see datasheet for detailed specifications



### AP and STA Modes

The WF5000B supports AP (AccessPoint) and STA (Station) network modes.

The parameters can be configured through a standard web-browser by logging into the converter over WiFi, through the serial port by using AT commands or by using the included software utility (both for WiFi and serial configuration).

**AP:** Access Point, the center of a wireless network and the network nodes. A standard wireless router we use at home or in office is usually configured as an AP.

**STA:** Station, each terminal that connects to a wireless network (such as laptops, PDA and other networking devices) can be called with a STA device.

### Auto- Frequency Function

When the WF5000B is configured as a STA, it will adjust its wireless channel to keep the same channel as the associated AP.

When the WF5000B is configured as an AP the built-in Auto-frequency function will select the best wireless channel based on the surrounding environment.

### Security

The WF5000B supports several security protocols:

- ◆ OPENWEP
- ◆ SHAREDWEP
- ◆ WPA-PSK
- ◆ WPA2-PSK

### Search Function for STA

When configuring the WF5000B via web-browser the STA Interface Settings Page can search for surrounding APs.

STA Interface Parameters	
AP's SSID	USR-WIFI232-AP_3378 <input type="button" value="Search..."/>
MAC Address (Optional)	<input type="text"/>
Security Mode	OPEN ▼
Encryption Type	NONE ▼



### Address Binding

The WF5000B supports the feature of binding the BSSID address of the target network.

According to the provisions of 802.11 protocol, different wireless networks can have the same network name (i.e. SSID / ESSID), but must correspond to a unique BSSID address (i.e. MAC address). Illegal intruders can create a wireless network with the same SSID / ESSID, which can make STAs in the network join the illegal AP and then network leakage can happen.

Users can prevent an STA from joining to an illegal network by binding the BSSID address, which improve wireless network security.

### UART Free-Frame

The WF5000B supports UART free-frame function. If the user selects this function, the module will check the intervals between any two bytes when receiving UART data. If this interval time exceeds the defined value (50ms default), the WF5000B will think it as the end of one frame and transfer this free-frame to the WiFi port. Alternatively the WF5000B will receive UART data until 4K bytes, then transfer 4KB frame to the WiFi port.

WF5000B's default interval time is 50ms. The user can also set this interval to fast (10ms) through AT command, however the user have to consider if the connected serial device can send UART data with 10ms interval , otherwise the UART data may be divided into fragments.

By using the AT command: AT+FUARTTE=fast/normal, the user can set the interval time: fast (10ms) and normal (50ms). This command is a factory default command and AT+RELD can't change its value.

### UART Auto-Frame

The WF5000B also supports the UART auto-frame function. If the user selects this function and sets the auto-frame trigger length and auto-frame trigger time parameters, then the module will auto frame the data which is received from the UART port and then transmit it to the network as a pre-defined data structure.

- **Auto-frame trigger length:** The fixed data length that the module use to transmit to the network.
- **Auto-frame trigger time:** After the trigger time, if the data received by the UART port can't reach the auto-frame trigger length, then the module will transmit the available data to the network and bypass the auto-frame trigger length condition.

For details about the UART auto-frame function please refer to AT commands "UARTF/UARTFT/UARTFL".

### GPIO1 / GPIO2

These settings are used for controlling the I/O pin status on the control module inside the WF5000B. The settings are active but currently only used for factory test purposes.



**AP Mode Example**



**AP Mode Example with smart phone**



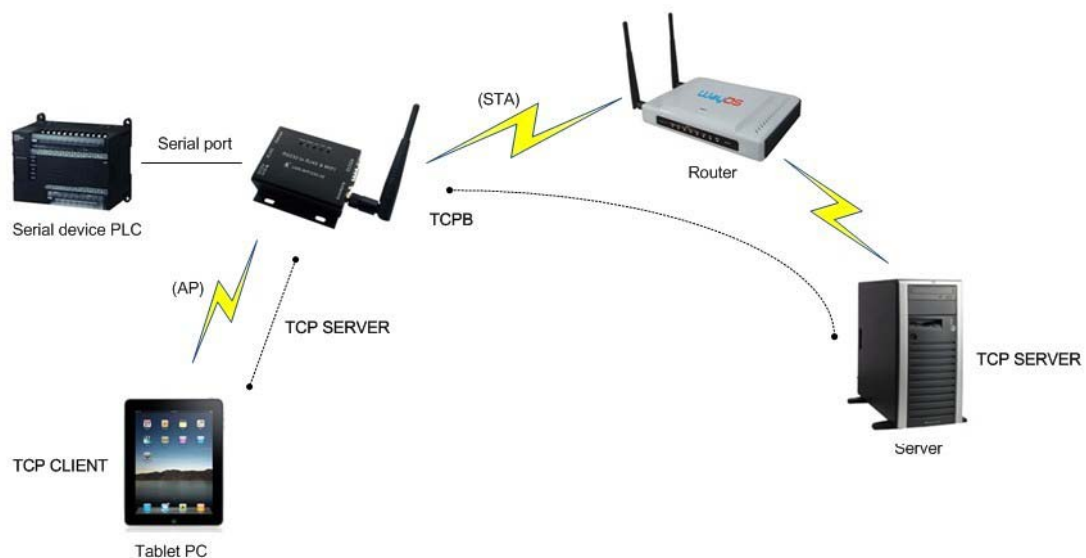


### STA Mode Example



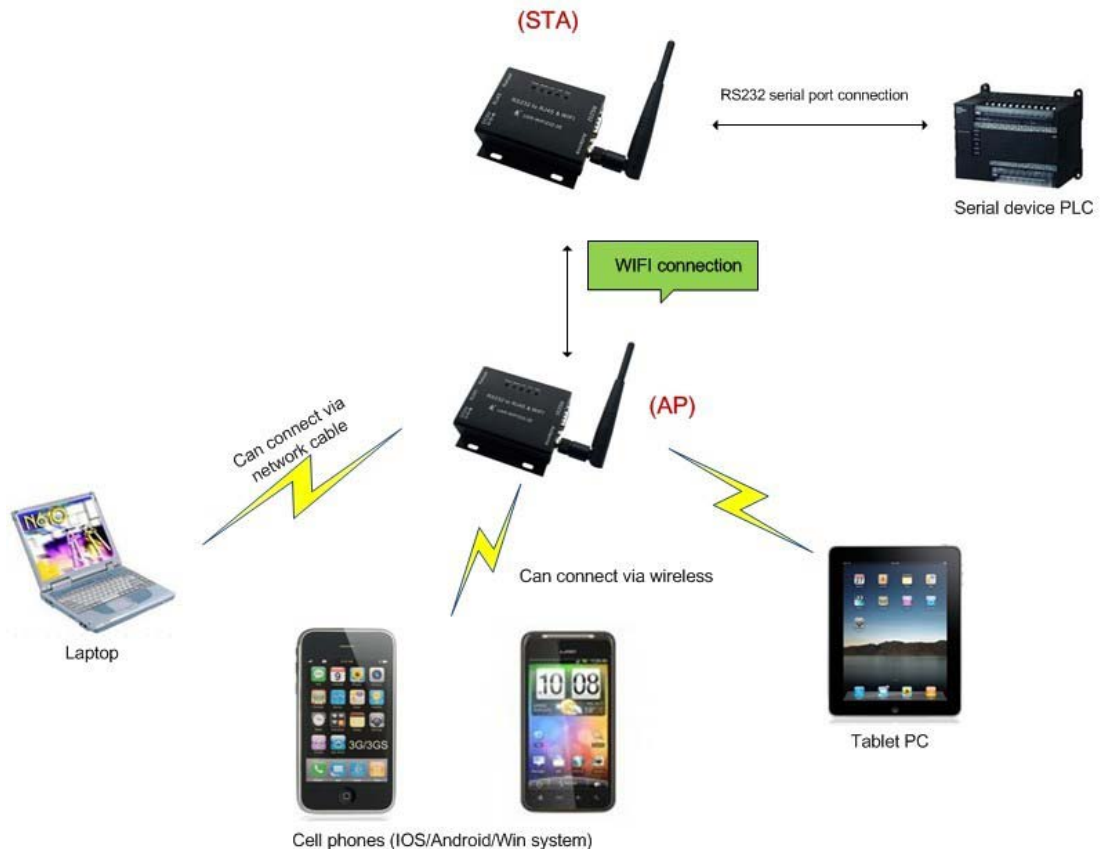
### AP+STA Mode Example

Notice: AP+STA Mode can only be enabled by AT commands, not through web-browser setup.





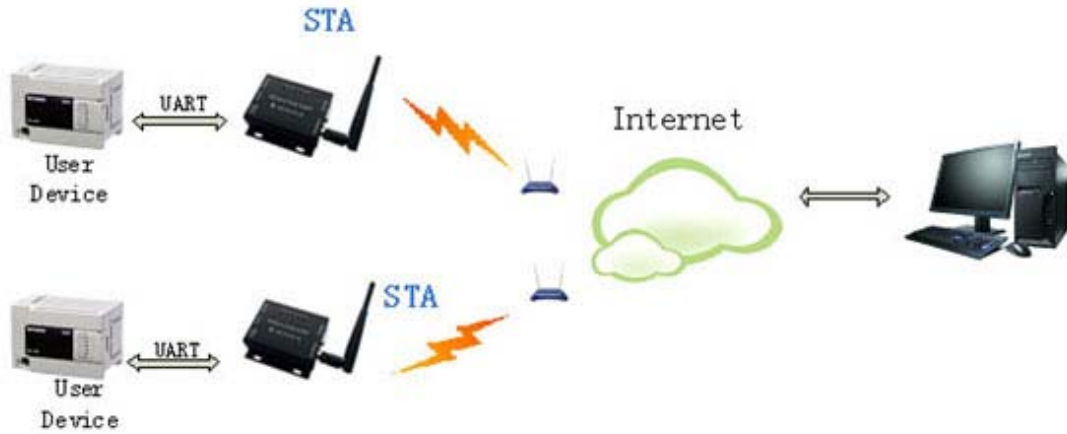
**One AP and one STA setup example**







### Remote Management Example

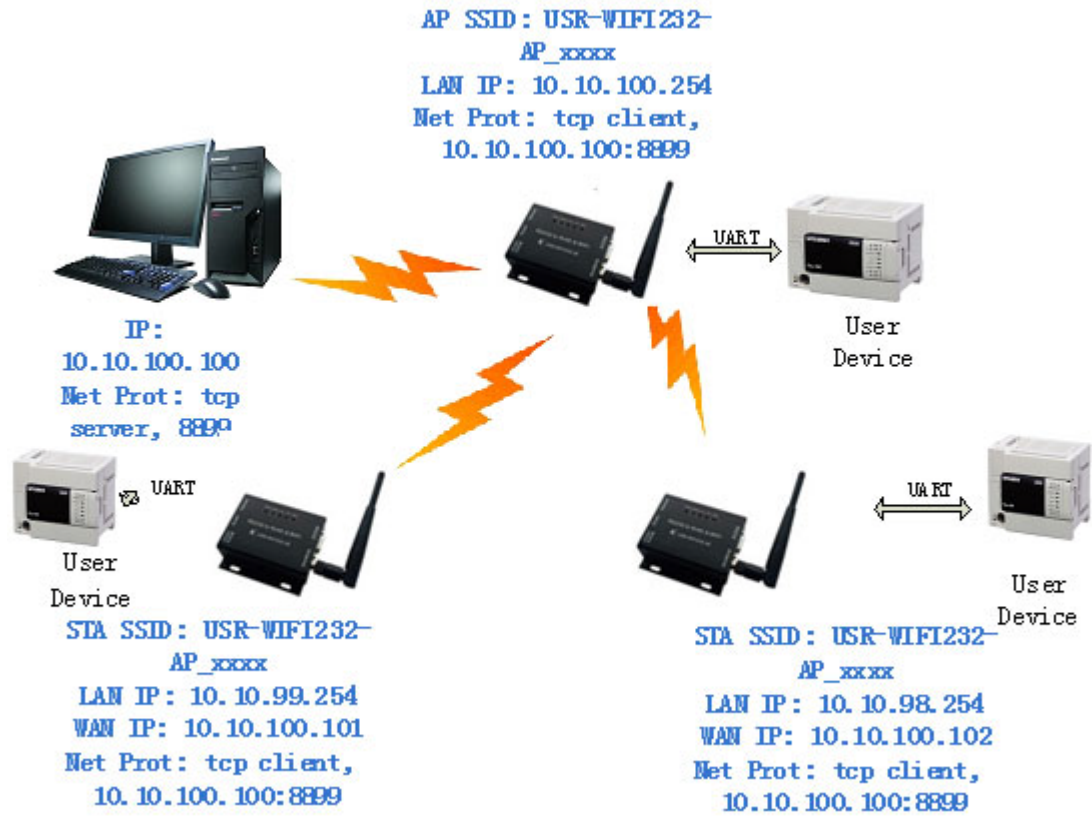


### Transparent Serial Port Example 1





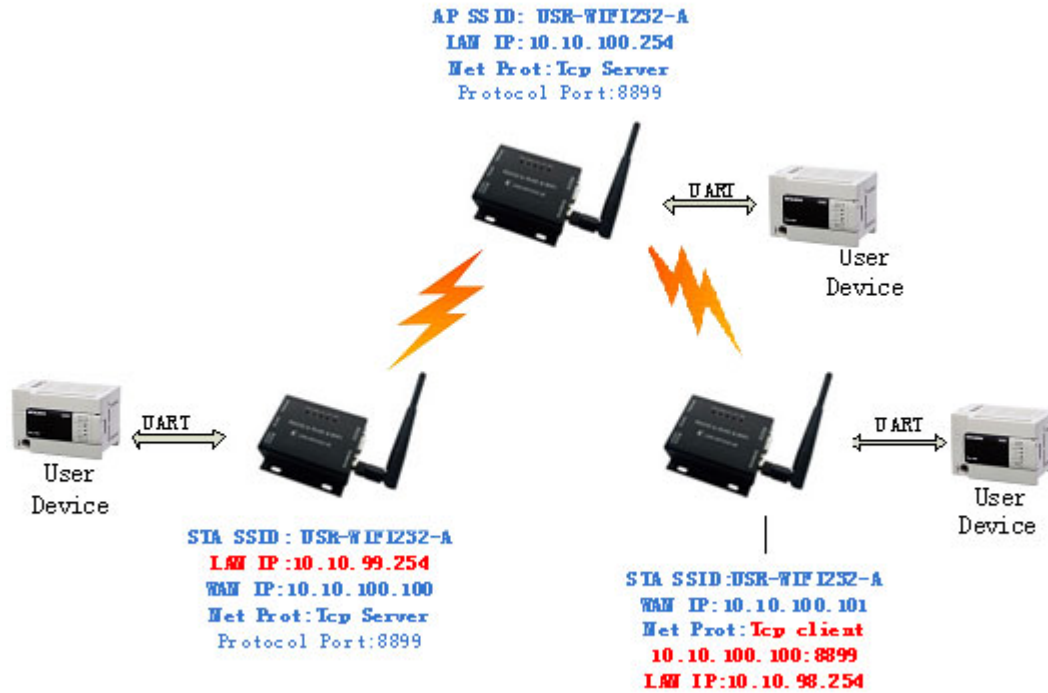
### Wireless Data Acquisition Example





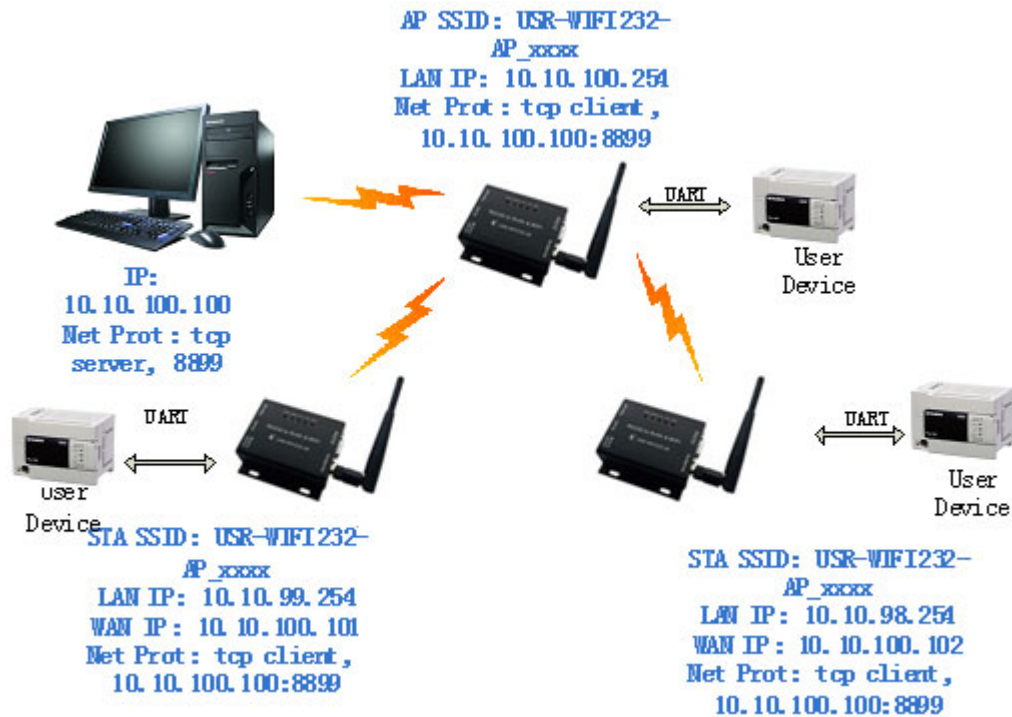
### Transparent serial port example 2

Two WIFI modules configured as STA and connecting through an AP





**PC as server example. All WF5000B's connects to the PC**



**How to avoid IP address conflicts.**

- The following address allocation method can avoid the IP address conflicts with dynamic and static IP addresses mixed application.
  - The module's dynamic IP address range from 100 to 200 for the last IP address segment.
    - ◇ For example: default IP: 10.10.100.254. When the module is setup as an AP, the IP address for STA is from 10.10.100.100 to 10.10.100.200;
  - So, if the user needs to set a static IP for a dedicated STA network, the available IP address range should be from 10.10.100.1 to 10.10.100.99.