INDUSTRIAL DATA FLOW

NETWORKING SOLUTION

RS485 To Wi-Fi

Converters

Installation Guide

VERSION 1.3

INDUSTRIAL NETWORKING COMPONENTS

Contents

Notices

About This Manual

- This manual describes how to pair two USR-W610 RS232/RS485 to Wi-Fi and Ethernet converters.
- Read this manual all the way through before you attempt installation and follow the instructions throughout the installation process.

- If you are uncertain about any of the requirements, recommendations, or safety procedures described in this manual, contact your supplier immediately for advice and clarification.
- The information included in this manual is accurate at the time of publication. However the product specifications are subject to change without prior notice. In addition the illustrations in this manual are meant to help explain system configuration concepts and installation instructions. The illustrated items may differ from the actual items at the installation location

RS485 to Wi-Fi Converter Usage

- Many inverters and associated monitoring and metering components use Modbus RTU over RS485 for communications

- RS485 to Wi-Fi converters enable these links to occur wirelessly

GRID   RS485 METER   RS485 TO WI-FI CONVERTER (SERVER)   RS485 TO WI-FI CONVERTER (CLIENT)   SOLAR INVERTER
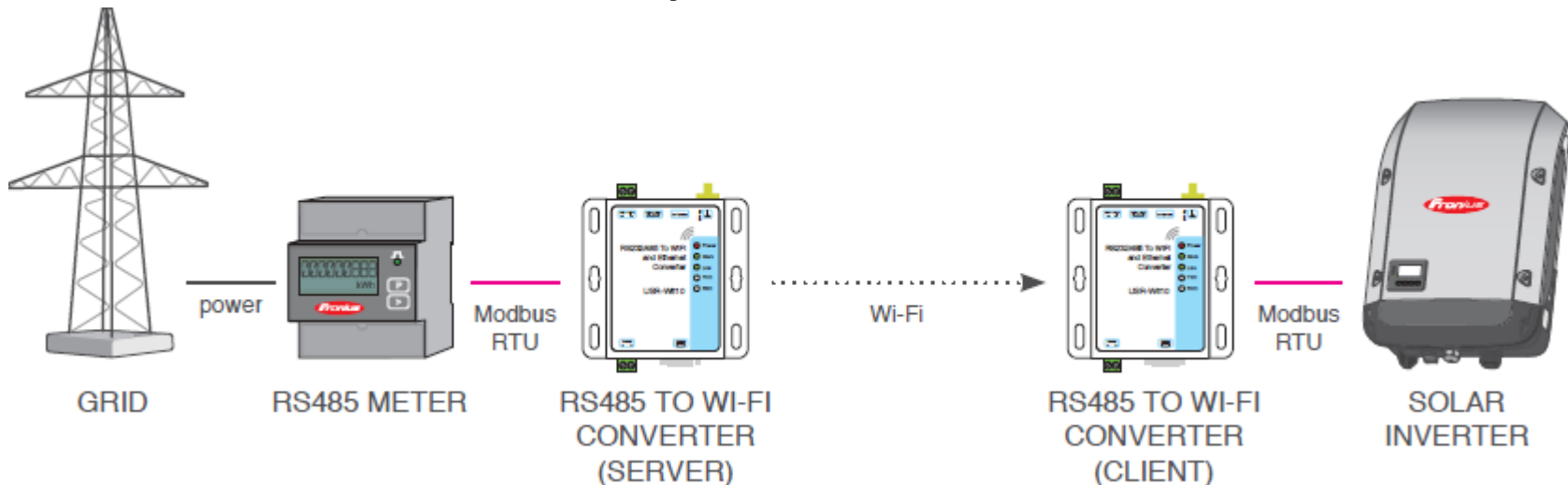
Before You Begin

- Installation Prerequisites
  - Computer with Wi-Fi for configuration (Mac – with Chrome or PC)
  - Web browser

Bill Of Materials

Component	Count
USR RS485 to Wi-Fi adapters	2 or more
Wall Plug 5Vdc power supplies	per converter
Standard or upgraded antennas	per converter
SMA Gender Changer	per upgraded antenna

Cautions

- This manual covers pairing two USR-W610 RS232/RS485 to Wi-Fi and Ethernet converters using standard settings

- Should you wish to configure these converters in a different way, or configure other models, please refer to manufacturer's documentation

USR-W610 Specifications

Parameter	Value
Serial connections supported	RS485 & RS232
Protection	Electrostatic and EFT protection
Flow Control	NFC: No flow control FC: Hardware flow control
Input voltage	5~36V
Wi-Fi standards	IEEE802.11b/g/n
Network support	TCP Server / TCP Client / UDP Server / UDP Client / HTTP Client mode
Modes	AP, STA, AP+STA
Router/bridge mode networking	Yes
Dimensions	86mm x 82.5mm x 25mm (L*W*H)
Antenna connection	3dbi external antenna

USR RS485 to Wi-Fi Converter (610)

Connections

Antenna

Power Supply
- Direct
- Plug Pack

RS232/485 To WIFI
and Ethernet
Converter

USR-W610

DC5 ~ 36V
− +

DC5 ~ 36V
⊕─⊙─⊖

WAN/LAN

Reload

⬤ Power
⬤ Work
⬤ Link
◯ TXD
◯ RXD

RS485
Connection

RS485
A   B

RS232

A = Data (+)
B = Data (−)
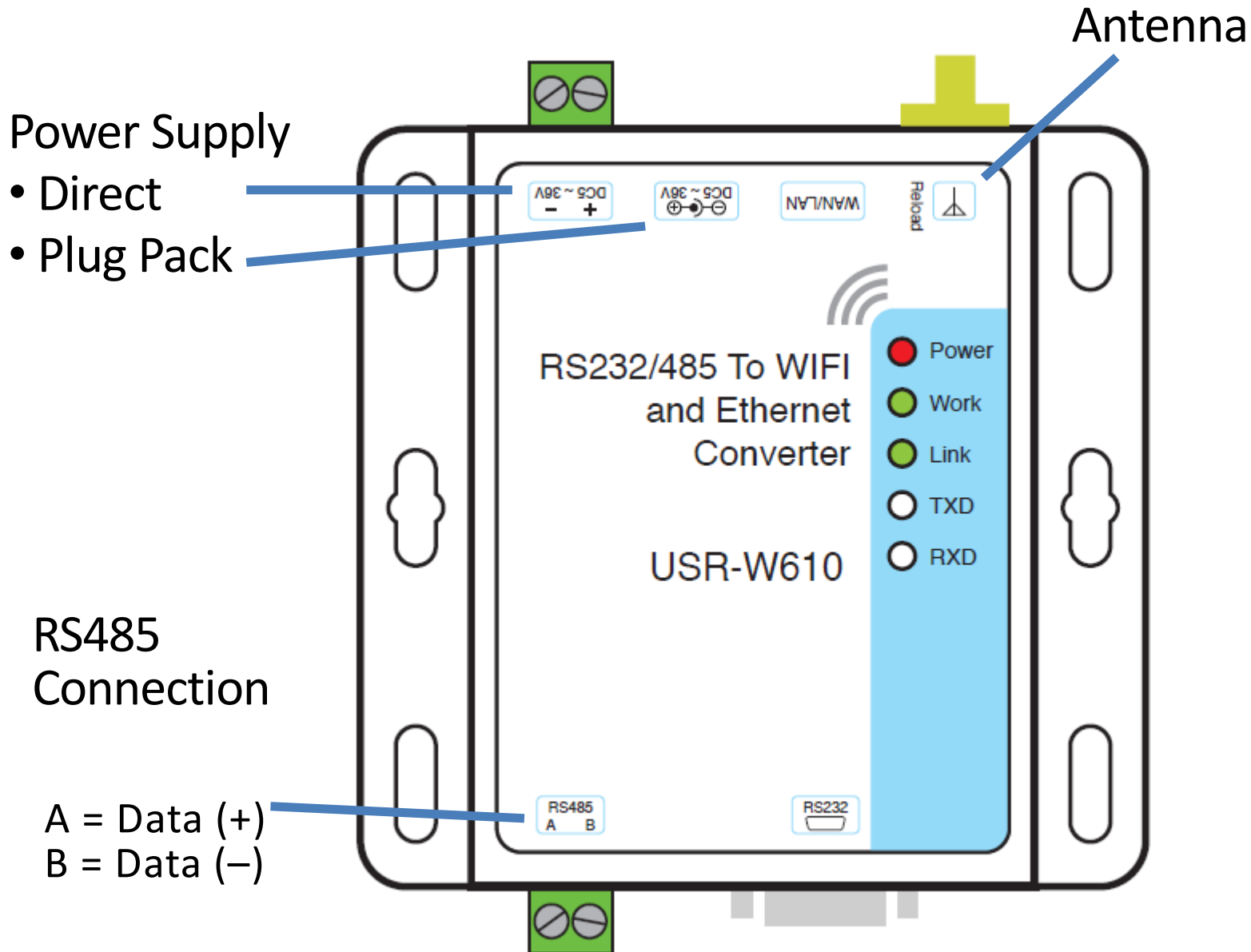
Reset Device

Press Reload Button for 5 seconds with the device powered up to factory reset the device

RS232/485 To WIFI and Ethernet Converter

USR-W610

- 🔴 Power
- 🟢 Work
- 🟢 Link
- ⚪ TXD
- ⚪ RXD

DC5~36V − +

DC5~36V ⊕−⊙−⊖

WAN/LAN

Reload

RS485 A B

RS232
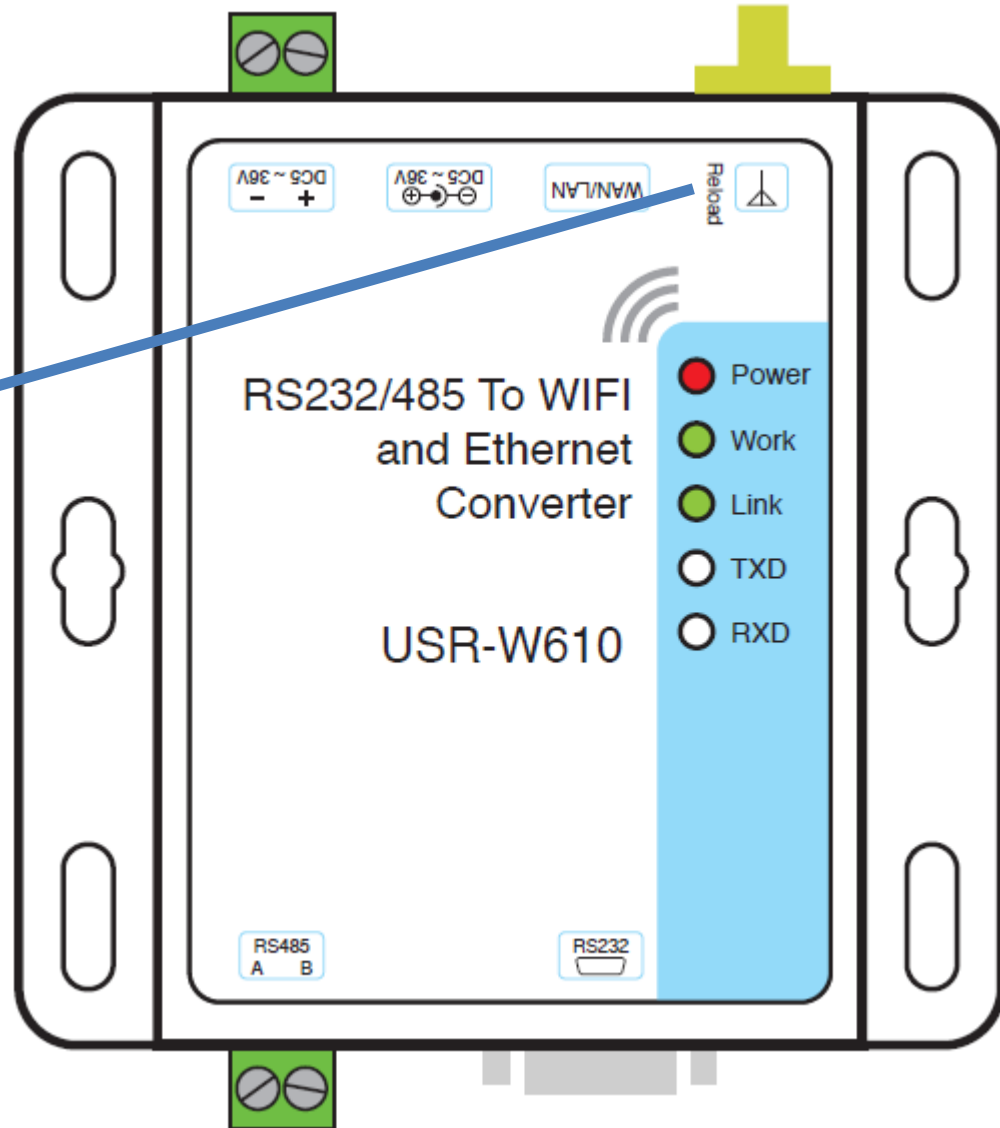
Factory Settings

Parameter	Default Setting
SSID (Wi-Fi network broadcast name)	USR-WIFI232-XXX_xxxx
IP Address	10.10.100.254
Subnet Mask	255.255.255.0
User Name	admin
Password	admin

Device Pairing Overview

- Connect to one converter and set it up as the Server before restarting it

- Re-connect to the Server converter and then Wi-Fi scan for the second converter

- Set up the second converter through the Server's interface to be the Client before restarting it

- Repeat with additional converters to set up more Clients as required
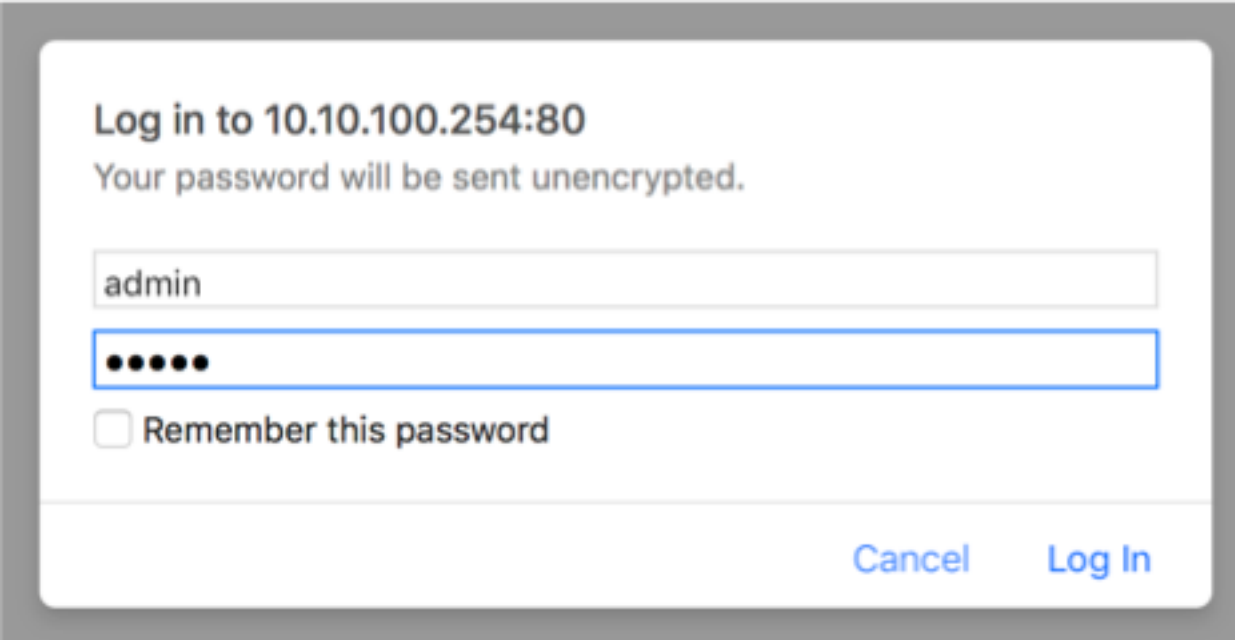
Installation Process

1. Begin by resetting each converter using its Reload button

2. Power on one converter and leave the other off

3. Connect computer to the Wi-Fi network called "USR-WIFI232-XXX_xxxx"

4. In a web browser enter address "10.10.100.254"
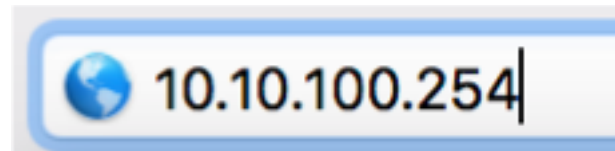
Installation Process cont.

5. Enter user name "admin" and password "admin"

Log in to 10.10.100.254:80
Your password will be sent unencrypted.

admin

•••••

☐ Remember this password

Cancel   Log In

Installation Process cont.

6. Under section 1F set security mode to WPA2-PSK and Select TKIPAES for WPA Algorithms

1F WI-FI Setting 【Modify】

Wifi Mode	
Mode	AP Mode ▼
Wireless configuration	
Network Name(SSID)	USR-WIFI232-604_A9AC Hidden ☐
BSSID	D8:B0:4C:D7:A9:AC
Security Mode	WPA2-PSK ▼ ⬅
WPA Algorithms	○ TKIP ○ AES ⦿ TKIPAES ⬅
Pass Phrase	12345678

Apply   Cancel

Installation Process cont.

7. Change the default password of "12345678" if required and then press Apply

Installation Process cont.

8. Under section 2F leave Ethernet disabled and then press Apply

Quick Configure

1F WI-FI Setting 【Modify】

2F Ethernet Ports Setting 【Modify】

Ethernet function	
Open the Ethernet	Disable ⌄

Apply   Cancel

Installation Process cont.

9. Under section 3F set Baudrate to 9600 then press Apply

Installation Process cont.

10.Under section 4F leave settings as is then press Apply

4F Network Setting **【Modify】**

Network A Setting	
Mode	Server
Protocol	TCP
Port	8899
Server Address	10.10.100.100
MAX TCP Num.(1~32)	32
TCP Time out (小于600 秒)	0
TCP connection password authentication	Disable

Apply   Cancel

Installation Process cont.

11.Click "AP Interface Settings" in the right hand menu (3rd option)

➡ Quick Configure

➡ Mode Selection

➡ AP Interface Setting

➡ STA Interface Setting

➡ Application Setting

➡ Ethernet Setting

➡ HTTPD Client Mode

➡ WEB IO

➡ Advanced

➡ Device Management
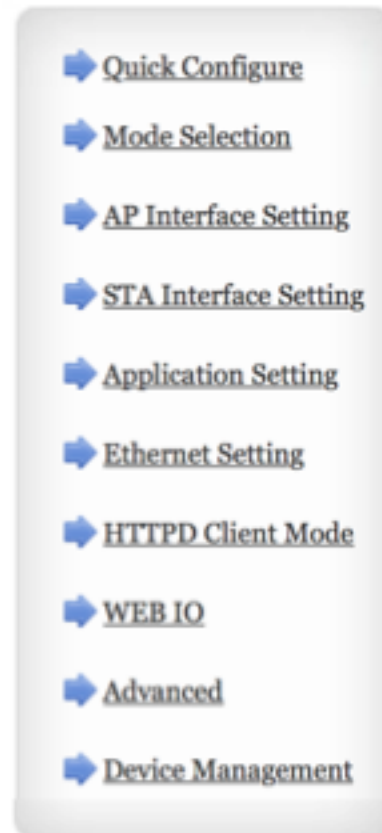
Installation Process cont.

12. Change IP Address under LAN Setup to be "192.168.1.1" then press Apply

LAN Setup	
IP Address(Default DHCP Gateway)	192.168.1.1 👤∨
Subnet Mask	255.255.255.0
DHCP Type	Server ⇕

Apply   Cancel

Installation Process cont.

13. Follow the link provided to Device Management

Set Successfully, Restart to use new setting.

Restart button in **Device Management**

14. Click Restart button to restart device and close the browser window

Restart Module	
Restart Module	Restart

Installation Process cont.

15. Power on the second converter

16. Connect computer to the second Wi-Fi network called "USR-WIFI232-XXX_xxxx"

17. In a web browser enter address "10.10.100.254"

🌐 10.10.100.254|
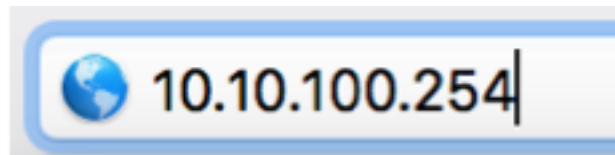
Installation Process cont.

19. Under section 1F ensure Mode is set to STA Mode and then click the AP's SSID search button (circled in red below) to find server

1F WI-FI Setting 【Modify】

Wifi Mode	
Mode	STA Mode ▾
STA Interface Parameters	
AP's SSID	USR-WIFI232-604_A9AC Search
MAC Address (Optional)	
Security Mode	OPEN ▾
Encryption Type	NONE ▾

Apply   Cancel

Installation Process cont.

20. In the Site Survey click the radio button alongside the fist converter's SSID and then press Apply

Site Survey						
	SSID	BSSID	RSSI	Channel	Encryption	Authentication	Network Type
◯		fa:8f:ca:32:5a:ef	100%	3	NONE	OPEN	Infrastructure
◉	USR-WIFI232-604_A9AC	d8:b0:4c:d7:a9:ac	100%	11	AES	WPA2PSK	Infrastructure

Apply   Refresh
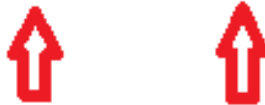
Note: Signal strenght (RSSI) should be at least 50% for stable connection.

Note: Security type is correct.

Installation Process cont.

21.Under section 1F ensure that the second converter's AP SSID is registered

Installation Process cont.

23. Set Security Mode to WPA2PSK and Encryption Type to AES

24. Enter password "12345678" or custom set password in Key field and then press Apply

1F WI-FI Setting 【Modify】

Wifi Mode	
Mode	STA Mode ▾
STA Interface Parameters	
AP's SSID	USR-WIFI232-604_A9AC Search
MAC Address (Optional)	
Security Mode	WPA2PSK ▾
Encryption Type	AES ▾
Key	12345678

Apply   Cancel

Installation Process cont.

24. Under section 2F leave Ethernet disabled and then press Apply

Quick Configure

1F WI-FI Setting 【Modify】

2F Ethernet Ports Setting 【Modify】

Ethernet function	
Open the Ethernet	Disable

Apply   Cancel

Installation Process cont.

25. Under section 3F set Baudrate to 9600 and then press Apply

Installation Process cont.

26. Under section 4F set Mode to Client

27. Set Server Address to 192.168.1.1 and then press Apply

Network A Setting	
Mode	Client ▾
Protocol	TCP ▾
Port	8899
Server Address	192.168.1.1
MAX TCP Num.(1~32)	32
TCP Time out (小于600 秒)	0

Apply   Cancel

Installation Process cont.

28.Click "STA Interface Settings" in the right hand menu (4th option)
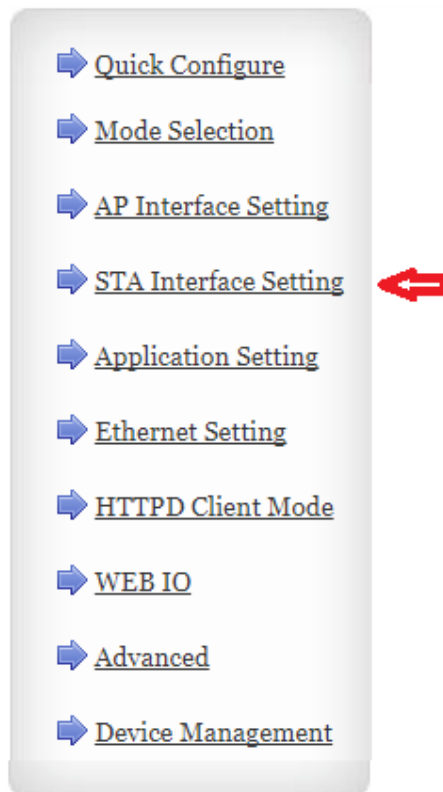
Installation Process cont.

29. Scroll to the bottom and change from DHCP(AUTO) to STATIC and enter the IP Address info as below "192.168.1.2" then press Apply

WAN Connection Type:	STATIC(fixed IP) ▼

Static Mode	
IP Address	192.168.1.2
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.1
DNS	192.168.1.1

Apply   Cancel

Installation Process cont.

30.Under section 5F Restart Module

Installation Process cont.

31. Confirm that both devices now have Power, Work and Link lights on

Server

Client

Completing Installation

- Once the two RS485 to Wi-Fi converters are paired proceed to connect RS485 input cables to both units as per the manufacturer's documentation

- Ensure final installation location of the converters is secured against moisture and vermin

- The final installation location should not exceed 80°C or relative humidity of 95% non condensing