CW-90/90X, 720i™, 820i®, iQUBE²®, LaserLT® and Counterpart®

WLAN Option Installation

The WLAN (Wireless Local Area Network) Option (Kit 206272) can be installed inside the CW-90/90X, 720i, 820i, iQUBE² and LaserLT products. The WLAN Option (Kit 125495) can be installed inside the Counterpart and comes with a coverplate for the antenna. 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 product 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.

1 : Parts Breakdown

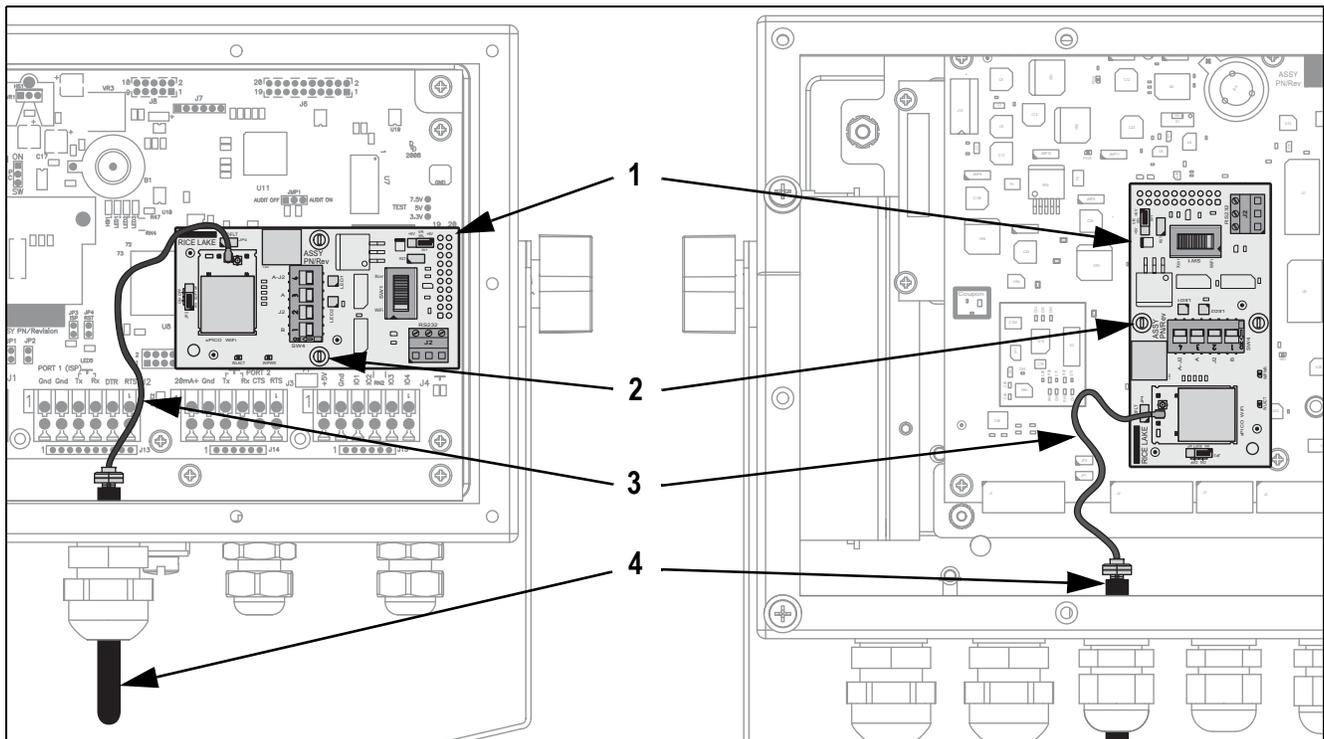The WLAN Option comes in a kit containing the necessary items used for installation of the card.

Figure 1. WLAN Option Parts Breakdown (Inside CW-90 [left] and 720i [right])

Item No.	Part No.	Description	Qty
1	205755	Card, WiFi/Serial Interface xPico Option Board, Serial Port Header Install	1
2	95356	Post, PCB Support, 1/2 Inch Height, Dual Locking for 0.156 Mounting Hole	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
–	121177	Coverplate, Antenna Option, Exterior Mounted (Counterpart Kit 125495 only)	1

Table 1. WLAN Option Parts List

2 : WLAN Option Setup

The xPico-based WLAN Option is a way to add a WiFi interface to several RLWS products by connecting to the 20-pin communications option slot of the product's CPU board. Depending on the product, the option card either takes an existing RS232 communications port or provides access to an addition port.

The option card accesses up to two different communications ports available through the communications option slot connection. The ports and capabilities vary by product. See Table 2 for selecting ports and proper voltage for the WLAN Option.

Only one communications port can be connected to the WiFi module at a time. In Table 2 and as marked on the product's CPU board, the two ports are labeled A and B. In addition, there is a RS232 communications port on the WLAN Option that can either be connected directly to Port A or the WiFi module. This allows for a third way to connect to the WiFi module.

Product	Port A	Port B	SW1	VR Select
CW-90/90X	Port 3	Port 2	Xcvr	6V
720i	Do Not Use	Port 2*	Xcvr	6V
820i	Do Not Use	Port 2*	Xcvr	6V
iQUBE²	Port 3	Port 2	WiFi	6V
Counterpart	Port 3	Port 2	Xcvr	5V
LaserLT (1550)	Port 3**	Port 4	Xcvr	6V
CPU Port2/OPT Jumper must be ON **CPU JP3 must be in the COM-OPT Position* *NOTE: If a port is used on this option card, it is no longer available on the CPU board and nothing should be connected to it.*				

Table 2. Product Port Use and Option Switch Positions

> **Note** *In the product'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 product 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.*

3 : 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).

> **Note** *The card can be configured using RS232 through the J2 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.

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4 : Option Jumpers and Switches

Refer to Figure 2 and Table 3 for the jumper locations and descriptions, and Figure 2 and Table 4 for the switch locations and descriptions for the WLAN Option board.
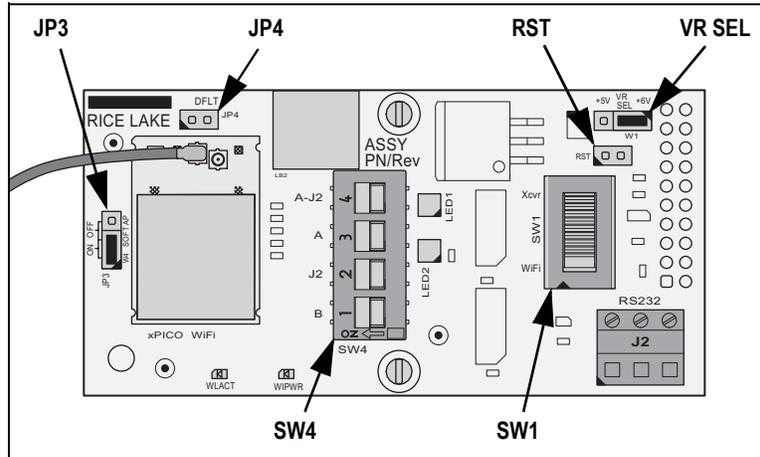

Figure 2. Jumper and Switch Locations on the WLAN Option Board

Jumper	Description
VR SEL	VR Select Jumper (+5V/+6V) – This jumper selects the voltage provided to the board. Please refer to Table 2 on page 2 for the correct position based on the product.
RST	Reset Jumper – Shorting this jumper pulls the card into reset. Used to perform a soft power-up reset on the board (not typical).
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 2 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 5 to reset the module to factory defaults.

Table 3. Jumper Descriptions

Switch	Description
SW1	Selects the data signal voltage level applied/received from the product's Port B connection. It is important that this be correct before applying power. Please refer to Table 2 on page 2 for the required setting based on the product.
SW4	The Data path select switch. This switch routes the data from Ports A, B, the Wifi module, and J2 to various locations. • A and B route the data to/from the WiFi module to Ports A and B respectively. • J2 routes the data to/from the WiFi module to the J2 RS232 connection. • A-J2 skips the WiFi module all together and routes the J2 RS232 data directly to Port A. *NOTE: Only one switch can be ON at a time with one exception, selection A-J2 and B. In the case of using Both A and B ports, both A-J2 and B can be ON at the same time to allow the Port A data to go to J2 for an additional Serial Port, while the data from Port B is routed to the WiFi module. See Available Serial Connection on page 5.*

Table 4. Switch Descriptions

5 : WLAN Option Installation

The WLAN Option is automatically recognized when the product is powered on. No hardware-specific configuration is required to identify an installed option card to the system. The option is installed on the 20-pin Communications Option Slot.

⚠ **WARNING** *Electric Shock Hazard – Option card is not hot swappable. Always disconnect power before opening an enclosure.*

⚠ **CAUTION** *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.

IMPORTANT *Please refer to Table 2 on page 2 for the correct positions of the switches and jumpers on the WLAN Option board. This is important to do before powering up the product to prevent possible damage to the option card.*

1. Disconnect power to the product and open enclosure according to the product's manual.
2. Install the two support posts provided in the option kit into the two holes of the WLAN Option card. The posts should protrude from the bottom of the card, opposite the side with the switches.
3. Carefully align the J1 connector, on the reverse side of the WLAN Option, with the 20-pin Communications Option Slot on the product's CPU board (Table 5). Ensure that two posts are also aligned with the corresponding holes on the product's CPU board.

Product	Connector		Product	Connector
CW-90/90X	J5		iQUBE²	J9
720i	J11		Counterpart	J5
820i	J1		LaserLT (1550)	J7

Table 5. 20-pin Option Slot Connectors

4. Press down on the option card board until it is seated into the product's CPU board connector.
5. Slide the antenna through the largest available cord grip.

📝 **Note** *In washdown environments, the antenna joint should not be exposed to the environment to avoid product getting trapped in the joint. In non-washdown applications, the joint should be exposed and positioned to follow the travel of the product's tilt direction. It is recommended to expose as much of the antenna as possible to help with signal strength.*

6. Connect the RP-SMA side of the antenna cable to the antenna.
7. Connect the u-Fl end of the antenna cable to the Antenna 1 connection on the WiFi module (Figure 3).
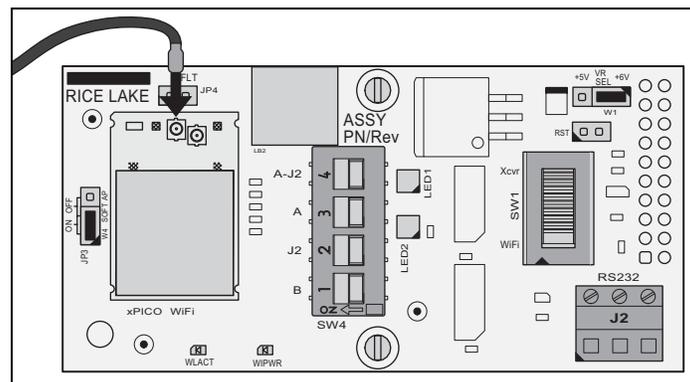

Figure 3. Antenna Connection Location

📝 **Note** *The Antenna 1 connection is located on the centerline of the WiFi module.*

8. Tighten the cord grip around the antenna and torque the cord grip nut (inside 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).

6 : 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 and Switches 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.

3. Remove the shorting shunt from the DFLT pins. The WiFi module is now defaulted.

> **Note** *Defaulting the WiFi module does not reset the WiFi connections, but enables a disabled Soft AP to allow access to the configuration. The DFLT jumper, along with the reset (RST) jumper, 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.*

7 : 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. Using a serial connection for network configuration is an advanced feature not discussed in this document. Refer to the xPico 200 Series User Guide at www.lantronix.com for more information.

RS232 J2 Setup Procedure

Follow this procedure to allow for the use of both available ports (A and B) of the WLAN Option, with Port A data going to the J2 as an additional serial port, while data from Port B is routed to the WiFi module.

1. Move both the A-J2 and B switches to the ON position. See Figure 4 for the location of the SW4 switches.

> **Note** *Normally only one switch can be ON at a time with this being the one exception.*

2. Confirm that both the A and J2 switches are in the OFF position.

3. Route cable to the J2 connector. See Figure 4 and Table 6 for wiring.

4. In the indicator, configure the WLAN Option's serial port as needed to communicate with the external device connected to the J2 connector. Refer to Table 2 on page 2 for the port use depending on the product.
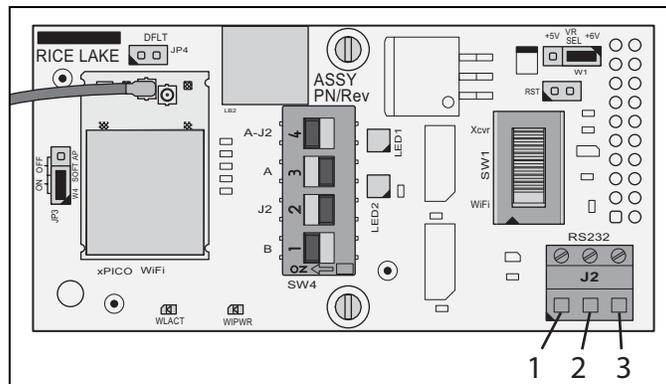

Figure 4. WLAN Option Board with Serial Port Pin Numbering

Connector	Pin	Function
J2	1	TxD
	2	RxD
	3	GND

Table 6. Serial Port Pin Assignments

8 : 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**

> 📝 **Note** *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.*

9 : WiFi Setup

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

1. Power on the indicator and wait for the WiPWR LED to light solid. See Figure 5 for the LED's location.
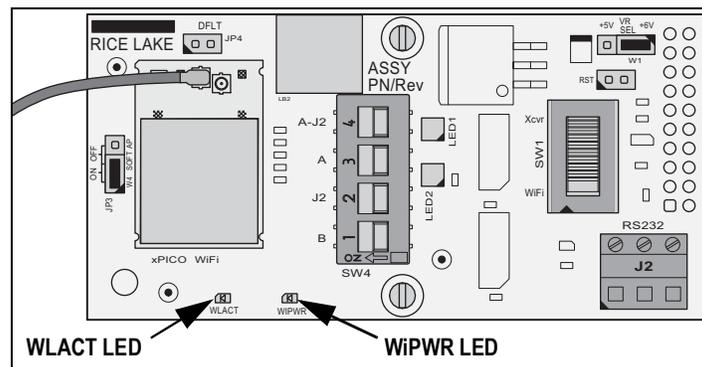
Figure 5. WiFi LED Locations

2. 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**

> **IMPORTANT** *It is recommended to change default passwords to limit access and for security.*
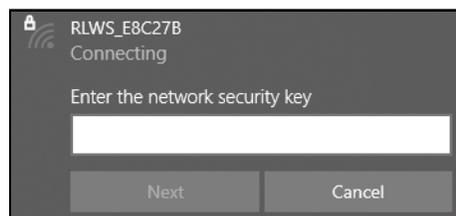
> 📝 **Note** *The X's in the name represent the last 6 digits of the WiFi MAC address. The serial number on the WiFi module's label is almost the same, other than the last digit being one number/character less than the WiFi MAC address.*
>
> *For example, if the module's serial number is "0080A3E8C27A", 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.*

3. Once connected to the Soft AP, use a web browser and enter **192.168.0.1** as the URL address and press **Enter**.

📝 **Note** *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).*

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

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

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

6. Click **QuickConnect** at the top of the left nav.

7. A list of wireless networks appear. Click the network name intended to connect the WLAN Option's WiFi network to.

📝 **Note** *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.*

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

8. The wireless network information page appears. Enter the network password (if applicable).

📝 Note | *Contact location's IT administrator to obtain network credentials as needed based on the security that is in place.*

9. 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 saved successfully. It does not necessarily mean it is connected to the network.

📝 Note | *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 5 on page 6).

📝 Note | *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.

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12. Connecting to the WiFi module's server with a remote client is now possible.

📝 **Note** | ***By default, the WiFi module is configured as an RS232 to WLAN tunnel for serial communication.***

In the product'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 product 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.

13. 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.

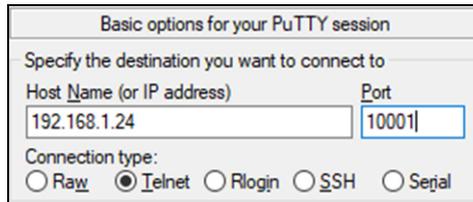*Figure 6. Putty Example*

📝 **Note** | ***If the card's IP address changed 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 be defaulted. See WiFi Module Default Procedure on page 5.

📝 **Note** | ***For more information on all the features of this card, visit www.lantronix.com to view the xPico 200 Series User Guide.***

10 : 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.
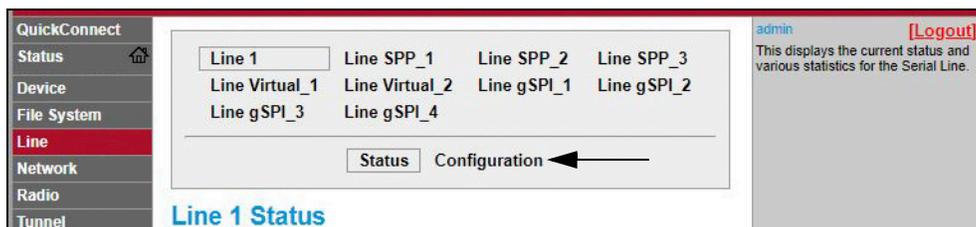
📝 **Note** | ***For example, the port's baud rate for the iQUBE² is set at 115200 by default, so the WiFi module setting for baud rate must be changed to match when using the WLAN Option with an iQUBE².***

1. Refer to Steps 1-5 in WiFi Setup on page 6 to sign in to the Web Manager.
2. Click *Line* in the left nav.

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

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

5. 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.

11 : 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).

Note *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.

Note *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.*

1. Refer to Steps 1-5 in WiFi Setup on page 6 to sign in to the Web Manager.
2. Click **Tunnel** in the left nav.

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

4. Change the **Mode** and **Local Port** settings if needed.

5. 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.

12 : 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.

> **Note** *For example, the CW-90/90X and Counterpart indicators can use the PC software WeighVault®. This requires the WiFi module to be configured as a client to connect to the IP Address and Port number of the PC running WeighVault.*

1. Refer to Steps 1-5 in WiFi Setup on page 6 to sign in to the Web Manager.
2. Click **Tunnel** in the left nav.

3. Click **Connect** towards the top of the **Tunnel 1 Status** page.
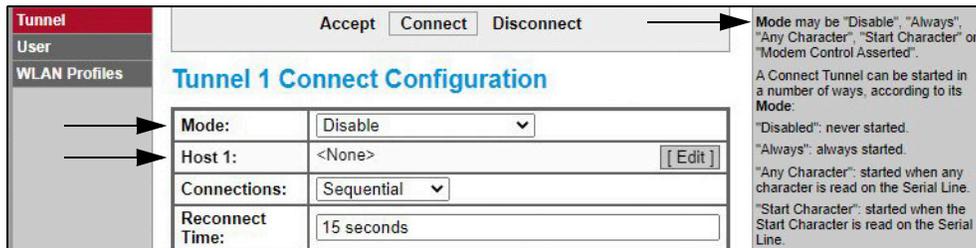
4. Use the drop-down to change the **Mode** setting, and then click **[Edit]** to display available **Host 1** settings.

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

5. Set the **Address** and **Port** as needed to connect to the intended available server connection.
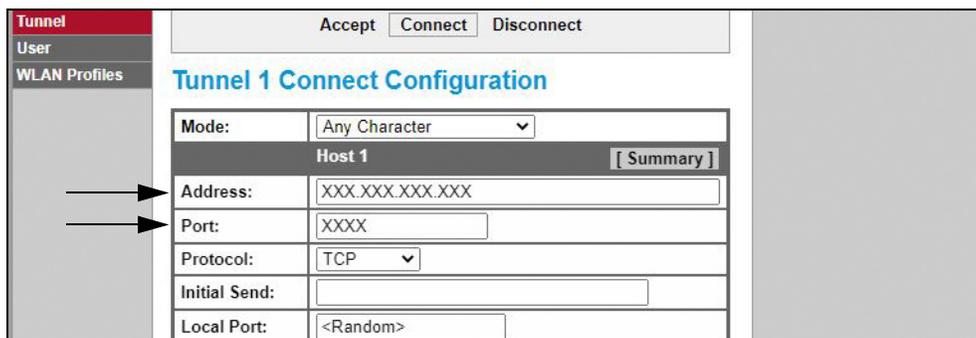
6. Click **Submit** at the bottom of the page to apply and save the settings. A message displays at the top of the page to confirm the changes have been saved permanently.

📝 **Note** *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.*

13 : 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.
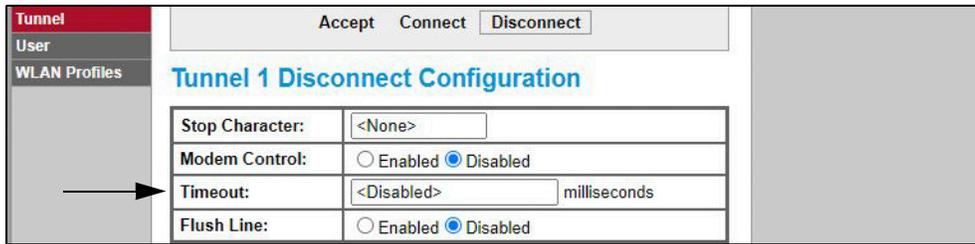
1. Refer to Steps 1-5 in WiFi Setup on page 6 to sign in to the Web Manager.

2. Click **Tunnel** in the left nav.

3. Click **Disconnect** towards the top of the **Tunnel 1 Status** page.
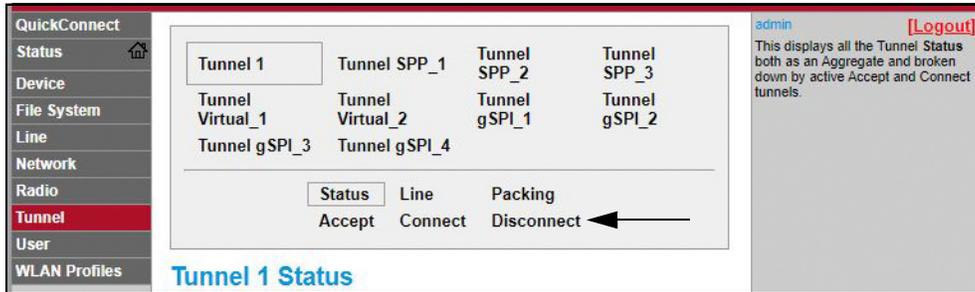
4. Enter the desired value in milliseconds for the **Timeout** setting. A value entry of 0 disables the Disconnect feature.

5. 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.

14 : 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 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)