RICE LAKE 820i Programmable Weight Indicator and Controller Instruction Manual

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RICE LAKE 820i Programmable Weight Indicator and Controller

WLAN Option Installation

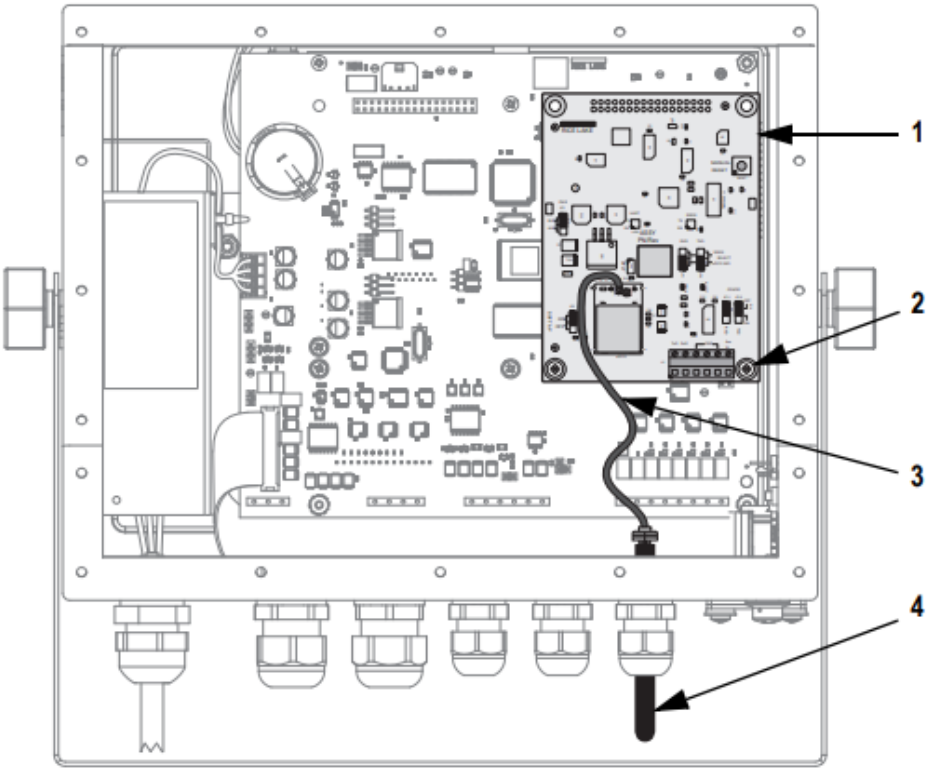
- The WLAN (Wireless Local Area Network) Option (Kit 206271) can be installed inside the 920i, 820i, and 720i

indicators into any available option slot. The WLAN Option can be factory installed upon request when ordering or can be purchased separately and installed on site. The WLAN option can be used for real-time data transmission between the indicator and other devices and software over a WLAN. Configuration of the WLAN Option is required before it can be used on a WLAN.

- Manuals and additional resources are available from the Rice Lake Weighing Systems website at www.ricelake.com Warranty information can be found on the website at www.ricelake.com/warranties
- The WLAN Option features a Lantronix® xPico 200 Series WiFi module. Visit www.lantronix.com to view the xPico 200 Series User Guide for detailed instructions on the WiFi module.

Parts Breakdown

The WLAN Option comes in a kit containing the necessary items used for the installation of the card.



Item No.	Part No.	Description	Qty
1	205754	Card, Dual Wireless/RS232 xPico Device Server & RS232 Serial Interface	1
2	14822	Screw, 4-40 NC x 1/4 Phillips Pan Head with Internal Tooth Lock Washer	2
3	112228	Cable, RF UFL to RSMA, 6 Inch, WiFi	1
4	98357	Antenna, 2.4 GHz 802.11B/G Lantronix Wireless Device Server Antenna	1

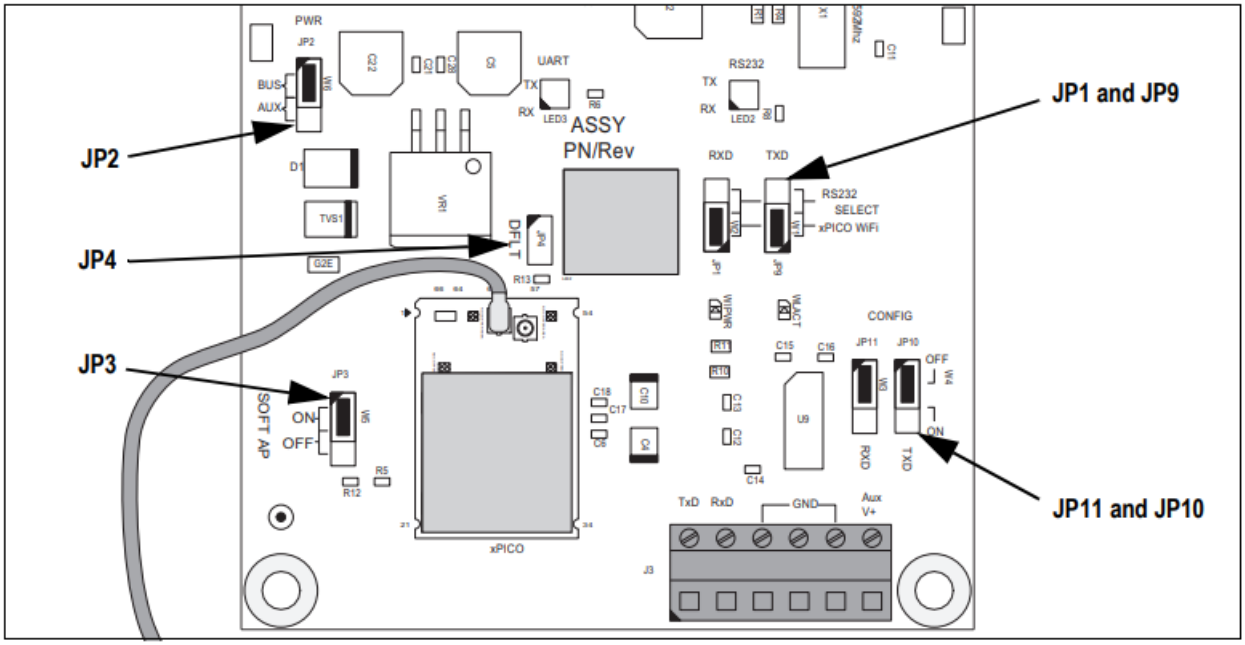
Table 1. WLAN Option Parts List

The indicator automatically recognizes all installed option cards when the unit is powered on. No hardware-specific configuration is required to identify an installed option card to the system. The WLAN Option appears as a dual serial card, however, only the first serial port can be connected to the WiFi module.
For Example: If an option is installed into Option Slot 1, it appears as serial ports 5 and 6, however, only port 5 is available for use with the WiFi module. The second port, port 6 in this example, can be configured for use as an RS232 port through the J3 connector (see Available Serial Connection on page 5).

- Electric Shock Hazard – The option card is not hot-swappable.
- The 920i, 820i, and 720i do not have an on/off switch. Always disconnect power before opening an enclosure. A grounding wrist strap must be worn to protect components from electrostatic discharge (ESD) when working inside an enclosure.
- Use this procedure to install the WLAN Option card and antenna.
- Disconnect power to the indicator and open the enclosure according to the indicator's manual.
- Carefully align the J1 connector, on the reserve side of the WLAN Option, with an available option slot connector.
- Press down on the option cardboard until it is seated into the option slot connector.
- Use the two screws provided in the option kit to secure the other end of the option card to the threaded standoffs.
- Slide the antenna through the largest available cord grip.
- The antenna joint should be exposed and positioned to follow the travel of the indicator's tilt direction.
- It is recommended to expose as much of the antenna as possible to help with signal strength.
- Connect the RP-SMA side of the antenna cable to the antenna.
- Connect the u-Fl end of the antenna cable to the Antenna 1 connection on the WiFi module
- The Antenna 1 connection is located on the centerline of the WiFi module.
- Tighten the cord grip around the antenna and torque the cord grip nut (inside the enclosure) to 33 in-lb (3.7 N-m) and torque the cord grip dome nut (around cable) to 22 in-lb (2.5 N-m)

Option Jumpers

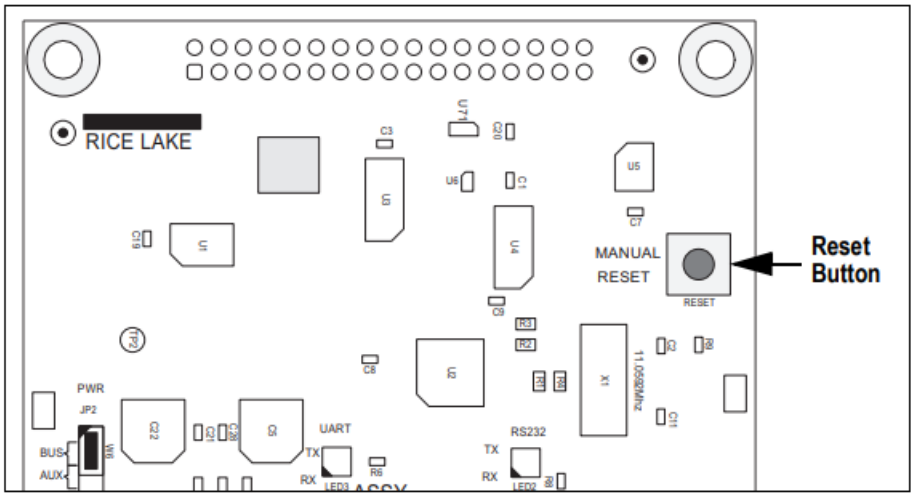
Refer to Figure 3 and Table 2 for the jumper locations and descriptions for the WLAN Option board.


JP2
JP4
JP3
JP1 and JP9
JP11 and JP10
PWR
JP2
BUS
AUX
UART
TX
RX
LED3
R6
ASSY
PN/Rev
RS232
TX
RX
LED2
RXD
TXD
RS232
SELECT
xPICO WiFi
D1
TVS1
VR1
DFLT
JP4
G2E
R13
JP1
JP9
WIPWR
WLACT
CONFIG
JP11
JP10
OFF
ON
RXD
TXD
JP3
SOFT AP
ON
OFF
R5
R12
C18
C17
C6
C10
C4
C15
C16
C13
C12
C14
U9
xPICO
TxD
RxD
GND
Aux
V+
J3

Jumper	Description
JP1 and JP9	RXD/ TXD Select Jumpers (RS232 / xPICO WiFi) – These jumpers select if RS232 is available through the second port of the option board. For most applications both the JP1 and JP9 jumpers should be in the xPICO WIFI position. ***NOTE: The second port is NOT actually connected to the WiFi module in the xPICO WIFI position, it is simply not used.*** When the jumpers are in the RS232 position, the second port on the board is routed to the TXD / RXD connection on the J3 connector to be used as a serial port. See **Available Serial Connection on page 5** for more information. ***NOTE: The jumpers must always be set in the same position. If JP1 and JP9 are in the RS232 position, then JP10 and JP11 jumpers must be in the OFF position. The JP1 and JP9 must NEVER be in the RS232 position at the same time JP10 and JP11 are in the ON position.***
JP2	Power Jumper (BUS / AUX) – Defines where option board gets power from. If installed in an indicator option slot, the jumper must be in the BUS position to pull power from the indicator. In the rare situation where the board is mounted externally (not on the “Bus”), then the jumper needs to be in the AUX position with 6-12 VDC applied to the AUX V+ and GND Pins of the J3 connector.
JP3	Soft AP Jumper (ON / OFF) – This jumper can be used to Enable or Disable the Soft AP (Access Point) feature of the WiFi Module. See **Soft AP (Access Point) on page 4** for more details on the function of the Soft AP. ***NOTE: This is an advanced feature and the jumper is not enabled by default. Contact Rice Lake if there is a need to disable the Soft AP.***
JP4	Default Jumper – This jumper connects to the Default pin of the WiFi module. This jumper can reset the module to factory OEM defaults if the user cannot do so through the Web Manager. This jumper must remain OFF for normal operation. See **WiFi Module Default Procedure on page 4** to reset the module to factory defaults.
JP10 and JP11	RXD / TXD Config Jumpers (ON / OFF) – These jumpers are used to select the connection to the WiFi module. – For normal operation: Set both JP10 and JP11 to the OFF position. This connects the WiFi module to the first port on the card. – For alternative operation: Set both JP10 and JP11 to the ON position. This connects the WiFi module to the J3 RS232 port. This can be used to route another serial port to the WiFi connection to allow serial data communications to a port other than the two available though the bus. This connection scheme can also be used to configure the WiFi module, but this is a more advanced feature not discussed in this document. Refer to the xPico 200 Series User Guide at **www.lantronix.com** for more information. ***NOTE: The jumpers must always be set in the same position. If JP1 and JP9 are in the RS232 position, then JP10 and JP11 jumpers must be in the OFF position. The JP1 and JP9 must NEVER be in the RS232 position at the same time JP10 and JP11 are in the ON position.***

Reset Button

The Reset Button performs a reset and reboots the WiFi module.



WiFi Module Default Procedure

The JP4 DFLT jumper can be used to reset the configuration of the WiFi module to factory OEM defaults.

1. With the board up and running, apply a shorting shunt to the DFLT pins for at least six seconds. See Option Jumpers on page 3 for the jumper's location.
2. The WiPWR LED starts to flash. See WiFi Setup on page 6 for the LED's location.

Remove the shorting shunt from the DFLT pins. The WiFi module now defaults.

Defaulting the WiFi module does not reset the WiFi connections, but enables a disabled Soft AP to allow access to the configuration. This jumper, along with the reset switch, can also allow the module to boot into command line mode. This is an advanced function not discussed in this document. Refer to the xPico 200 Series User Guide at www.lantronix.com for more information.

Soft AP (Access Point)

The recommended method to configure the WLAN Option to connect to a location's network is to use the built-in Web Manager. The preferred method to access the built-in Web Manager, before the WLAN Option is on the location's network, is to use the built-in Soft AP and do the configuration needed to connect to the network (see WiFi Setup on page 6).

The card can be configured using RS232 through the J3 connector, but by default, the module is not set up to do this and would need to be booted into the command line mode to do so. This is an advanced function not discussed in this document. Refer to the xPico 200 Series User Guide at www.lantronix.com for more information.

Soft AP as the WLAN Connection

In applications that don't have a local network to connect to or if the network is not in range, the Soft AP connection can also be used to talk to an indicator using the WLAN Option by connecting to IP 192.168.0.1, port 10001.

Available Serial Connection

A previous version of the WLAN Option used the serial connection to configure the WiFi module to connect to a

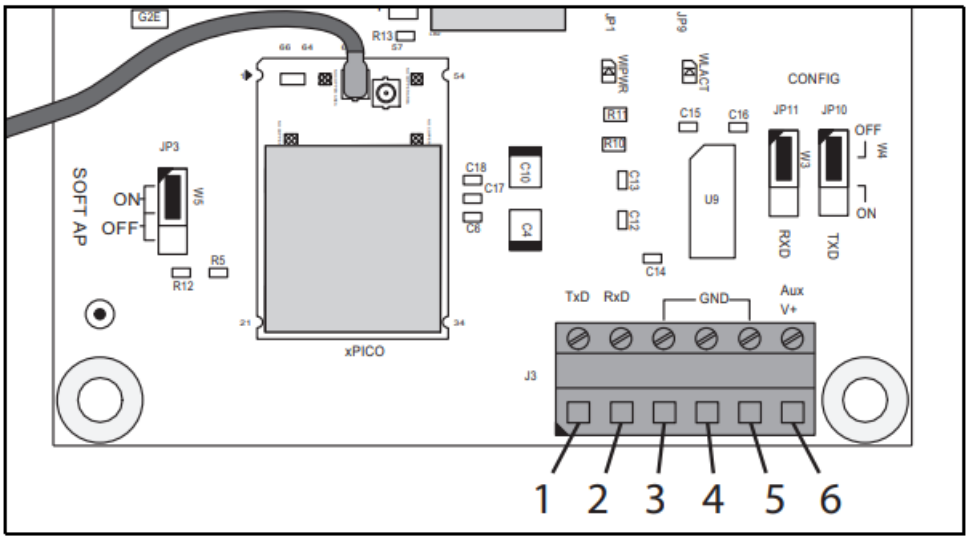
network. Even though this is still possible with this xPico-based WLAN Option, the preferred configuration method is now through the WiFi module's built-in Web Manager.

In addition to network configuration, the serial port can also be used to talk through the WiFi module, but both are advanced features not discussed in this document. Refer to the xPico 200 Series User Guide at www.lantronix.com for more information.

The WLAN Option appears as a dual serial card, with the first serial port being used to connect to the WiFi module. The second port can be configured for use as an RS232 port through the J3 connector.
RS232 J3 Setup Procedure

- Move both the JP1 and JP9 jumpers to the RS232 position.
- Confirm that both of the JP10 and JP11 jumpers are in the OFF position.
- Route cable to the J3 connector. See Figure 5 and Table 3 for wiring.
- In the indicator, configure the WLAN Option's second (higher numbered) serial port as needed to communicate with the external device connected to the J3 connector.

For Example: If an option is installed into Option Slot 1, it appears as serial ports 5 and 6. Making port 6 the second port.



Connector	Pin	Function
J3	1	TxD
	2	RxD
	3-5	GND
	6	Aux V+
NOTE: Aux V+ is used to provide power to the board when JP2 is in		
the AUB position. It is not a power source, and typically not used.		

Indicator Configuration

The WLAN Option appears as a dual serial card. When the WLAN Option is installed, additional serial ports will become available in the indicator configuration, depending on the slot the card is installed in.

- If in slot 1 – ports 5 and 6 will be available
- If in slot 2 – ports 7 and 8 will be available
- Pattern continues if additional slots are available

The first (lower numbered) port connects to the WiFi module. In the indicator's configuration, the first port's Baud Rate, Bits, and Parity settings must match the WiFi module's settings. The WiFi module's default settings are 9600 (Baud Rate), 8 (Data Bits), and None (Parity). Other indicator settings, such as the port's Function, Echo, and Response can be changed as needed.
See Serial Port Settings on page 9 to change the WiFi module's default settings using the Web Manager.

Wireless Configuration

Configuration of the wireless settings is done through the WLAN Option's built-in Web Manager. If already connected to a network, a web browser on that network can connect to the Web Manager by simply navigating to the WLAN Option's IP Address.
If not already connected to a network, or configuration through the network is not desired/available, then the Web Manager may be accessed through the WLAN Option's Soft AP. By default, the option's Soft AP is available any time the card is powered up. Soft AP (Access Point) Details

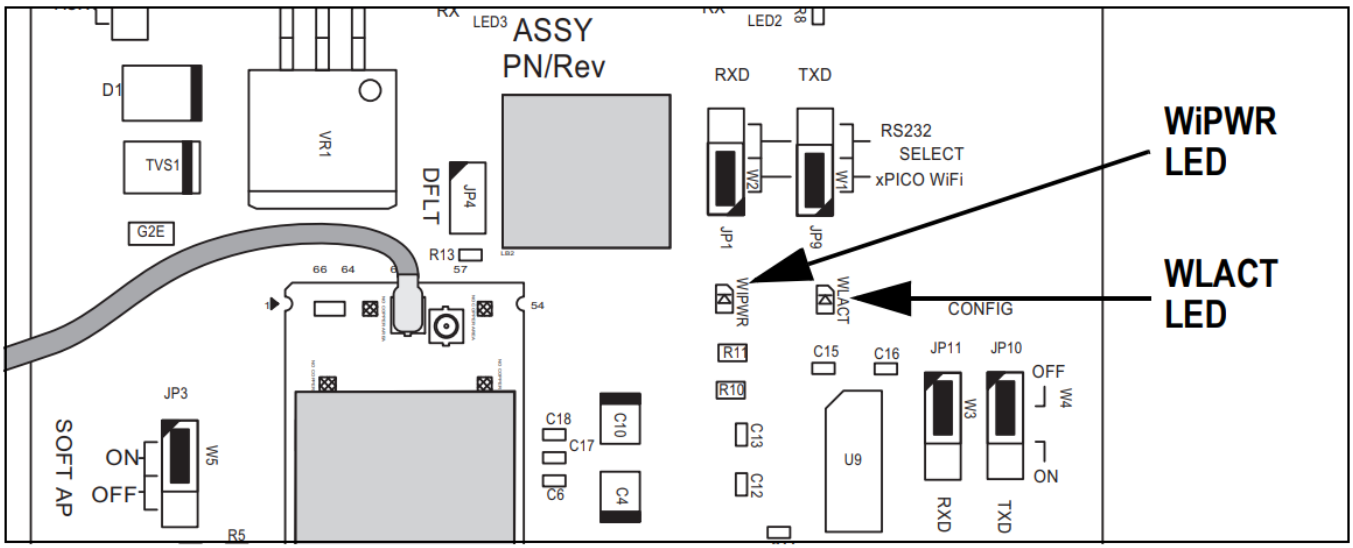
- Name: RLWS_XXXXXX
- Password: PASSWORD
- Configuration Page: http://192.168.0.1

The Soft AP only shows up as a 5 GHz network. The connecting device must be capable of using the 5 GHz band to connect to the Soft AP.

WiFi Setup

The following procedure is for setting up the WLAN Option's WiFi network using the WLAN Option's built-in Web Manager.

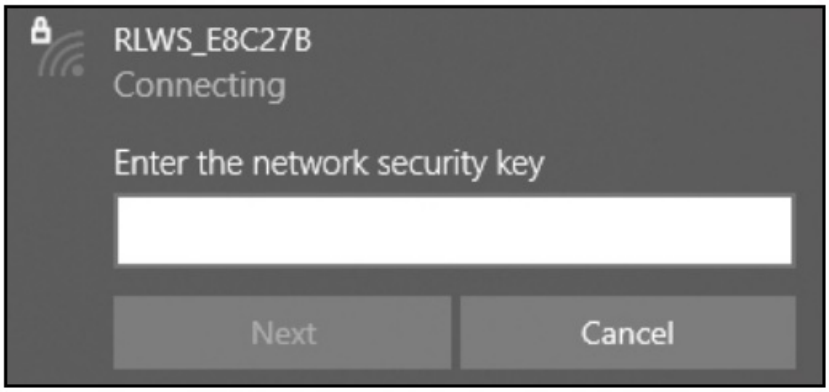
Power on the indicator and wait for the WiPWR LED to light solid. See Figure 6 for the LED's location.



Scan for available WiFi networks using a computer or phone and connect to the Soft AP. It might take a few attempts before the Soft AP appears on the computer or phone.

- Soft AP Name: RLWS_XXXXXX
- Soft AP Password: PASSWORD

It is recommended to change default passwords to limit access and for security.

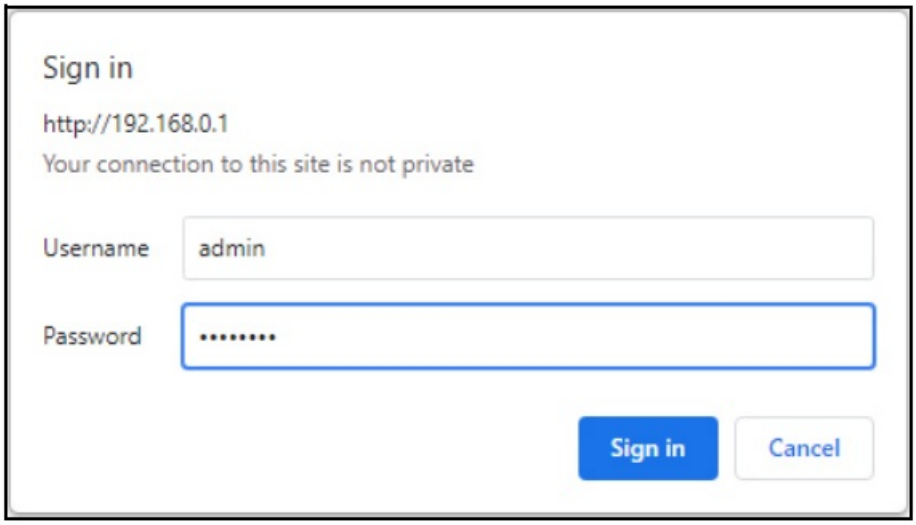


The X's in the name represent the last 6 digits of the WiFi MAC address. The serial number on the WiFi module's label is almost the same, other than the last digit being one number/character less than the WiFi MAC address. For example, if the module's serial number is "0080A3E8C27A", then the SSID would be "RLWS_E8C27B". The MAC address is a Hexadecimal value, so the letter A follows the number 9, and this continues to F before incrementing the next most significant digit and returning to 0.

Once connected to the Soft AP, use a web browser and enter 192.168.0.1 as the URL address, and press Enter. Once connected to a network, a web browser on that network can connect to the Web Manager by simply navigating to the WLAN Option's IP Address (available on the Status page of the Web Manager).

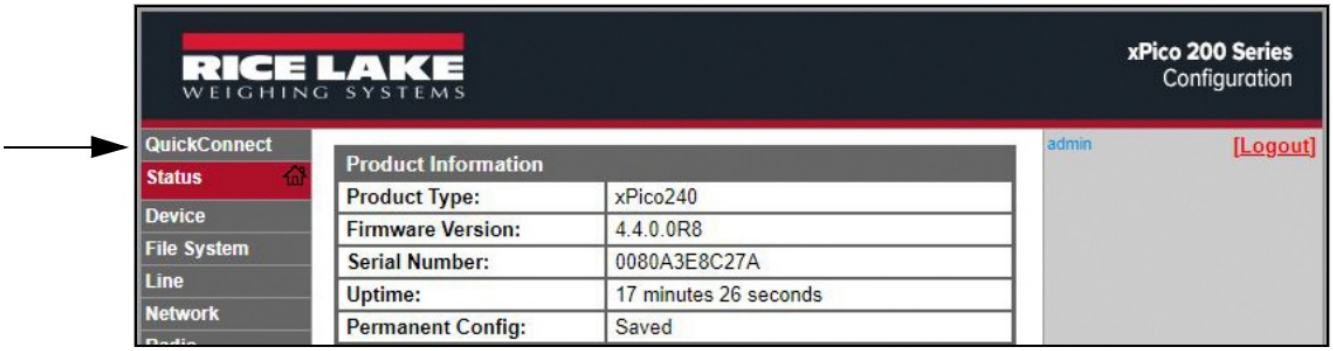
- Enter the default login credentials for the Web Manager.
- Username: admin
- Password: PASSWORD

It is recommended to change default passwords to limit access and for security.

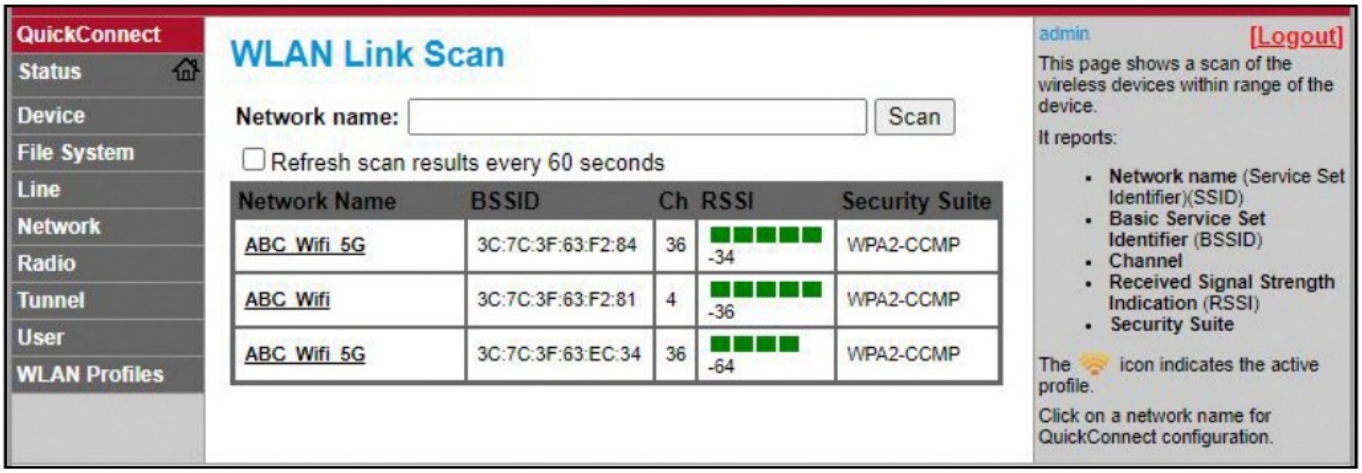


Press Sign in. The Web Manager loads in the browser and the Status page appears.

Click QuickConnect at the top of the left nav.

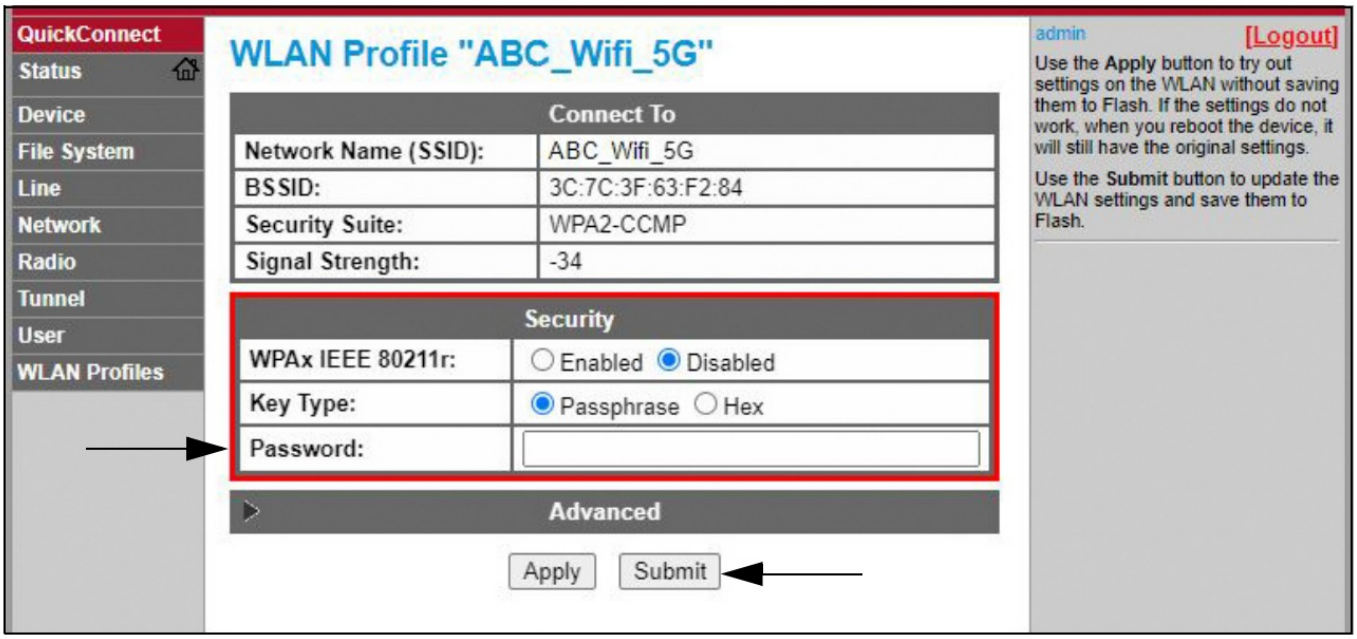


A list of wireless networks appears Click the network name intended to connect to the WLAN Option's WiFi network. If the necessary network does not show up, just click the Scan button again. It may take a few tries to show the network. If the network is hidden, enter the network name in the box provided.



The Web Manager provides notes and information related to the current page in the far right column. Descriptions for options and settings are also provided when hovering over the item in question.

The wireless network information page appears. Enter the network password (if applicable). Contact the location's IT, administrator, to obtain network credentials as needed based on the security that is in place.

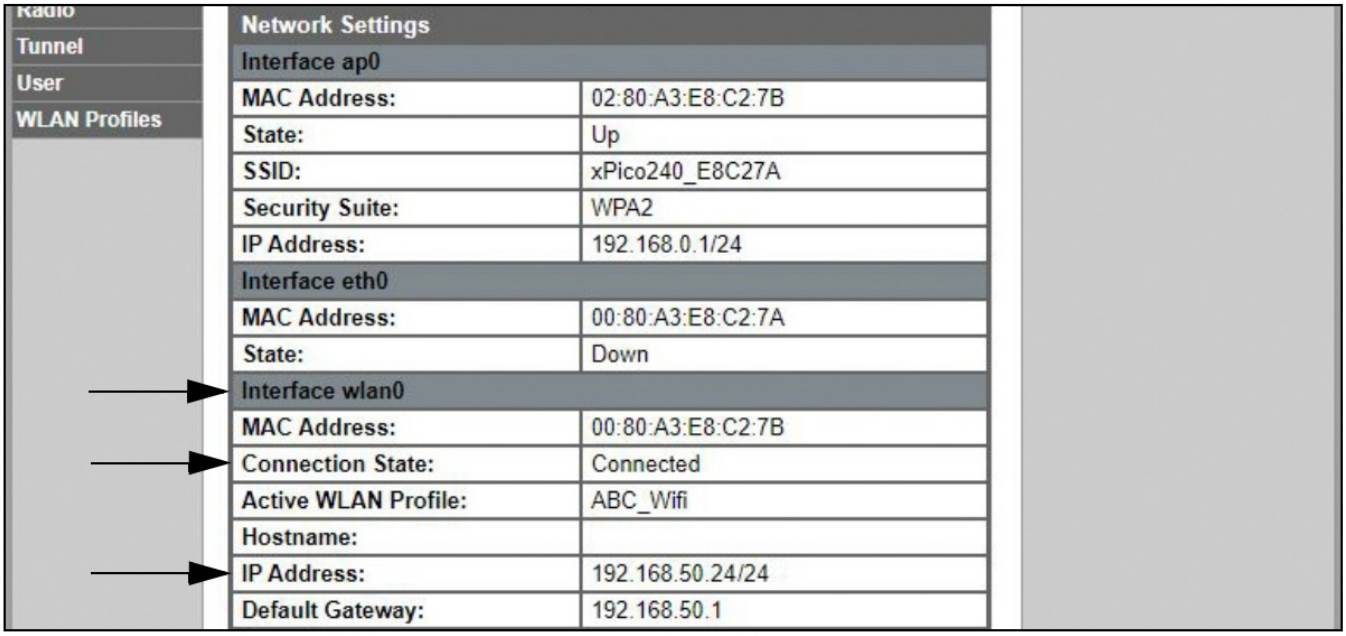


Click Submit to apply and save the settings. A message displays at the top of the page to show if the new

network's Profile is saved successfully. It does not necessarily mean it is connected to the network.

The Apply button only applies the settings for the current session but does NOT save them. 10. To verify that the WLAN Option is connected to the location's network, click Status near the top of the left nav.

11. The Status page shows all of the network connections on the device under Network Settings.

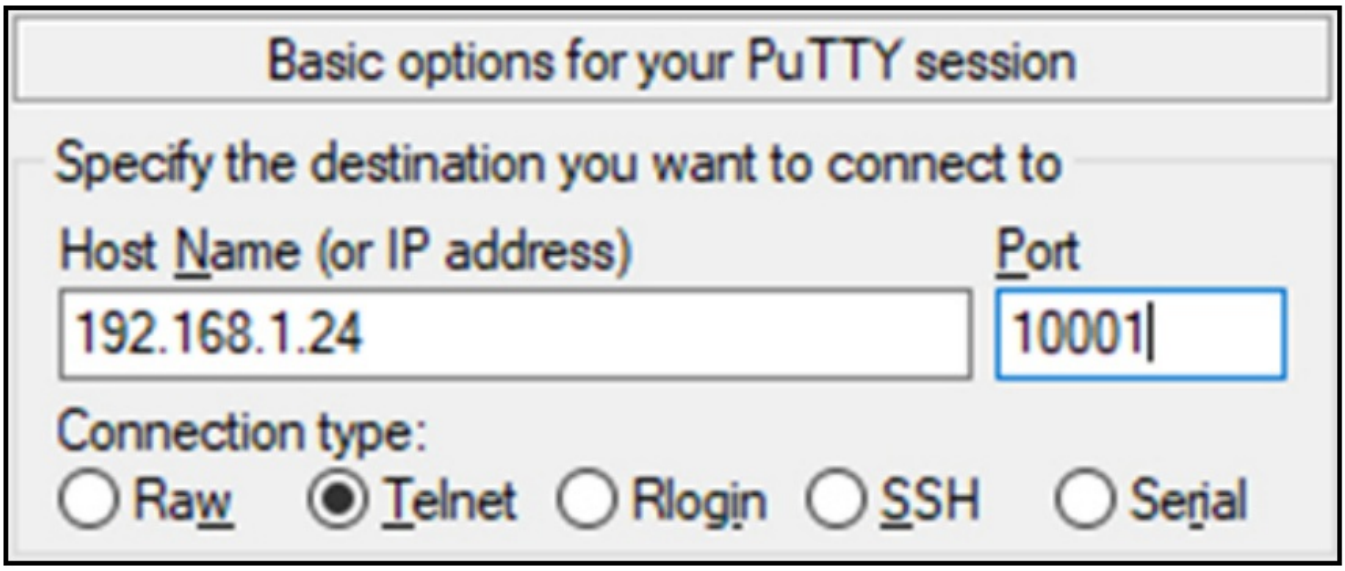


If Connected: Interface wlan0 is listed with Connection State showing Connected and the IP Address populated. The WLACT LED on the card also lights when connected to a network (Figure 6 on page 6).
The "/24" at the end of the IP Address indicates the number of bits set for the network subnet mask and is not part of the IP Address itself. There are 32 bits in a subnet mask and "/24" indicates the subnet mask is 255.255.255.0.If Not Connected: Click WLAN Profiles at the bottom of the left nav to change the network settings and try again.

Connecting to the WiFi module's server with a remote client is now possible. By default, the WiFi module is configured as an RS232 to WLAN tunnel for serial communication.

In the indicator's configuration, the port's Baud Rate, Bits, and Parity settings must match the WiFi module's settings. The WiFi module's default settings are 9600 (Baud Rate), 8 (Data Bits), and None (Parity). Other indicator settings, such as the port's Function, Echo, and Response can be changed as needed. See Serial Port Settings to change the WiFi module's default settings using the Web Manager.

Using a Terminal Emulation program, such as Putty, as a remote client connection to the WiFi module's server over Telnet is possible using the IP Address that was noted in Step 11 on page 8 and the Local Port number, which by default is 10001.



- **Putty Example**

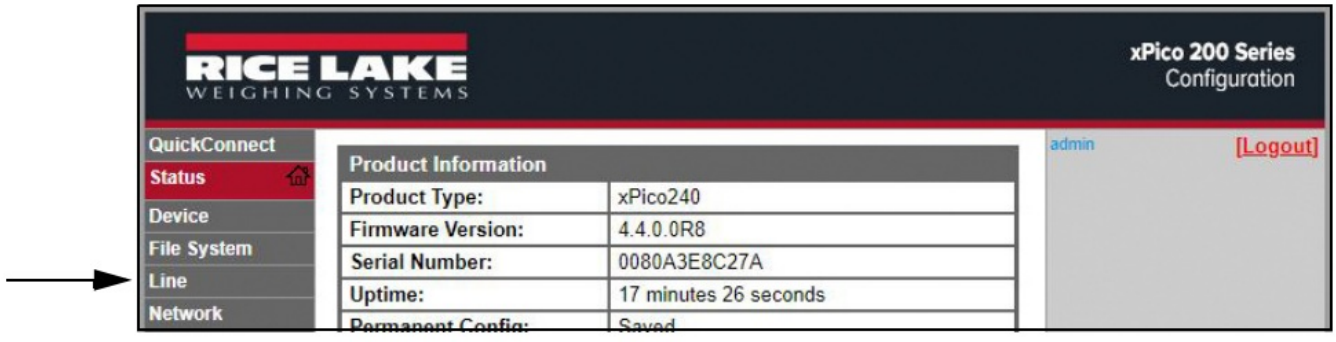
  If the card's IP address changes and there is no longer access to the card through the location's wireless network, connect to the Soft AP and use the Web Manager to learn the new IP Address.

  If the Web Manager cannot be reached through the location's wireless network or the Soft AP, the card needs to default. See WiFi Module Default Procedure on page 4.

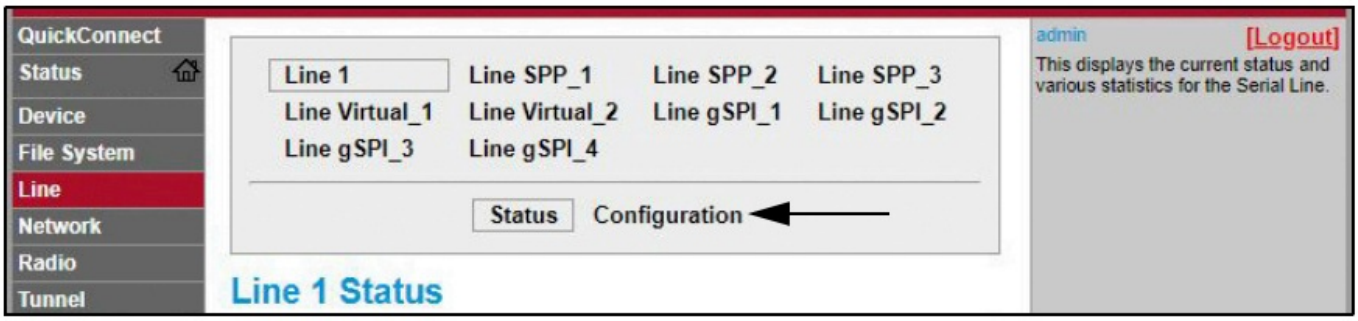
  For more information on all the features of this card, visit www.lantronix.com to view the xPico 200 Series User Guide.
- **Serial Port Settings**

  The following procedure is for changing the WiFi module's settings to match the product's serial port settings using the Web Manager. The WiFi module's settings of Baud Rate, Data Bits, and Parity must match the product's serial port settings.
- For example, the port's baud rate for the iQUBE² is set at 115200 by default, so the WiFi module setting for baud rate must be changed to match when using the WLAN Option in a 920i with an iQUBE².
- Refer to Steps 1-5 in WiFi Setup on page 6 to sign in to the Web Manager.

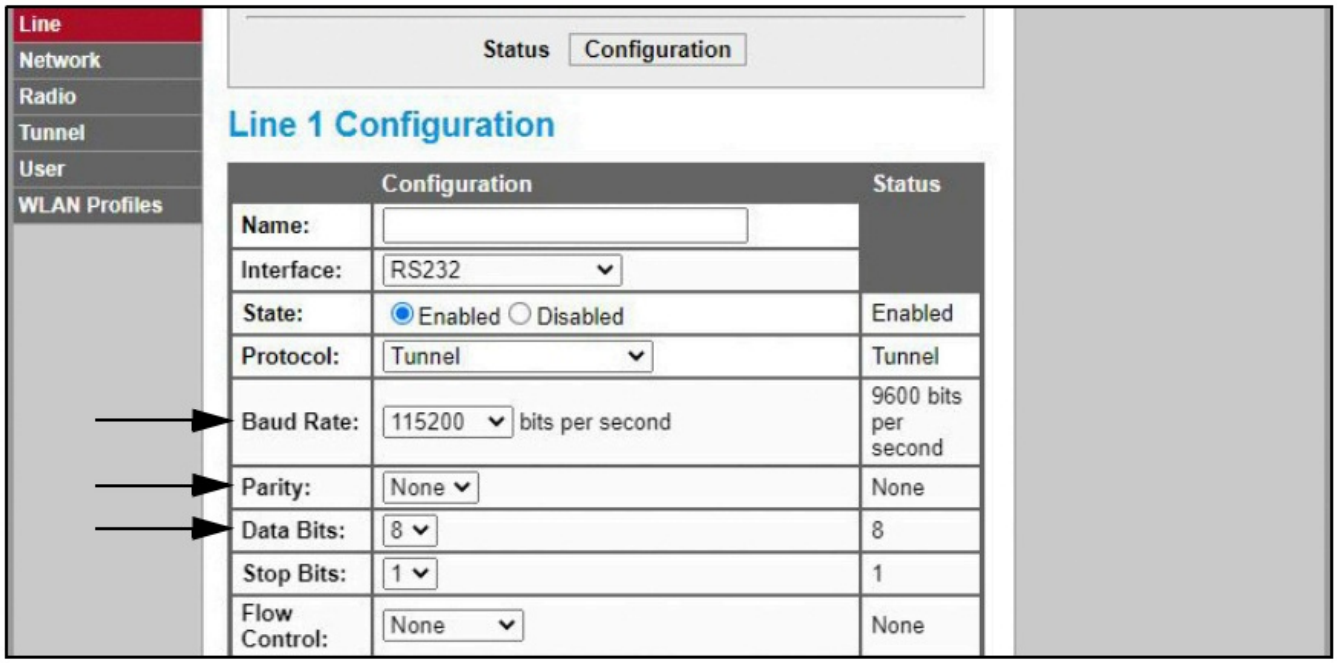
  Click Line in the left nav.



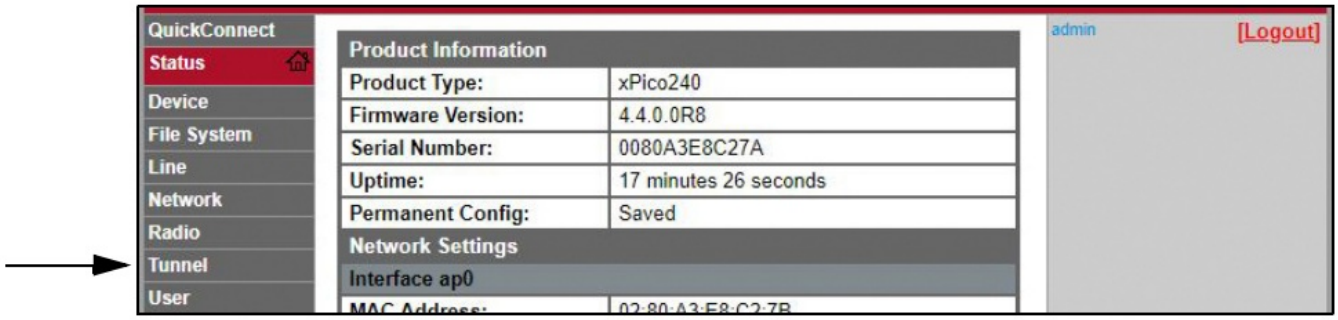
Click Configuration towards the top of the Line 1 Status page.



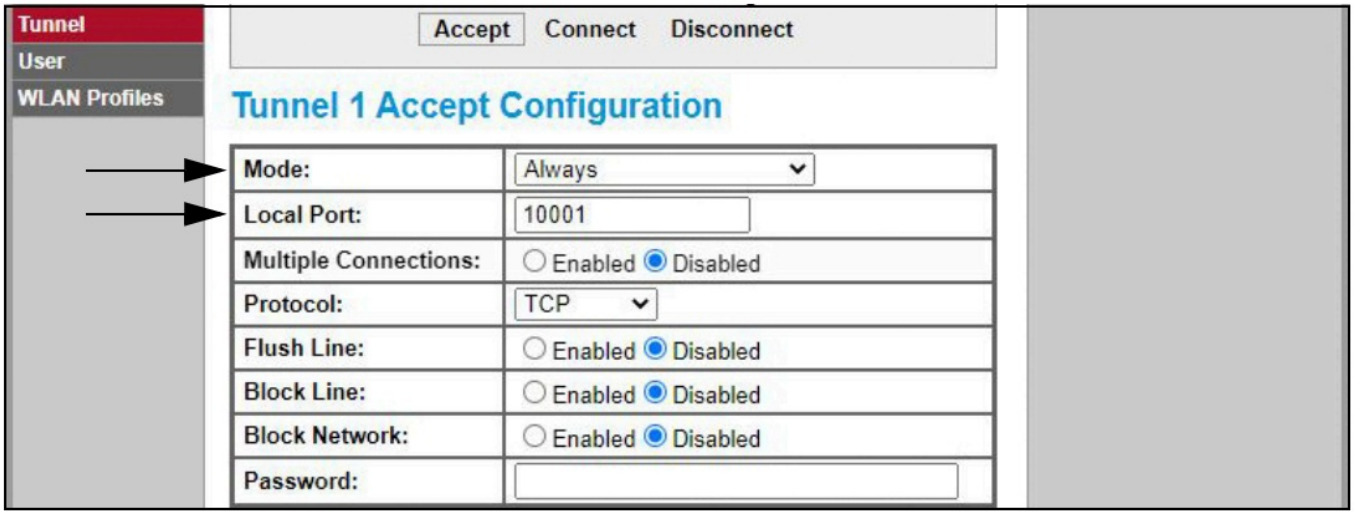
Use drop-down options to change Line 1 Configuration settings as needed to match the product's serial port settings.



- Click Submit at the bottom of the page to apply and save the settings. A message displays at the top of the page to confirm the changes have been saved permanently.
- Server Configuration
- The WiFi module is configured to be a server by default, with the ability to accept the connection of a client to it.
- A Server is waiting to accept a connection from a Client.
- A Client is looking to connect to a Remote Server (host).
- Even though a device can be set up for both, typically it is only set up as one or the other.
- The following procedure shows where the WiFi module's server settings are found using the Web Manager.
- Making changes to the Tunnel 1 Accept Configuration settings may impact the WiFi module's connection to the location's network, established in WiFi Setup on page 6.
- Refer to Steps 1-5 in WiFi Setup on page 6 to sign in to the Web Manager.
- Click Tunnel in the left nav.



3. Click Accept towards the top of the Tunnel 1 Status page.

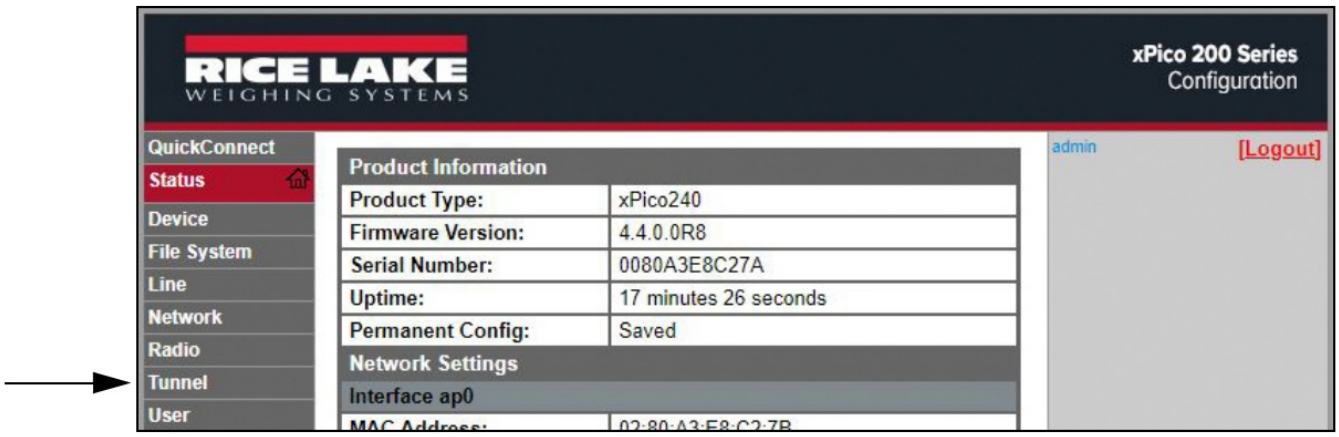


Change the Mode and Local Port settings if needed.

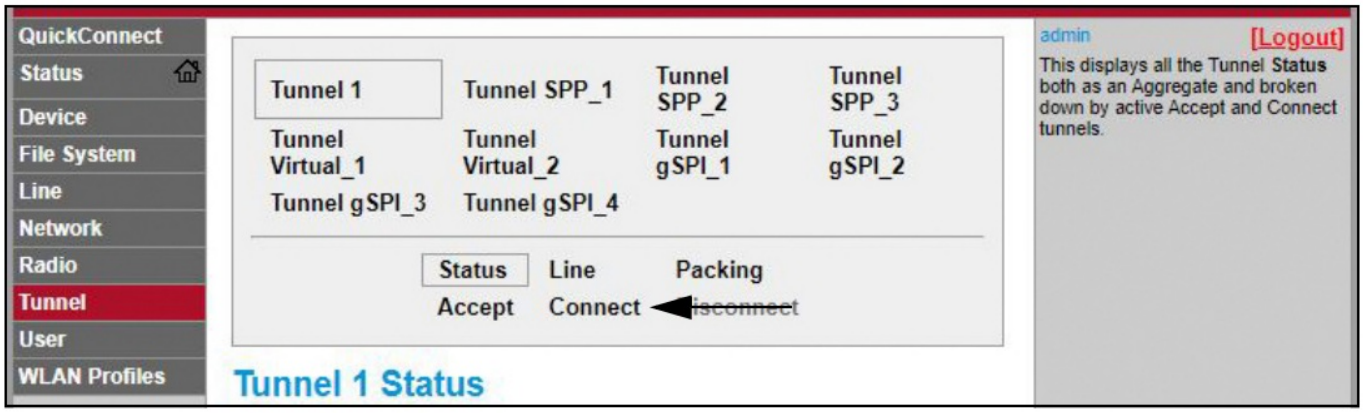
- Click Submit at the bottom of the page to apply and save the settings. A message displays at the top of the page to confirm the changes have been saved permanently.

Client Configuration

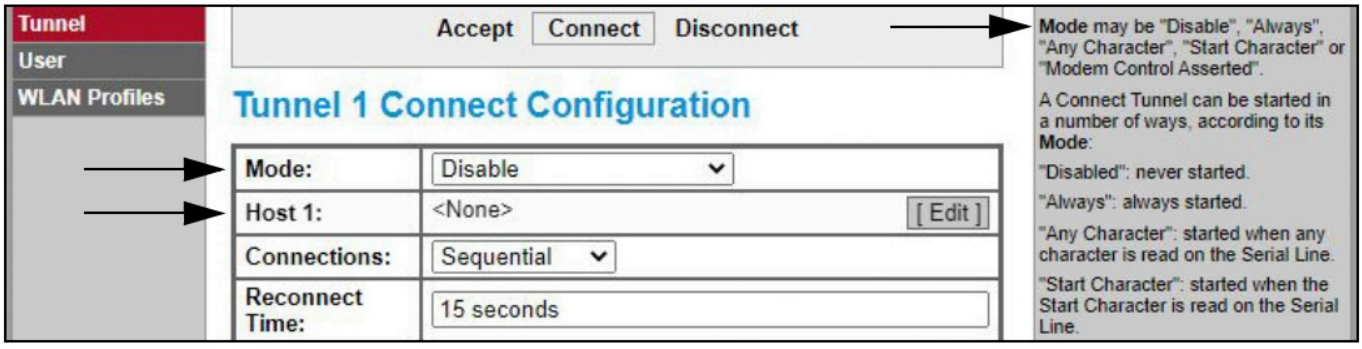
- The WiFi module is configured to be a server by default, with the ability to accept the connection of a client to it.
- A Server is waiting to accept a connection from a Client.
- A Client is looking to connect to a Remote Server (host).
- The following procedure is for configuring the WiFi module as a client, using the Web Manager, to be able to connect the WiFi module to an available server connection.
- Refer to Steps 1-5 in WiFi Setup on page 6 to sign in to the Web Manager.
- Click Tunnel in the left nav.



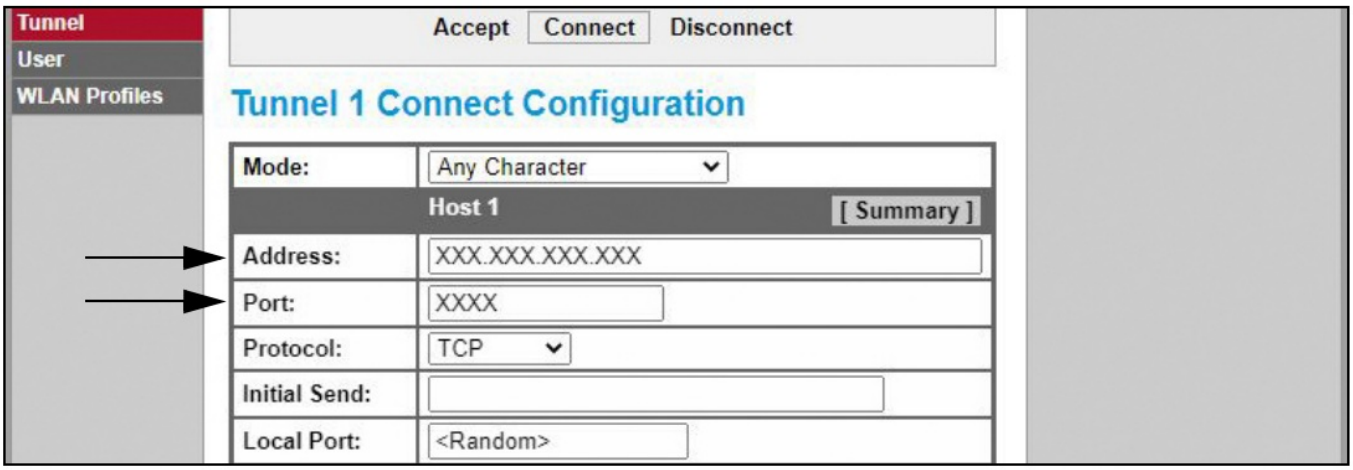
Click Connect towards the top of the Tunnel 1 Status page.



Use the drop-down to change the Mode setting, and then click [Edit] to display available Host 1 settings.
The Web Manager provides notes and information related to the current page in the far right column. Descriptions for options and settings are also provided when hovering over the item in question.



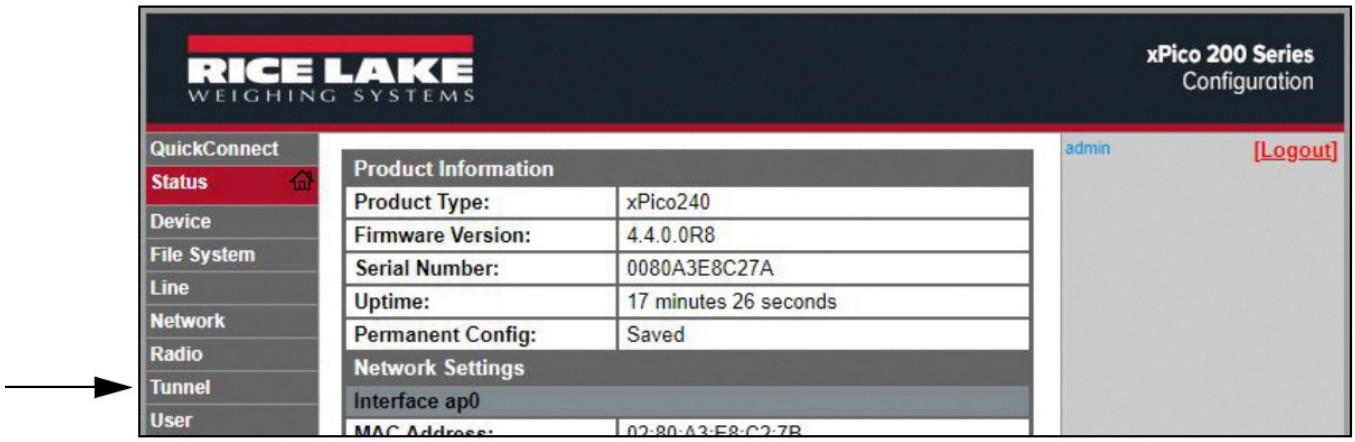
Set the Address and Port as needed to connect to the intended available server connection.



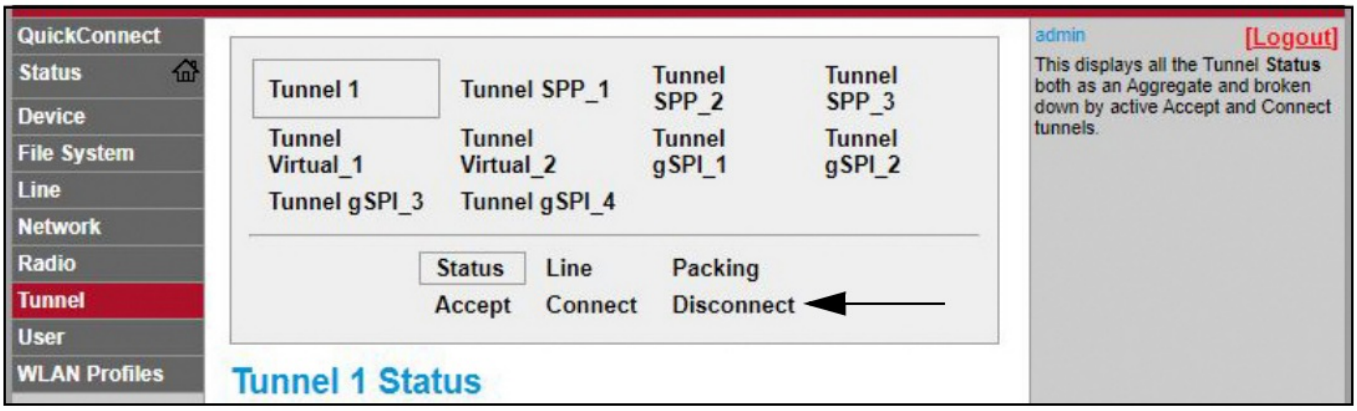
- Click Submit at the bottom of the page to apply and save the settings. A message displays at the top of the page to confirm the changes have been saved permanently.
- While the WiFi module's server is still available, it is necessary to adjust the server and client mode settings to allow
- both to function in unison. Even though a device can be set up for both, typically it is only set up as one or the other.
- Refer to the xPico 200 Series User Guide at www.lantronix.com for more information.

Timeout Configuration

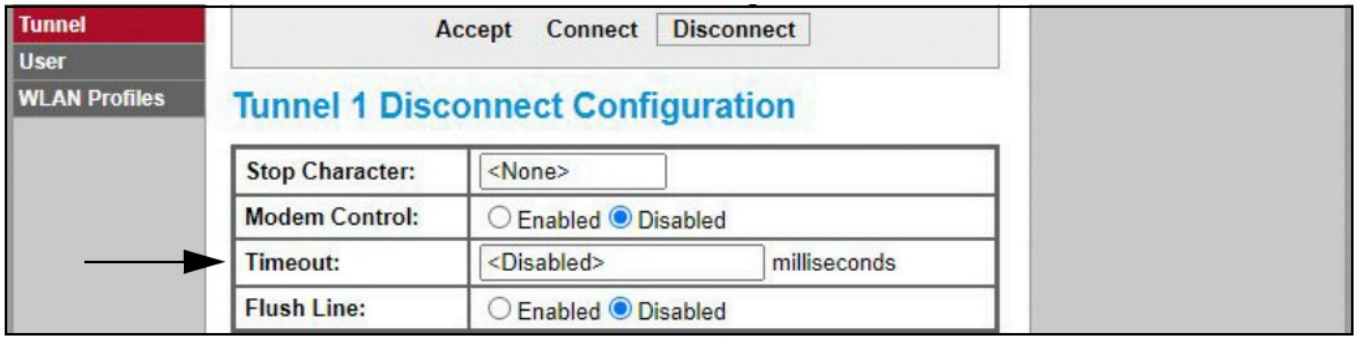
- The WiFi module has an optional Disconnect feature that can be configured to break a connection after a set amount of time.
- This feature applies to both server and client connections.
- The following procedure shows where the WiFi module's timeout setting is found using the Web Manager.
- Refer to Steps 1-5 in WiFi Setup on page 6 to sign in to the Web Manager.
- Click Tunnel in the left nav



3. Click Disconnect towards the top of the Tunnel 1 Status page.



4. Enter the desired value in milliseconds for the Timeout setting. A value entry of 0 disables the Disconnect feature.



Click Submit at the bottom of the page to apply and save the settings. A message displays at the top of the page to confirm the changes have been saved permanently.

WiFi Module Specifications

- The WLAN Option features a Lantronix® xPico 200 Series WiFi module. Visit www.lantronix.com to view the latest list of technical specifications on the WiFi module.

  Wireless Specifications
- IEEE 802.11 a/b/g up to 54 Mbps; 802.11 n (1×1) up to 150 Mbps
- 20 and 40 MHz channel width with optional SGI
- Dual Band 2.4 GHz and 5 GHz, Channels 1-13, UNII-1, 2a, 2e and 3
- Supports IEEE 802.11 d/h/i
- 802.11r fast roaming

  Data Communication
- TruPort® Serial Technology— TCP and UDP Server Mode, TCP and UDP Client Mode, Multi-host Connect; TLS Client and Server
- TruPort® Socket— Multi-host Client and Server Modes, HTTP(S), Sockets, TLS
- Authenticated SMTP Support— Send email directly from device

  Security and Authentication
- TruPort® Security Software
- Secure Boot, Secure Firmware-Over-the-Air (FOTA) Updates
- Secure Key Storage, Encrypted Configuration
- Secure Connections with SSL/TLS, HTTPS
- Software Controlled Network Service Ports Enable/Disable

- Role-Based Access Control
- AES/CCMP and TKIP encryption, WPA/WPA2 Personal
- WPA2 Enterprise (EAP-TLS, EAP-TTLS, EAP-PEAP, EAP-FAST
- SSLv3/TLS 1.2 with PKI and X.509 Certificates (up to 4096-bit Keys)
- AES Algorithm, 256-bit, 192-bit, 128-bit
- WiFi Module Specifications Continued

Management Interfaces

- Lantronix ConsoleFlow™ Cloud Software Platform, REST, MQTT
- Lantronix Discovery Protocol (77FE)
- Serial Port, Internal Web Server (HTTP/HTTPS)
- XML Configuration and XML Status (CLI, API)

Secure Firmware Upgrade via HTTPS, ConsoleFlow™

Protocol Support

- DHCP Client, Server (Soft AP), HTTP Server/Client
- IPv4, TCP/IP, UDP/IP, ARP, ICMP, Auto-IP, DNS
- SNMP v1/v2
- IPv6

Wireless Features

- Concurrent Soft AP + STA (Client), Client, Soft AP
- Up to 5 simultaneous client connections to the Soft AP interface
- Up to 4 in Concurrent Mode
- Connect to multiple WLAN networks, WLAN QuickConnect

Certifications & Compliance

- Type Approvals: USA (FCC Part 15), Canada (IC RSS), EU (RED), Japan (MIC), China (SRRC), AU/NZS
- Safety: IEC 62368 EN 62368, EN 62311, UL 60950
- RoHS, REACH
- FCC ID: R68XPICO200
- CMIIT ID: 2017AJ6663(M)

Documents / Resources

	RICE LAKE 820i Programmable Weight Indicator and Controller [pdf] Instruction Manual 920i, 820i, 720i, 820i Programmable Weight Indicator and Controller, Programmable Weight In dicator and Controller

References

- X Intelligent IoT Solutions - Connect, Compute, Comprehend, Control
- Rice Lake Weighing Systems
- Warranties
- X xPico 200 Series

- X xPico 240 Embedded IoT Gateway | Lantronix
- R Rice Lake Weighing Systems