SERIAL TO WIFI CONVERTER

WF950

Quick start guide



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Overview

The WF950 is a solid high performance 1-port serial RS232, RS485, RS422 WiFi adapter (also called a wireless device server), which will allow you to send and receive serial data over a standard WiFi network.

It is designed around the popular Atheros AR2317 processor which offers great reliability and performance including many features and functions rarely seen in this price range. In Infrastructure mode or Ad-Hoc mode, the WF950 can communicate with any host computer through an access point, or with another WF950 located up to 300 feet (100 meters) away.

Default settings

Wireless IP: 192.168.10.3 (https) Wired IP: 192.168.10.2 (https) Netmask: 255.255.255.0 Gateway: 192.168.10.1 Network type: Ad-hoc TCP Server port: 4000 Network interface: Wired Ethernet Baud rate: 38400bps

Hardware



DC-In Power Outlet

The Serial to Wi-Fi Converter is powered by a single 12V DC (center +) power supply at 1.0A. A suitable power supply adapter is part of the packaging. Connect the power line to the power outlet at the left side of Serial to Wi-Fi Converter and put the adapter into the socket. If the power is properly supplied, the "SYS" red color LED will be on **after about 30 seconds**. In some cases a reboot by pressing the reset button might be required for the first time the converter is powered on.



Ethernet Port

The connector for network is the usual RJ45. Simply connect it to your network switch or Hub. When the connection is made, the LAN LED indicator will light. When data traffic occurs on the network, red (Rx/Tx) indicator will blink during data transferring and receiving.

Antenna Connector

The connector for antenna is a standard reverse SMA jack. Simply connect it to a 2.0dBi or 5.0dBi dipole antenna (Standard Rubber Duck). It is 50 Ohms impedance and can support 2.4GHz frequency.

Reset Button

To reset the WF-950 first disconnect the network cable and serial cable before pressing the reset button. Use any point tip to push the reset button and hold it about 5 seconds, you can release it when the SYS light start flashing. After a few seconds the converter will reboot. All the parameters will be reset to the factory default settings including the IP address 192.168.10.2. The converter is ready when the SYS light becomes solid ON.



Serial I/O Port of RS-232/RS-422/RS-485

Connect the serial data cable between the Wi-Fi converter and the serial device. Follow the parameter setup procedures to configure the converter (see the following chapters).

LED Indicators



SYS (Red)

Power / ready indicator

(When the power is on and the converter is ready, the LED will be on.)

It can take up to 45 seconds for the converter to boot up and be ready after you have connected the power supply. The red SYS LED light must be steady ON before the converter is ready.

LAN (Green)

Network signal indicator (When the LAN signal is detected, the LED will be on.)

WLAN (Red)

Wireless Lan indicator (When wireless LAN signal is connected, the LED will be on)

TX / RX (Yellow)

Data sent indicator (When data are sent out to the network, the LED will be blink.)

Data received indicator

(When data are received from the network, the LED will be blink.)

Wiring Examples





RS-422



RS-485



Configuring the parameters

Assign a static IP address to your network in the 192.168.10.xx subnet:

Internet Protocol Version 4 (TCP/IPv4)	Properties ? X					
General						
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.						
Obtain an IP address automatical	lly					
Oge the following IP address:						
IP address:	192.168.10.8					
Subnet mask:	255.255.255.0					
Default gateway:	· · ·					
Obtain DNS server address automatically						
• Use the following DNS server add	tresses:					
Preferred DNS server:						
Alternate DNS server:	· · ·					
Validate settings upon exit	Ad <u>v</u> anced					
	OK Cancel					

Connect the converter to the power supply and wait for the SYS LED light to be steady ON. Then connect the Ethernet cable.

It can take up to 45 seconds for the converter to boot up and be ready after you have connected the power supply. The red SYS LED light must be steady ON before the converter is ready. Open a web browser and go to:

https://192.168.10.2/

Remember the secure HTTPS, not only HTTP.

Click "Continue to this website (not recommended)."

()	Ø https://192.168.10.2/ ♀ ▼ Ø Ø ▼ Ø Ø ♥ Ø
<u>F</u> ile <u>E</u> dit	<u>V</u> iew F <u>a</u> vorites <u>T</u> ools <u>H</u> elp
8	There is a problem with this website's security certificate.
	The security certificate presented by this website was not issued by a trusted certificate authority. The security certificate presented by this website was issued for a different website's address.
	Security certificate problems may indicate an attempt to fool you or intercept any data you send to the server.
	We recommend that you close this webpage and do not continue to this website.
	Click here to close this webpage.
	Source of this website (not recommended).
	More information
	a 100% 🔻 🖽

User and password are both: admin

Windows Security	· · · · · · · · · · · · · · · · · · ·
The server 192. server reports t	168.10.2 is asking for your user name and password. The hat it is from cgi-bin.
	admin ●●●●● Image: Contract of the second
	OK Cancel

You should now be able to see the status screen:



To enable the wireless interface, click on "IP Configuration" in the left side menu and select "Wireless" from the drop-down menu. Select "DHCP" if you want to enable this. Click the "Apply" button.



To be able to communicate with the converter using a wireless router, click the "Wireless Configuration" in the left side menu, enter the credentials of your wireless router and click the "SSID Scan" button. Click the "Apply" button.



Click "System Tools" in the left side menu and click "Restart Device" in the drop-down menu. Now click the "Reboot" button and wait 30 - 50 seconds for the converter to reboot.



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After the reboot is complete you should automatically be re-directed to the status screen:

← → @ https://192.168.10.2/ ♪	🗸 😵 Certifi 🖒 <i>@</i> Serial Device Server	- □ - × ★ ☆
File Edit View Favorites Iools	Industria	I Networking Platform Design Partner
open all	System Information	^
Management	LAN IP Address	192.168.10.2
Help	LAN MAC Address	00:1E:94:92:07:01
	Wireless IP Address	192.168.10.3
	Wireless MAC Address	00:1E:94:92:07:02
	Firmware Version	1.17
		~
		€ 100% ▼

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To be able to connect to the converter using your wireless router you must first **disconnect the wired Ethernet cable**. If the Ethernet cable is connected to the converter it cannot be accessed wirelessly.

Once the Ethernet cable is disconnected you can now login to the converter over the air by using a web browser and go to the IP address you gave the converter (remember HTTPS). If you have set the wireless interface to DHCP then you can either login to your wireless router to see which IP address has been assigned to the converter or you can use the EDS-Tool to search for the converter:

🞐 EDS-Tool		
Search Device	Add Device By IP	
Device list	Basic Setting Map VCOM Basic information Firmware Version: 1.17 Description: serial to wifi Mac address: 00:1e:94:92:07:02 IP address: 192.168.11.4 IP status: DHCP IP configuration Protocol: DHCP IP address: 192.168.11.4 Subnet mask: 255.255.0.0 Default gateway: 192.168.11.1 Primary dns: 208.180.42.68	
Goto Web Management	Apply Netresh	About Quit

Creating a virtual COM port

For creating a virtual COM port we recommend the USC-VCOM software (downloadable for free from <u>www.usconverters.com</u>). Install and run the USC-VCOM software.

Click the "Add COM" button.

🔍 VCOM Virtu	ual Serial Por	t Server V3.4	4.1.0					
Device(<u>D</u>) To	ools(<u>T</u>) Op	tions(<u>O</u>) H	elp(<u>H</u>)					
		46	٨	¥.	1	<u>.</u>	-	
Add COM	DelCOM	Connect	Reset Count	Monitor	Se	arch	Smart VCC	IM Quit
Remarks	COM Name	Parameters	COM State	Net Proto	col	Remote	IP	Remote Port Local
•		III						•

Enter the converter's information and click the OK button:

Reference Add Virtual Serial I	Port
Virtual COM:	COM2 🗸
Net Protocol:	TCP Client
Remote IP/addr	192.168.11.4
Remote Port:	4000
Local Port:	8234
Remarks:	
🕑 ок	Cancel Advanced (ç

The virtual COM port will be created:

🔍 VCOM Virt	ual Serial Por	t Server V3.4	l.1.0				
Device(<u>D</u>) T	ools(<u>T</u>) Opt	tions(<u>O</u>) H	elp(<u>H</u>)				
		46	٨	X.		-	-
Add COM	Del COM	Connect	Reset Count	Monitor	Search	Smart VCOM	Quit
Remarks	COM Name	Parametere	COM State	Net Protoc	col Romo t	te IP Ren	note Port Local F
	COM2		Not used	TCP Clien	t 192.16	58.11.4 400	0
•							Þ.

Check in Device Manager to make sure the COM port has been successfully created:



Parameters

Most of the parameter settings are self-explanatory so we will here just mention a few of the more unusual parameters:

Performance (under Serial Configuration).

Throughput: This mode is optimized for highest transmission speed. Latency: This mode is optimized for shortest response time.

Automatic Data Buffer Flush

The received data will be queued in the internal buffer until all the delimiters are matched. When the buffer is full (4K Bytes) or after the 'Flush Data Buffer' timeout, the data will also be sent. 'Flush Data Buffer' timeout can be set from 0 to 65535 seconds.

System Event Notifications by SMTP Mail, SNMP Trap or Syslog

With the integrated System Log Configurator you can specify if you want to receive system notifications, at what interval and also how you want to receive these, by email, SNMP Trap Server or TCP Server Logs. The following notifications are available: Hardware Reset (Cold Start), Software Reset (Warm Start), Login Failed, IP Address Changed, Password Changed, Access IP Blocked, Port Connected, Port Disconnected.

Network Delimiter

A maximum of 4 delimiters (00-FF, Hex) can be defined for each direction. The data will be held until the delimiters are received or the Flush Data Buffer times out.

Adjustable Alive Check

The serial device will send TCP alive-check packages in each defined time interval (Alive Check) to the remote host to check the TCP connection. If the TCP connection is not alive, the connection will be closed and the port will be freed.

Adjustable number of connections

You can manually select the number of simultaneous host connections you want to allow to the converter.

IP Filtering

This function will let you specify which IP addresses that can connect to the converter.

Force TX Interval Time

The Force TX interval time function specifies the timeout when no data has been transmitted. When the timeout is reached or the TX buffer is full (4K Bytes), the queued data will be sent.

Idle Timeout

When the serial port stops data transmission for a defined period of time (Idle Timeout), the connection will be closed and the port will be freed and try to connect with other hosts.

Appendix A

Pin configuration and Cable Wiring



RJ-45 Pin Assignment

Pin	Signal	
1	Tx+	
2	Tx-	1 *
3	Rx+	···· ··
6	Rx-	

RS-232 Pin Assignment

The pin assignment scheme for a 9-pin male connector on a DTE is given below.

 PIN 1 : DCD
 PIN 2 : RXD
 PIN 3 : TXD
 PIN 4 : X

 PIN 5 : GND
 PIN 6 : X
 PIN 7 : X
 PIN 8 : X

 PIN 9 : X
 (DC+5V Power Output- For Option)

RS-422 Pin Assignment

The pin assignment scheme for a 4-pin RS-422 is given below.



RS-485 Pin Assignment

The pin assignment scheme for a 4-pin RS-485 is given below.



PIN 1 : X PIN 2 : X PIN 3 : D- PIN 4 : D+

RS-422 Wiring Diagram

WF-950 Converter
<u>3 T-</u>
4 T+
1 R-
2 R+

RS-485 Wiring Diagram

Serial Device	WF-950 Converter
<u>D-</u>	<u>1 D-</u>
D+	2 D+