

## How to setup a the USCHF2211 Serial WiFi adapter

This Step-by-step guide explains how to get started using the Serial WiFi Adapter part USCHF2211.

<a href="#">Powering the USCHF2211 module</a>	2
<a href="#">Configuring the parameters</a>	3
<a href="#">Access the parameters over WiFi</a>	4
<a href="#">How to create a virtual COM port</a>	7
<a href="#">Making a loop-back test</a>	9
<a href="#">Pairing two modules</a>	13
<a href="#">How to connect the USCHF2211 using a wireless router</a>	21
<a href="#">FAQ</a>	32
<a href="#">Testing XON/XOFF software flow control</a>	35



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### **Powering the USCHF2211 module.**

The USCHF2211 module can be powered by a 5 - 36VDC, 350mA (max) voltage and a standard connector jack size of 5.5 x 2.1 x 11.5mm, or through screw terminals.

When power is applied to the module the red “Power” LED should be solid ON.

A standard 110VAC / 9VDC power adapter as shown below can be used to power the module.



## Configuring the parameters.

There are four ways of configuring the parameters of the USCHF2211 module:

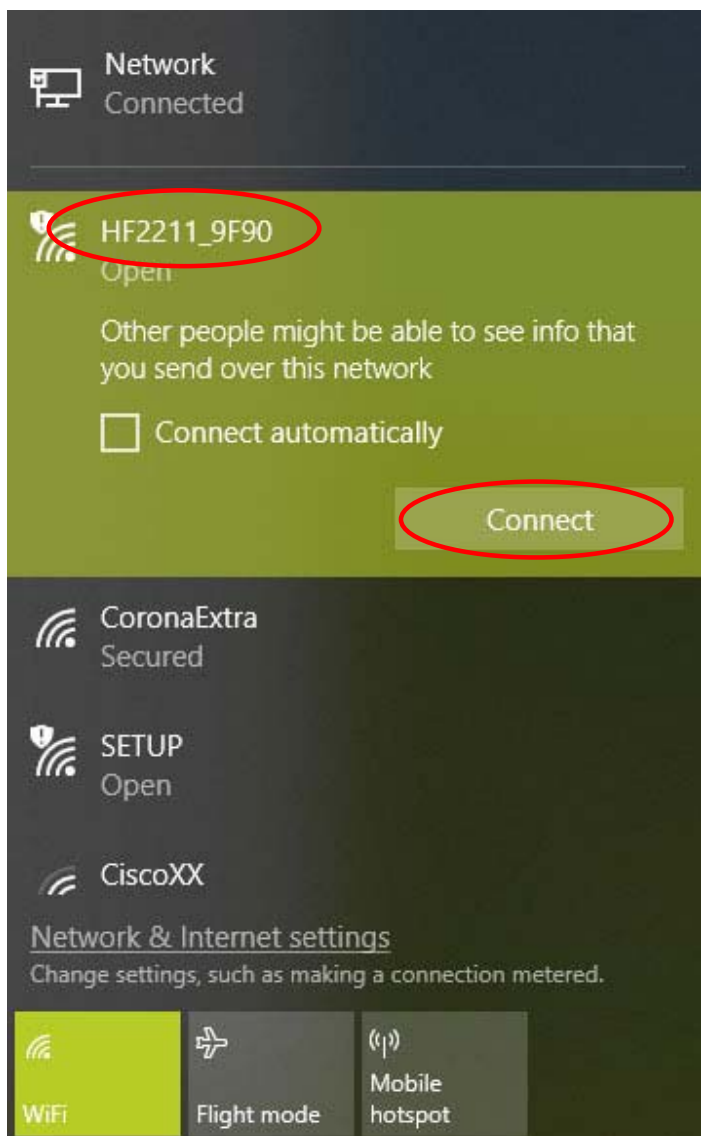
- Over WiFi or LAN using a standard web browser to access the parameters (recommended method).
- Over WiFi or LAN using Telnet.
- Over WiFi or LAN using software utility.
- Through the RS232 port using CLI commands.

We will here describe how to configure the parameters using a web browser. Please contact us for more information if you wish to configure the module in other ways.

## Access the parameters over WiFi.

Your PC needs a WiFi network card or USB WiFi dongle installed in order to use this method. Most laptops have a built-in WiFi card.

First connect to the USCHF2211 module using your operating system's default wireless network manager. In this case we use Windows wireless manager.

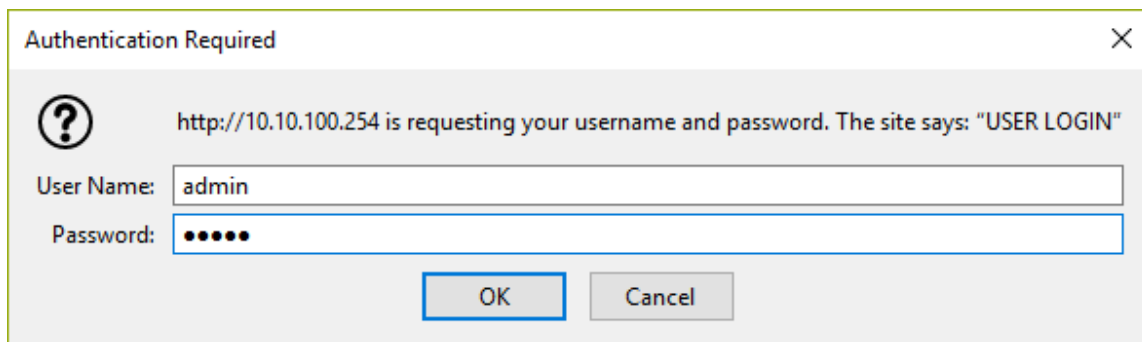


Once your computer is connected successfully to the USCHF2211 module you can open a web browser and enter the USCHF2211's IP address which by default is 10.10.100.254.

A login window will open. Enter the user name and password.

User: **admin**

Password: **admin**



The image shows a standard Windows-style dialog box titled "Authentication Required" with a close button (X) in the top right corner. Inside the dialog, there is a question mark icon on the left and a message on the right: "http://10.10.100.254 is requesting your username and password. The site says: 'USER LOGIN'". Below the message, there are two input fields. The first is labeled "User Name:" and contains the text "admin". The second is labeled "Password:" and contains six black dots. At the bottom of the dialog, there are two buttons: "OK" and "Cancel".

The main menu will open from where you can access all the parameters. Below are screenshots of the available parameters:

The screenshot displays the web interface for the USCHF2211 Serial WiFi Converter. The browser address bar shows the URL `10.10.100.254/index.html`. The page header includes the company logo, name, and model. A left sidebar contains navigation links for STATUS, SYSTEM SETTINGS, SERIAL PORT SETTINGS, COMMUNICATION SETTINGS, ADVANCED SETTINGS, and OTHERS. The main content area is titled 'Status' and provides a 'System running status overview'. It is divided into two sections: 'System State' and 'Serial Port State'. The 'System State' section contains a grid of parameters including Product Name, MAC, DHCP status, IP, Subnet Mask, Gateway, DNS, Firmware Version, System Time, Total Running Time, Remaining RAM, Max Block Size, Configuration Protected status, WiFi State, and WiFi Rssi. The 'Serial Port State' section shows Received Bytes, Received Frames, Sent Bytes, and Sent Frames, all currently at 0.

System State	
Product Name HF2211	MAC 98D863119F90
DHCP Enable	IP 0.0.0.0
Subnet Mask 0.0.0.0	Gateway 0.0.0.0
DNS 10.10.100.254	Firmware Version 1.34.04
System Time NTP Disabled	Total Running Time 0-Day 0:28:11
Remaining RAM 1651712	Max Block Size 1651712
Configuration Protected Disable	WiFi State Disconnected
WiFi Rssi 0	

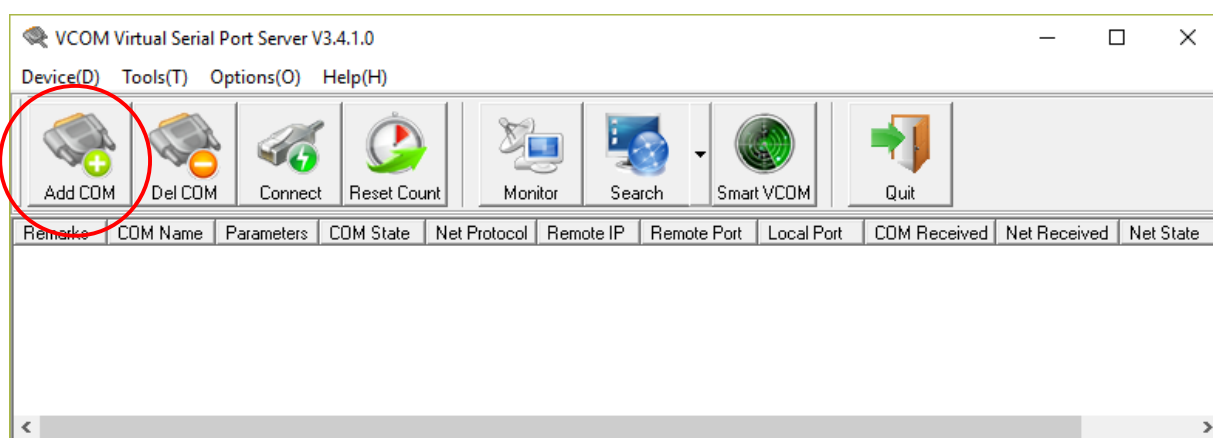
Serial Port State	
Received Bytes 0	Received Frames 0
Sent Bytes 0	Sent Frames 0

## How to create a virtual COM port

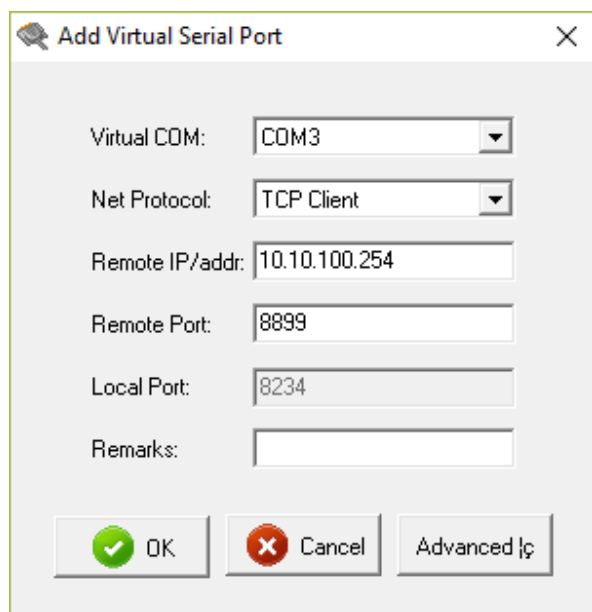
To create a virtual COM port for the USCHF2211 module which can be used by a serial application or serial device you need to use a COM port redirector, also called virtual COM port software.

You can either use the VCOM software made for the USCHF2211 (called USR-VCOM, downloadable from [www.usconverters.com](http://www.usconverters.com)) or use a 3<sup>rd</sup> party VCOM software such as “PortShare” which is free or “Fabulatech COM port Redirector” which is a 15-day trial and can be purchased from [fabulatech.com](http://fabulatech.com).

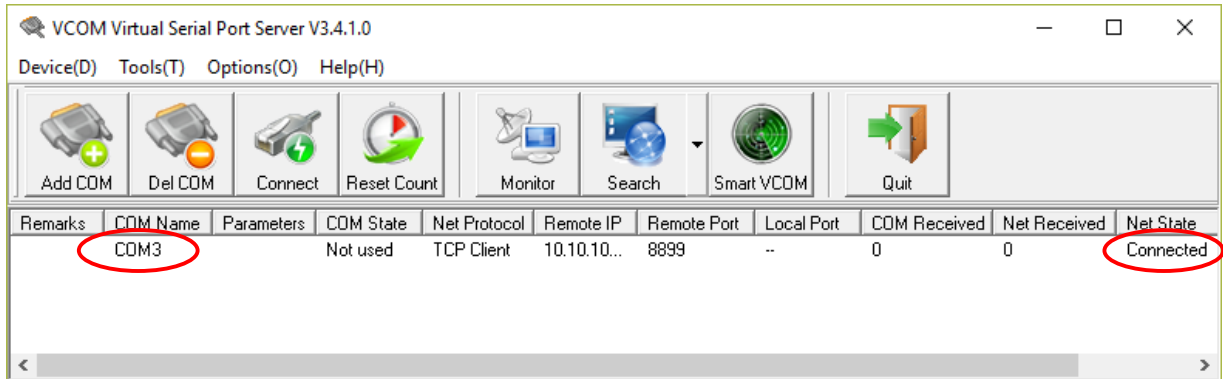
Start the VCOM software and click the “Add COM” button:



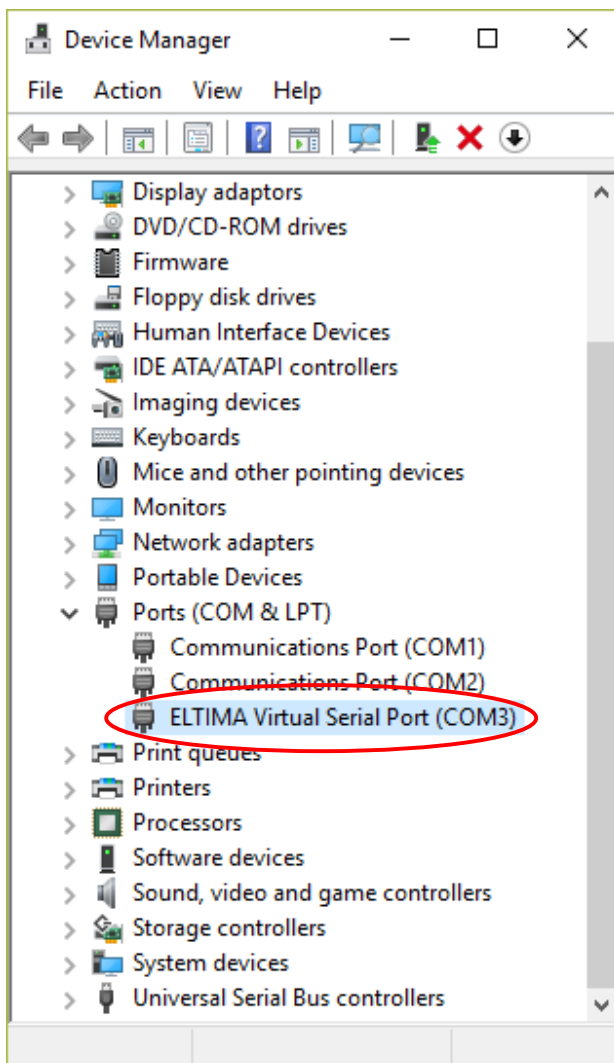
Select which COM port number you want to create and set USCHF2211’s IP address and port number:



The port will now be created:



Check in Windows Device Manager to see if the COM port has been successfully created:





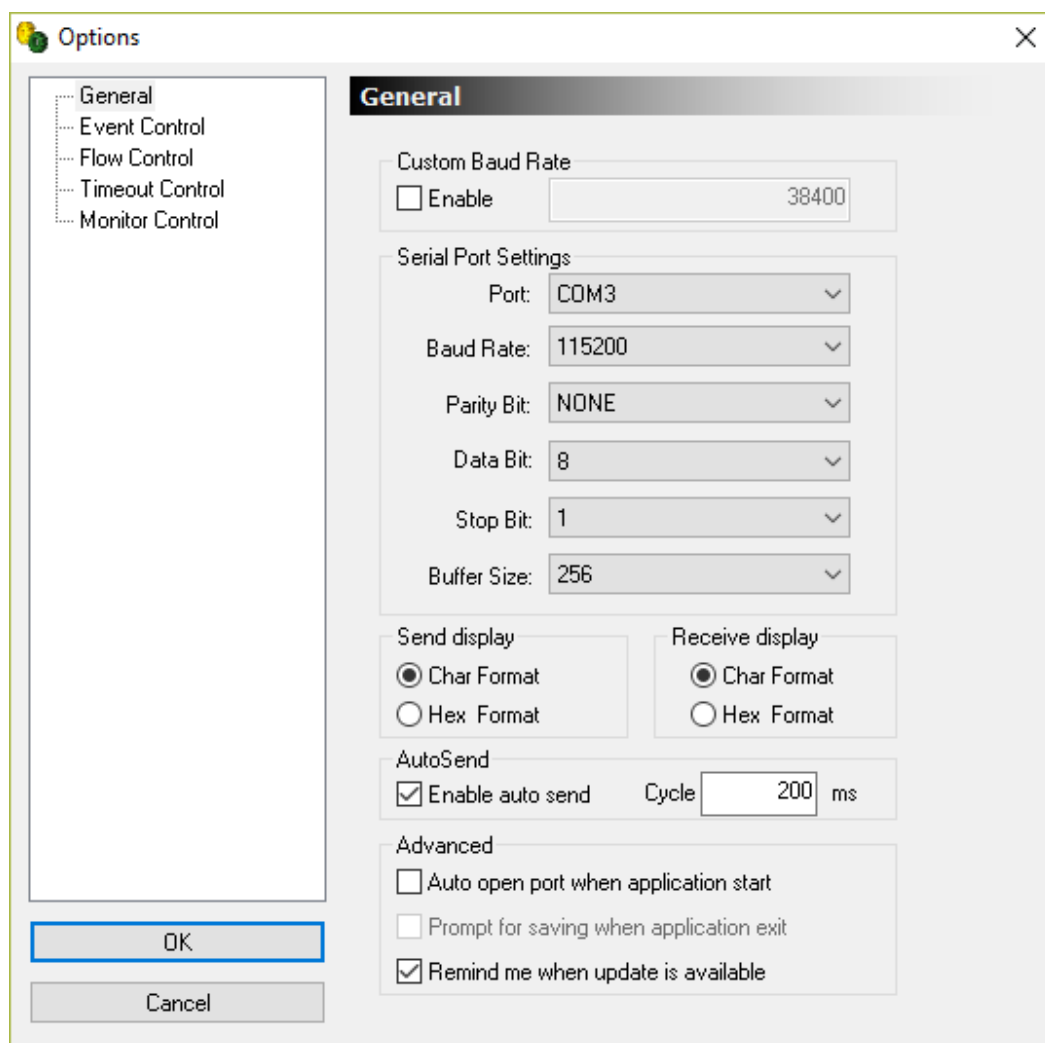
## Making a loop-back test.

To verify if the USCHF2211 module is working properly and the ports has been successfully created you can make a loop-back test.

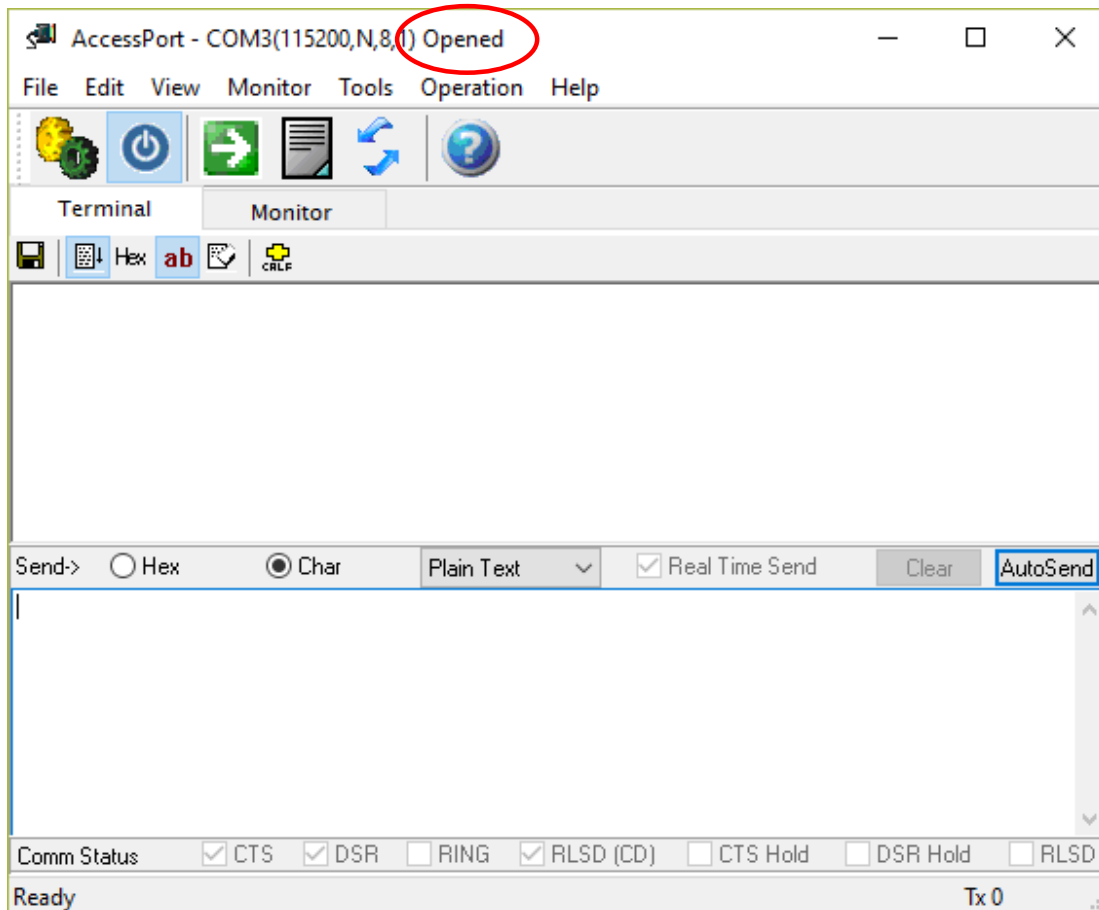
**Carefully use a paper clip or similar to jump the RX (pin 2) and TX (pin 3) pins at the end of the included serial cable and connect the cable to the USCHF2211 module's DB9 connector.**

Open AccessPort (can be downloaded for free from <http://www.usconverters.com>).

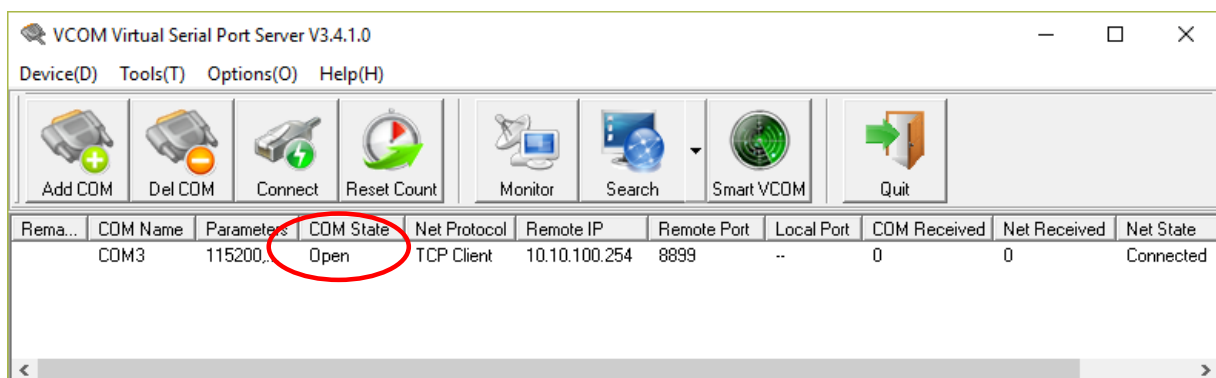
Configure AccessPort's parameters to match the virtually created COM port (the COM port created by the VCOM software), in this example COM 3, and click the OK button:



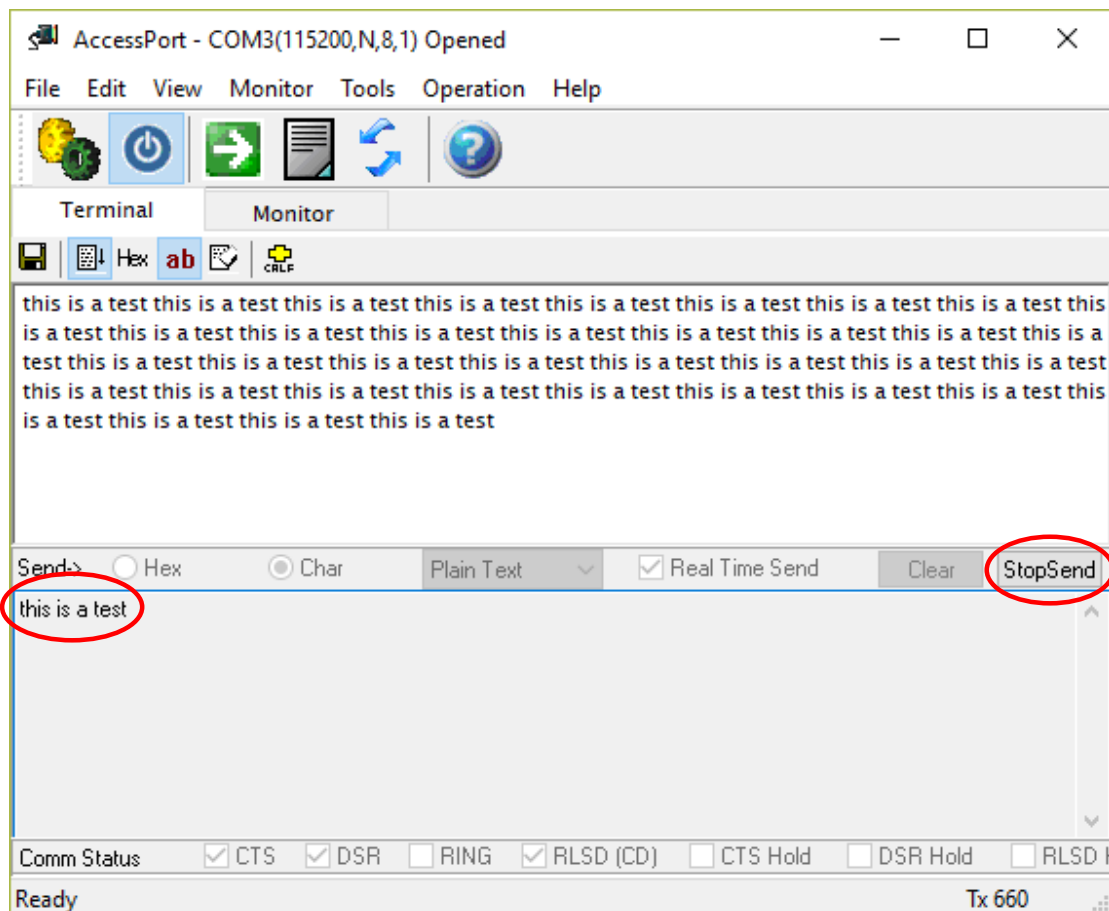
The port will now open:



In the VCOM software the 'COM State' column should now show 'Open':



Enter a text string in the lower (send) window in AccessPort and click the AutoSend button. The characters should now be sent via virtual COM 3, over WiFi to the USCHF2211 module, out on the TX pin, back into the RX pin, back over WiFi, back into virtual COM port 3 and should appear in AccessPorts upper (receive) window:

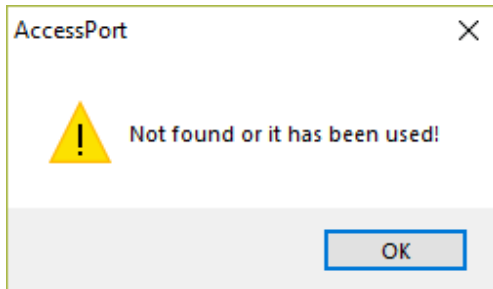


If you remove the jumper at the end of the serial cable connected to the USCHF2211 the data flow should stop.

The USCHF2211 module obviously must be joining a network when performing this test.

Making this loopback test will confirm that the COM port has been successfully created and that the USCHF2211 can send and receive data, ensuring that the module has been setup correctly.

If you try to open the port but it is already in use, not existing or otherwise occupied by the operating system you will get the following error message from AccessPort. Using a different port is the easiest solution.



## Pairing two modules

The USCHF2211 can be configured to communicate in pairs between two serial ports, also called point-to-point communication.



One unit must be configured as a Server in AP mode (which it is by default) and the other as a Client in STA mode. You can of course choose different serial port settings, security, or IP address than shown below, however the procedure as shown must be followed.

The Server in AP mode use all default settings so below is shown the settings for the Client in STA mode.

**Client (STA) configuration:**

System settings: disable DHCP under WAN Settings and enter an IP address different from the servers IP address:

The screenshot displays the 'System Settings' web interface for the USCHF2211 device. The browser address bar shows '10.10.100.254/system.html'. The interface includes a sidebar with navigation options: STATUS, SYSTEM SETTINGS, SERIAL PORT SETTINGS, COMMUNICATION SETTINGS, ADVANCED SETTINGS, and OTHERS. The main content area is titled 'System Settings' and contains several configuration sections:

- Authentication:** User Name (admin), Password (masked).
- Basic Settings:** Host Name (Eport-HF2211), Network Mode (Router).
- WAN Settings:** DHCP (OFF), WAN IP (10.10.100.250), Subnet Mask (255.255.255.0), Gateway (10.10.100.250), DNS (10.10.100.250).
- LAN Settings:** LAN IP (10.10.101.254), Mask (255.255.255.0), DHCP Server (ON), Ethernet Port Mode (WAN).

Red circles highlight the 'DHCP OFF' toggle in the WAN Settings section and the 'LAN IP' field in the LAN Settings section.

System settings: select STA mode and click the Scan button:

The screenshot shows a web browser window with the address bar displaying `10.10.100.254/system.html`. The page title is `HF2211`. The interface contains the following sections and controls:

- LAN Settings**
  - LAN IP: `10.10.101.254`
  - Mask: `255.255.255.0`
  - DHCP Server: `ON`
- WiFi Settings**
  - WiFi Mode: `STA` (highlighted with a red circle)
  - STA SSID: `HF2221_F684`
  - Scan: `Scan` button (highlighted with a red circle)
  - WiFi Roaming: `OFF`
- Telnet Settings**
  - Enable: `ON`
  - Telnet Port: `23`
  - Echo: `ON`
- Web Settings**
  - Enable: `ON`
  - Web Port: `80`
- NTP Settings**
  - Enable: `OFF`

At the bottom of the page are two buttons: `Submit` and `Reset`.

Select the server 'HF2211\_XXXX' from the list (XXXX) is the last 4 digits of the MAC address:

The screenshot shows the web interface of the HF2211 device. The browser address bar displays '10.10.100.254/system.html'. The interface is divided into several sections:

- LAN Settings:**
  - LAN IP: 10.10.101.254
  - Mask: 255.255.255.0
  - DHCP Server: ☒ ON
- WiFi Settings:**
  - WiFi Mode: STA
  - STA SSID: HF2221\_F684
  - Scan button
  - Table of detected WiFi networks:

ID	SSID	Security	Choose
1	SETUP	×	<input type="radio"/>
2	HF2221_F684	×	<input type="radio"/>
3	CoronaExtra	✓	<input type="radio"/>
4	CiscoXX	✓	<input type="radio"/>
5	Omni_3D7948	✓	<input type="radio"/>
6	dlink-365C	✓	<input type="radio"/>
7	SAMILPOWER_47BAA0	✓	<input type="radio"/>
8	HomeBox-70E0_2.4G	✓	<input type="radio"/>
9	Lund_2G	✓	<input type="radio"/>
- WiFi Roaming:** ☒ OFF
- Telnet Settings:**
  - Enable: ☒ ON
  - Telnet Port: 23
  - Echo: ☒ ON
- Web Settings:**
  - Enable: ☒ ON



Click the Submit button:

The screenshot shows a web browser window with the address bar displaying `10.10.100.254/system.html`. The page title is `HF2211`. The interface contains several configuration sections:

- LAN IP**: `10.10.101.254`
- Mask**: `255.255.255.0`
- DHCP Server**: `ON`
- WiFi Settings**:
  - WiFi Mode**: `STA`
  - STA SSID**: `HF2211_F684`
  - Scan**: Button
  - WiFi Roaming**: `OFF`
- Telnet Settings**:
  - Enable**: `ON`
  - Telnet Port**: `23`
  - Echo**: `ON`
- Web Settings**:
  - Enable**: `ON`
  - Web Port**: `80`
- NTP Settings**:
  - Enable**: `OFF`

At the bottom, there are two buttons: **Submit** (circled in red) and **Reset**.

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Communication Settings: select TCP Client and enter the server's IP address and port number:

The screenshot displays the 'Communication Settings' web interface for a device labeled 'HF2211'. The browser address bar shows '10.10.100.254/socket.html'. The left sidebar contains navigation links: STATUS, SYSTEM SETTINGS, SERIAL PORT SETTINGS, COMMUNICATION SETTINGS (selected), ADVANCED SETTINGS, and OTHERS. The main content area is titled 'Communication Settings' with the subtitle 'change the device socket settings'. It features a tabbed interface with 'netp' selected and a '+Add' button. The settings are organized into four sections:   
1. **Basic Settings**: Includes 'Name' (netp) and 'Protocol' (Tcp Client, circled in red).   
2. **Socket Settings**: Includes 'Server' (10.10.100.254, circled in red), 'Server Port' (8899, circled in red), 'Local Port' (0), 'Buffer Size' (1024), 'Keep Alive(s)' (60), and 'Timeout(s)' (0).   
3. **Protocol Settings**: Includes 'Connect Mode' (Always), 'Register Mode' (Disable), and 'Heart Beat' (OFF).   
4. **More Settings**: Includes 'Security' (Disable) and 'Route' (Uart).

Click the Submit button:

HF2211

10.10.100.254/socket.html

Keep Alive(s) 60

Timeout(s) 0

**Protocol Settings**

Connect Mode Always

Register Mode Disable

Heart Beat OFF

**More Settings**

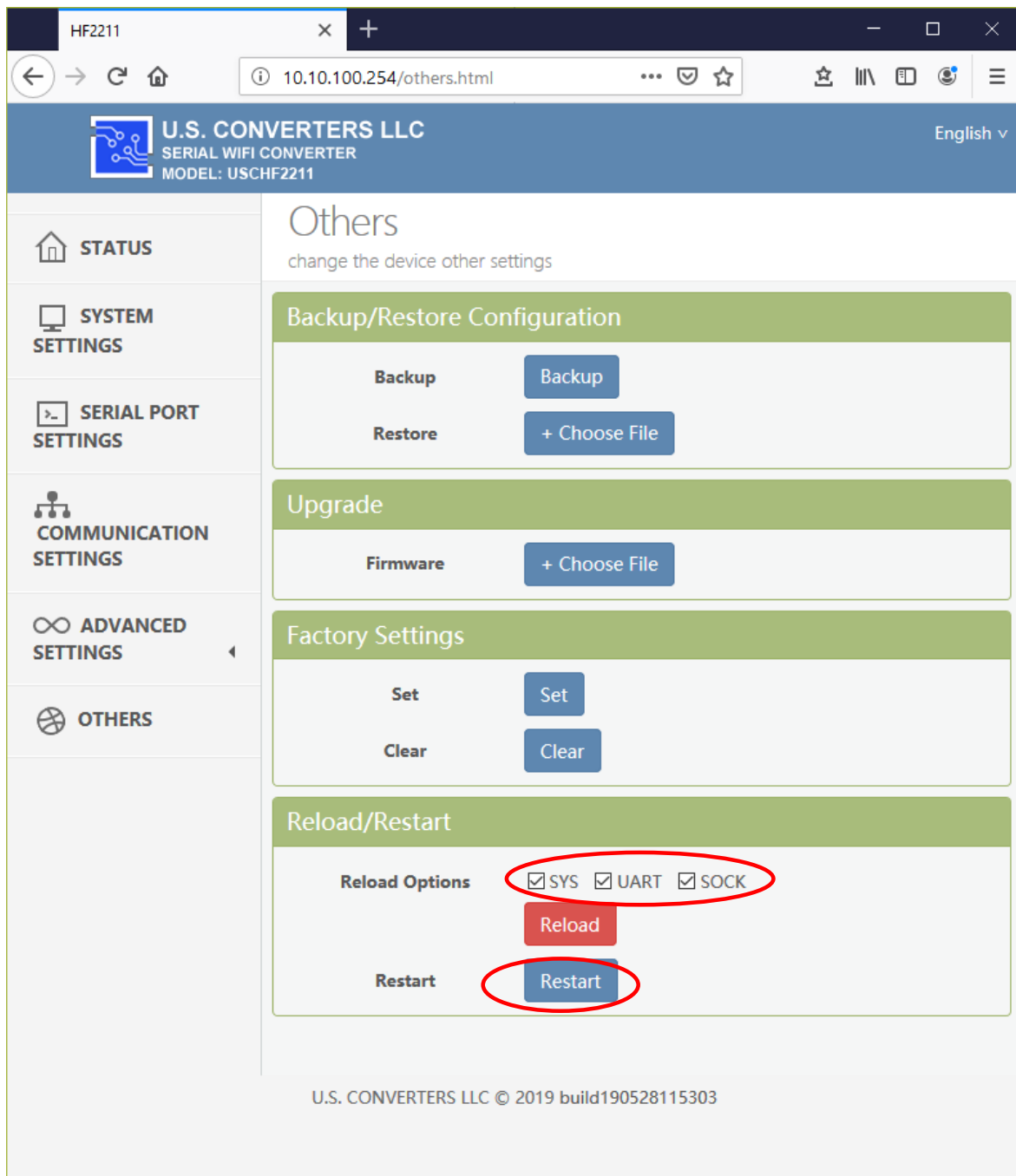
Security Disable

Route Uart

Submit Delete Reset

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Others: check 'SYS', 'UART' and 'SOCK' and click the Restart button:



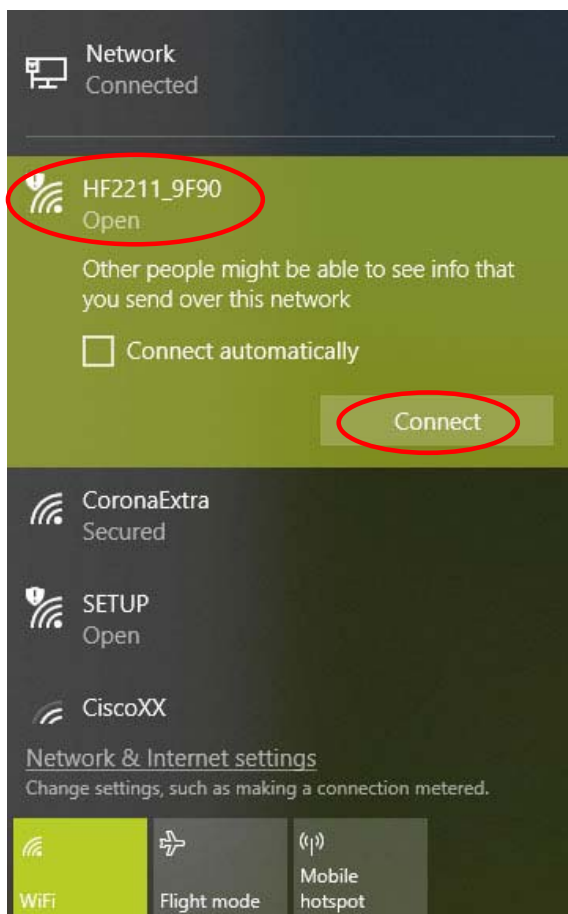
The server and the client USCHF2211 should not automatically link. The green Link lights on both converters should turn on after about 10 seconds.

## How to connect the USCHF2211 using a wireless router

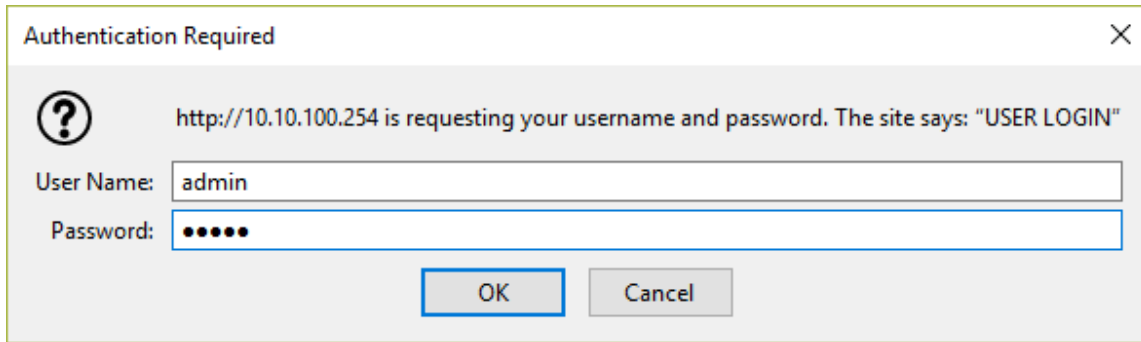
The setup looks like this:



Connect to the USCHF2211 using Windows network manager. Your computer needs a WiFi network card or USB WiFi dongle in order to do this:



Open a web-browser and go to 10.10.100.254, and enter the credentials which is “admin” for both the user name and password:



The image shows a standard Windows-style 'Authentication Required' dialog box. It has a title bar with the text 'Authentication Required' and a close button (X) in the top right corner. Below the title bar, there is a question mark icon in a circle, followed by the text: 'http://10.10.100.254 is requesting your username and password. The site says: "USER LOGIN"'. Below this text, there are two input fields. The first is labeled 'User Name:' and contains the text 'admin'. The second is labeled 'Password:' and contains six black dots. At the bottom of the dialog box, there are two buttons: 'OK' and 'Cancel'.

Go to the “System Settings” page and select STA under “WiFi Settings”:

The screenshot shows the web interface of the USCHF2211 device. The browser address bar displays `10.10.100.254/system.html`. The left sidebar contains three main sections: **COMMUNICATION SETTINGS**, **ADVANCED SETTINGS**, and **OTHERS**. The **WiFi Settings** section is currently selected and expanded, showing the following configuration:

- WiFi Mode:** A dropdown menu with **STA** selected. This option is circled in red.
- STA SSID:** A text input field containing `HF2211`.
- STA KEY:** A text input field containing `STA KEY`, with a toggle icon to the right.
- Scan:** A blue button.
- WiFi Roaming:** A toggle switch currently set to **OFF**.

Other visible settings sections include:

- Basic Settings:** Host Name is `Eport-HF2211`; Network Mode is `Router`.
- WAN Settings:** DHCP is **ON**; DNS is `10.10.100.254`.
- LAN Settings:** LAN IP is `10.10.100.254`; Mask is `255.255.255.0`; DHCP Server is **ON**.
- Telnet Settings:** Enable is **ON**; Telnet Port is `23`; Echo is **ON**.

Click the Scan button and select your routers SSID:

The screenshot shows the web interface of the HF2211 device. The browser address bar shows the URL `10.10.100.254/system.html`. The interface includes several configuration sections:

- Mask:** 255.255.255.0
- DHCP Server:** ON
- WiFi Settings:**
  - WiFi Mode:** STA
  - STA SSID:** HF2211
  - STA KEY:** STA KEY
  - Scan:** A blue button circled in red.
  - SSID List:** A table with 7 rows. The second row, 'CoronaExtra', is circled in red.
  - WiFi Roaming:** OFF
- Telnet Settings:**
  - Enable:** ON
  - Telnet Port:** 23
  - Echo:** ON
- Web Settings:**
  - Enable:** ON
  - Web Port:** 80
- NTP Settings:** (partially visible)

ID	SSID	Security	Choose
1	SETUP	×	<input type="radio"/>
2	CoronaExtra	✓	<input type="radio"/>
3	CiscoXX	✓	<input type="radio"/>
4	HomeBox-70E0_2.4G	✓	<input type="radio"/>
5	Omni_3D7948	✓	<input type="radio"/>
6	dlink-365C	✓	<input type="radio"/>
7	Omni_3D7948	✓	<input type="radio"/>



Enter the STA Key if required and click the Submit button:

The screenshot shows a web browser window with the address bar displaying `10.10.100.254/system.html`. The page title is "HF2211". The interface contains several configuration sections:

- Mask:** `255.255.255.0`
- DHCP Server:** ☒ ON
- WiFi Settings:**
  - WiFi Mode:** STA
  - STA SSID:** CoronaExtra
  - STA KEY:** A field containing 16 dots, highlighted with a red circle.
  - Scan:** A blue button.
  - WiFi Roaming:** ☐ OFF
- Telnet Settings:**
  - Enable:** ☒ ON
  - Telnet Port:** 23
  - Echo:** ☒ ON
- Web Settings:**
  - Enable:** ☒ ON
  - Web Port:** 80
- NTP Settings:**
  - Enable:** ☐ OFF

At the bottom of the page, there are two buttons: **Submit** (highlighted with a red circle) and **Reset**.

Under Others: check 'SYS', 'UART' and 'SOCK' and click the Restart button:

The screenshot shows a web browser window with the URL `10.10.100.254/others.html`. The page header identifies the device as 'U.S. CONVERTERS LLC SERIAL WIFI CONVERTER MODEL: USCHF2211'. The left sidebar contains navigation links: STATUS, SYSTEM SETTINGS, SERIAL PORT SETTINGS, COMMUNICATION SETTINGS, ADVANCED SETTINGS, and OTHERS. The main content area is titled 'Others' with the subtitle 'change the device other settings'. It contains several sections: 'Backup/Restore Configuration' with 'Backup' and '+ Choose File' buttons; 'Upgrade' with a '+ Choose File' button; 'Factory Settings' with 'Set' and 'Clear' buttons; and 'Reload/Restart'. In the 'Reload/Restart' section, the 'Reload Options' are ☒ SYS, ☒ UART, and ☒ SOCK. Below these are 'Reload' and 'Restart' buttons. Red circles highlight the checked options and the 'Restart' button. The footer shows 'U.S. CONVERTERS LLC © 2019 build190528115303'.

After the reboot and if you have entered the correct network settings and password then the converter will now automatically join the network, and the "Link" light will be on.

To check/verify if the adapter has joined the network successfully you may be able to login to your wireless routers admin status page and see the converter:

The screenshot shows a web browser window with the address bar displaying `192.168.1.1/index.cgi`. The page title is "Wireless - Administrative Console". At the top, there are input fields for "IP range:" (192.168.1.100 - 192.168.1.254), "Lease time:" (43200), and "Max lease time:" (43200). Below these is a tab labeled "DHCP". Under the "DHCP" tab, there is a section titled "Dynamic Leases" containing a table with the following columns: "IP Address", "MAC Address", "Hostname", "Expires", and a "Make Static" button for each row.

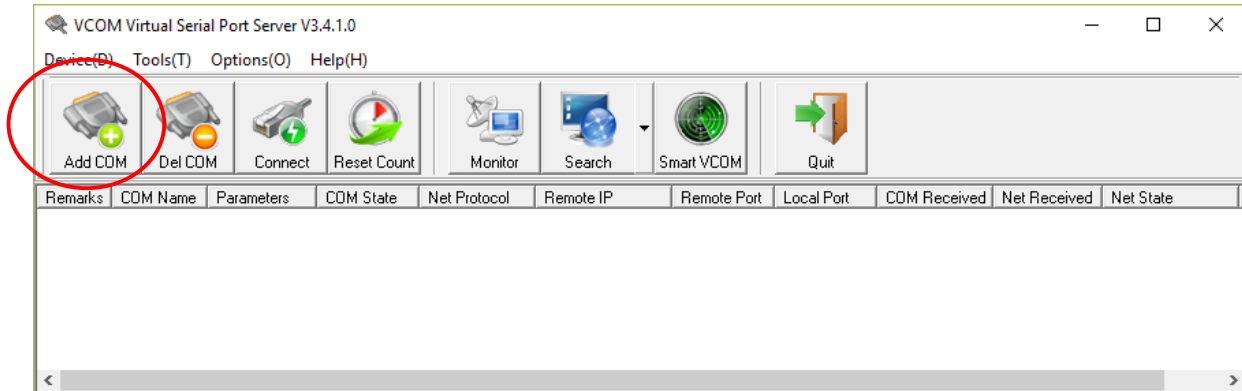
IP Address	MAC Address	Hostname	Expires	
192.168.1.119	98:D8:63:11:9F:91	Eport-HF2211	2019/06/17 23:46	Make Static
192.168.1.116	10:7B:44:B0:F1:71	DESKTOP-AK2C5KN	2019/06/17 20:54	Make Static
192.168.1.107	10:7B:44:B0:F1:73	*	2019/06/17 20:54	Make Static
192.168.1.146	00:F4:8D:A7:91:55	LAPTOP-HOOQ1DNE	2019/06/17 23:39	Make Static
192.168.1.143	00:04:30:5F:DC:D1	NETGEM-5fdcd1	2019/06/17 17:28	Make Static
192.168.1.123	78:7E:61:E6:2C:EF	iPad	2019/06/17 20:41	Make Static
192.168.1.117	C0:8C:71:7D:EB:F2	*	2019/06/17 23:28	Make Static
192.168.1.188	30:07:4D:D9:E6:8E	Galaxy-S8	2019/06/17 20:28	Make Static
192.168.1.100	00:05:CD:64:00:00	0005CD640000	2019/06/17 20:27	Make Static
192.168.1.134	08:96:AD:DC:0F:0C	wapdc0f0c	2019/06/17 19:30	Make Static

Below the table is a "Reload" button. At the bottom, there is a section titled "Static Leases".

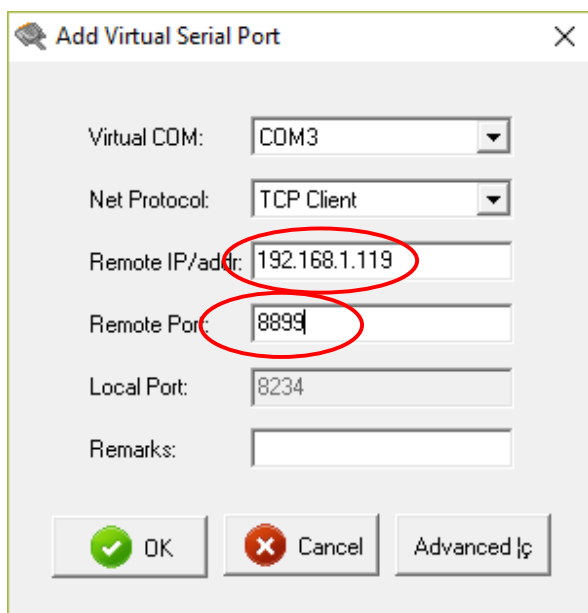
Alternatively you can use an IP scanner such as Advanced IP Scanner: <https://www.advanced-ip-scanner.com/>

Create a virtual COM port.

Open the USC-VCOM virtual COM port software and click the 'Add COM' button:

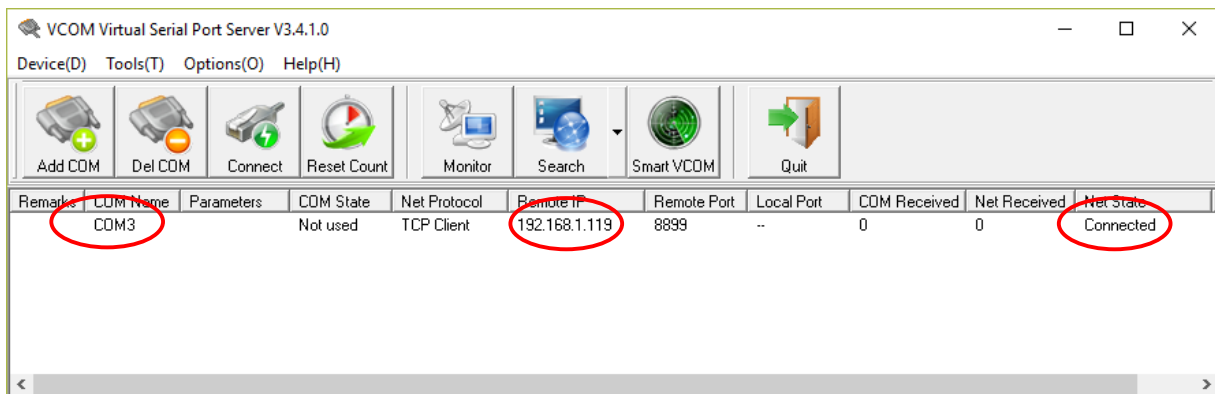


Enter the IP address which your router has assigned to the converter:

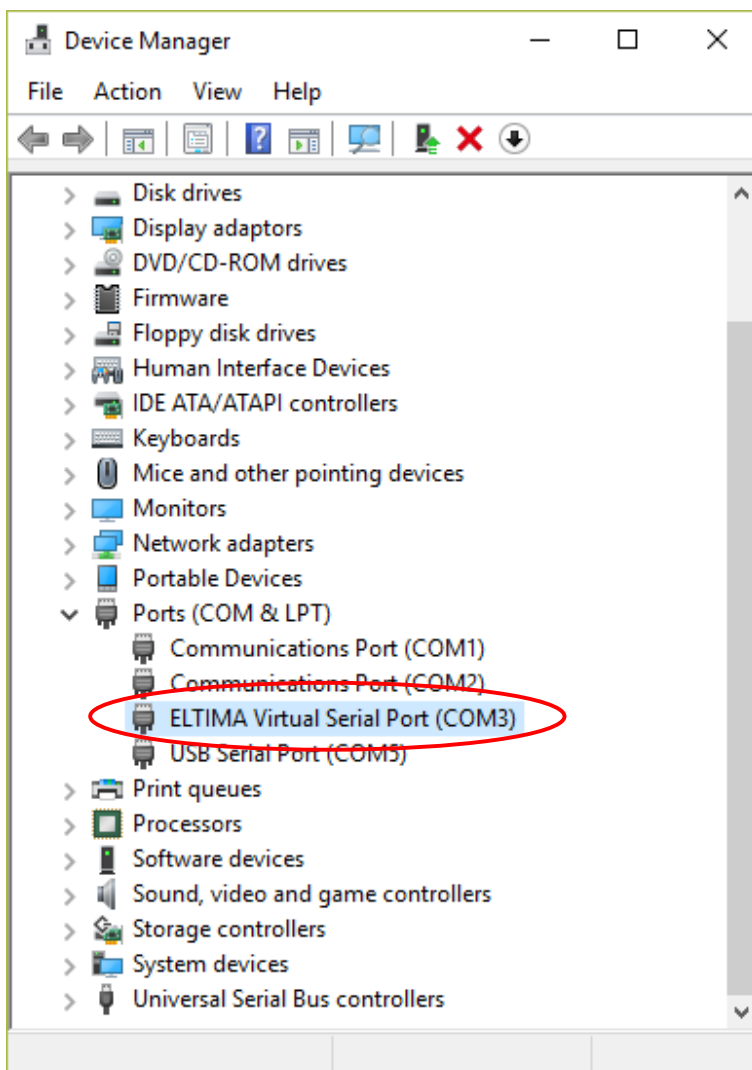


Click OK.

The virtual COM port should now be created:



You should now be able to see the virtual COM port in Windows Device Manager:



Verify communication by making a loop-back test.

Loop the TX and RX pins on the DB9 interface of the USCHF2211 and open Access Port. Enter the following settings and click the OK button:

**Options**

- General
- Event Control
- Flow Control
- Timeout Control
- Monitor Control

**General**

Custom Baud Rate  
☐ Enable 115200

Serial Port Settings  
Port: COM3  
Baud Rate: 115200  
Parity Bit: NONE  
Data Bit: 8  
Stop Bit: 1  
Buffer Size: 256

Send display  
☒ Char Format  
☐ Hex Format

Receive display  
☒ Char Format  
☐ Hex Format

AutoSend  
☒ Enable auto send Cycle 200 ms

Advanced  
☐ Auto open port when application start  
☐ Prompt for saving when application exit  
☒ Remind me when update is available

OK

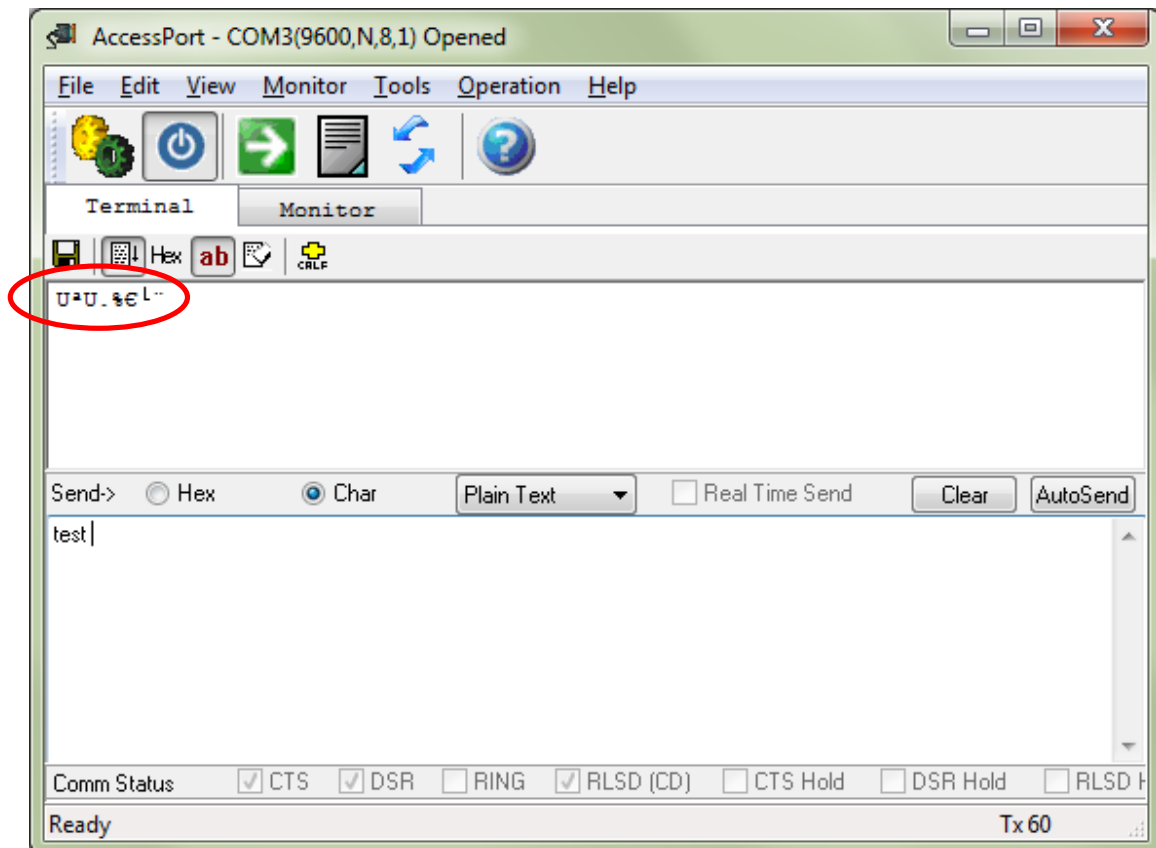
Cancel

[illegible]

## FAQ

### Question:

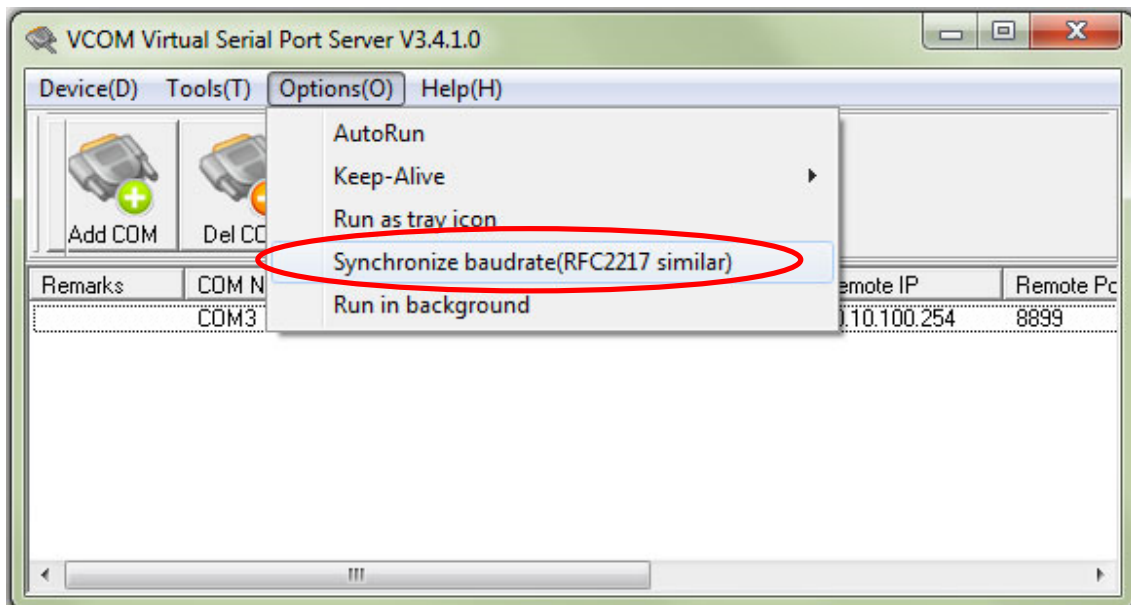
When I open the virtual COM port for the first time a text string is sent from the converter. How can I disable that?





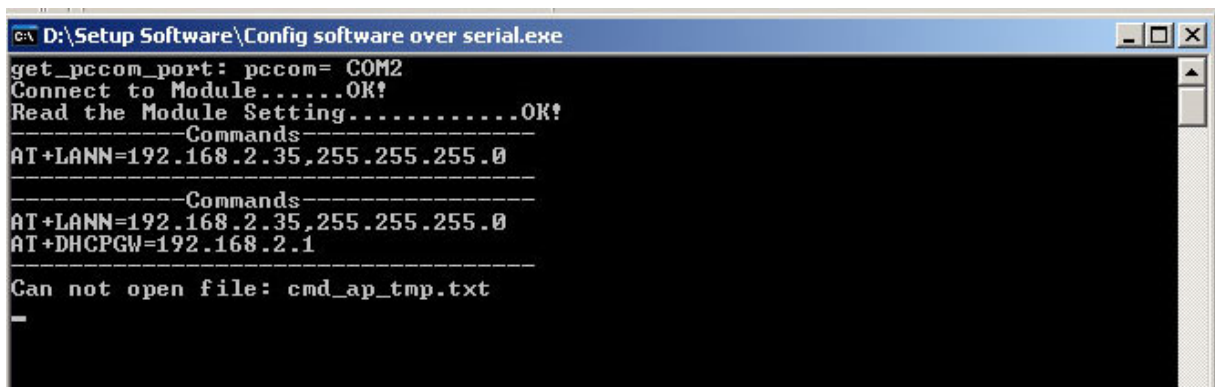
**Answer:**

Disable "Synchronize baud rate (RFC2217 similar)" in the virtual COM software:



**Question:**

When trying to save the settings using the configuration tool I get the message "Can not open file: cmd\_ap\_tmp.txt" as shown below.



**Answer:**

The file "cmd\_ap\_tmp.txt" for some reason cannot be created. Try one or more of the following:

1. Log in to your computer as an administrator.
2. Run the configuration software as an administrator.
2. Disable firewall and antivirus software.
3. Make sure the folder with the configuration software is NOT set to "Read-only".

**Question:**

The MAC address on the back of the USCHF2211 does not match with the real MAC address on the network, why?

On back of USCHF2211:



On the network:

172.1.1.11	DA:B0:4C:0F:45:B8
------------	-------------------

**Answer:**

The USCHF2211 has four MAC addresses: AP MAC, STA MAC, LAN MAC and WAN MAC. The label on the back of the USCHF2211 shows only the AP MAC address.

## Testing XON/XOFF software flow control

Default settings:

10.10.100.254

port 8899

115200 bps

Half duplex

xon: 11

xoff: 13

**RTS MUST be enabled/high at both the serial device end and the virtual COM port/PC end.**

**This can be accomplished by enabling 'RTS' in both instances of the communicating software (in this case we use Hercules terminal program) or by putting a jumper wire from RTS (pin 7) to CTS (pin 8) in the DB9 cable connector.**

XON/XOFF confirmed working only works with 'Fabulatech Serial Port Redirector'.

USC-VCOM does not work properly (it freezes when sending from serial device to virtual COM port).

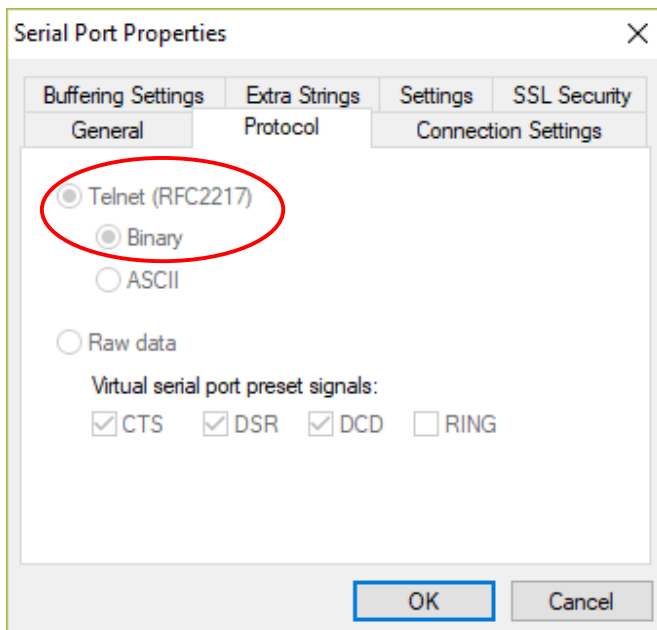
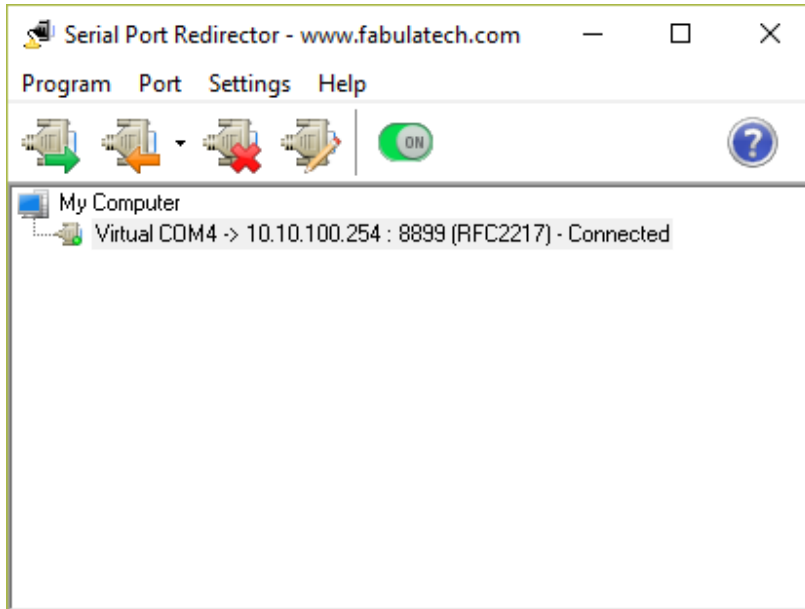
SharePort does not work properly (it cannot send data after xoff and xon is sent).

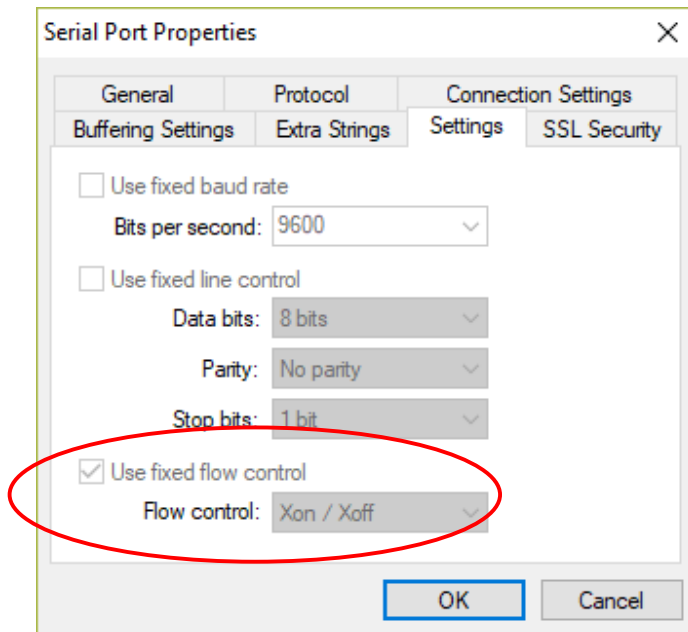
Some devices require BOTH ends (the serial device and the virtual COM port/PC) to send a XON command (11) before communication can start.

Wire connections:

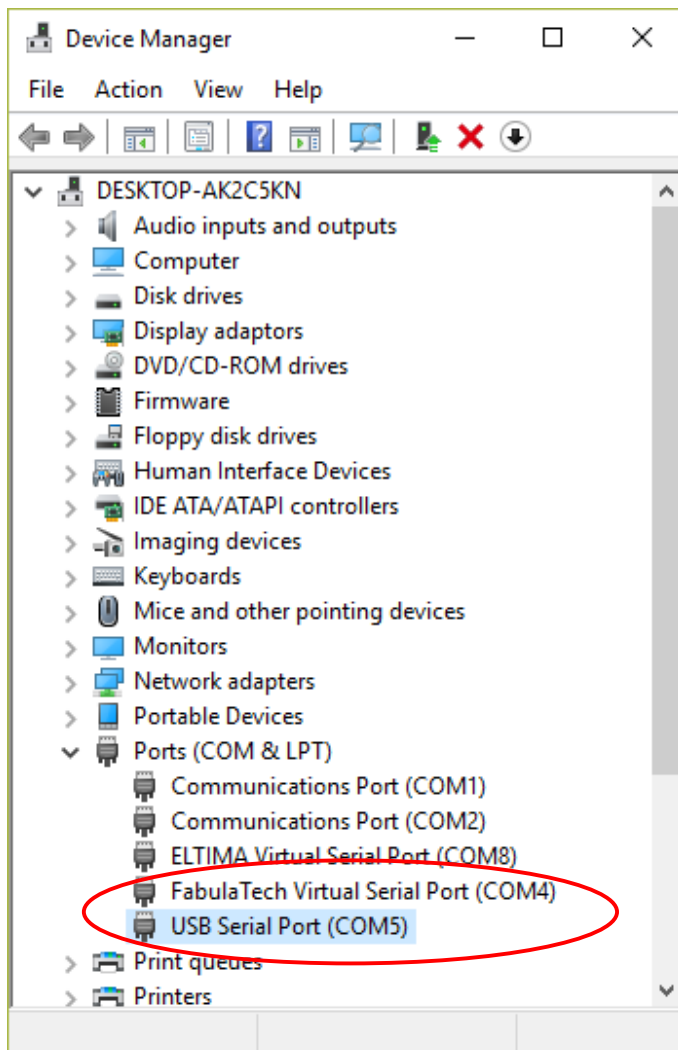
Serial device	USCHF2211
TX (pin 3)-----	RX (pin 2)
RX (pin 2)-----	TX (pin 3)
RTS (pin 7)---	--- RTS (pin 7)
CTS (pin 8)---	--- CTS (pin 8)
GND (pin 5)-----	GND (pin 5)

Fabulatech settings:

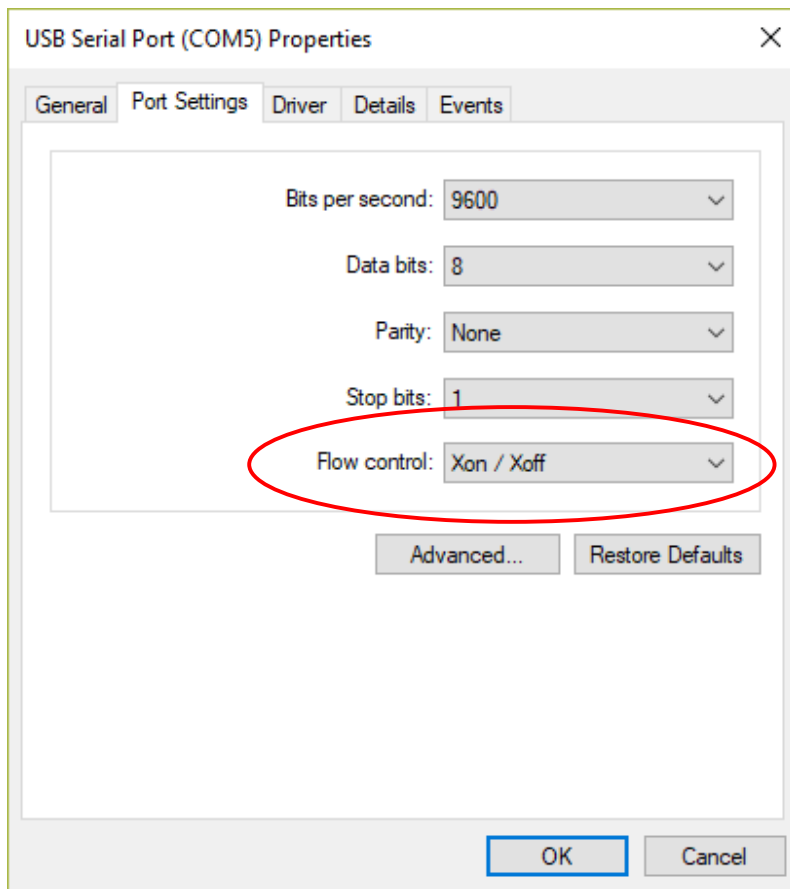




Windows Device Manager:

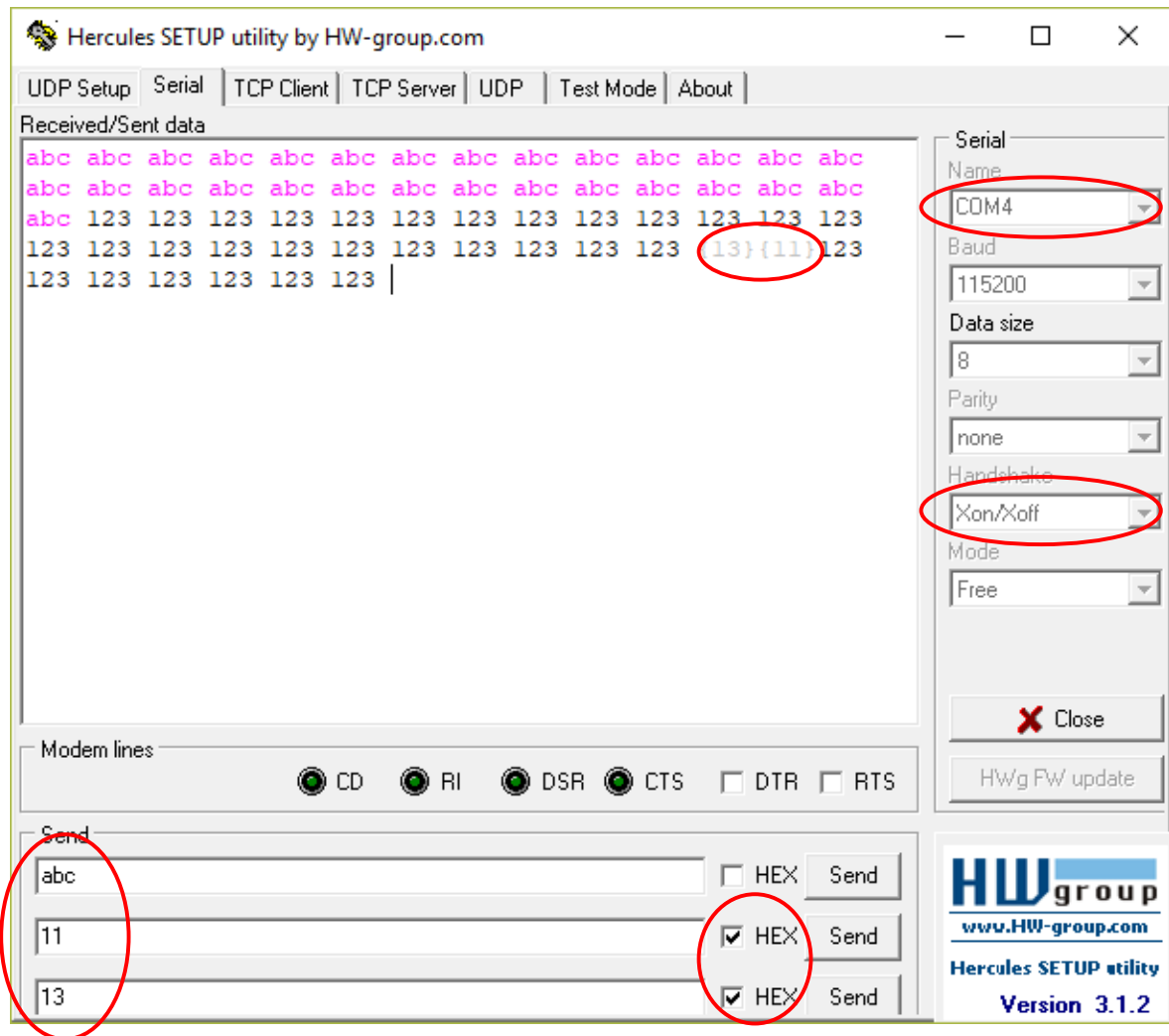


USB to serial adapter port settings (the adapter mimics a serial device):



[illegible]





HF2211

10.10.100.254/uart.html

U.S. CONVERTERS LLC  
SERIAL WIFI CONVERTER  
MODEL: USCHF2211

English

**Serial Port Settings**  
change the device serial port settings

**Basic Settings**

Baud Rate: 115200

Data Bit: 8

Stop Bit: 1

Parity: None

**Buffer Settings**

Buffer Size: 1024

Gap Time: 50

**Flow Control Settings**

Flow Control: Flow Control

Software Flow Control: ON

Xon: 11

Xoff: 13

**Cli Settings**

Cli: Serial String

Serial String: +++