

Set up guide to add an S2w232 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 S2W232 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 - connect the S2W232 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 S2W232 device in STA mode.

Summary of steps:

1. Supply power to the S2W232 device.
2. Connect the S2W232 device to the chamber.
3. Set switch to DTE on S2W232.
4. Press reset button to restore device to default settings.
5. Use a browser to access the device settings at 192.168.0.3.
6. Select the wifi wizard tab, select your wifi network, click next and enter the security key.
7. Cycle power to S2W232 device.
8. Determine the new IP address assigned to the S2W232 device by logging into the wifi router or downloading, installing and running the free 'advanced IP scanner' software.
9. Open a browser and go to the device's IP address.
10. Enter serial port settings and choose a port number such as 5000 for the device.
11. Download, install and run VCOM software to create a virtual COM port.
12. 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. [S2W232E-ESP32](#) 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](#) 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 S2W232 device.
 - The S2W232 device can receive power in three ways.
Through the mini USB connector using a 5Vdc, 1A adapter, by supplying 5-40Vdc to the 2 position terminal or to pin 9 of the device's DB9 port. Only one power source should be applied at a time. The red LED should light up when power is applied and the blue 'link' LED will blink when the adapter is not connected.
2. Connect the S2W232 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)
Connects to S2W232 device

DB25 connector (male)
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.

3. Make sure that the DTE/DCE switch on the S2W232 device is set to DTE.

4. 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:
 - AP mode with 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
 - Default COM port settings:
 - Baud rate: 9600 bps
 - Data bit: 8
 - Parity: none
 - Stop bit: 1
 - Flow control: none
5. On your PC, click on the WIFI symbol on the lower right portion of the task bar to open the Windows WIFI connection manager and locate your adapter. It will start with S2W232 followed by a - and four more characters (e.g. S2W232-ba1g). Select the device and select connect.
6. Open a web browser and type in the default IP address of the adapter. This address is: 192.168.0.3. This should bring up the login screen. Enter the following credentials:
Username: admin
Password: admin
7. Select the WIFI wizard tab, then select your wifi network and click on the NEXT button.
8. Enter your wifi network's security key in the field labeled 'Pre-share key'.
9. 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. If unsuccessful, verify that the correct security key for your wifi network was entered.
10. Login to your wireless router to verify that the S2W232 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.
11. If you are not able to log in to your router, download and install [advanced IP scanner](#).
12. 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 BASIC tab to set the serial port settings as shown below.

Basic Advanced WiFi WiFi Wizard Status

Serial Settings

Data Baud Rate: 38400

Data Bits: 8

Data Parity: None

Stop Bits: 2

Flow Control: None
Only valid for RS232.

Modbus: None

Serial Packet Time: 10
1~255(ms)

Serial Packet Length: 32
1~1460(byte)

Serial to Network Settings

Operation Mode: Socket

Protocol: TCP

Server/Client Mode: Server

TCP Server Connections: 1

Port Number: 5000
Please enter an integer between 1024~65535.

Apply

13. Select the WIFI tab to verify the settings as shown below.

Serial WiFi Converter
by U.S Converters LLC

USCONVERTERS.COM Logout

Basic Advanced **WiFi** WiFi Wizard Status

System Settings

Network Mode: Station

DHCP Settings

DHCP: Enable

Save Apply

14. Go to the chamber and verify that the baud rate in the chamber's SDEF menu is the same as the S2W232 adapter's baud rate set earlier. 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.
15. Next, download and install the VCOM software to create a virtual COM port.
16. Open the VCOM software and select create. Enter the settings as shown below. You can use any available COM port. COM9 was used in this example:

CREATE

Serial: COM9

Protocol: ☐ TCP SERVER ☒ TCP Client ☐ UDP

Remote IP/Host: 192.168.0.3

Remote Port: 5000

Remark: COM9-TCP CLIENT

Cancel Confirm

17. Click Confirm to create a virtual COM port.
18. 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 S2W232E-ESP32 adapter](#)
[S2W232E-ESP32 Quick Reference Guide](#)
[Detailed Setup Guide for the S2W232 adapter](#)
[Advanced IP Scanner](#)
[Access Port - Free terminal program](#)

Troubleshooting common issues

- Verify that the S2W232E-ESP32 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)

- Verify that the DTE/DCE switch on the S2W232E-ESP32 adapter is set to DTE.
- Make sure that the chamber has the same baud rate as the S2W232E-ESP32 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. Using a paper clip to press the RESET button on the device will also restore the device to factory default settings.
- 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
- Verify that 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".
- This detailed [setup guide](#) from the mfg of the S2W232 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 [S2W232's web page](#) that include accessories, specs, source code and firmware updates.