

Set up guide to add the WF5000B serial to WIFI adapter to a network

There are 2 types of connections that can be made.

1. AP (Access Point) mode - Connect your PC's WIFI to the WF5000B adapter for 1 on 1 communication between your PC and chamber.
 - In this mode, your PC's wifi adapter will connect to the S2W232 serial adapter allowing communication with the chamber. If you are using your wifi adapter to access the internet, you will not be able to access the internet while connected to the adapter. This mode is ideal for a computer, phone or tablet that is dedicated solely for communication with the chamber.
2. STA (Station) mode - Add the WF5000B adapter to a wireless network to control multiple adapters (chambers).
 - This way of connecting will allow your PC's wifi to maintain access with your wifi router as well as allow you to add multiple adapters to your network to communicate with multiple chambers with one PC. You will need to know the IP address that was assigned to each adapter to create a virtual COM port. To find out the adapter's IP address, you can log into your router or download a free IP scanner such as [Advanced IP Scanner](#).

This guide shows the steps required for operating the WF5000B device in STA mode.

Summary of steps:

1. Supply power to the WF5000B device.
2. Connect the WF5000B device to the chamber.
3. Press reset button to restore device to default settings as device must be in AP mode (default setting).
4. Use a browser to access the device settings at 10.10.100.254.
5. Select the STA interface setting, search for your wifi network and enter the security key.
6. Go to the Mode Selection page, select STA mode, apply settings and reboot the device.
7. Determine the new IP address assigned to the WF5000B device by logging into the wifi router or downloading, installing and running the free 'advanced IP scanner' software.
8. Open a browser and go to the device's IP address.
9. Go to the Application Settings, enter the serial port settings and choose a port number such as 8899 (default) for the device.
10. Download, install and run VCOM software to create a virtual COM port.
11. Open terminal software of your choice (e.g TeraTerm) to begin communicating with chamber through COM port created in previous step

Detailed setup guide:

Parts required:

1. Sun EC1x Chamber.
2. [WF5000B](#) Serial to WIFI adapter with 5Vdc power supply.
3. A 3 wire, DB9 female to DB25 male (connects to adapter) to DB25 male (connects to chamber) cable to connect the adapter to the EC1x chamber.

This cable can be manufactured yourself and wired as follows:

DB9 connector (female)	DB25 connector (male)
Connects to adapter	connects to chamber

Pin #3 (TXD) >-----> Pin #3 (RXD)
Pin #2 (RXD) <-----< Pin #2 (TXD)
Pin #5 (GND) <-----> Pin #7 (GND)

Alternatively, this cable can be purchased from Sun (Sun part:930026).

Software required:

1. [VCOM](#) program to add a virtual port.
2. RS232 software such as [TC10RS232Demo](#), [TeraTerm](#) or [CoolTerm for Windows](#).
3. [IP scanner](#) (only needed if you are unable to login to your router to view the IP address of the adapter).

Detailed instructions for the quick start guide above:

1. Supply power to the **WF5000B** device.
 - o Power can be supplied with a 5Vdc, 1A adapter with a barrel jack style connector: 5.5mm (outer diameter), 2.1mm (inner diameter), 11.5mm long (center positive).
2. Connect the **WF5000B** device to the chamber.
 - o Connect the device to the chamber by using either a 3 wire cable or DB9-F to DB25-M adapter board wired in a NULL MODEM configuration as shown below:

DB9 connector (female)	DB25 connector (male)
Connects to S2W232 device	connects to Sun chamber

Pin #3 (TXD) >-----> Pin #3 (RXD)
Pin #2 (RXD) <-----< Pin #2 (TXD)
Pin #5 (GND) <-----> Pin #7 (GND)

The cable can be manufactured by the user or purchased from Sun (part number: 930026)

3. The device must be in AP mode. This is the factory default. To restore the device to factory default settings, use a paper clip to press the reset button for 5 seconds, then

release the button. The green ready LED should turn off, then turn back on within 10 seconds and the device will be restored to factory default settings (in AP mode).

- The network default settings of the device after reset are:
 - IP: 10.10.100.254
 - Socket port: 8899
 - Log in ID: admin Log in password: admin
 - Default COM port settings:
 - Baud rate: 57600 bps
 - Data bit: 8
 - Parity: none
 - Stop bit: 1
 - Flow control: none
4. On your PC, open up the WIFI manager by clicking on the WIFI symbol on the lower right portion of the task bar and locate your adapter. A typical name for the device is "USCONVERTERS_AP". Select the device and click connect.
 5. Open a web browser and type in the default IP address of the adapter. This address is: 10.10.100.254. This should bring up the login screen. Enter the following credentials:
Username: admin
Password: admin
 6. Select the STA interface tab on left, then click search to locate your wifi network and enter your network's security key.

You could configure STA interface parameters here.

STA Interface Parameters	
AP1's SSID	TP-Link_0B30 Search...
MAC Address1 (Optional)	
Security Mode1	WPA2PSK ▾
Encryption Type1	AES ▾
Pass Phrase1	Enter security key here
AP2's SSID	Search...
MAC Address2 (Optional)	
Security Mode2	OPEN ▾
Encryption Type2	NONE ▾
AP3's SSID	Search...
MAC Address3 (Optional)	
Security Mode3	OPEN ▾
Encryption Type3	NONE ▾
Signal threshold	100 % Note: If the signal strength is lower than the entered

7. Go to the MODE SELECTION page and select STA mode.

Working Mode Configuration

You may configure the Uart-WIFI module wifi mode and data transfer mode.

☐ **AP Mode:**
Access Point

☒ **STA Mode:**
Station Mode

Data Transfer Mode Transparent Mode ▾

Apply Cancel

8. Select Apply then Go to the Device Management tab to reboot the router and apply the new settings.
9. Login to your wireless router to verify that the **WF5000B** adapter is now on the network and get the IP address that was assigned to it. Common router IP addresses are:

192.168.1.1 or 192.168.0.1 for example.

10. If you are not able to log in to your router, download and install [advanced IP scanner](#).
11. Once the adapter's new IP address is obtained, you may then enter this address into a browser, log into it (user:admin, password:admin), and select the Application Setting page to set the serial port settings as shown below.

The screenshot shows a web interface for 'Wifi-Uart Setting'. On the left is a sidebar menu with links: Mode Selection, AP Interface Setting, STA Interface Setting, Application Setting (highlighted), HTTPD Client Mode, and Device Management. The main content area has a title 'Wifi-Uart Setting' and a subtitle 'You could configure the Uart parameters and network parameters of the wifi-uart application.' Below this are two sections: 'Uart Setting' and 'UART AutoFrame Setting'. The 'Uart Setting' section contains a table with the following parameters: Baudrate (9600), Data Bits (8), Parity (None), Stop (2), Flow control (Disable), and Baudrate adaptive (RFC2117) (Enable). The 'UART AutoFrame Setting' section contains a single parameter: UART AutoFrame (Disable). Each section has 'Apply' and 'Cancel' buttons. At the bottom, there is a 'Registered Package Setting' section which is currently empty.

Uart Setting	
Baudrate	9600
Data Bits	8
Parity	None
Stop	2
Flow control	Disable
Baudrate adaptive (RFC2117)	Enable

UART AutoFrame Setting	
UART AutoFrame	Disable

12. Go to the chamber and verify that the baud rate in the chamber's SDEF menu is the same as the **WF5000B** adapter's baud rate. While in the SDEF menu, set the RS Char Echo to NO and set RS DTR-CTS to NO, then press ENTER until you exit the menu.
13. Next, download and install the VCOM software to create a virtual COM port.
14. Open the VCOM software and select create. Enter the IP address assigned to the **WF5000B** device by your router and the port number chosen in the devices Application Setting. You can use any available COM port. COM6 was used in this example:

The screenshot shows a dialog box titled 'EDIT' with a close button (X). It contains the following fields: Serial (COM6), Protocol (radio buttons for TCP SERVER, TCP Client (selected), and UDP), Remote IP/Host (192.168.0.249, circled in red), Remote Port (8899), and Remark (COM6-TCP CLIENT). To the right of the Remote IP/Host field is a text label: 'Enter the IP address assigned by your router'. At the bottom are 'Cancel' and 'Confirm' buttons.

15. Click Confirm to create a virtual COM port.
16. Once the COM port is created, you can then use a terminal application such as CoolTerm or TeraTerm to communicate with the chamber. The TC10RS232Demo on Sun's website can be used for basic communication as well as simple charting and to upload/download local programs. When starting up the terminal program you have chosen, make sure to select the new COM port that was created and use the following settings if required by the application:

BAUD RATE: 38,400 (or same as selected in SDEF menu)
STOP BITS:2
DATA: 8 bits
PARITY:NONE
FLOW CONTROL:NONE

Useful links:

[Purchase the WF5000 adapter](#)
[Detailed Setup Guide for the WF5000 adapter](#)
[Advanced IP Scanner](#)
[Access Port - Free terminal program](#)

Troubleshooting common issues

- Verify that the **WF5000B** adapter has power. The red LED on the device should be on.
- Use an ohmmeter to verify that the DB9 to DB25 cable is wired as shown below:

DB9 connector (female)	DB25 connector (male)
Connects to adapter	connects to chamber

Pin #3 (TXD) >-----> Pin #3 (RXD)
Pin #2 (RXD) <-----< Pin #2 (TXD)
Pin #5 (GND) <-----> Pin #7 (GND)

- Make sure that the chamber has the same baud rate as the **WF5000B** adapter and that RS DTR-CTS is set to NO in the EC1x chamber's SDEF menu. If using the TC10RS232 Demo you will also need to set RS Char Echo to NO .
- The adapter's serial port settings and any software used to communicate with the chamber should have the following settings:
Baud rate: same as the chamber (check SDEF menu). STOP bits:2
DATA bits: 8
PARITY: NONE
FLOW CONTROL: NONE
- If you need to return the device to AP mode, use a paper clip to press the RESET button on the device for 5 seconds, then release and wait 10 seconds. Once the green ready LED is on, the device will be restored to factory default settings.

- This detailed [setup guide](#) from the mfg of the **WF5000B** serial to wifi device has more tips that can assist in troubleshooting issues with the adapter.
- There are also helpful links at the bottom of the [WF5000B web page](#) that include accessories, specs, source code and firmware updates.