

Set up guide to communicate with Sun chamber using an WF5000B serial to WIFI adapter

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 **WF5000B** 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 AP 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 (if state of device unknown).
4. Use a browser to access the device settings at **10.10.100.254**.
5. Open a browser and go to the device's IP address.
6. Enter serial port settings and choose a port number such as the default of 8899 for the device.
7. Download, install and run [VCOM](#) software to create a virtual COM port.
8. Open the terminal software of your choice (e.g TeraTerm, [coolTerm](#) from this [website](#)) to begin communicating with the chamber through the COM port created with VCOM.

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)
Connects to adapter

DB25 connector (male)
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](#), [CoolTerm](#), or [Access Port](#)

Detailed instructions for the quick start guide above:

1. Supply power to the WF5000B device.
 - 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.
 - 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 WF5000B device connects to Sun chamber

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

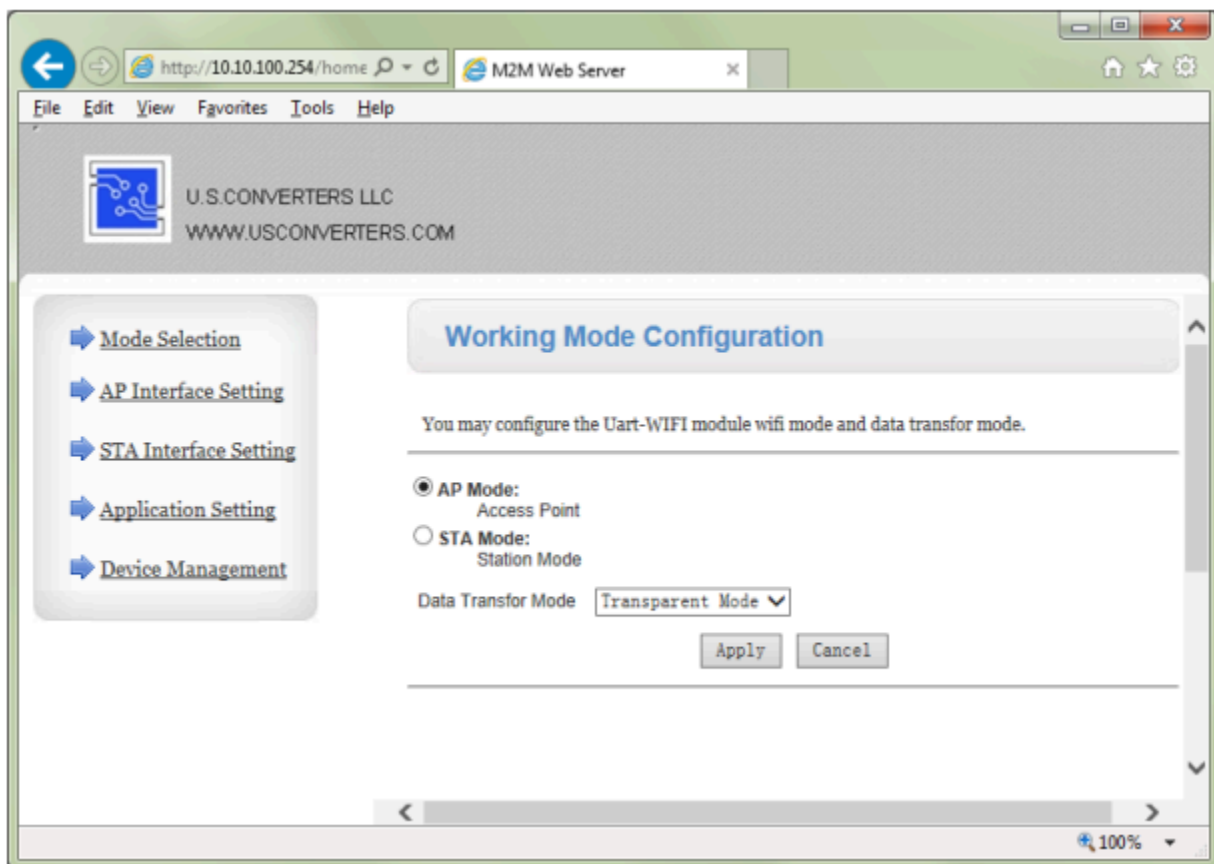
The cable or adapter board can be manufactured by the user or purchased from Sun (part number 930026).

3. If the state of the device is unknown, you can restore it to factory default settings by using a paper clip to press the reset button.

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. Verify AP mode is selected as shown below. Most of the default settings will be used.



7. Select the Application Setting tab on left and enter the RS232 settings as shown below. Go to the chamber and verify that the baud rate in the chamber's SDEF menu is set to the same value. 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.

[Mode Selection](#)
[AP Interface Setting](#)
[STA Interface Setting](#)
[Application Setting](#)
[HTTPD Client Mode](#)
[Device Management](#)

Wifi-Uart Setting

You could configure the Uart parameters and network parameters of the wifi-uart application.

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

Apply Cancel

UART AutoFrame Setting	
UART AutoFrame	Disable ▾

Apply Cancel

Registered Package Setting

Network A Setting

Mode	Server ▾
Protocol	TCP ▾
Port	8899
Server Address	10.10.100.100
MAX TCP Num. (1~32)	1
TCP Time out (MAX 600 s)	0
TCP connection password authentication	Disable ▾

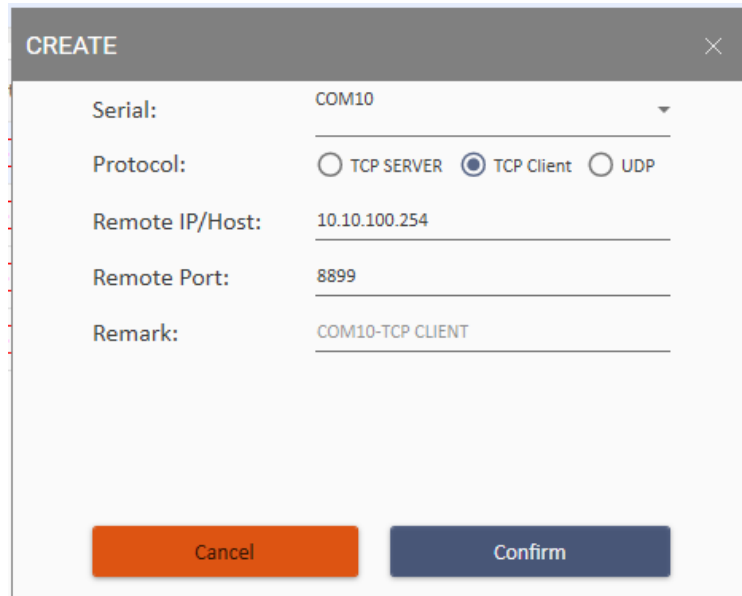
Socket B Setting

Open the SocketB function	off ▾
Port	18899
Server Address	10.10.100.100
TCPB Time out (MAX 600 s)	0

Apply Cancel

- Write down the PORT number shown in the Network Setting section (8899 shown here) as this value, along with the default IP address of 10.10.100.254 will be required when creating a virtual COM port in the steps below. The default port number can be changed to any available number between 0 and 65,535. It is also recommended to select 1 for MAX TCP Num. if you don't want anyone else connecting to the chamber.

9. Click Apply, then click the 'device management' link to reboot the device. Next, download and install the VCOM software to create a virtual COM port.
10. Open the VCOM software and select the "CREATE" button on the top menu bar. Enter the settings as shown below. If you used a different Port value, enter that one. You can use any available COM port. COM10 was used in this example:



The screenshot shows a 'CREATE' dialog box with the following fields and values:

Field	Value
Serial:	COM10
Protocol:	☐ TCP SERVER ☒ TCP Client ☐ UDP
Remote IP/Host:	10.10.100.254
Remote Port:	8899
Remark:	COM10-TCP CLIENT

At the bottom of the dialog are two buttons: 'Cancel' (orange) and 'Confirm' (dark blue).

11. Click Confirm to create a virtual COM port.
12. Once the COM port is created, it should show 'connected' under net status. You can then use a terminal application such as CoolTerm, TeraTerm etc. 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. This is all that is required to begin communicating with the chamber. 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:9600 (or same value 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)
Connects to adapter

DB25 connector (male)
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 (i.e. return to 1 on 1 communication), log into the device, click on the ADVANCED tab, then click 'Reset to Default'. Then select the Basic tab to enter serial port settings. You can also reset the device using a paper clip. Press the reset button for 5 seconds, then release the button. The green LED will turn off, then turn back on within 10 seconds with factory default settings installed.
- If errors are occurring when using TC10RS232 demo, open up the VCOM2 software and verify that CONFIG/SerialPackageSettings is set to:
 - SP time: 0ms
 - SP length:0
- 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](#) that include accessories, specs, source code and firmware updates.