How to setup the S2W232E-ESP32 Serial WiFi adapter

(based on Windows 11, 32/64-bit)

This step-by-step guide explains how to get started using the Serial RS232 WiFi Adapter part S2W232E-ESP32. This product has more advanced features and functions than described in this guide so this guide is only a quick-start guide to help you get started with the basic functions.

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Configuring the parameters

The S2W232E-ESP32's parameters can be configured using a standard web-browser such as Chrome, Firefox or Microsoft Edge.

The default network settings are:

- Adhoc mode (Simple AP), DHCP disabled
- SSID: S2W232-abcd (abcd is the last 4 numbers of the MAC address)
- TCP Server mode
- IP: 192.168.0.3
- Socket port: 5000
- Log in ID: admin
- Log in password: admin

The default COM port settings are:

- Baud rate: 9600 bps
- Data bit: 8
- Parity: none
- Stop bit: 1
- Flow control: none

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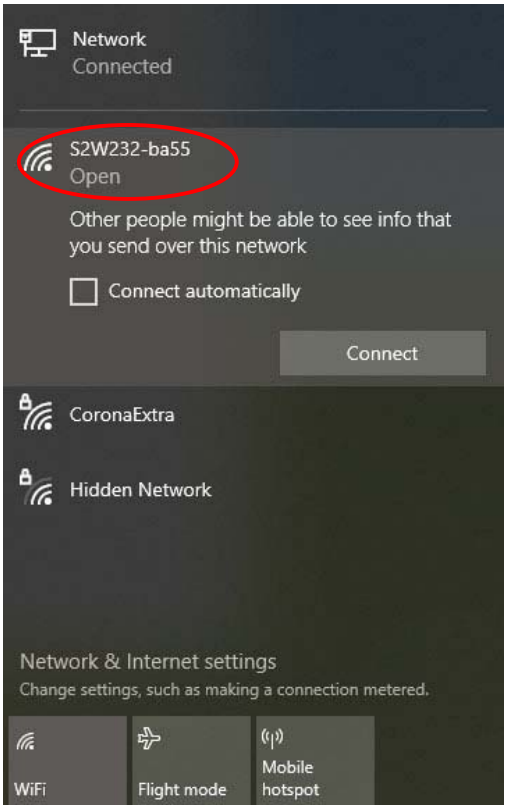
Use your WiFi card's connection manager or Windows WiFi manager to connect to the S2W232E-ESP32. In this example we use Windows connection manager:



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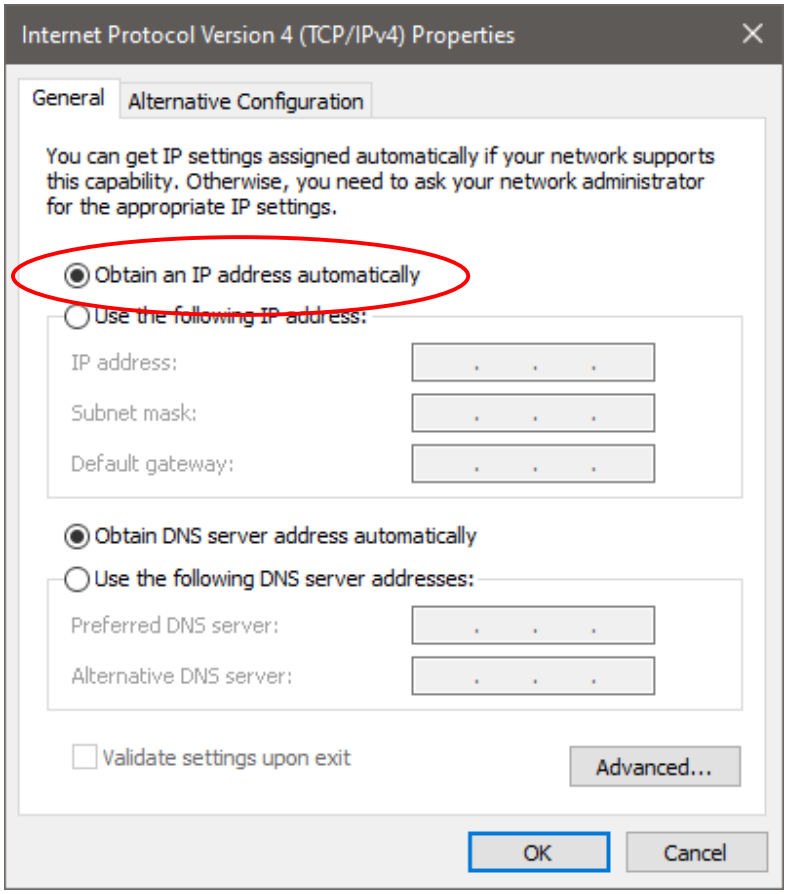
Make sure your wireless network has “Obtain an IP address automatically” selected. Go to “Control Panel\All Control Panel Items\Network Connections”, right-click wireless network and click “Properties”. Select “Internet Protocol Version 4 (TCP/IPv4)” and click “Properties”.



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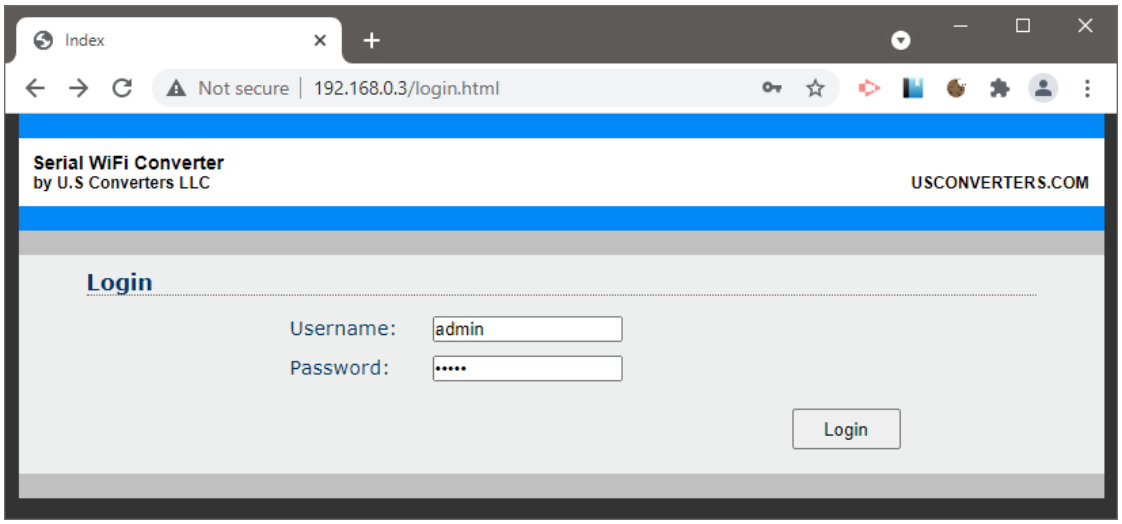
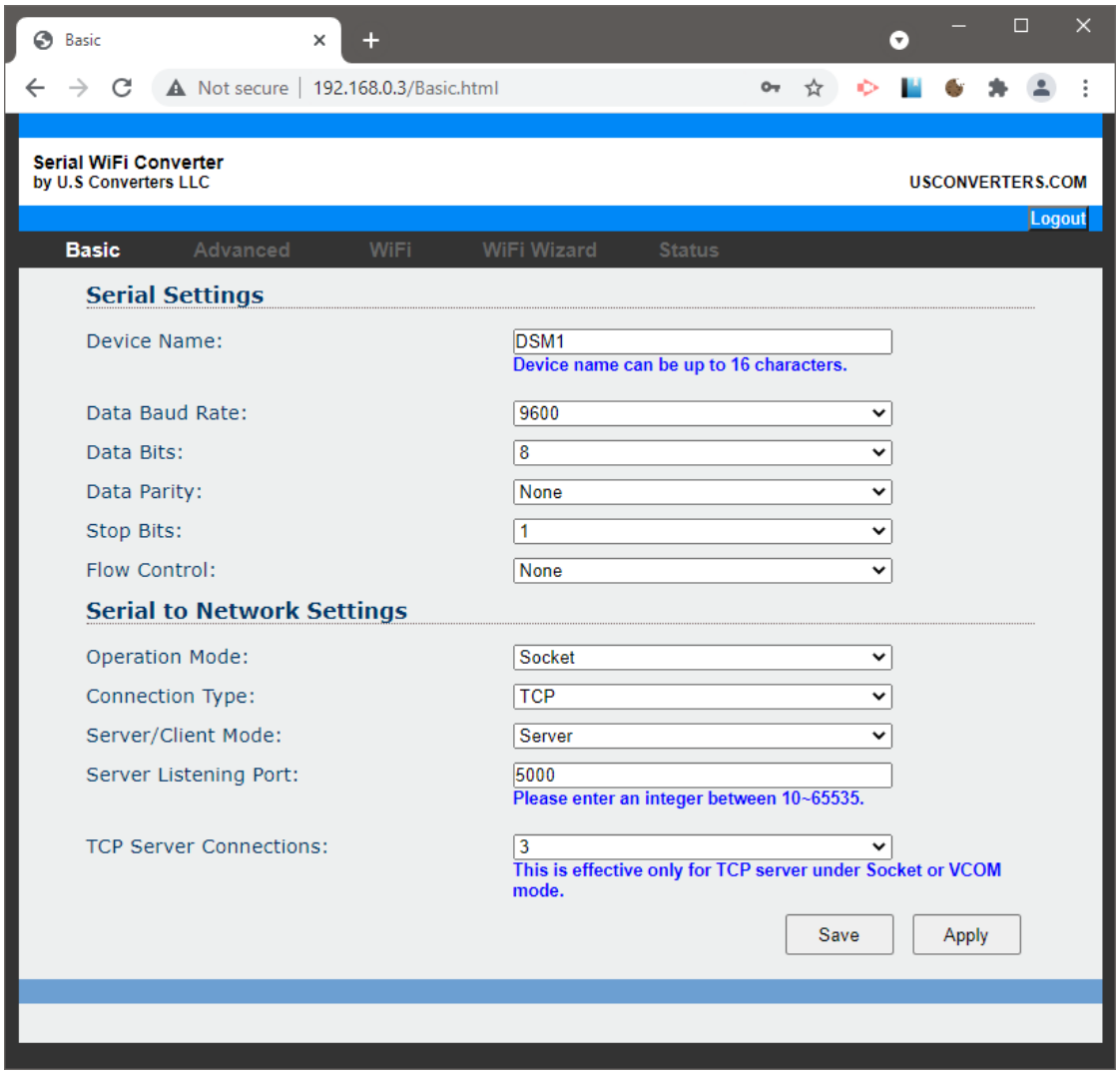
Open your web-browser and enter the IP address 192.168.0.3. You should now see the login screen.

The default username is: admin.
The default password is: admin.





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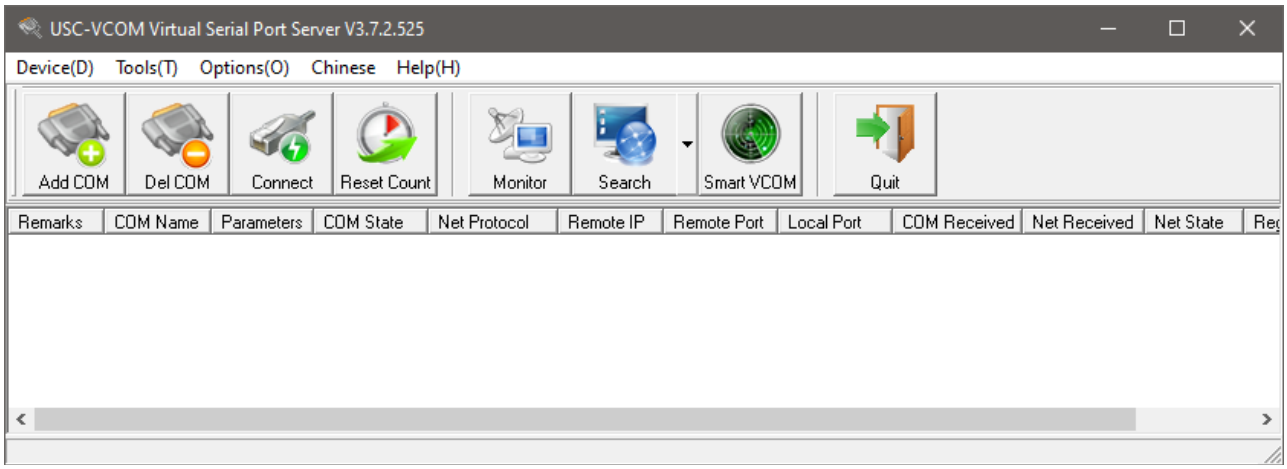
Creating a Virtual COM port

Using a virtual COM port software, you can create a virtual COM port in your operating system which the adapter can use, almost as if it was a standard COM port.
We recommend using USC-VCOM which can be downloaded for free here:

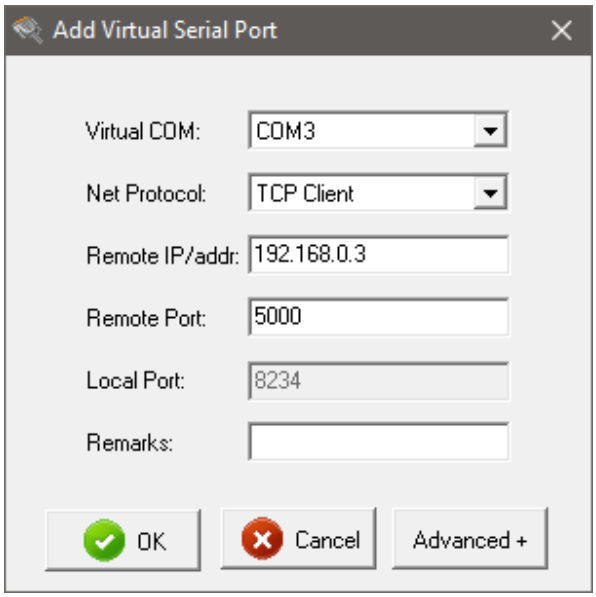
http://www.usconverters.com/downloads/drivers/virtual-com-port-software.zip

Install the software and start the program.



Click “Add COM”.

In the pop-up window enter the adapters IP address 192.168.0.3 and port number 5000, and click OK:



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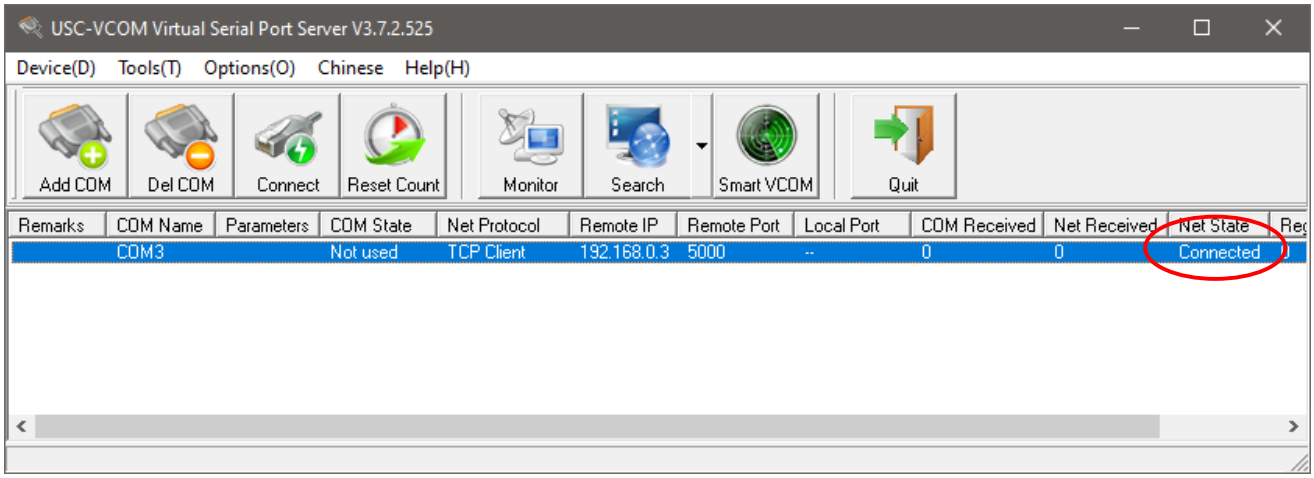
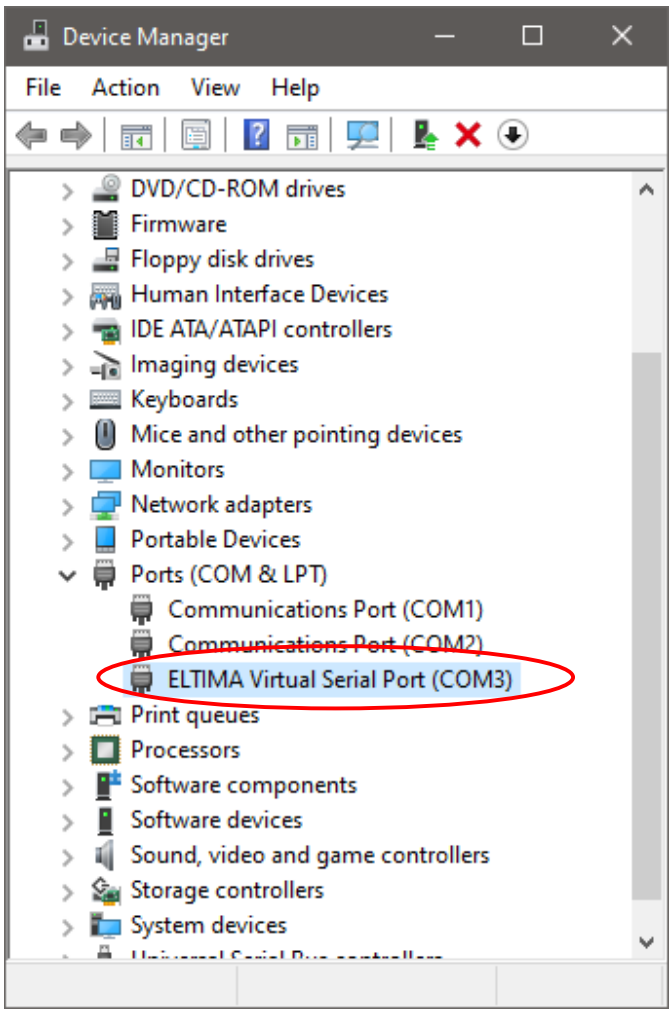
"Net State" should now show "Connected":



In Windows Device Manager the virtual COM port should now show up under "Ports (COM & LTP)":



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Verifying communication with a loop-back test

To check if the S2W232E-ESP32 can send and receive data successfully you can make a loop-back test using AccessPort, which can be downloaded for free here:

http://www.usconverters.com/downloads/tools/AccessPort137.zip

Make sure VCOM is running and a virtual COM port has been successfully created.
Put a jumper wire from the TX pin (pin 2) to the RX pin (pin 3) in the S2W232E-ESP32's DB9 connector (use a paperclip or small wire). The S2W232E-ESP32 has a DB9 male connector so it may be a bit tricky to get the wire to make a good connection between the two pins.

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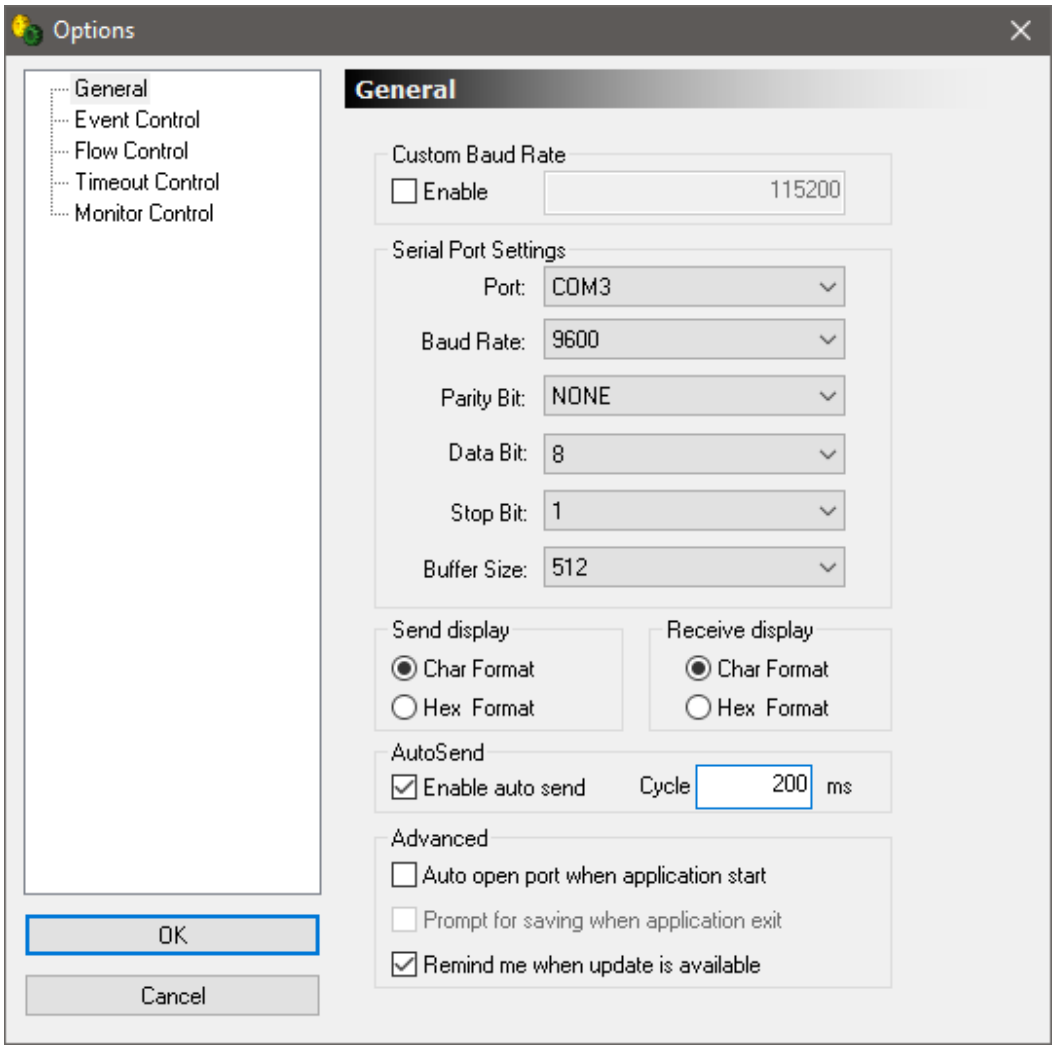
Open AccessPort and select the correct virtual COM port number created by the VCOM software (in this example COM 3), and select 9600 bps, NONE, 8, 1 and click OK:



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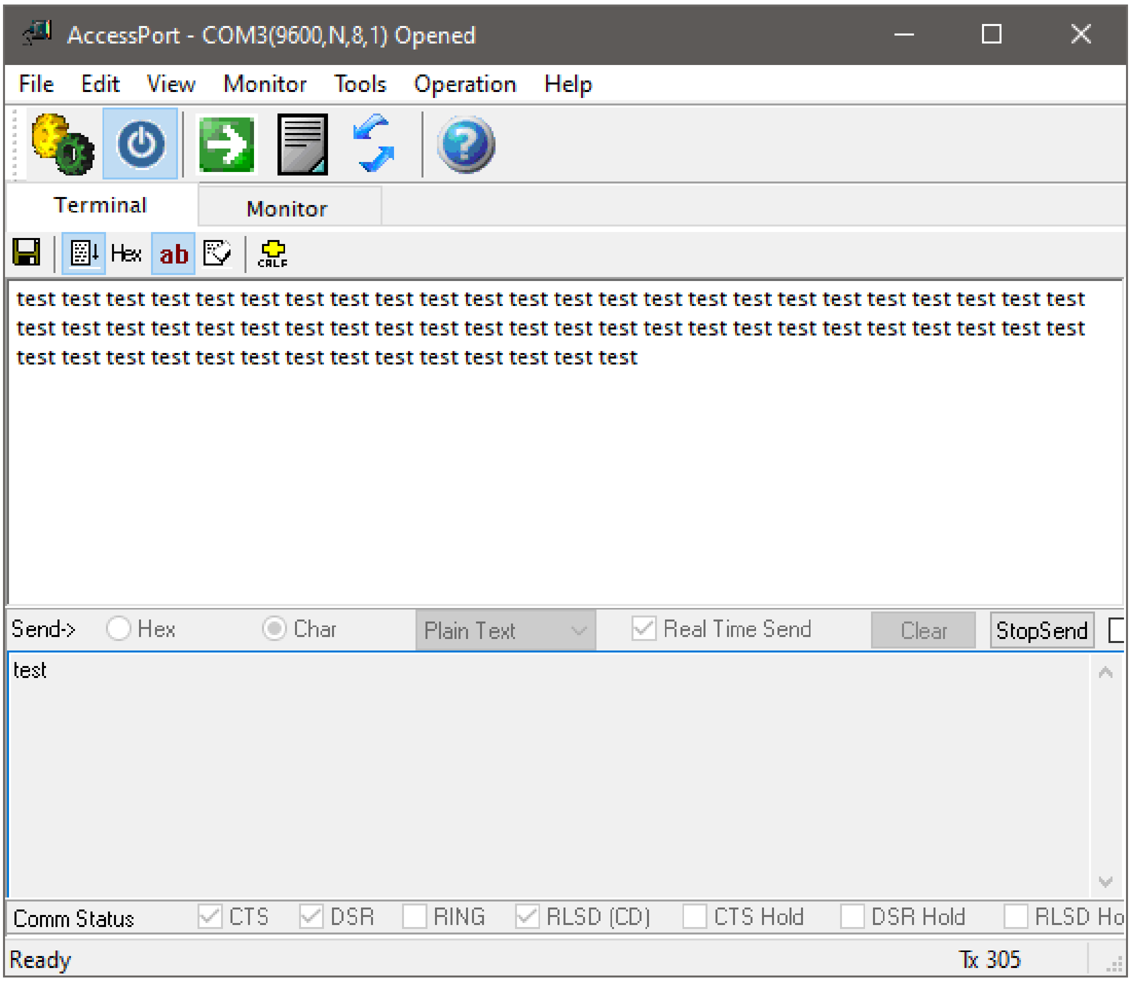
Enter a text string in the lower (send) window.

Click the "ON" button to open the COM port.

Click "AutoSend". The text string should now be sent to the S2W232E-ESP32, out on the TX pin and back through the jumper on the RX pin and appear in the upper (receive) window:



This test shows that data can be sent and received within the adapter which means that it's working properly.

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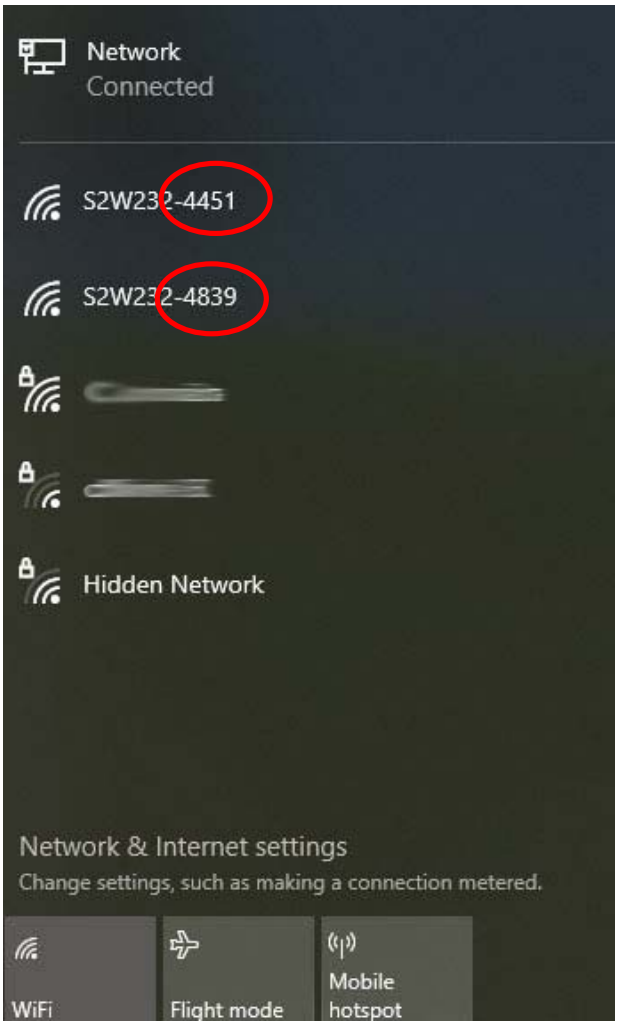
Point-to-point setup

The S2W232E-ESP32 can be configured to communicate in pairs between two serial ports, also called point-to-point communication.

Make sure both adapters are set to factory default setting by pressing the reset button for approx. 10 seconds. The LED lights will turn off and the adapter will restart with default settings.

Open Windows WiFi Manager, search for the adapters and write down the last 4 numbers of the MAC address for both adapters. In this example one adapter has number 4451 and the other adapter has 4839:



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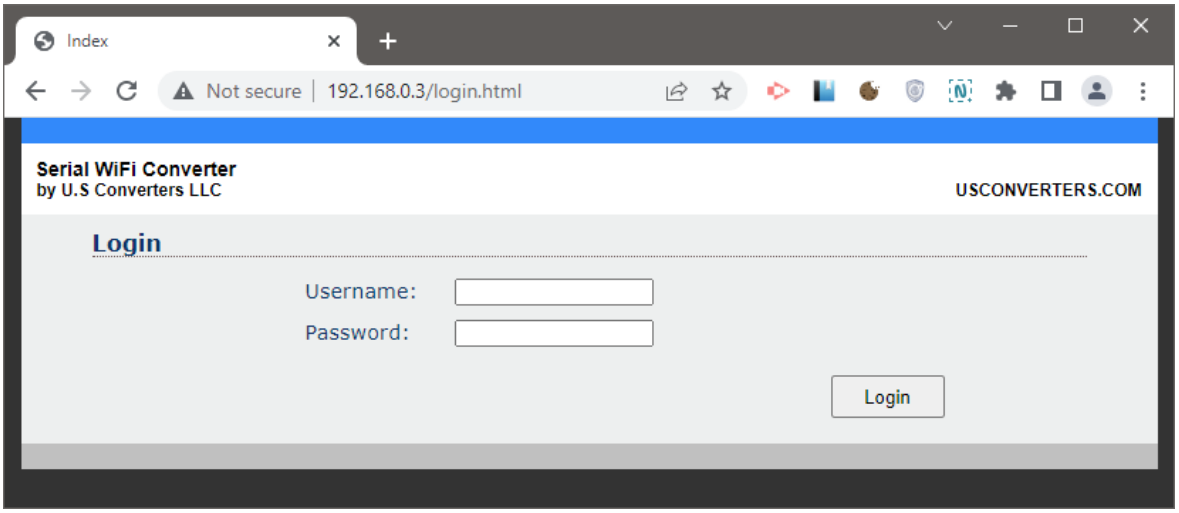
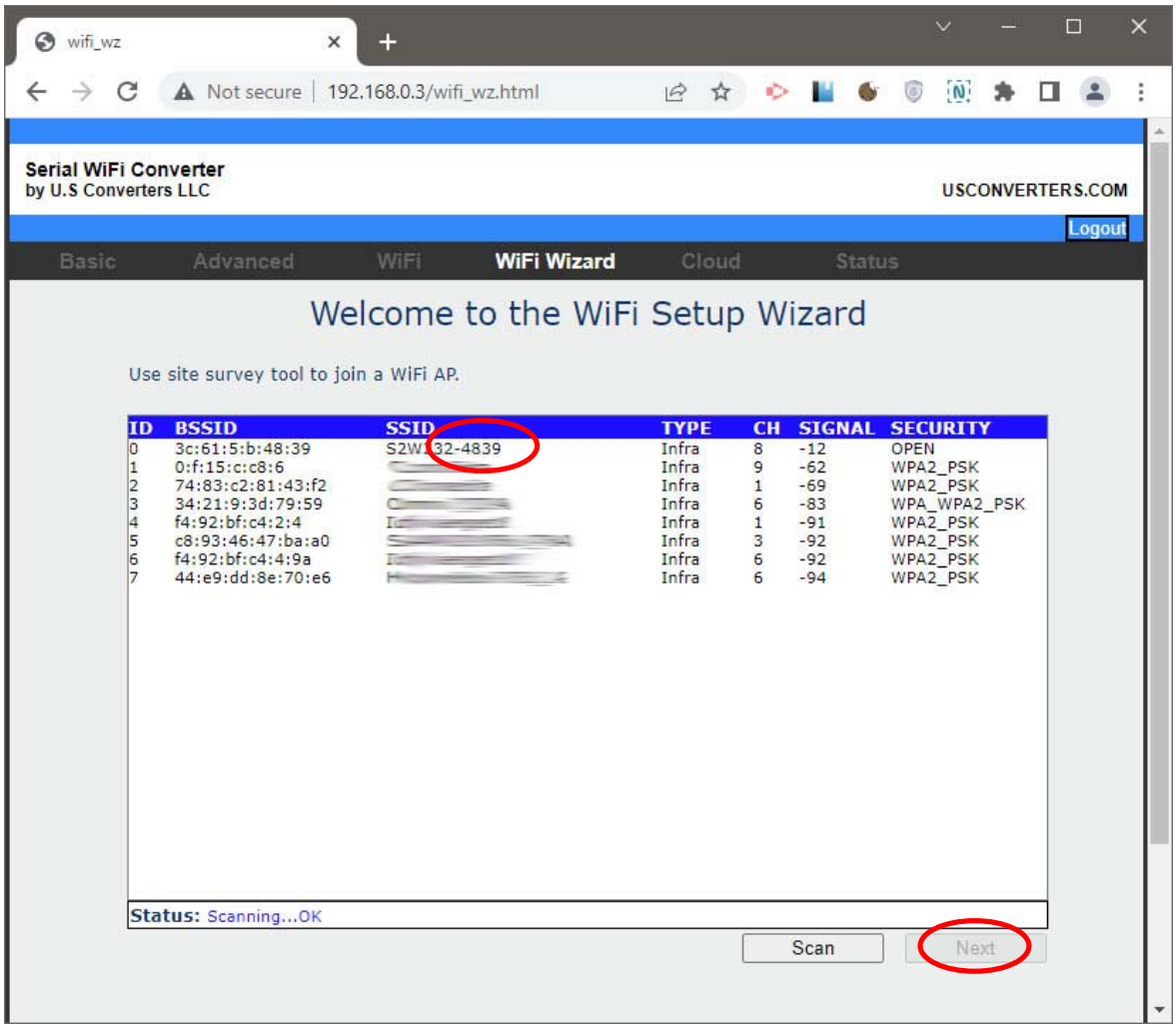
Connect to the first adapter (4451) in Windows WiFi Manager and use a web-browser to login to the adapter's admin panel at IP 192.168.0.3:



Go to the "WiFi Wizard" page and scan for the other adapter:



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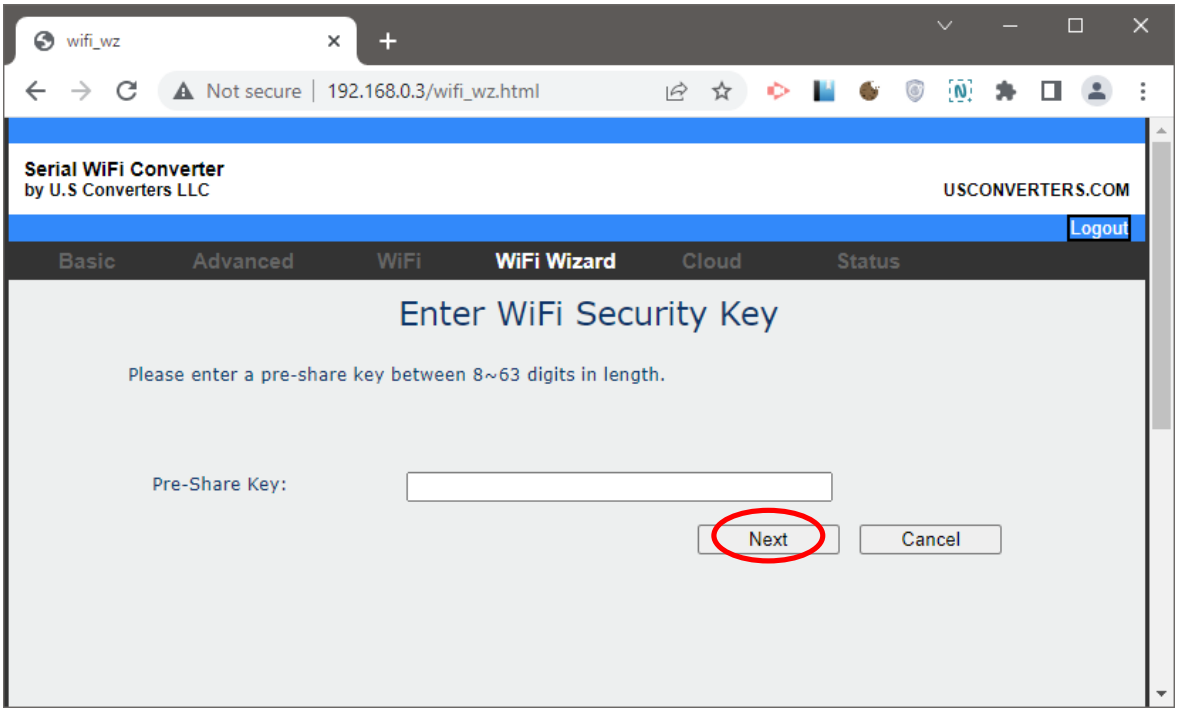
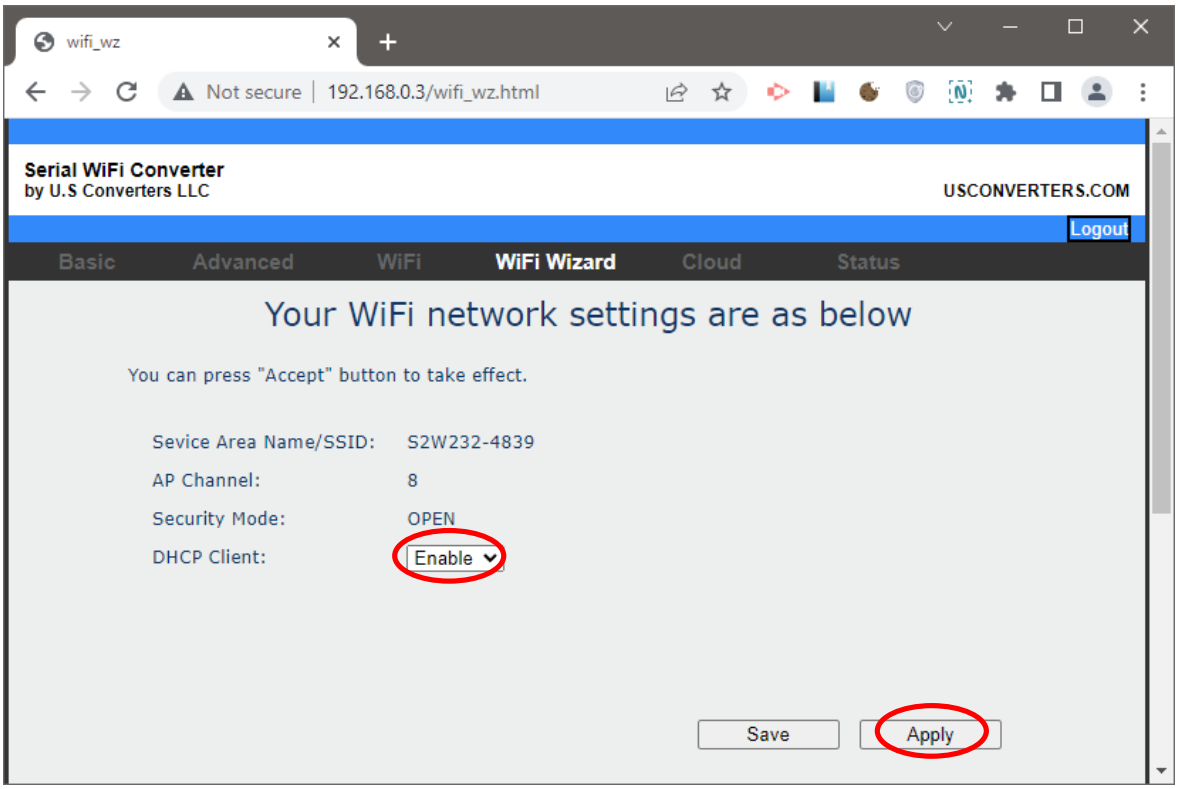
Select the adapter in the list (4839 in this example) and click Next.
Let the “Pre-Share Key” be empty and click Next:



Let DHCP stay enabled on the next page and click the “Apply” button:



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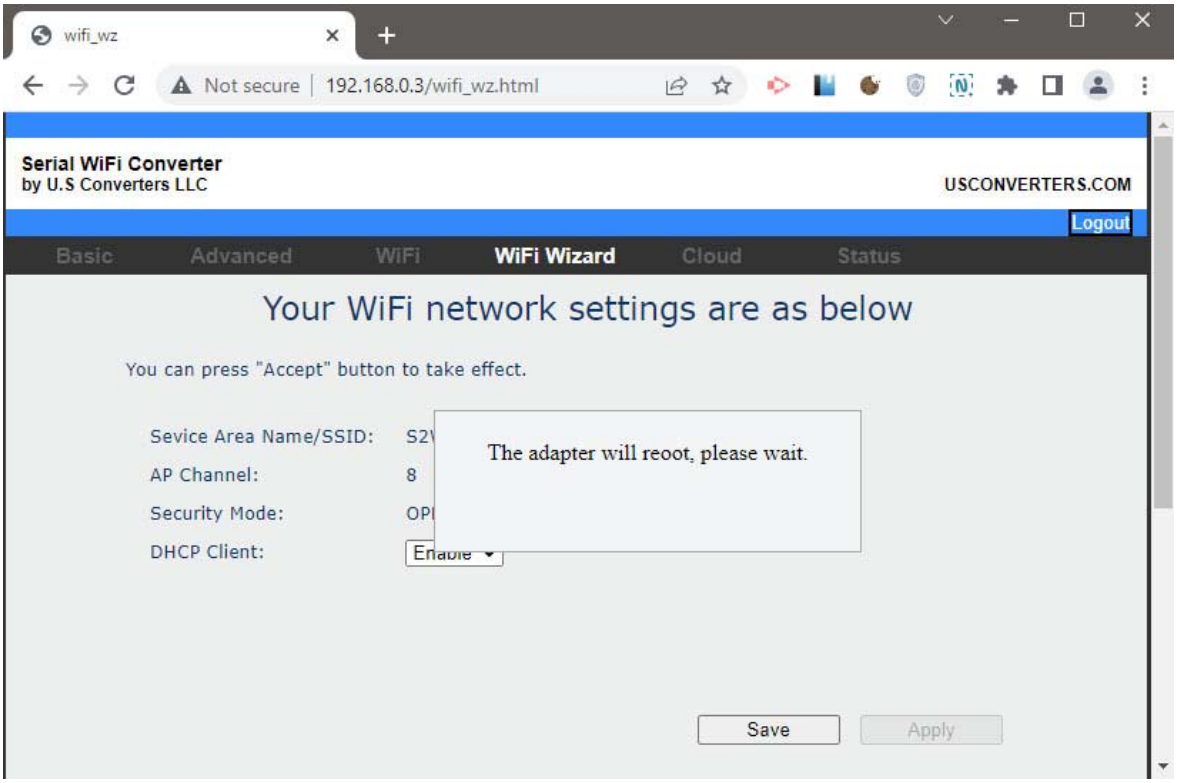
The adapter will reboot into Station mode:



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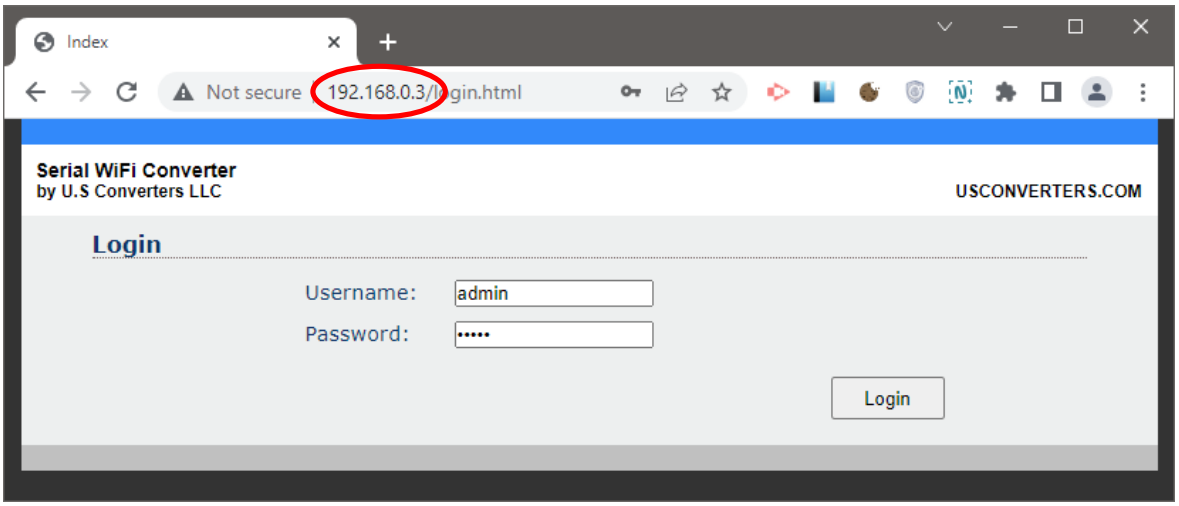
Now connect to the other adapter (4839) using Windows WiFi Manager:

Login to the admin panel at 192.168.0.3:



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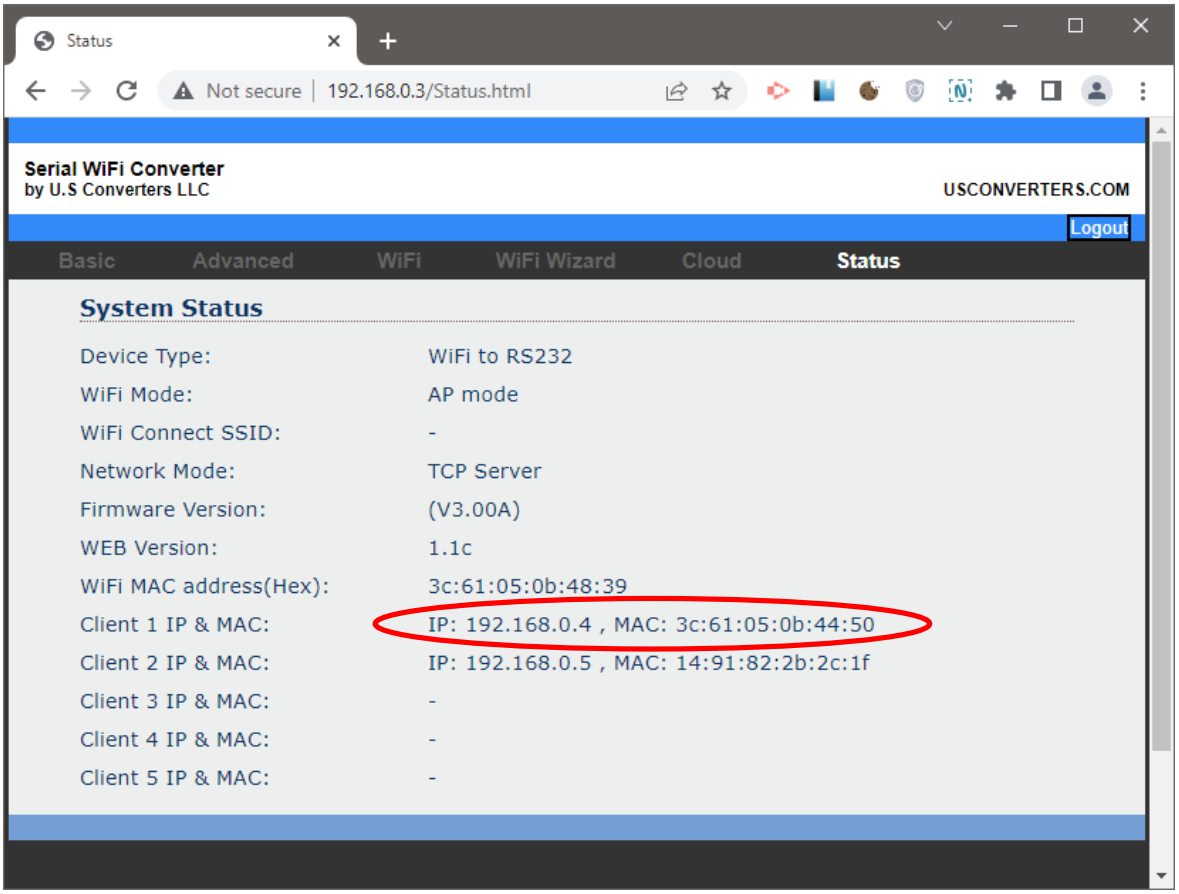
Go to the “Status” page:



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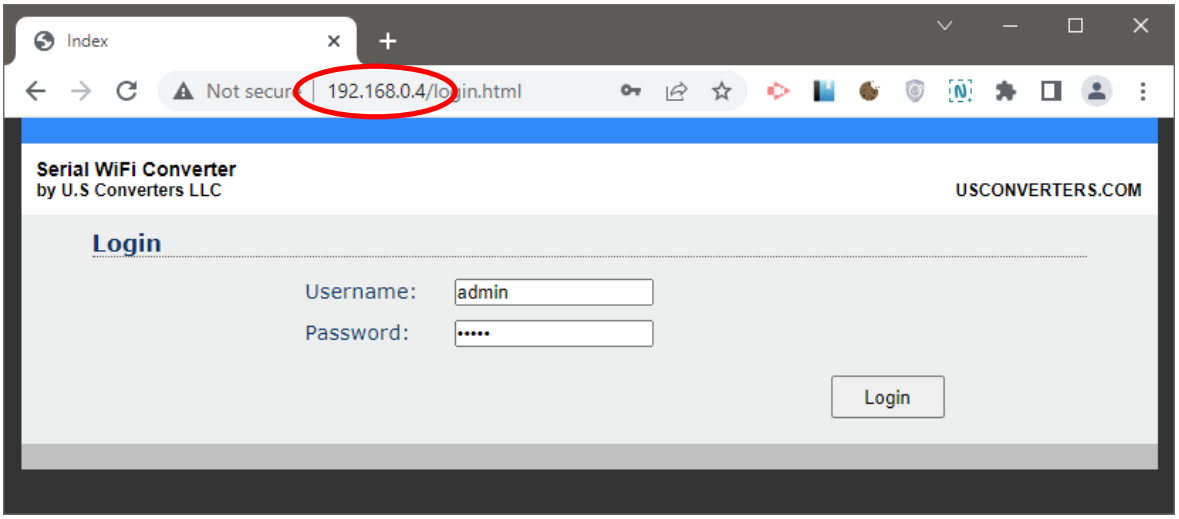
The status page shows us that the Station adapter's IP address is 192.168.0.4. So now you need to login to 192.168.0.4. in your web-browser:



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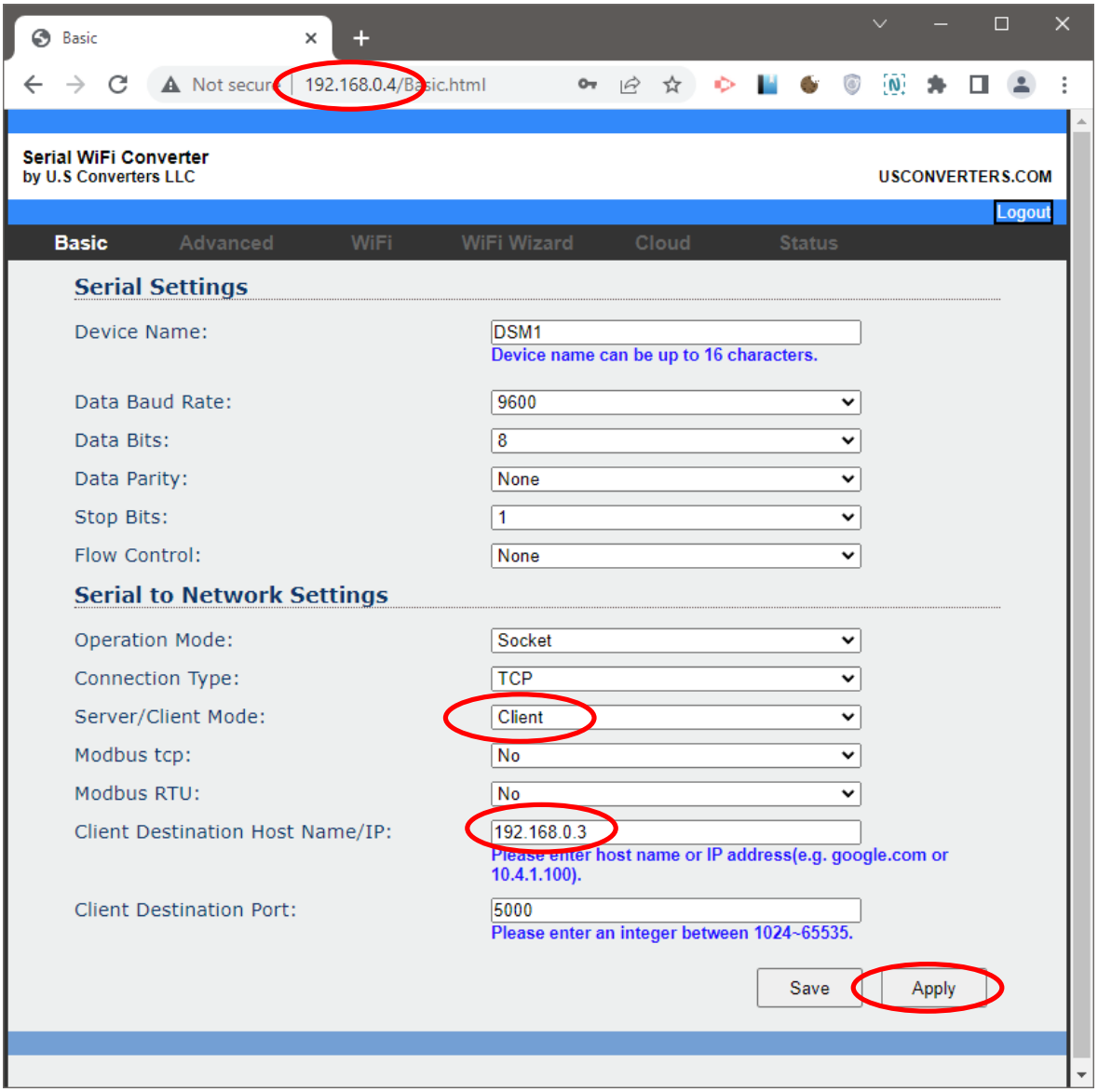
Set “Server/Client Mode” to Client and enter the “Client Destination Host Name/IP” for the other adapter (MAC 4839 in this example) which is the default IP address 192.168.0.3:



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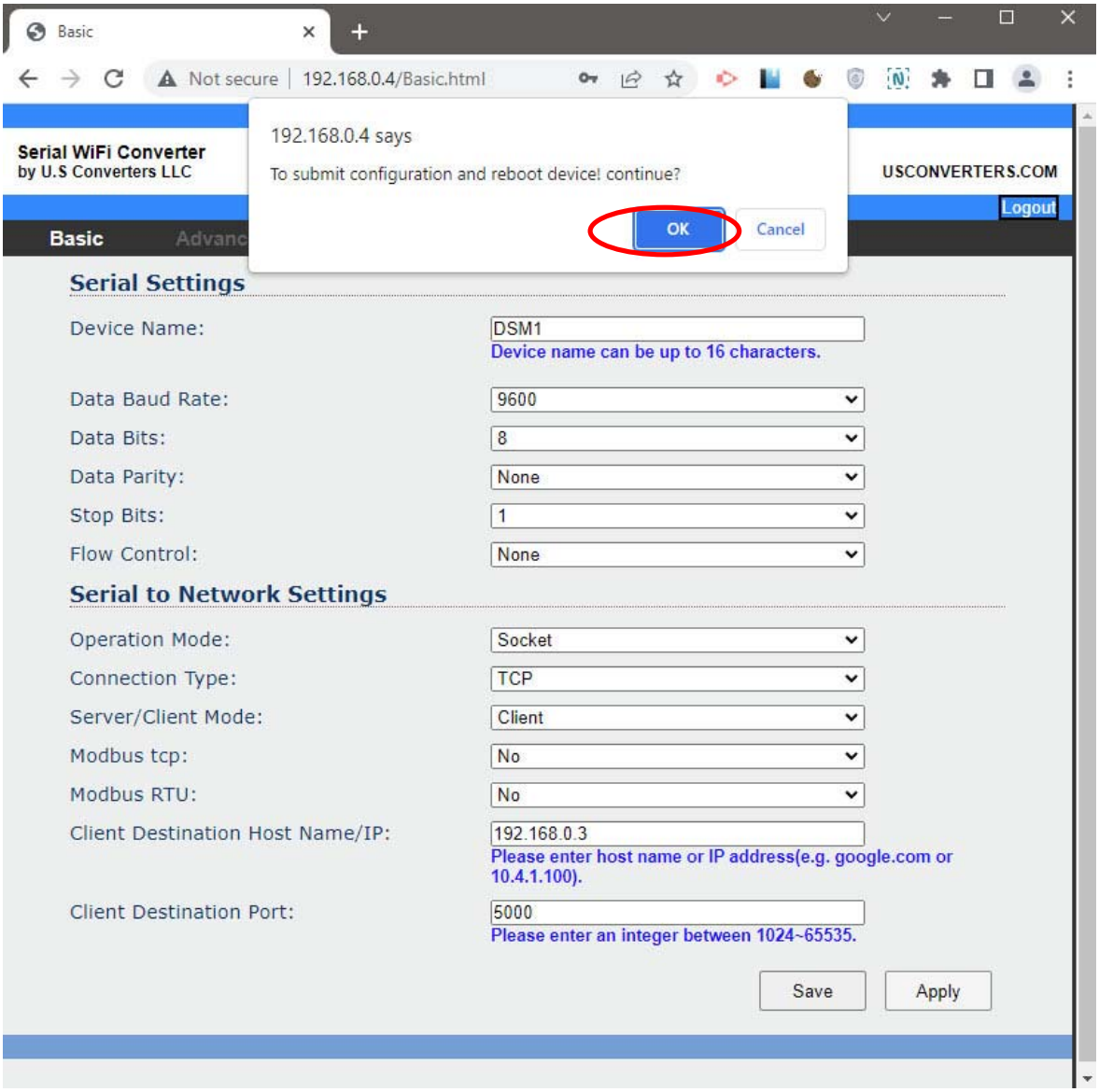

The two adapters are now linked.

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Communication test.

To test if the linked adapters are working properly and can send and receive data, you can make a communication test.
Start by ensuring that the DTE/DCE switch on the back of both adapters is in **position DCE**.
Connect one adapter to a USB to serial adapter which is connected to your computer and create a virtual COM port.
In the other adapter, connect a jumper wire from the TX pin (pin 3) to the RX pin (pin 2) in the DB9 connector. A female/female DB9 gender changer will make it easier to connect the jumper wire.

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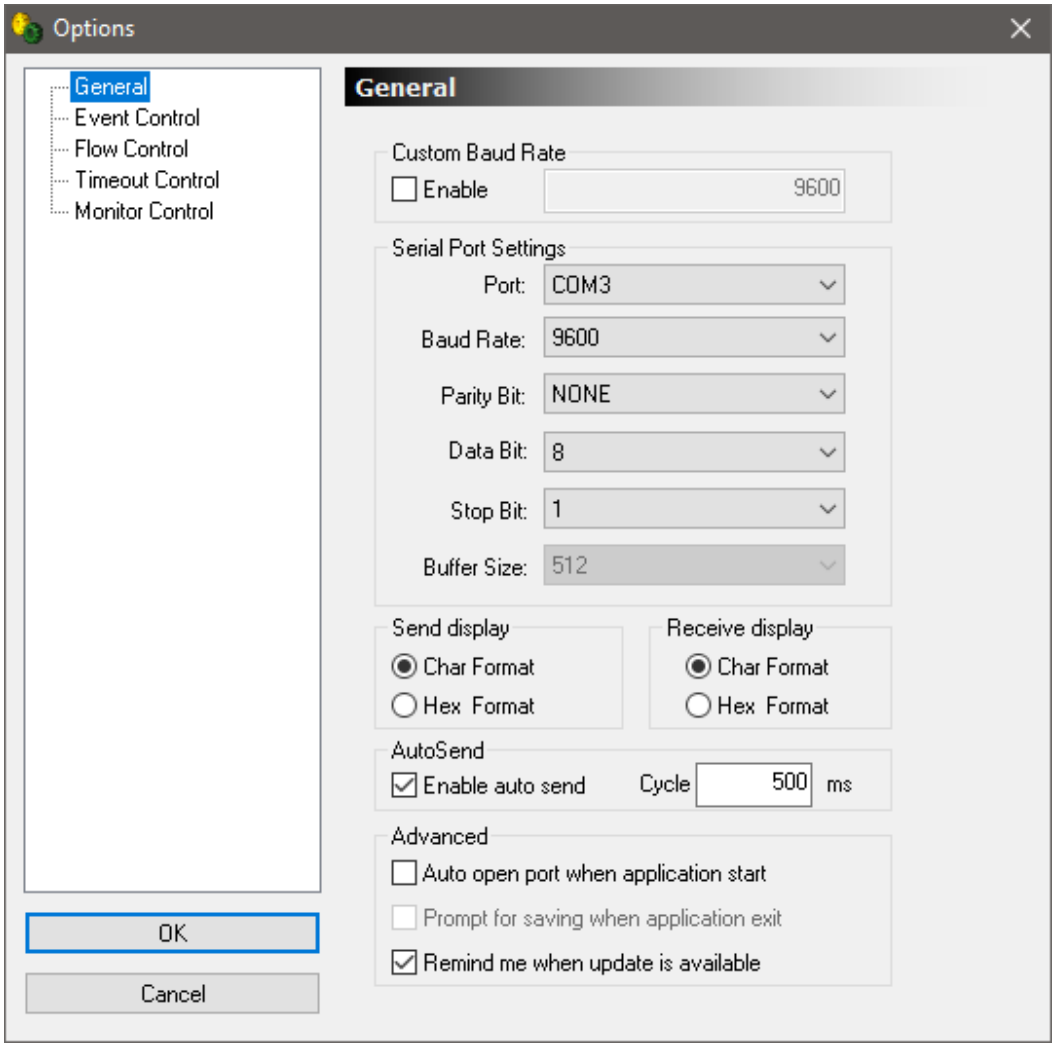
Open a terminal program such as AccessPort, Putty or TeraTerm (or any other terminal program) and connect to the virtual COM port created for the USB to serial adapter.
In this example we use AccessPort:



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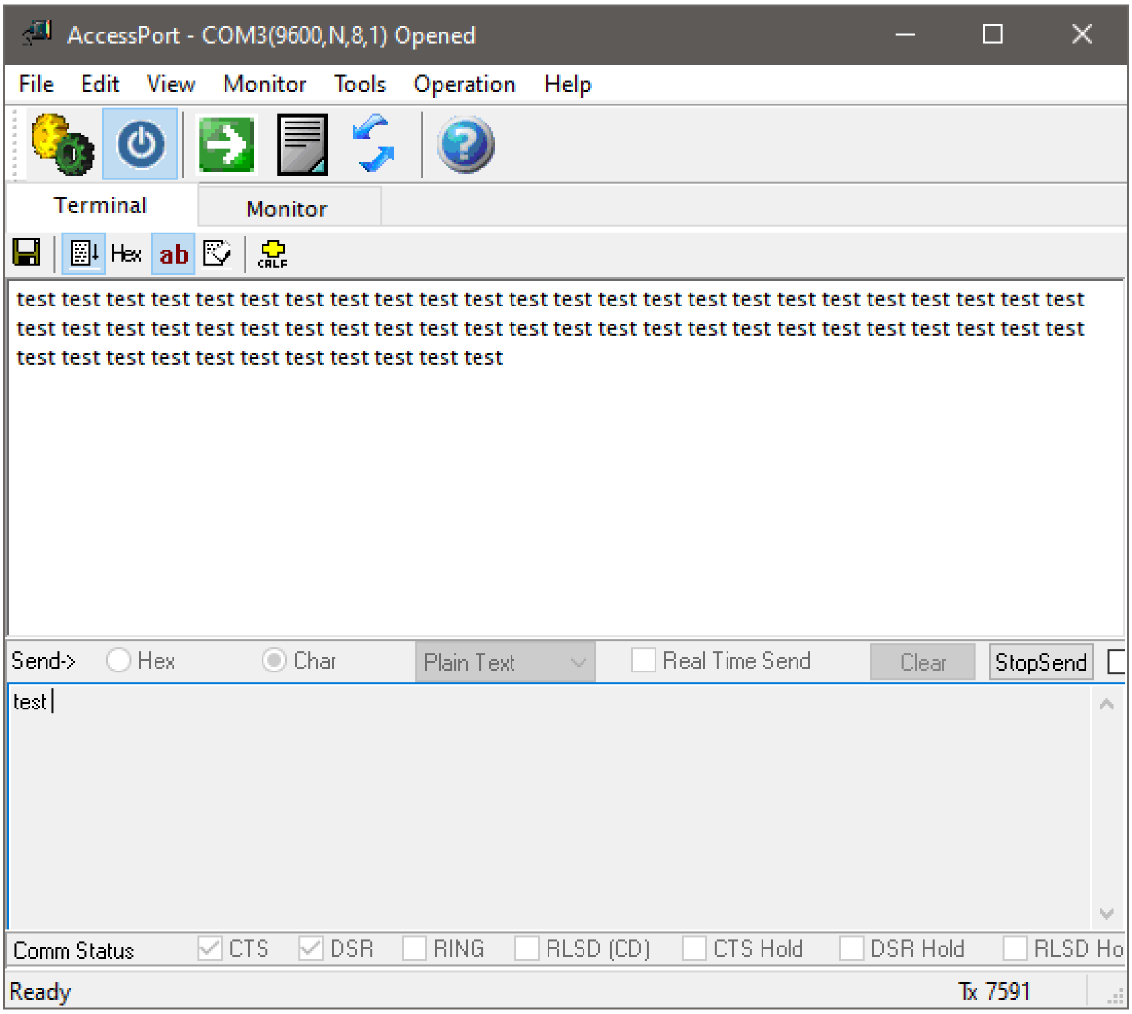
You should now be able to send data from the virtual COM port, to the local adapter which will send it over WiFi to the remote adapter. The remote adapter will send the data back to the local adapter through the jumper wire and finally back to the virtual COM port.



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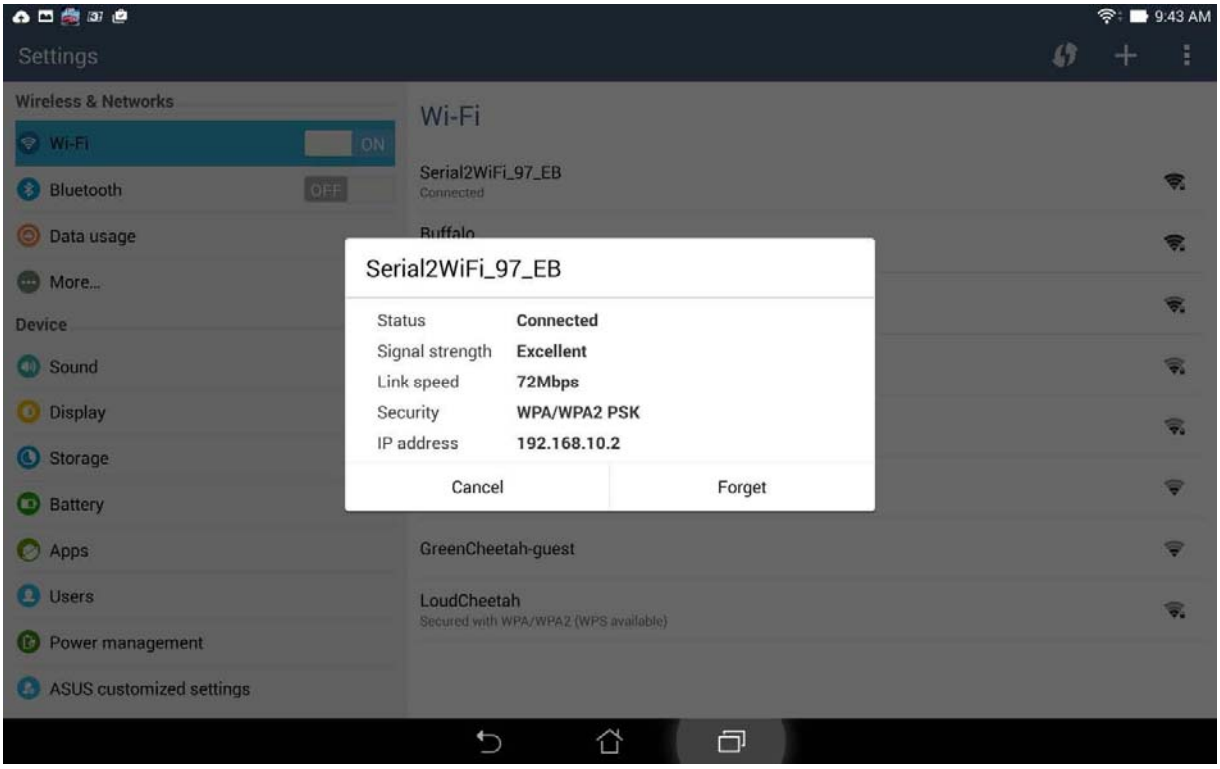
Connecting with Android

Connecting and communicating with the S2W232E-ESP32 using an Android tablet is easy. Simply search for the
S2W232E-ESP32 using the tablet's built-in WiFi manager and connect to the S2W232E-ESP32:



You can now login to the adapter's admin page using any web-browser.

A free terminal emulator APP for Android is offered from the Google Play store:

http://play.google.com/store/apps/details?id=com.ucconnect.uctcpipadapter_hex

Most of the free serial terminals are compatible with the S2W232E-ESP32, simply search the Google Play Store for "Serial Terminal", see what is available and experiment with the various terminals until you find one you like.

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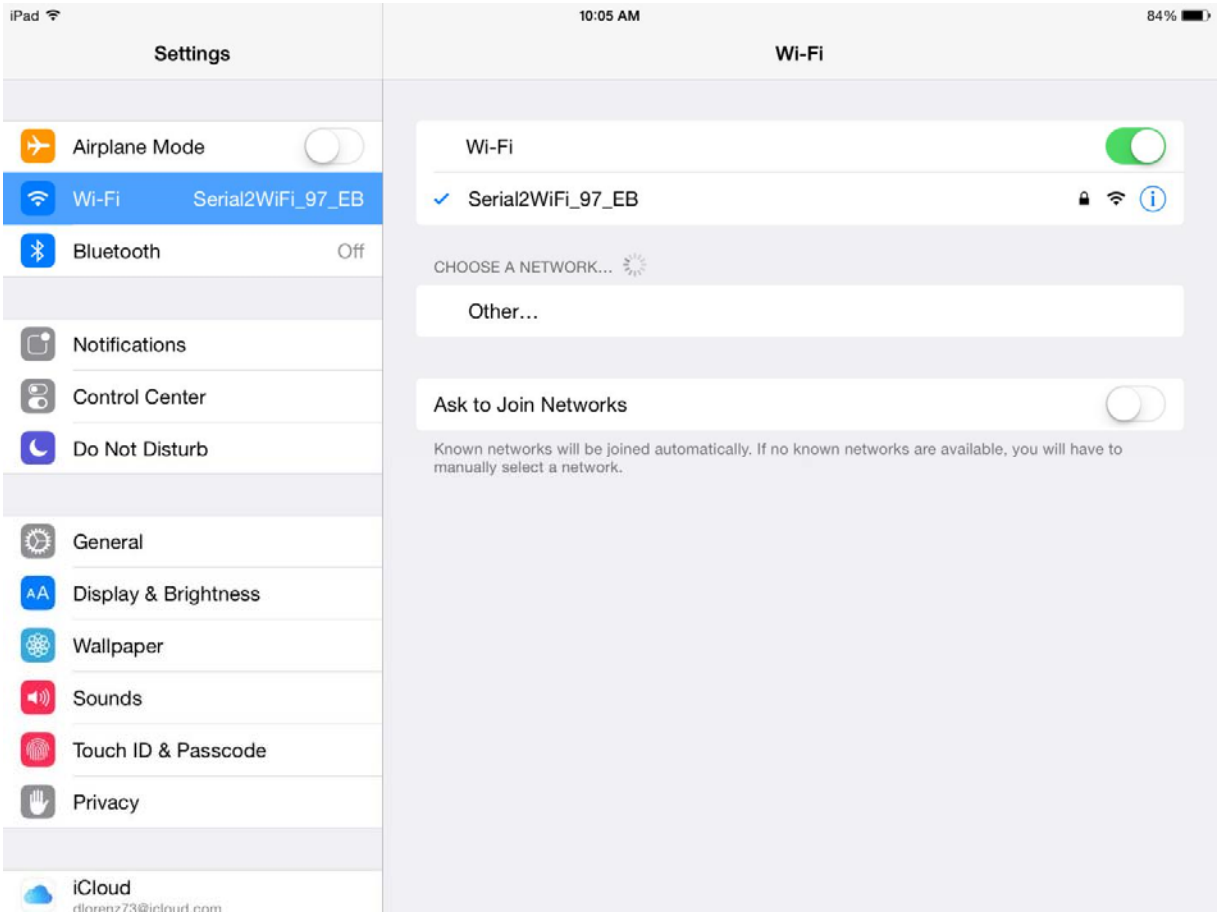
Connecting with iOS

Connecting and communicating with the S2W232E-ESP32 using an iPad table is easy. Simply search for the S2W232E-ESP32 using the tablet's built-in WiFi manager and connect to the S2W232E-ESP32:



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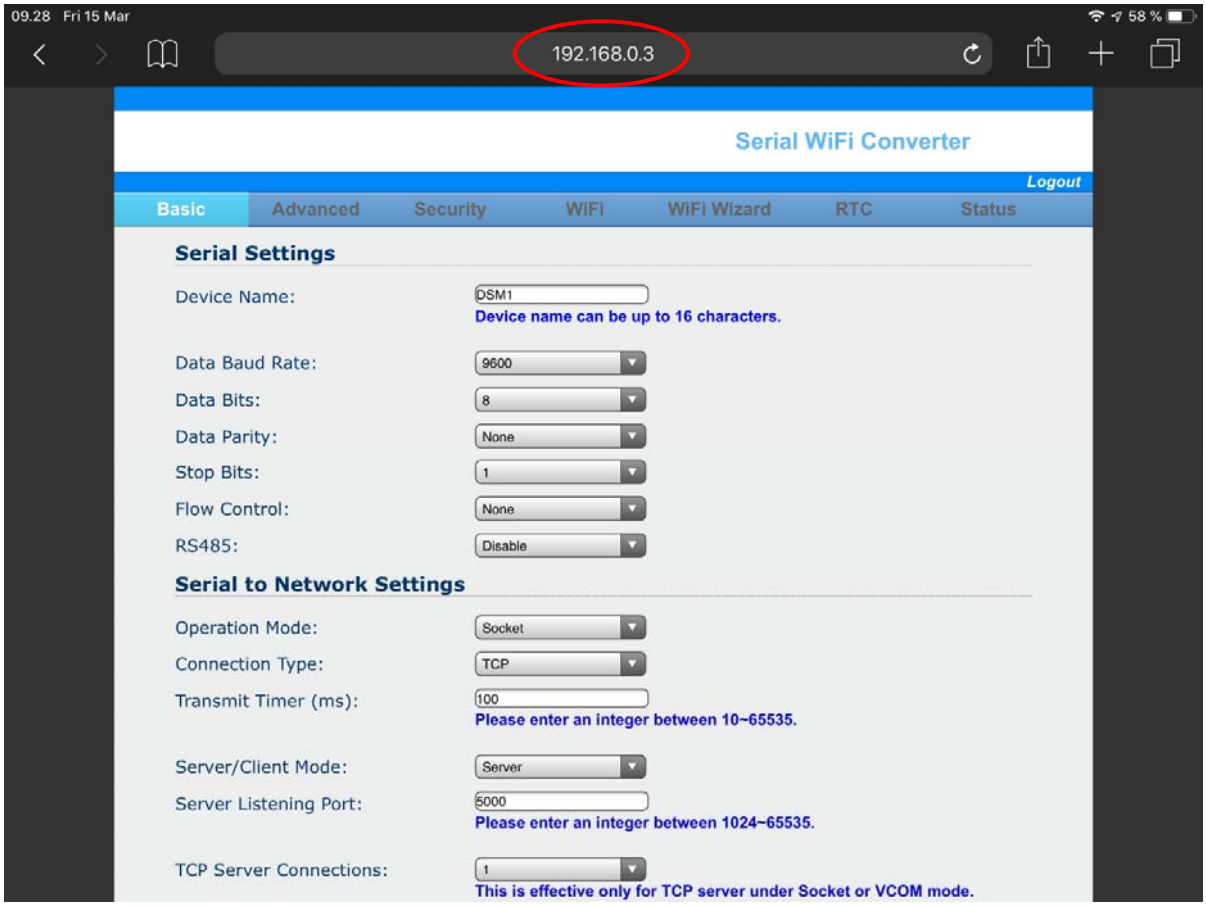
You can now connect to the S2W232E-ESP32's admin page by using a web-browser:



A free terminal emulator APP for iOS is offered from the app store:
https://apps.apple.com/us/app/tcp-ip-to-serial-terminal/id1238054234?l=zh&ls=1

Most of the free serial terminals are compatible with the S2W232E-ESP32, simply search the Apple App Store for "Serial Terminal", check what is available and experiment with the various terminals until you find one you like. Here is the QR code for the free APP:

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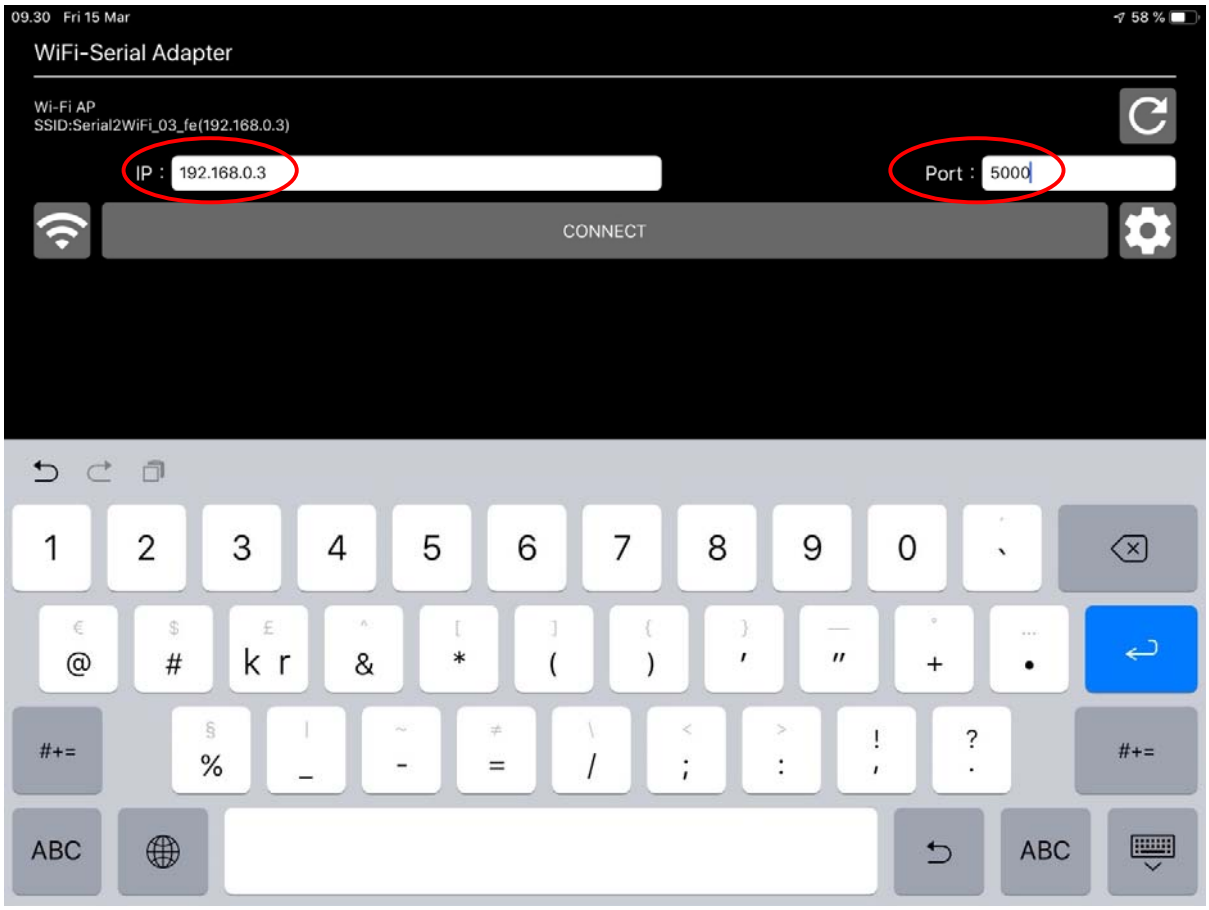
Enter the S2W232E-ESP32's IP address and port number, 192.168.0.3 port 5000, and press the CONNECT button:



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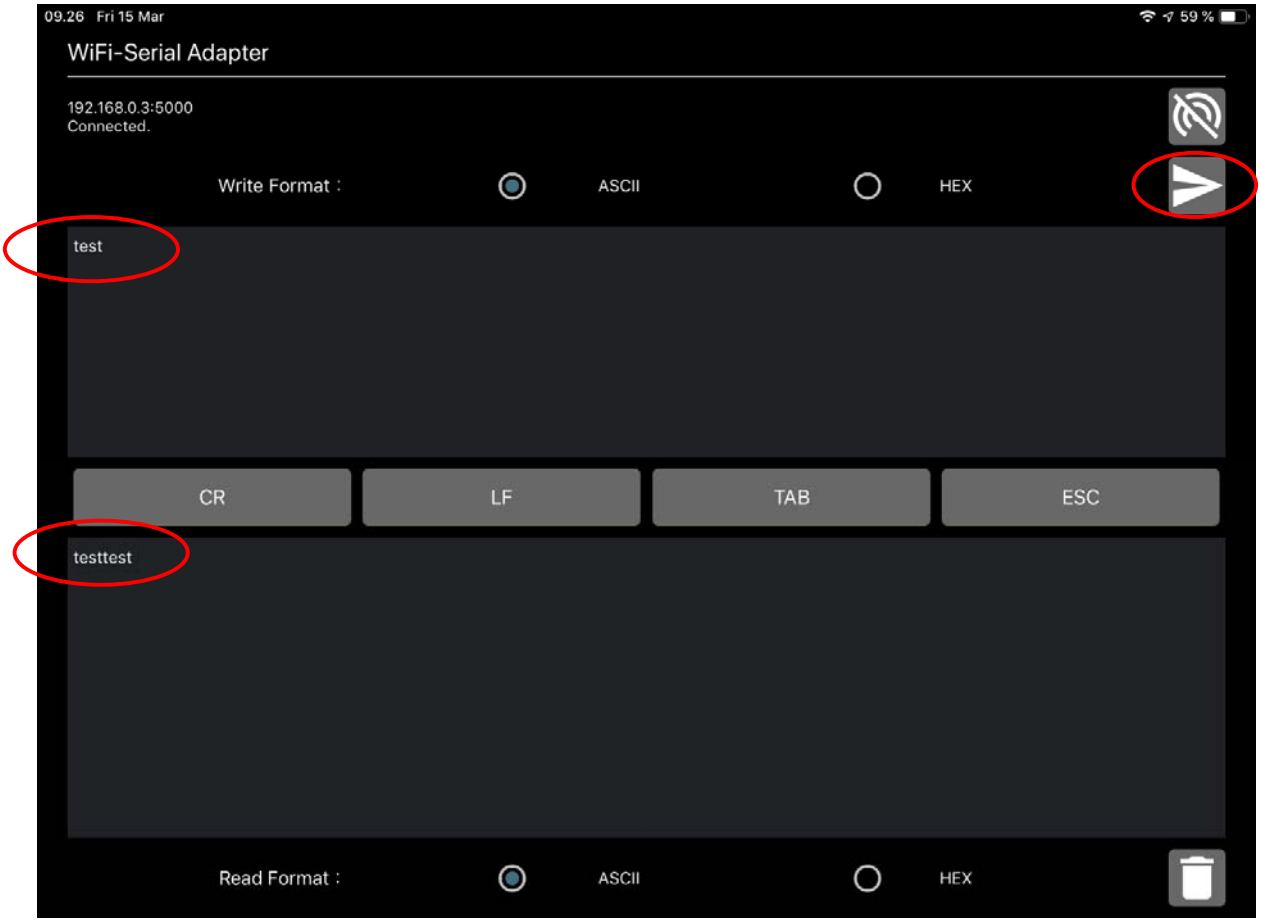
Now put a jumper wire between the TX and RX pins (pins 2 and 3) in the S2W232E-ESP32's DB9 connector. Enter a text string in the upper 'send' window and press the send button:



If the connection is set up correctly, you have the jumper wire in place and the adapter is working properly then the text from the upper window will be received in the lower 'receive' window.

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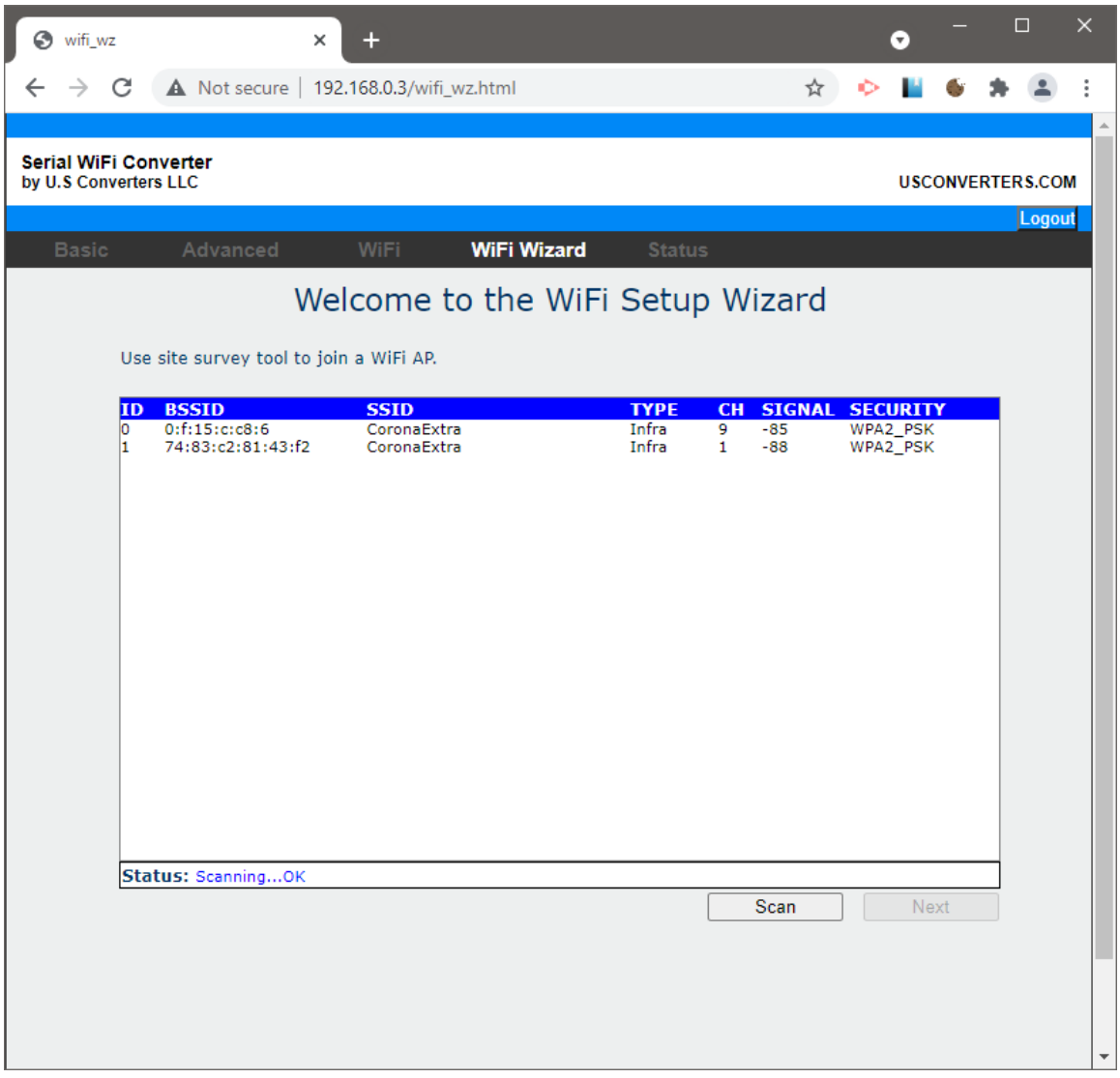
How to connect the S2W232E-ESP32 using a wireless router

The setup looks like this:

First login to the S2W232E-ESP32 using an access point (not the wireless router) as described earlier in this guide. Go to the “WiFi Wizard” screen, select the SSID you want to connect to and click the “Next” button:



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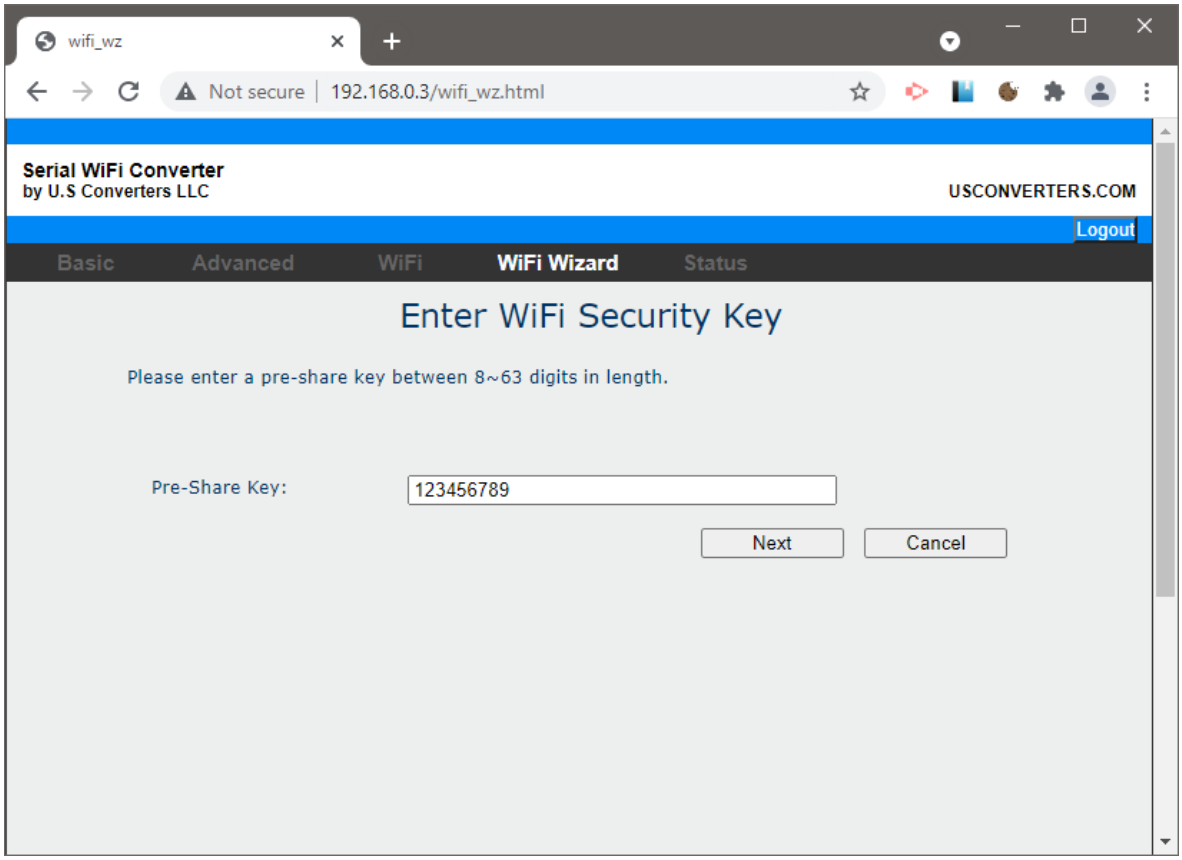
Enter your security key:



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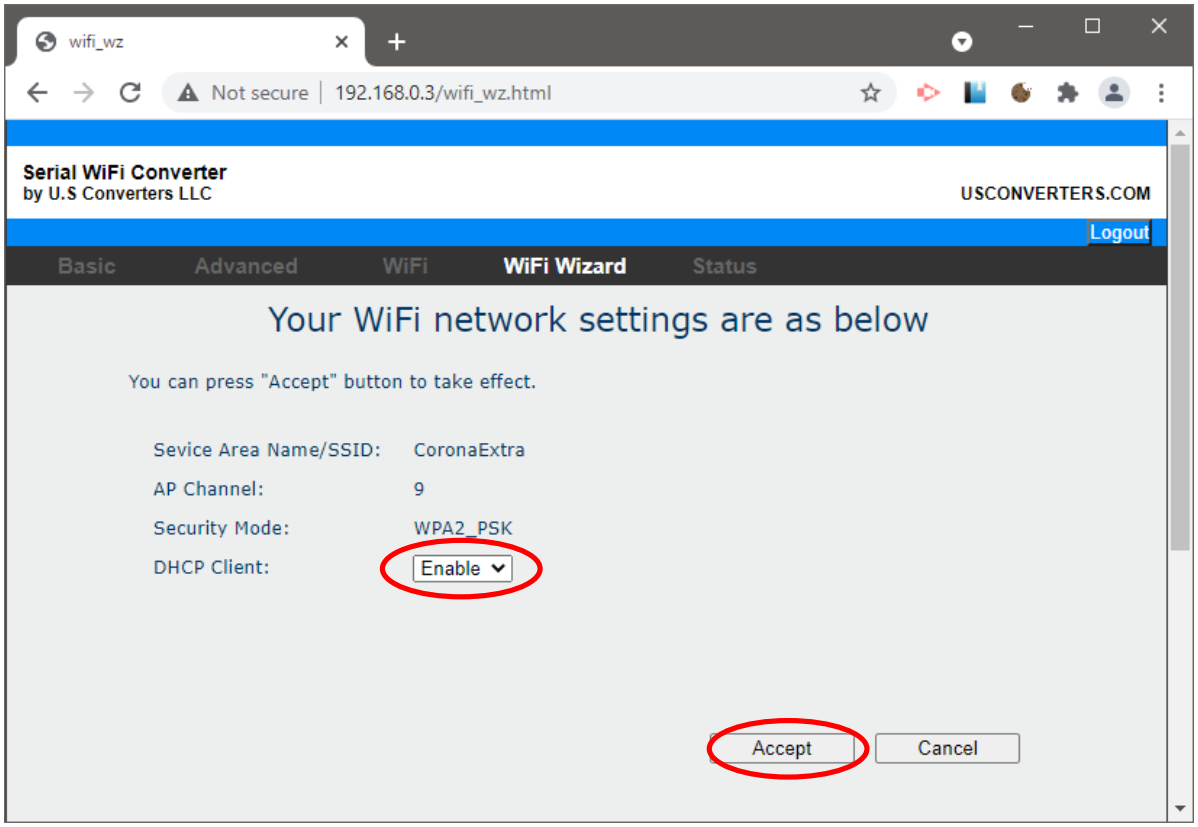
Enable DHCP or give the S2W232E-ESP32 a static IP address and click the “Accept” button:



Now power cycle the adapter. Shortly after you re-connect power to the adapter it should automatically link with your wireless router and the blue LED light on the adapter should turn steady ON, otherwise the adapter is not successfully connected to the network.

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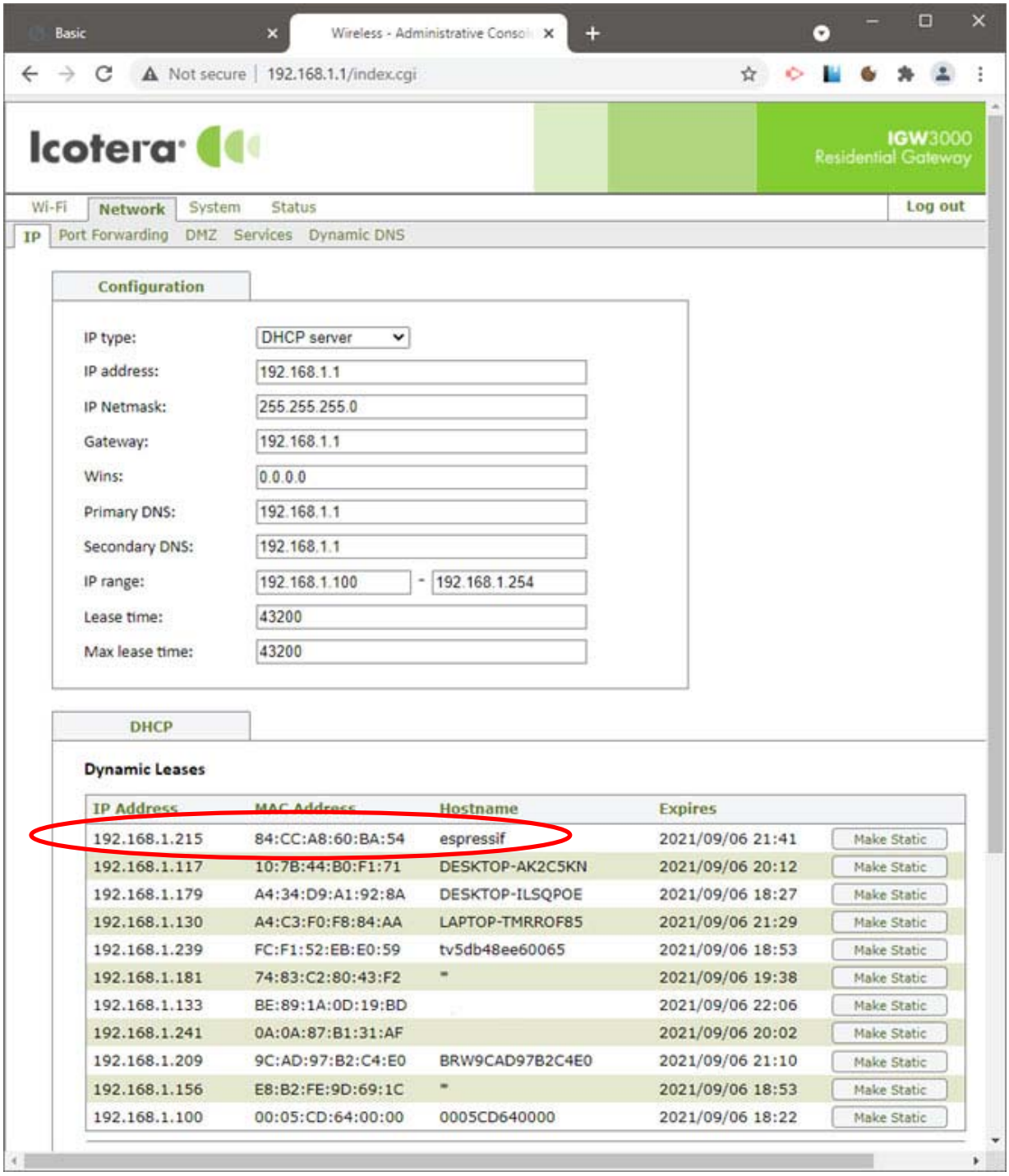
To check and verify if the S2W232E-ESP32 has joined the network successfully you may be able to login to your wireless routers admin status page and see what IP address has been assigned to the S2W232E-ESP32:



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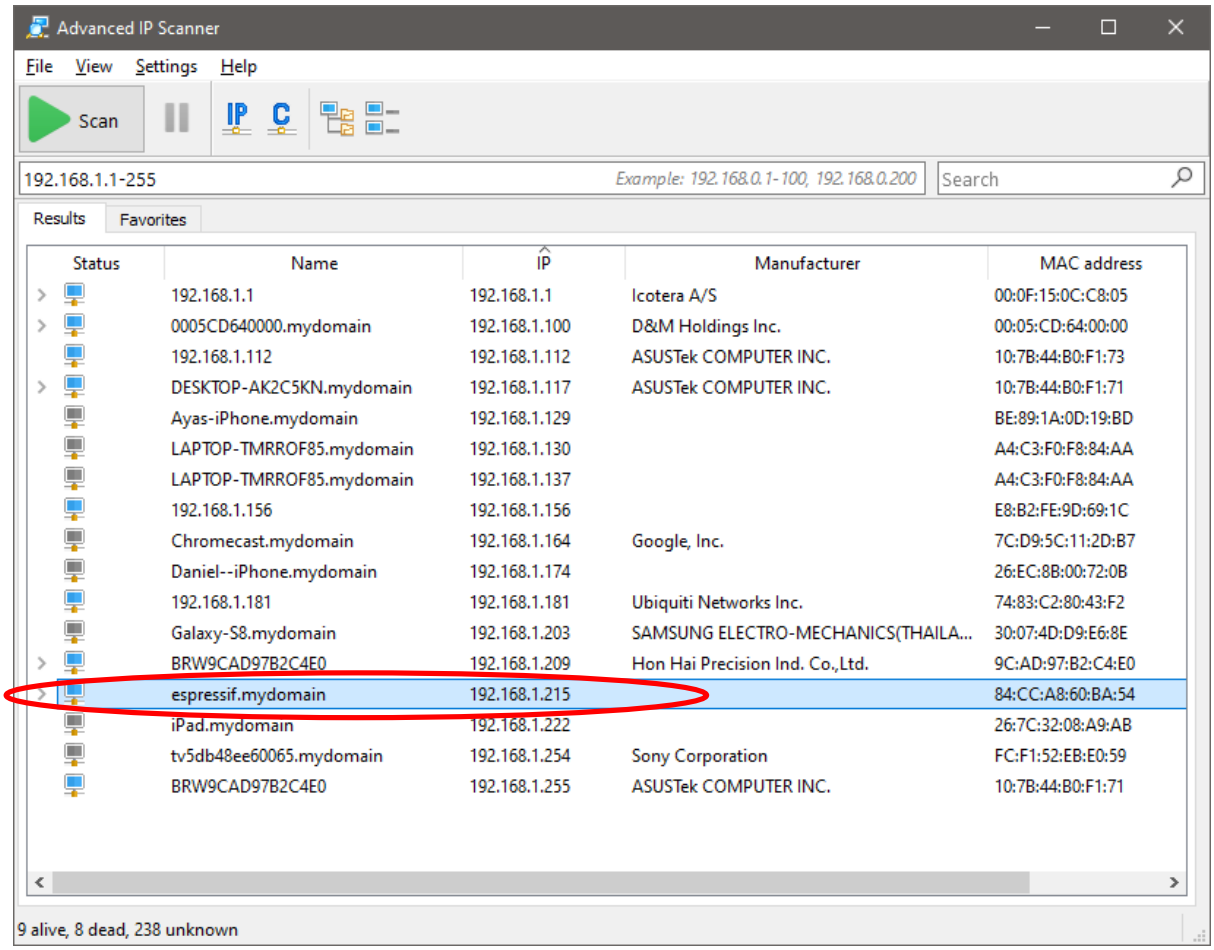
If logging into your wireless router is not an option then you can find the S2W232E-ESP32's IP address with an IP Scanner such as "Advanced IP Scanner", http://www.advanced-ip-scanner.com/



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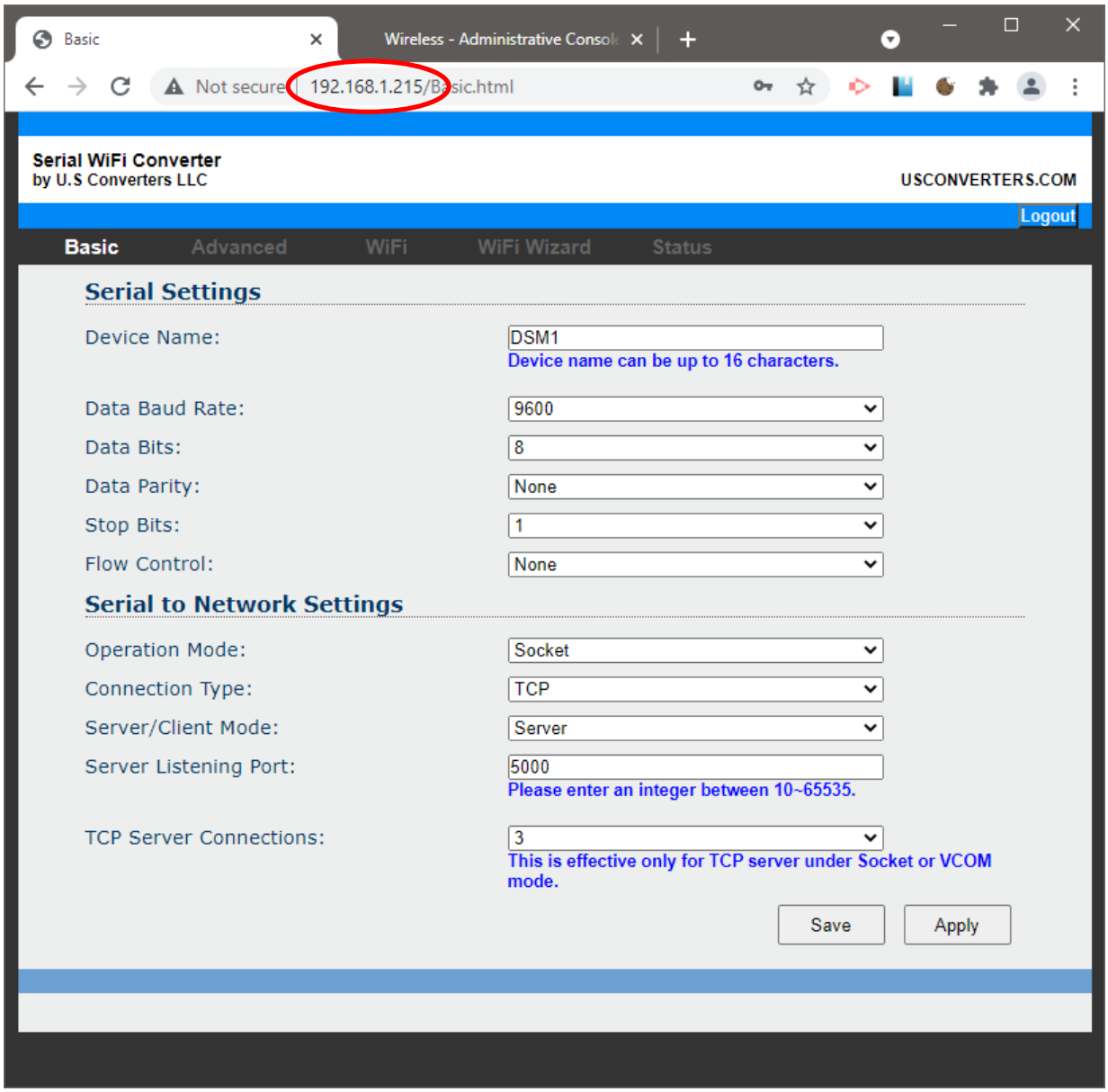
You can now login to the S2W232E-ESP32 using the new IP address:



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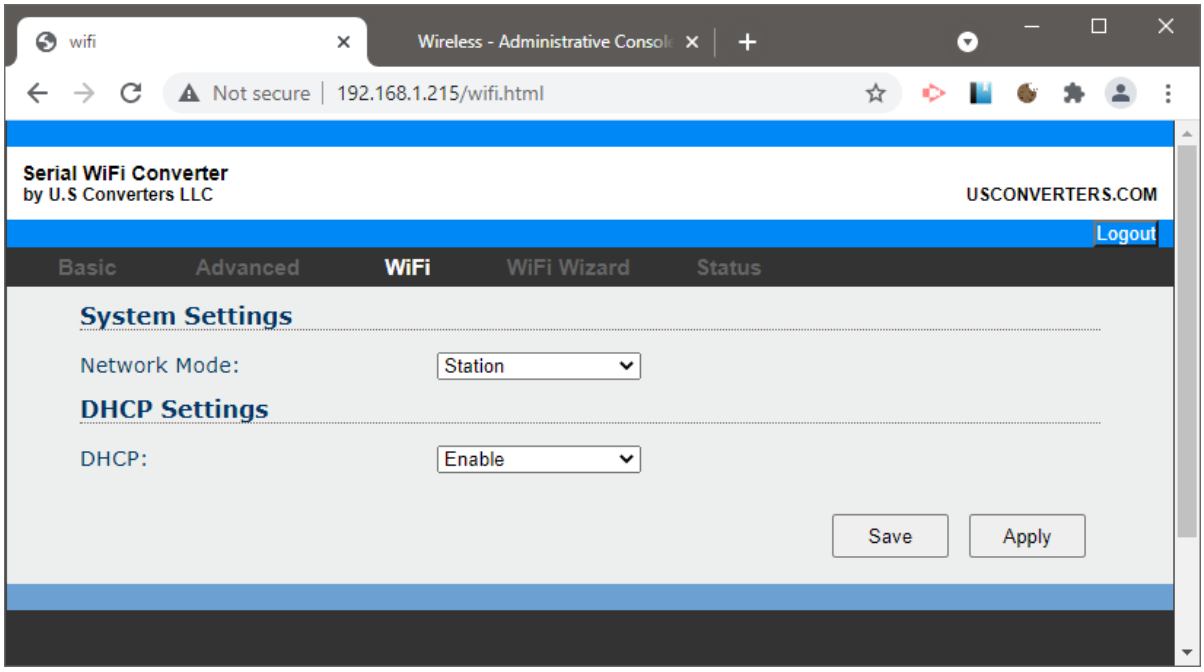

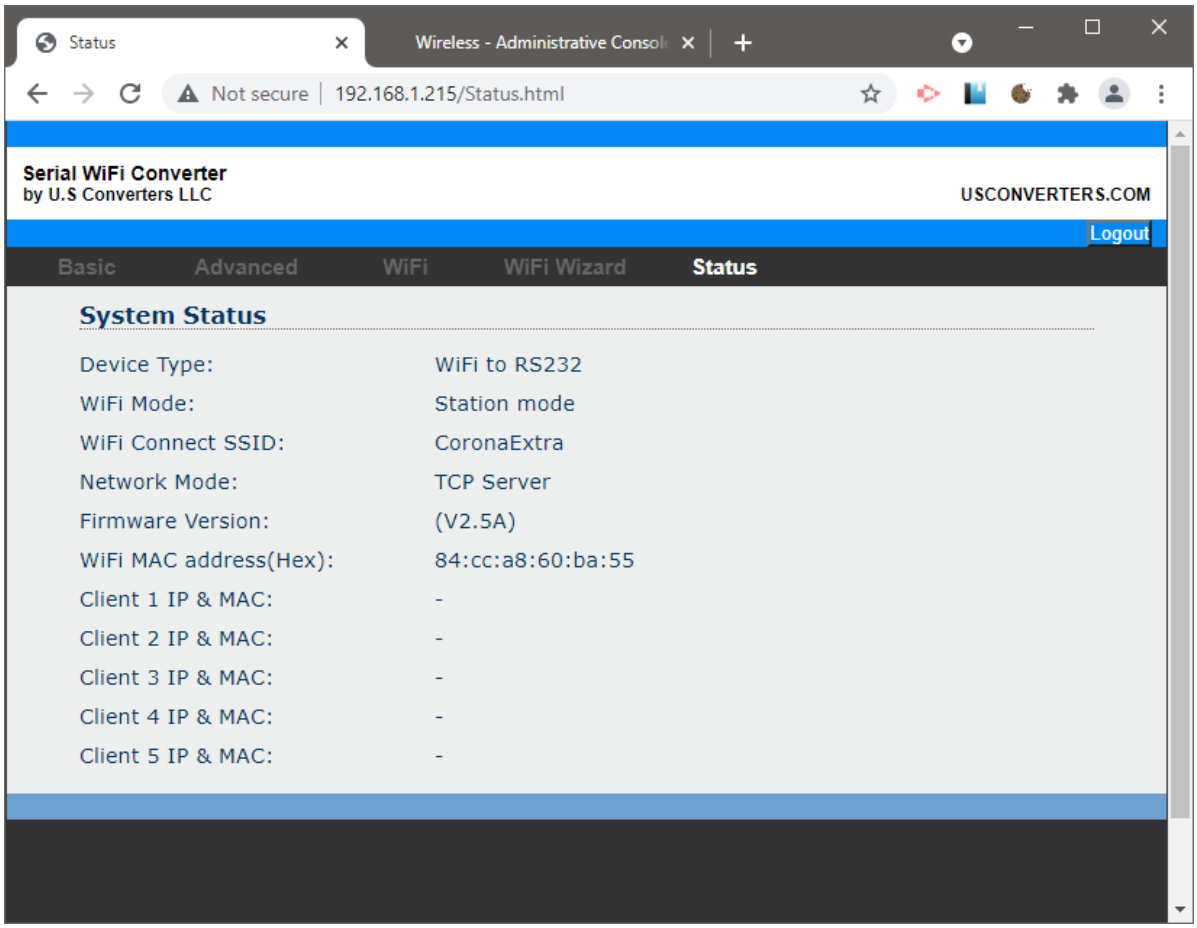

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Troubleshooting / Known issues

Dropped connections or connection problems.

Using a serial WiFi adapter on a high traffic network with many WiFi and/or Bluetooth connections may sometimes be a challenge since all WiFi and Bluetooth devices share the same 2.4Ghz frequency. Sometimes this “noisy / busy” environment can cause problems connecting to the S2W232E-ESP32 or it can cause dropped connections, so here are a few things you can try to improve the situation:

1. Try changing the wireless channel.

2. Try changing the wireless data rate. Lowering the data rate may help improve time-out issues.

3. If possible try and scan the 2.4Ghz spectrum. This can for example be done by using a 3rd party software such as:

   inSSID:
   http://www.metageek.net/products/inssider/
   WiFi Stumbler:
   http://meraki.cisco.com/products/wireless/wifi-
   stumbler For Android: WiFi Analyzer APP

   Analyze the network and use the channel with the least number of other wireless devices.

1. Check the number of DHCP clients of your router if you use a wireless router. If the number of available IP addresses is less than the number of S2W232E-ESP32 's then they will disconnect randomly.

2. Make sure the S2W232E-ESP32’s power supply is sufficient. We recommend 5VDC 1000mA USB power adapter, powered from a 120VAC-5VDC wall adapter.

3. Bandwidth of AP: If you connect using an external Access Point, please set 20 MHz bandwidth. 40 MHz may not work.

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Question:

Can I be connected to the Internet while also being connected to the S2W232E-ESP32? (when using a Windows laptop with a built-in WiFi card).

Answer:

Windows does not have a feature to have two wireless networks connected at the same time using only one network card. So you would need to connect another WiFi card (for example a USB WiFi dongle) to your PC to be able to have two network connections at the same time.
This works in most cases however Windows does have bugs in this regard, in some cases Windows will crash when connecting two wireless cards to the same PC.
Linux does not have this 'limitation'.

Federal Communications Commission (FCC) Statement
RADIO FREQUENCY INTERFERENCE STATEMENT
THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS.
(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE AND
(2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED , INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.
Tested to comply with FCC standards for home or office use

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