Ethernet TCP/IP Interface

For Rice Lake Indicators

Installation and Configuration Manual

Revision History

This section tracks and describes manual revisions for awareness of major updates.

Revision	Date	Description
A	December 29, 2025	Established revision history; Updated formatting

Table i. Revision Letter History

***Technical training seminars are available through Rice Lake Weighing Systems.
Course descriptions and dates can be viewed at www.ricelake.com/training
or obtained by calling 715-234-9171 and asking for the training department.***

Contents

1.0 Introduction

This manual is intended for use by service technicians responsible for installing the Ethernet card option in Rice Lake indicators.

Manuals are available from Rice Lake Weighing Systems at **www.ricelake.com/manuals**

Warranty information is available at **www.ricelake.com/warranties**

1.1 Overview

The Ethernet card option comes in two sizes. The larger size (PN 83267) can be used in the 920i, 820i, and 720i. The smaller card (PN 77142) can be used in the 820i and 720i. When ordered at the same time as the indicator, the Ethernet card can be factory installed by Rice Lake Weighing Systems if requested. Once the Ethernet option is installed, you are ready to begin configuring the scale's IP address, gateway IP address, netmask, and Telnet configuration password.

IMPORTANT: You cannot use a TCP/IP card if you are interfacing to a PLC. A PLC requires an IP card.

Rice Lake uses Lantronix Technology for most TCP/IP converters. Ensure you have the latest version of Device Installer configuration software from **www.lantronix.com**.

General Terms and Information

ARP (Address Resolution Protocol) – can be run from the Command Prompt if the MAC is known. It assigns an address to an Ethernet I/P device.

IPCONFIG – from any bus will assign an IP address to an Ethernet I/P device. When entered in the Command Prompt, it will display the PC's IP address and MAC address.

MAC (Media Access Control) – is a unique number assigned by the vendor for all Ethernet devices.

Hub – broadcasts all traffic to all ports, and only the correct address responds.

Switch – sends data to only the correct device, keeping traffic at a minimum.

Subnet Mask – is a way of splitting networks.

> Class A 255.0.0.0
> Class B 255.255.0.0
> Class C 255.255.255.0
> 255 Host 0 Client

Safety Definitions:

DANGER: Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. Includes hazards that are exposed when guards are removed.

WARNING: Indicates a potentially hazardous situation that, if not avoided, could result in serious injury or death. Includes hazards that are exposed when guards are removed.

CAUTION: Indicates a potentially hazardous situation that, if not avoided, could result in minor or moderate injury.

IMPORTANT: Indicates information about procedures that, if not observed, could result in damage to equipment or corruption to and loss of data.

General Safety

Do not operate or work on this equipment unless this manual has been read and all instructions are understood. Failure to follow the instructions or heed the warnings could result in injury or death. Contact any Rice Lake Weighing Systems dealer for replacement manuals.

⚠ WARNING

Failure to heed could result in serious injury or death.

Procedures requiring work inside the indicator must be performed by qualified service personnel only.

Do not allow minors (children) or inexperienced persons to operate this unit.

Do not operate without the enclosure completely assembled.

Do not use for purposes other than weight taking.

Do not place fingers into slots or possible pinch points.

Do not use this product if any of the components are cracked.

Do not exceed the rated specification of the unit.

Do not make alterations or modifications to the unit.

Do not remove or obscure warning labels.

Do not submerge.

Before opening the unit, ensure the power cord is disconnected from the outlet.

Ensure the outlet is located in an easily accessible area.

1.2   Disposal

Product Disposal

The product must be brought to appropriate separate waste collection centers at the end of its life cycle.

Proper separate collection to recycle the product helps prevent possible negative effects on the environment and to health, and promotes the recycling of the materials. Users who dispose of the product illegally shall face administrative sanctions as provided by law.

1.3   FCC Compliance

United States

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Canada

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la Class A prescites dans le Règlement sur le brouillage radioélectrique edicté par le ministère des Communications du Canada.

2.0   Installation

⚠️ *WARNING: Failure to heed the following statements could result in injury.*

Rice lake indicators have no on/off switch. Before opening the unit, ensure the power cord is disconnected from the power outlet.

The Ethernet card should NOT be used to communicate between buildings. The Ethernet port is not suitable for connection to circuits used outside the building and is subject to lightning or power faults.

Use a wrist strap to ground yourself and protect components from electrostatic discharge (ESD) when working inside the indicator enclosure.

This unit uses double pole/neutral fusing which could create an electric shock hazard. Procedures requiring work inside the indicators must be performed by qualified service personnel only.

ⓘ *IMPORTANT: On the 920i indicator this card must be installed in an onboard slot, do not install on the expansion card.*

The indicator enclosure must be opened to install the Ethernet card.
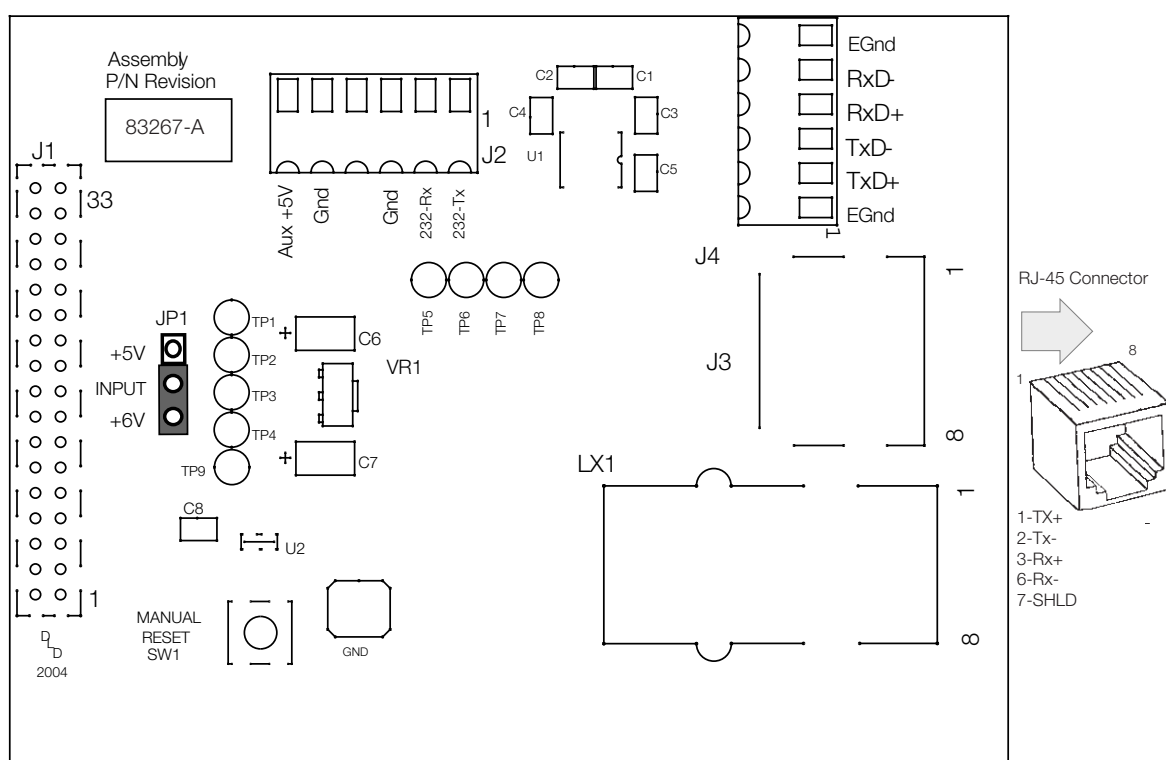
Figure 2-1. Ethernet Interface Card

2.1 Ethernet Card Installation

1. Disconnect the indicator from power source.

2. Place indicator on an anti-static work mat. Remove screws that hold the cover to the enclosure body, then lift the cover away from the enclosure and set it aside.

3. Remove plug from cord grip on the indicator that will be used to run the Ethernet cabling.

4. Carefully align the option card connector with the connector on the indicator's CPU board. Press down to seat the option card in the CPU connector.

NOTE: Refer to the indicator manual for exact pin locations.

5. Use the screws provided in the option kit to secure the other end of the option card to the threaded standoffs on the indicator's CPU board.

6. Ensure jumper JP1 on the Ethernet card is in the +6V position for installation.

Figure 2-2. Ethernet Card Installation onto 920 CPU Board

2.1.1   Ethernet Card Serial Port Wiring

The Ethernet card requires an RS-232 communications connection to the Rice Lake indicator. The indicator and Ethernet card must be set to the same baud rate (Rice Lake indicators' default serial baud rate is 9600.) To change the Ethernet card baud rates, refer to the *Lantronix User's Guide*.

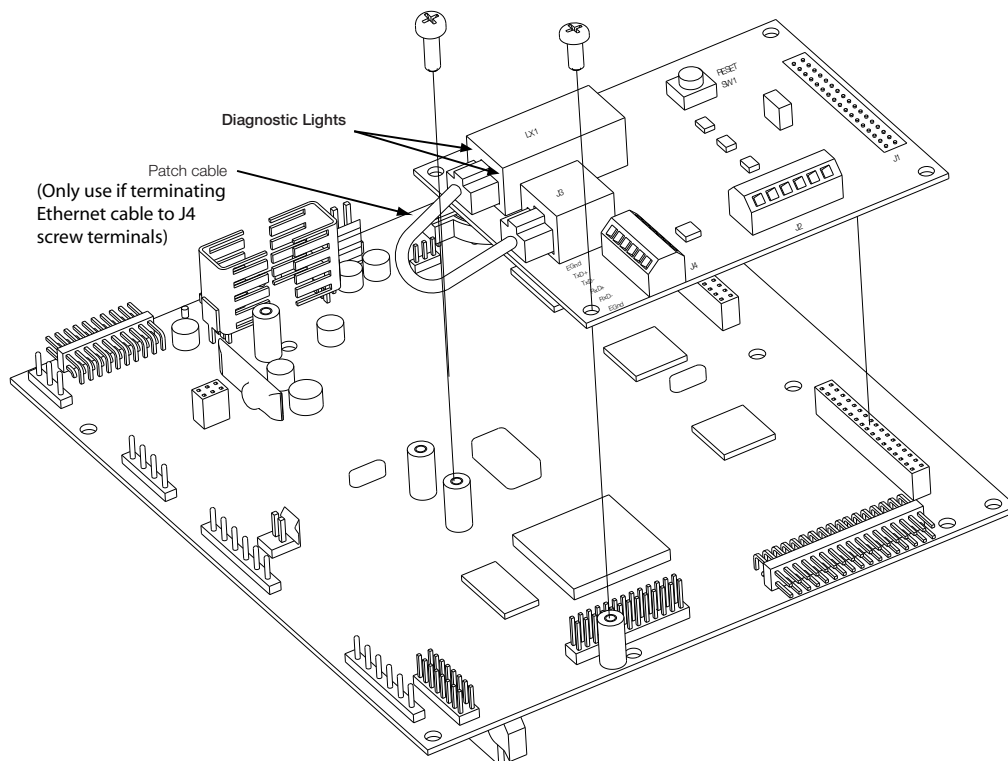1. To attach the 6-inch unshielded cable directly to the 920i, remove serial connector from the CPU board (port 1, 3, or 4).

2. Use the supplied 60-inch, unshielded cable to run from J2 on the Ethernet board to the connector of choice. Refer to the tables on the following page for pin assignments.

3. Once cables are attached, plug the connector into the header on the board. Table 2-1 shows the Ethernet card serial port pin assignments.

Pin	Signal
1	Txd
2	Rxd
3	Gnd
4, 5, or 6	Not used

Table 2-1. Ethernet Card J2 Pin Assignment

920i			
Connector	Pin	Signal	Port
J11	1	Gnd	1
	2	RS-232 RxD	
	3	RS-232 TxD	
J9	1	GnD	3
	2	RS-232 RxD	
	3	Rs-232 TxD	
J10	1	GnD	4
	2	RS-232 RxD	
	3	RS-232 TxD	

820i			
Connector	Pin	Signal	Port
J9	1	CLK	1
	2	+5V	
	3	GND	
	4	DATA	
J10	1	GND	2
	2	RS-232 RxD	
	3	RS-232 TxD	
	4	RS-232 RTS	
	5	RS-232 CTS	
J11	1	GND	4
	2	N/C	
	3	N/C	
	4	RS-485 A	
	5	RS-485 B	
	6	+20mA OUT	
	7	–20mA OUT	
	8	GND	
	9	RS-232 RxD	
	10	RS-232 TxD	

720i			
Connector	Pin	Signal	Port
J3	1	CLK	1
	2	+5V	
	3	GND	
	4	DATA	
J2	1	GND	2
	2	RS-232 RxD	
	3	RS-232 TxD	
	4	RS-232 RTS	
	5	RS-232 CTS	
	6	GND	
J4	1	RS-422/485 Y	3
	2	RS-422/485 Z	
	3	RS-422/485 B	
	4	RS-422/485 A	
	5	+6V	
	6	GND	
J5	1	GND	4
	2	RS-232 RxD	
	3	RS-232 TxD	
	4	20mA OUT	

520			
Connector	Pin	Signal	Port
J5	1	EDP TxD	4
	2	GND	
	3	EDP RxD	
	4	Printer TxD	
	5	Printer RxD	
	6	–20 mA TxD	
	7	+20 mA TxD	
	8	RS-485A	
	9	RS-485B	
	10	GND	

Table 2-2. Serial Port Pin Assignments for 920i, 820i, 720i and 520 Indicators
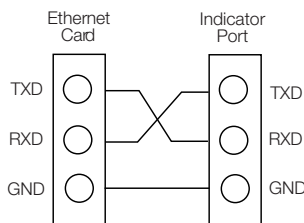
Figure 2-3. Ethernet Card Serial Wiring

4. Use cable ties to secure loose cables inside the enclosure away from high voltage circuits

2.1.2 External Ethernet Cabling

Configure external Ethernet cabling using either the RJ-45 connector (LX1) or the hardwire connection to J4 on the Ethernet card. When using an external RJ-45 connector, we recommend using a DNET 1 network surge suppressor (PN 72682) wired through a cord grip with the RJ-45 socket left outside of the enclosure.

Pin	Signal
1	Gnd
2	TxD+
3	TxD-
4	RxD+
5	RxD-
6	Gnd

Table 2-3. Ethernet Card J4 Pin Assignment

2.1.3 Reassembling The Enclosure

1. Once cabling is complete, position the backplate over the enclosure and reinstall the backplate screws. Use the torque pattern provided in the indicator's installation manual to prevent distorting the backplate gasket.

2. Ensure no excess cable is left inside the enclosure and tighten the cord grips.

3. Reconnect power to the indicator.

NOTE: Contact factory for washdown option.

2.1.4 Ethernet Option Parts Kit Contents

PN	Description	Qty.
14822	Screws, 4-40NCx1/4	2
15631	Cable tie, 3 in nylon	2
54325	Unshielded cable, grey 60 in	1
78269	RJ-45 cable, 5 in	1
83267	Ethernet card, RS-232/Ethernet	1
72763	Ethernet CD	1

PN	Description	Qty.
14822	Screws, 4-40NCx1/4	2
15631	Cable tie, 3 in nylon	2
54325	Unshielded cable, grey 60 in	1
78269	RJ-45 cable, 5 in	1
72696	Cable, 3-pin to blunt 3-wire	1
83267	Ethernet card, RS-232/Ethernet	1

Table 2-4. Part Kit Contents for PN 71986 (left) and PN 77205 (right)

3.0   Assigning an IP Address

The following section covers the steps required to assign an IP address. The IP address must be assigned and configured before a network connection is available. There are four methods, any one of which can be used:

- Lantronix® DeviceInstaller™
- Network port login
- Command Prompt
- Web Configuration

Both of these installer tools are located on the Ethernet Configuration CD, PN 72763.

> **NOTE: Refer to www.lantronix.com to ensure you have the most up-to-date version of DeviceInstaller.**
>
> **If connecting from a PC to the Ethernet card, use a crossover cable. Otherwise, use a straight through cable if connecting via a network.**

Refer to the *Lantronix User's Guide* found on the Ethernet Configuration CD for further information on the Ethernet configuration procedures.

3.1   DeviceInstaller

DeviceInstaller provides the preferred method for setting up an IP address for the Ethernet card with Rice Lake Indicators. Depending on firewall restrictions and other network variables, however, DeviceInstaller may not be able to find the Ethernet card. If you encounter troubles in using the instructions listed in this section, use the Windows Command Prompt (Section 3.3 on page 12), which will always work regardless of network variables.

The DeviceInstaller runs on a personal computer to help assign an IP address. To use the DeviceInstaller, use the following steps:

1. Insert the Ethernet Configuration CD into the hard drive of your PC running Windows® 95, 98, ME, 2000, or XP.

2. Install DeviceInstaller per on-screen instructions.

3. Start the DeviceInstaller program and follow the on screen instructions.
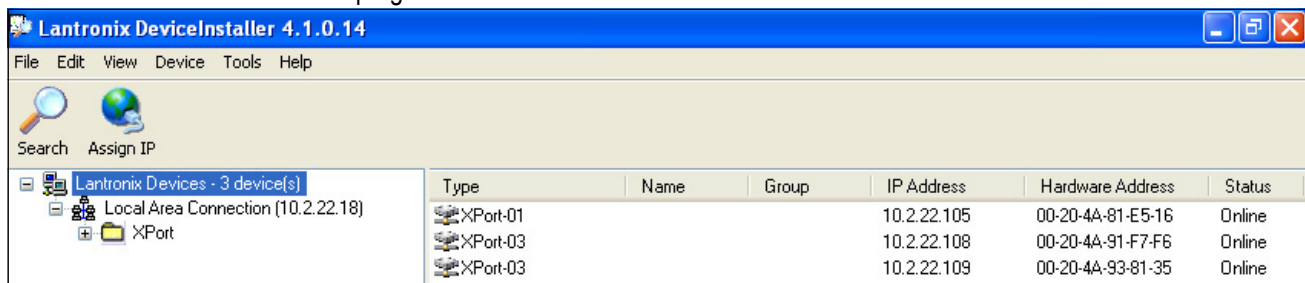

Figure 3-1. DeviceInstaller Main Menu Screen

Rice Lake Indicators come supplied with a pre-configured IP address which automatically enables Dynamic Host Control Protocol (DHCP)—It is recommended that you assign a static IP address to your card for use in the field.

> **NOTE: The web connection to the Ethernet card requires the original JAVA by Sun Microsystems. For a free download, go to www.JAVA.com**

1. Click **Action / Assign IP Address** to assign a new IP address.

2. Enter the hardware address found on LX1.

3. It is recommended that you assign your own IP address to the card. Enter a chosen IP address in the **Enter IP** field. Record the configured IP address for future reference.

4. Press **Set IP** to assign a new IP address.

> **NOTE: The DeviceInstaller will search the network to see if the proposed IP address is already being used. If it is already in use, on the network, the operation will fail.**

3.2   Network Port Login

The network port login provides a way to make a telnet connection to the network port (9999). This ARP method is available under UNIX and Windows-based systems.

1. Set a static ARP with the desired IP address using the hardware address of the scale. The address is printed on a label attached to the Ethernet card.

    arp –s 128.1.123.123.00.20-4a-xx-xx-xx

📝 *NOTE: In order for the ARP command to work in Windows®, the ARP table on the PC must have at least one IP address defined other than its own. Type "ARP - A" at the DOS prompt (or from Run) to verify that there is at least one entry in the ARP table. If there is no entry other than the local machine, ping another IP machine on your network to build the ARP table. This has to be a host other than the machine on which you are working. Once there is at least one entry in the ARP table, use the following commands to ARP an IP address to the scale.*

2. Open a Telnet connection to port 1 by clicking the Telnet icon on the Toolbar. The connection will fail quickly but the device server temporarily changes its IP address to the one designated in this step and sets all required parameters.

    Telnet 128.1.123.123.1

3. Open a Telnet connection to port 9999 and press the *ENTER* key within three seconds to go into the Setup mode. if you wait longer than three seconds, the unit will reboot. Set all required parameters.

    Telnet 128.1.123.123.9999

📝 *NOTE: The IP address you just entered is temporary and will revert to the default when the unit's power is reset unless you log into the unit and store the changes permanently.*

3.3   Command Prompt

As an alternative to DeviceInstaller, you can use the Windows Command Prompt to set the IP address of the Ethernet card. Command Prompt can be opened by selecting Start » Run and typing **cmd**.
It is also located in Start » Programs » Accessories » Command Prompt.

1. From Command Prompt, type arp and press Enter to see a list of available commands.

```
C:\>arp

Displays and modifies the IP-to-Physical address translation tables used by
address resolution protocol (ARP).

ARP -s inet_addr eth_addr [if_addr]
ARP -d inet_addr [if_addr]
ARP -a [inet_addr] [-N if_addr]

  -a            Displays current ARP entries by interrogating the current
                protocol data.  If inet_addr is specified, the IP and Physical
                addresses for only the specified computer are displayed.  If
                more than one network interface uses ARP, entries for each ARP
                table are displayed.
  -g            Same as -a.
  inet_addr     Specifies an internet address.
  -N if_addr    Displays the ARP entries for the network interface specified
                by if_addr.
  -d            Deletes the host specified by inet_addr. inet_addr may be
                wildcarded with * to delete all hosts.
  -s            Adds the host and associates the Internet address inet_addr
                with the Physical address eth_addr.  The Physical address is
                given as 6 hexadecimal bytes separated by hyphens. The entry
                is permanent.
  eth_addr      Specifies a physical address.
  if_addr       If present, this specifies the Internet address of the
                interface whose address translation table should be modified.
                If not present, the first applicable interface will be used.
Example:
  > arp -s 157.55.85.212   00-aa-00-62-c6-09  .... Adds a static entry.
  > arp -a                                    .... Displays the arp table.

C:\>_
```

Figure 3-2. Available ARP Commands.

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2. To statically enter the IP address, type arp-s (your IP address) (mac address shown on the card). Refer to the first example shown in Figure 3-2 on page 12.

3. Use a telnet session to activate the address by typing telnet (your IP address) 1.
    The telnet connection will time out and fail, but the address will be activated.

4. You can view the address in your arp table by typing arp -a.
    This will list the arp table and you will see your IP address and its mac address, and it will be listed as a static entry.

5. You should now be connected and can test connectivity by pinging your address. To ping your address, type ping (your IP address).

6. Now that you have statically established communication on your local machine, you will be able to search and find the card with DeviceInstaller to set the permanent IP address of the card.

NOTE: If you are having connection issues, there may be network variables preventing communication. Make sure to turn off all firewalls, anti-virus software, and be logged in as a user with administrator privileges.

Other methods of configuring the settings on the card are vie the web or a telnet session. You can see the card's settings through your web browser by typing its IP address in the address bar of Internet Explorer. The card be configured via telnet by typing telnet (your IP address) 9999.

When using telnet, the numbers after the IP address stand for the port number. Port 9999 "talks" to the card (used for configuring the card only). Port 10001 "talks" through the card to the indicator (used for communicating with iRev, Revolution, HyperTerminal, etc.).

3.4   Configuration Parameters

Web configuration of the card can be done by entering the IP address in your web browser and clicking GO (or pressing Enter). This allows changing any or all setup in the Ethernet option card.

Figure 3-3. Web Configuration Connection Settings

Figure 3-4. Web Configuration Serial Settings

Refer to the *Lantronix User's Guide* for further instructions on Ethernet configuration by Telnet.

NOTE: Rice Lake indicators can act as an Ethernet – TCP/IP to RS-232 converter. The converter can act as a server and accept an incoming connection, or, through a special serial command prepended to a serial transmission, it can connect to remote servers. Once a connection is established, Rice Lake indicators can send commands and handle responses using the internal serial API.

To terminate a connection from the indicator, set a transmission idle time out on the Ethernet card. After "X" amount of time without transmission from the indicator, the card terminates the connection.

4.0 WLAN Installation and Configuration

> **NOTE:** *Before installing this option, you must contact your IT administrator to obtain network communication protocol codes and have a RS-232 communications cable or regular comm port cable available to run between your PC and the indicator while installing and setting up the wireless network.*

The optional Lantronix® WiPort™ (WLAN - Wireless Local Area Network) wireless networking device comes in two sizes. The larger size card (PN 98057) can be installed in the 920i, 820i, 720i, and 520 indicators. The smaller size card (PN 108671) can be installed inside the 820i, 720i, CW-90/90X, iQube, and iQube 2 products. Both options can be used for real-time data transmission to warehouse management systems. The Windows®-based configuration software, DeviceInstaller™ is required for installation/setup and is available on the CD that comes with the kit. The WLAN option can be factory installed or can be purchased separately and installed on site.

PN	Description	Qty.
14822	Screw, MACH 4-40NCx1/4	2
52342	Label Roll, 4.00x1.25	1
72763	CD, Ethernet	1
97789	Card, Dual Wireless/RS-232	1
98357	Antenna, 2.4GHz 802.11b/g	1

PN	Description	Qty.
106103	Board Assy, Wi-port option	1
72763	CD, Ethernet	1
95356	Post, PCB Support 1/2"	2
98357	Antenna, 2.4GHz 802.11b/g	1

Table 4-1. Part Kit Contents for PN 98057 (left) and PN 108671 (right)
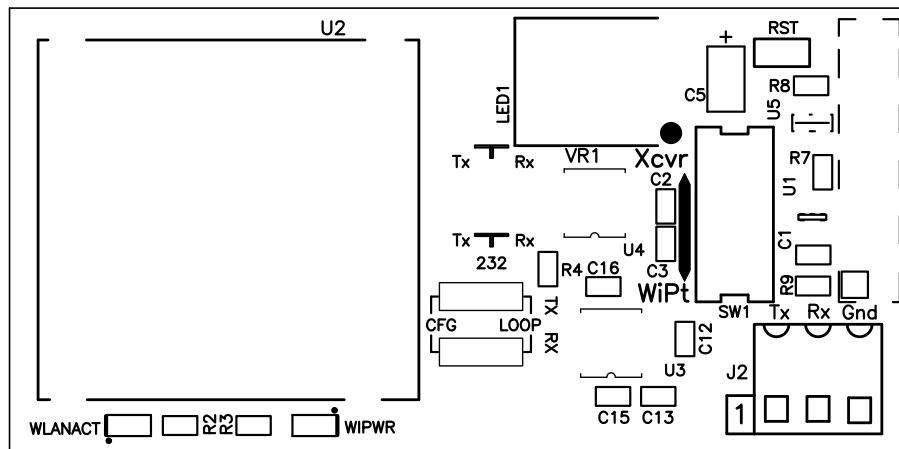
Figure 4-1. WLAN board

4.1 Enclosure Disassembly

The indicator enclosure must be opened to install and wire the WLAN option card and antenna.

> ⚠️ **WARNING:** *Before opening the unit, ensure the power cord is disconnected from the power outlet.*

1. Disconnect power to the indicator.
2. Place the indicator face-down on an anti-static work mat.
3. Remove the screws that hold the backplate to the enclosure body, then lift the backplate away from the enclosure and set it aside.

4.2   Installing the WLAN Option Card

⚠️ *CAUTION: Option cards are not hot-pluggable. Disconnect power to the unit before installing the WLAN option card.*

1. Ensure that power has been disconnected to the indicator. Remove backplate as described in the previous section.
2. Carefully align the WLAN option card onto the proper connector on the CPU board (see the respective product's installation manual).
3. Press down firmly to seat the option card in the CPU board connector.
4. Use the standoffs provided in the option kit to secure the option card to the mounting holes on the CPU board.
5. Set up the WLAN configuration parameters as explained on Section 4.6 on page 17.
6. Make connections to the option card as required. Use cable ties to secure loose cables inside the enclosure. When installation and configuration is complete, reassemble the enclosure.

4.3   Mounting the Antenna

1. If the antenna is not already connected, screw it in place as shown in Figure 4-2.

Figure 4-2. Antenna installed on card

2. Place the antenna through the large cord grip, closest to the option card. It is recommended for the antenna's tip to extend out of the cord grip approximately 1 in as shown in Figure 4-3.

Approx 1 in of antenna exposed

Figure 4-3. Location of WLAN antenna

3. Tighten the cord grip. Option cards are recognized when the unit is powered on.

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4.4   Wireless Configuration via Serial Mode

You must configure the WLAN card so that it can communicate on your network. WiPort (WLAN) is configurable using a PC and a terminal program (like Windows XP HyperTerminal) to access the device serial port locally. To configure the WiPort (WLAN option), connect a serial cable from the J2 connector of the installed WLAN option card to a PC.

4.5   Jumpers

There are two configuration jumpers located on the WLAN option board. See Figure 4-4 below. These jumpers must be set to the CFG position to configure the WLAN option.
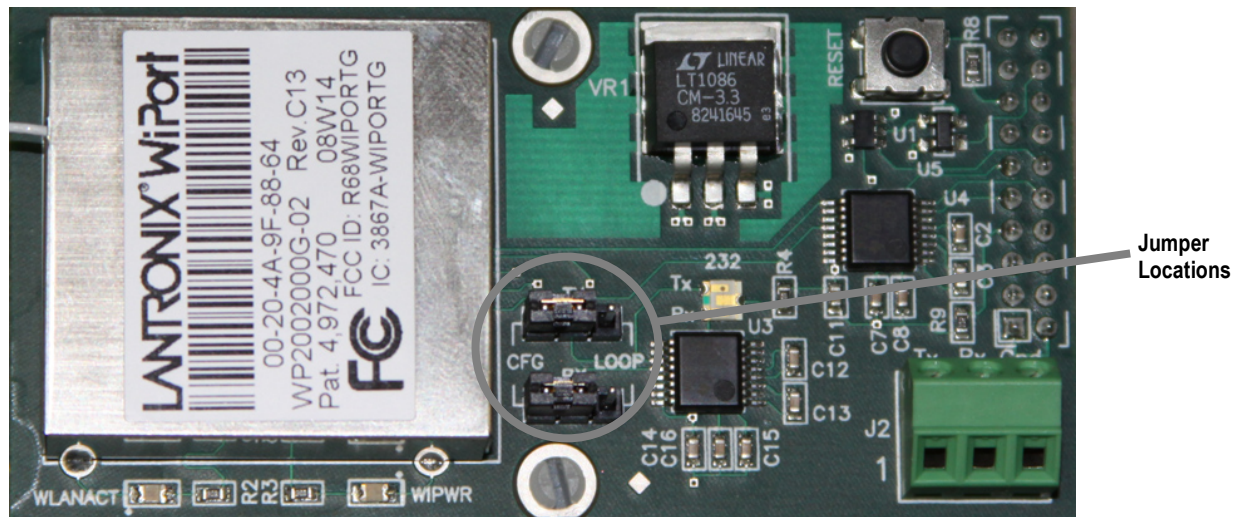
Figure 4-4. Jumpers location

Once the configuration jumpers are in the CFG position, continue with WLAN Card Configuration to make the necessary settings for the WLAN option.

> **NOTE: Not all devices display information in the same manner and depending on your IT department's software choice for configuring the WLAN option, the screens displayed may be different.**
>
> *If using Lantronix DeviceInstaller, you may access additional information from their web site at: www.lantronix.com.*

4.6   WLAN Card Configuration

1. Select the HyperTerminal program on the PC.
2. Enter a name and choose an icon for the connection, then click **OK**.

Figure 4-5. HyperTerminal connection description screen

3.   Select a **Connect** *To* option. Select the comm port you have connected your serial cable to and click **OK**.

Figure 4-6. Connect To screen

4.   Comm port properties must be set as shown in the following screen.
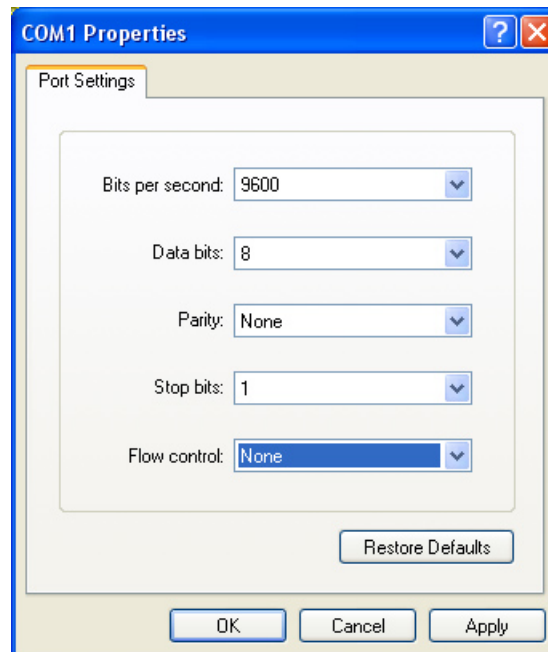
Figure 4-7. Comm Port Properties screen

The WLAN configuration port uses the following settings:

- Baud Rate: 9600
- 8 Bits
- No parity
- 1 Stop Bit
- No Flow Control

5.   Make the changes and click **OK** to save the changes.

6. Reset the WLAN option card by pressing the manual reset button shown in Figure 4-8, and immediately upon release, enter three lowercase x characters (xxx) at the same time.

Manual Reset Button
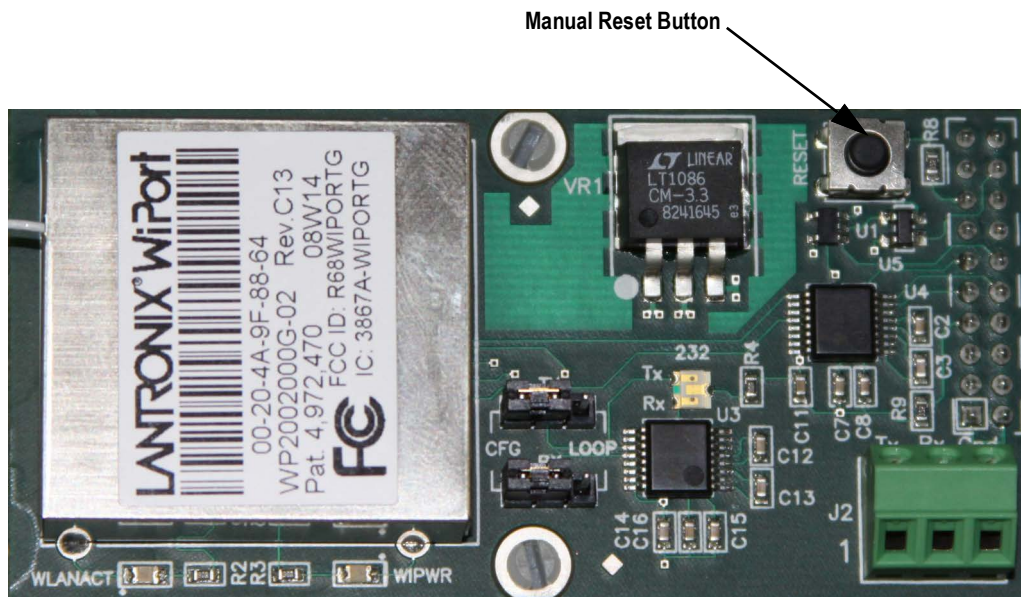
Figure 4-8. Manual Reset Button location on WLAN option card

NOTE: The easiest way to connect is to hold down the x key on the PC's keyboard until the manual reset button is released and the PC screen displays the MAC address and software version as shown in Figure 4-9. This must be done within three seconds of resetting the WLAN option.

Upon a successful connection, the following information is displayed.
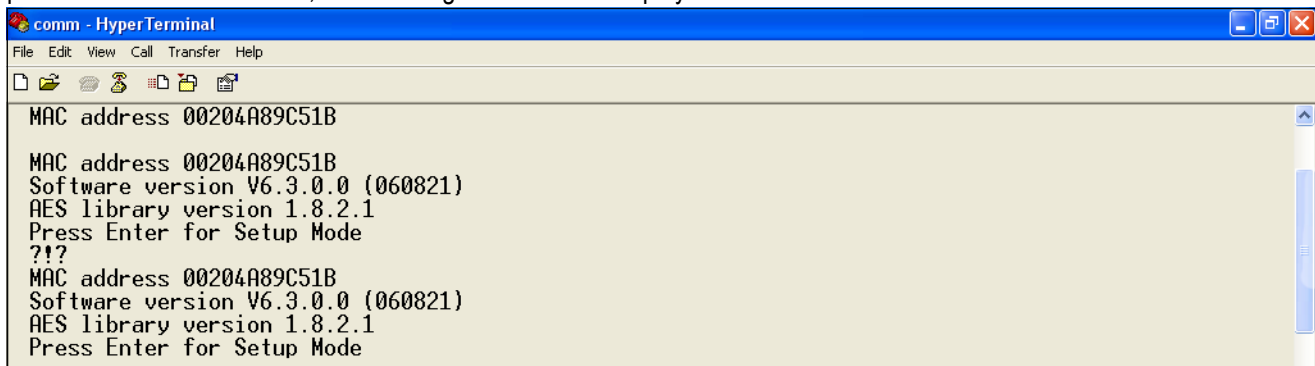
Figure 4-9. Display Information for Setup Mode

7. To enter Setup Mode, press **Enter** within *five* seconds. Note that the connection will fail if **Enter** is not pressed within the *five* second time limit. The configuration settings display, followed by the setup menu options. If this happens, repeat Step 5.

8. Select an option on the menu by entering the number of the option in *Your Choice?* field and press **Enter**. In this case, we're setting up the WLAN options so press **4** and press **Enter** as shown in Figure 4-10.

```
*** WLAN
WLAN: enabled
Topology: Infrastructure
Network name: wrlws
Country: US
Security suite: WEP
Authentication: open/none
Encryption: WEP64
TX Key index: 1
TX Data rate: 54 Mbps auto fallback
Power management: disabled

Change Setup:
  0 Server
  1 Channel 1
  2 Channel 2
  3 E-mail
  4 WLAN
  5 Expert
  6 Security
  7 Defaults
  8 Exit without save
  9 Save and exit          Your choice ?
```
Connected 0:00:29   Auto detect   9600 8-N-1   SCROLL   CAPS   NUM   Capture   Print echo

Figure 4-10. Change Setup Screen

9. View the current configuration by pressing **Enter** from the Change Setup menu. To enter a value for a parameter, type the value and press Enter. To confirm a current value, press Enter (without inputted parameters).

10. Enter the desired Topology for the WLAN option.

```
Change Setup:
  0 Server
  1 Channel 1
  2 Channel 2
  4 WLAN
  5 Expert
  6 Security
  7 Factory defaults
  8 Exit without save
  9 Save and exit          Your choice ? 4

Topology 0=Infrastructure, 1=AdHoc (0) ? |
```

Figure 4-11. Topology Screen

The two choices are:

- 0 = Infrastructure
- 1 = AdHoc.

11. Select **0** for your choice and press **Enter**.

12. The next menu choice is Network Name as shown below.

```
Change Setup:
  0 Server
  1 Channel 1
  2 Channel 2
  4 WLAN
  5 Expert
  6 Security
  7 Factory defaults
  8 Exit without save
  9 Save and exit          Your choice ? 4

Topology 0=Infrastructure, 1=AdHoc (0) ? 0
Network name (SSID) (      ) ? |
```

Figure 4-12. Network Name Screen

13. Enter your wireless network name as your menu choice and press **Enter**. This identifies the network that the wireless option will run on.

14. The next step is to select a level of security as shown in Figure 4-13.

```
Change Setup:
  0 Server
  1 Channel 1
  2 Channel 2
  4 WLAN
  5 Expert
  6 Security
  7 Factory defaults
  8 Exit without save
  9 Save and exit            Your choice ? 4

Topology 0=Infrastructure, 1=AdHoc (0)  ? 0
Network name (SSID) (      ) ? (      )
Security 0=none, 1=WEP, 2=WPA (1) ?
```

Figure 4-13. Security Level Select Screen

Security levels include:

- 0 = None
- 1 = WEP (Equivalency Protection)
- 2 = WPA

15. Select **1** and press **Enter**.

16. The next step is to set the authentication level for the configuration as shown below.

```
Change Setup:
  0 Server
  1 Channel 1
  2 Channel 2
  4 WLAN
  5 Expert
  6 Security
  7 Factory defaults
  8 Exit without save
  9 Save and exit            Your choice ? 4

Topology 0=Infrastructure, 1=AdHoc (0)  ? 0
Network name (SSID) (      ) ? (      )
Security 0=none, 1=WEP, 2=WPA (1) ? 1
Authentication 0=open/none, 1=shared (0)  ?
```

Figure 4-14. Authentication Screen

Authentication choices are:

- 0 = open/none
- 1 = Shared

17. Select **0** = open/none and press **Enter**.

18. Select the correct encryption next. Choices are WEP64 and WEP128 as shown below. Select **1** = WEP64 as the default parameter and press **Enter**.

```
  1 Channel 1
  2 Channel 2
  3 E-mail
  4 WLAN
  5 Expert
  6 Security
  7 Defaults
  8 Exit without save
  9 Save and exit              Your choice ? 4

Topology: 0=Infrastructure, 1=Ad-Hoc (0) ? 0
Network name (SSID) (      ) ?
Security suite: 0=none, 1=WEP, 2=WPA, 3=WPA2/802.11i (1) ? 1
Authentication: 0=open/none, 1=shared (0) ? 0
Encryption: 1=WEP64, 2=WEP128 (1) ? 0
   Only 1 - 2 allowed!
Encryption: 1=WEP64, 2=WEP128 (1) ? _
```
Connected 0:03:47   Auto detect   9600 8-N-1   SCROLL   CAPS   NUM   Capture   Print echo

Figure 4-15. Encryption Screen

19. Next, it asks to display current key? Press **N** and press **Enter**.

```
  6 Security
  7 Factory defaults
  8 Exit without save
  9 Save and exit              Your choice ? 4

Topology O=Infrastructure, 1=AdHoc (O) ? 0
Network name (SSID) (      ) ? (        )
Security O=none, 1=WEP, 2=WPA (1) ? 1
Authentication O=open/none, 1=shared (O) ? O
Encryption O=WEP64, 1=WEP128 (O) ? O
Display current key (N) ?
```
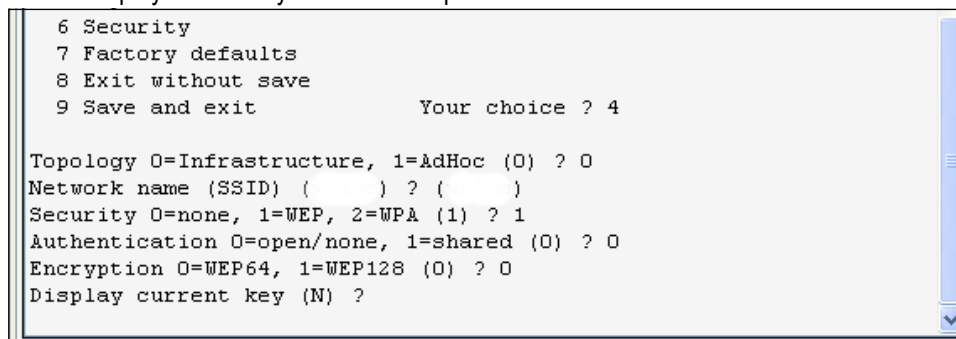
Figure 4-16. Display Current Screen

20. Select Yes (**Y**) for the "display current key" option. This prompt shows the currently configured key/passphrase.

```
  6 Security
  7 Factory defaults
  8 Exit without save
  9 Save and exit              Your choice ? 4

Topology O=Infrastructure, 1=AdHoc (O) ? 0
Network name (SSID) (wrlws) ? (wrlws)
Security O=none, 1=WEP, 2=WPA (1) ? 1
Authentication O=open/none, 1=shared (O) ? O
Encryption O=WEP64, 1=WEP128 (O) ? O
Display current key (N) ? N
Change Key (N) ?
Data rate, Only : O=1, 1=2, 2=5.5, 3=11 Mbps or
            Up to: 4=2, 5=5.5, 6=11 Mbps          (6) ?
```
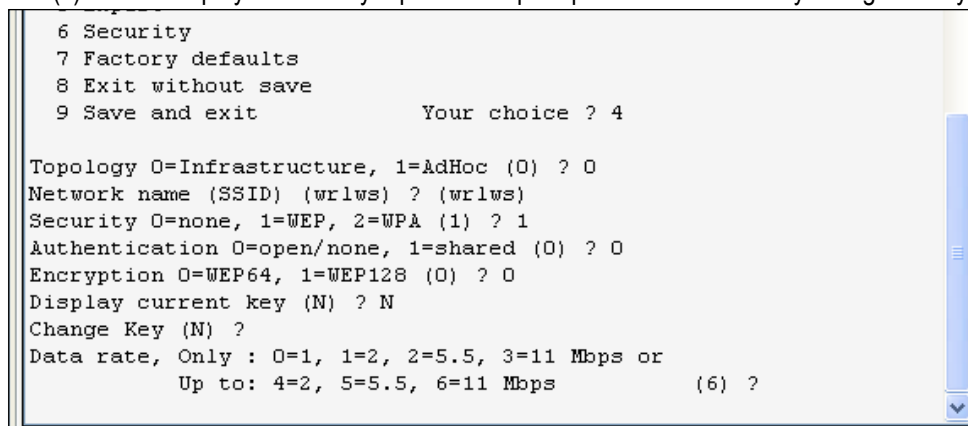
Figure 4-17. Change Key Screen

21. Select the data rate and press **Enter**.

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22. The screen automatically goes to end the screen which gives the choice to Save and Exit (**9**) and is shown below. By selecting that choice, and pressing **Enter**, the WLAN parameters are saved and the screen becomes grayed out as is shown below.

```
TX Data rate: 0=fixed, 1=auto fallback (1) ? 0
TX Data rate: 0=1, 1=2, 2=5.5, 3=11, 4=18, 5=24, 6=36, 7=54 Mbps (7) ?
Enable power management (N) ?


Change Setup:
   0 Server
   1 Channel 1
   2 Channel 2
   3 E-mail
   4 WLAN
   5 Expert
   6 Security
   7 Defaults
   8 Exit without save
   9 Save and exit            Your choice ? 9
```
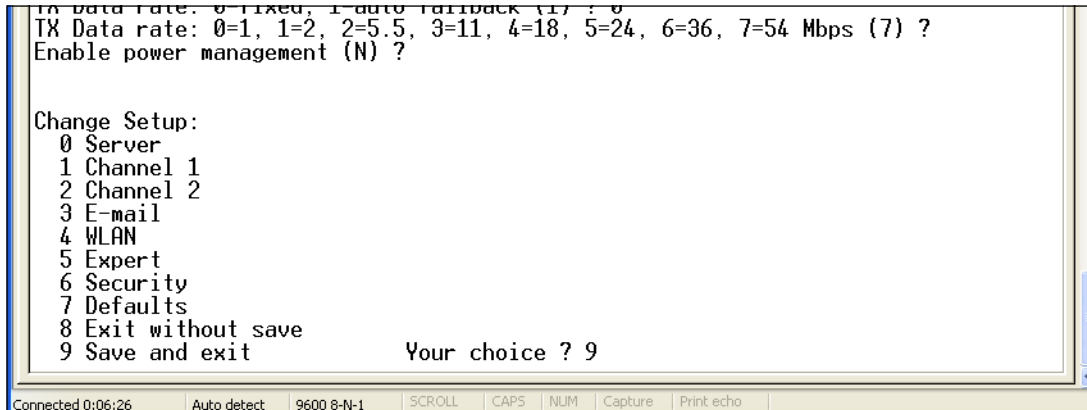Connected 0:06:26   Auto detect   9600 8-N-1   SCROLL   CAPS   NUM   Capture   Print echo

Figure 4-18. Save and Exit Screen

Once all of the data is saved, you must switch the jumpers back to the OFF position () to exit out of the configuration mode. Now you can access and view all wireless data on the PC.

4.7   Enclosure Reassembly

Once cabling is complete, position the backplate over the enclosure and reinstall the backplate screws. Use the torque pattern shown in the indicator's manual to prevent distorting the backplate gasket.

4.8   WiPort Wireless Specifications

Category		Description
Network Standards		IEEE 802.11b; IEEE 802.11g
Frequency Range		2.412 - 2.484 GHz
Antenna Connector		1, no diversity supported
Data Rates		1, 2, 5.5, 11Mbps (802.11b) 6, 9, 12, 18, 24, 36, 48, 54Mbps (802.11g)
Radio	Number of Selectable Channels	Up to 14 channels. Profiles available will include USA, France, Japan, Spain, Canada and "other" (multiple countries).
	Modulations	OFDM, DSSS, DBPSK, DQPSK, CCK, 16QAM, 64QAM
	Antenna Connector	1
Security		WEP 64/128, WPA-PSK, TKIP, AES end-to-end encryption
Maximum Receive Level		-10 dBm (with PER < 8%)
Receiver Sensitivity		-72 dBm for 54Mbps -87 dBm for 11Mbps -89 dBm for 5.5Mbps -90 dBm for 2.0Mbps -92 dBm for 1.0Mbps
WLAN Power and Link LED Current		Max: 4 mA

Table 4-2. WiPort Wireless Specifications

4.9   WiPort Technical Data

Category	Description
CPU, Memory	Lantronix DSTni-EX 186 CPU, 256 KB zero wait state on chip SRAM, 2048 KB flash, 16 KB Bott ROM
Firmware	Upgradeable via TFTP and serial port
Reset Circuit	Reset In is low active. Minimum reset pulse width is 2 ms at IIL = -500 aA
Serial Interface	CMOS (Asynchronous) 3.3V-level signals Rate is software selectable (300 bps to 921600 bps)
Serial Line Formats	7 or 8 data bits, 1-2 stop bits, parity: odd, even, none
Modem Control	DTR, DCD
Flow Control	XON/XOFF (software), CTS/RTS (hardware), none
Network Interface	Wireless 802.11b, 802.11g and 10/100 Ethernet
Protocols Supported	ARP, UDP, TCP, Telnet, ICMP, SNMP, DHCP, BOOTP, Auto IP, HTTP, SMTP, TFTP
Media Access Control	CSMA/CA with ACK
Frequency Range	2.412-2.484 GHz
Range	Up to 328 feet (100m) line of sight
Modulation Techniques	OFDM DSSS CCK DQPSK DBPSK 64 QAM 16 QAM
Transmit Output Power	14 dBm + 1.5 dBm/-1.0 dBm
Peak Supply Current at 3.3V	650 mA
Management	Internal web server, SNMP (read only) Serial login, Telnet login DeviceInstaller software
Security	Password protection, locking features, 64/128 bit WEP, WPA-PSK, End-to-End AES
Internal Web Server	Serves web pages Storage capacity: 1.2 MB
Weight	29 grams
Material	Metal shell
Temperature	Operating range: -30° C to +70° C (-22° F to 158° F) Storage range: -40° C to +85° C (-40° F to +185° F)
Warranty	2-year limited warranty
Included Software	Windows® 98/NT/2000/XP based DeviceInstaller configuration software and Windows based Comm Port Redirector, DeviceInstaller, Web-Manager Lantronix web site: http://www.lantronix.com/

Table 4-3. WiPort Technical Data

4.10   WiPort Disclaimer

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Re-orient or relocate the receiving antenna
- Increase the separation between the equipment and the receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/tv technician for help

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This device is intended only for OEM integrators. The OEM integrator should be aware of the following important issues.

Labeling of the End Product

The label of the end product integrating this module must clearly indicate that the end product contains an FCC approved RF module. The format of such statement could be *Contains Transmitter with FCC ID: R68WIPORTG* or something similar.

RSS-GEN Sections 7.1.4 and 7.1.5 Statement for Devices with Detachable Antennas

This device has been designed to operate with the antennas listed in the certificate, and having a maximum gain of 5 dB. Antennas not included in this list or having a gain greater than 5 dB are strictly prohibited for use with this device. The required antenna impedance is 50 ohms.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent insotropically radiated power (EIRP) is not more than that required for successful communication.

Integration Note

(a) This module is authorized under limited module approval specified to mobile host equipment. So, the antenna must be installed such that 20 cm is maintained between the antenna and the user.

(b) The transmitter module may not be co-located with any other transmitter or antenna.

As long as the two conditions above are met, further transmission testing will not be required. However, the OEM integrator is still responsible for testing their end product for any additional compliance requirements required with this module installed (for example, digital device emission, PC peripheral requirements, etc).

NOTE: In the event that these conditions cannot be met (for example) certain laptop configurations, general purpose PCMCIA or similar card, or location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID cannot be used on the final product (including the transmitter) and obtaining a separate FCC authorization.

Changes or modifications to this device not explicitly approved by Lantronix will void the user's authority to operate this device.

5.0 920i/iQube Email Setup

Error conditions generate a displayed error message if the iQube is connected to a 920i which, with an Ethernet card, can be configured to email the alert message to a specified address.

5.1 Configuration

For email to work, both the 920 port (wired to) and the Ethernet serial port (wired to) must be both set to default values or are set to the same baud, bits, parity, etc. Once this is done, follow the steps below:

1. Set or determine the IP address of the Ethernet option (This can be done using DeviceInstaller - see).

2. From iRev, select the *Contact Information* tab from System Parameters » Features.

3. Set the SMTP server address that is to be used.

> **NOTE: The Ethernet IP address may need to be registered with the server.**

4. Set the email address the iQube alert will be sent to.

5. Select Print Formatting » Print Format Information.

6. Verify the alert format port setting is set properly (same 920 port the Ethernet is wired to).

7. In DeviceInstaller, set the *Startup connect mode* to Manual Connection.

8. Set the *Inactivity timeout* to Enable.

9. Set the *Inactivity timer* to 0:15.

> **NOTE: After the SMTP address has been set to other than 0.0.0.0 (in the 920), normal uploading/downloading with iRev (in TCP/IP mode) is not allowed nor will Telnet operate in a bi-directional fashion.**

Baud rate	9600	Remote Port	00000
I/F Mode	4C	DisConn Mode	00
Flow	00	Flush Mode	00
Port No	10001	Disconn Time	**15** (enter by 00<CR>15
Connect Mode	C4	SendChar 1	00
Remote IP	000.000.000.000	SendChar2	00

Table 5-1. Ethernet port 1 settings (bold items need to be changed via Telnet)

> **NOTE: The Ethernet option is designed to work in a connection-oriented system. This means that once the setup is done and an iQube error is detected, the Ethernet card will send out a message (looking for the server) with the SMTP IP address (and a port designation). Example: C128.1.25.1/25.**
>
> *If no response is forthcoming (from the server), it will go no further. It will not transmit again (from an iQube error) until powered down and powered back up.*
>
> *If a connection is made with the mail server, then the packet will be sent to the server for forwarding as an email.*
>
> *This could be tested by connecting to Telnet (Port 10001) and creating an error within iQube. The SMTP address and port designation preceded by a "C" should appear on the screen, but this will only happen one time in this fashion and not again until the system is powered down.*

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5.2   Troubleshooting

If you are having trouble connecting to your networked 920i, the problem might be caused by IP addressing or network firewall issues. One of the most common problems is a firewall (or multiple firewalls). In many cases, the firewall simply doesn't know the Ethernet address of the 920i. Thus, it is rejected and can't make it past this point. The remedy is a firewall configuration by the company's IT department to add the 920i's address to the device.

Other common problems occur within mail servers. Local email clients use the Post Office Protocol version 3 (POP3), an application-layer Internet standard protocol, to retrieve email from a remote server over a TCP/IP connection. If the 920i's IP address isn't allowed to relay (send) mail, the message could be rejected. The email server needs to be manually configured to allow the 920i to do this.
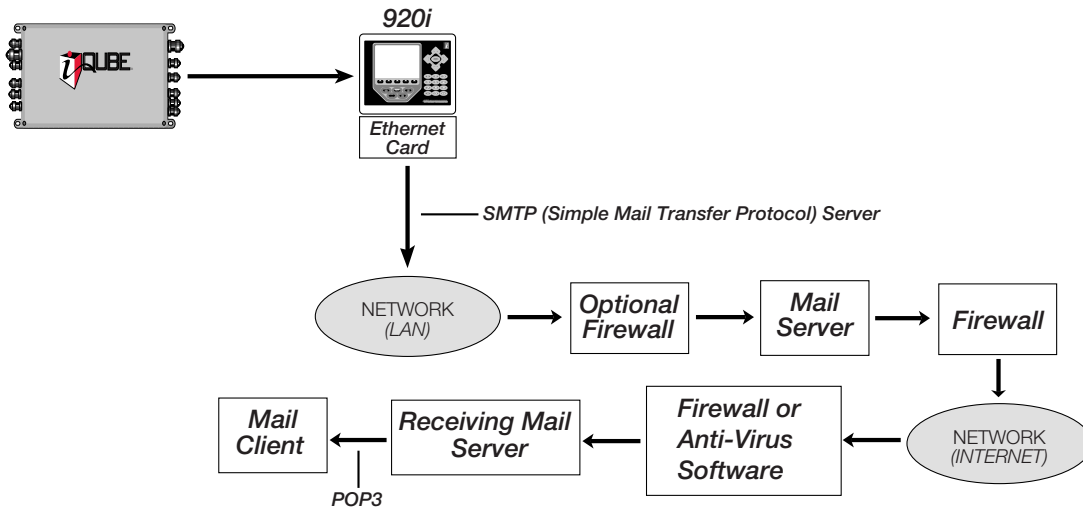

Figure 5-1. Typical network diagram

Additionally, the receiving mail server might get an email from the 920i and go back to ask the network's mail server if it, in fact, sent the message, which would make it allowable. Since the 920i sent the message, the mail server replies with "No, it's not from me" and the email is discarded. Again, a typical IT department is fully capable of correcting this.

There may also be multiple spam filters existing within the network, any one of which could interpret the message as coming from a fictitious address. The address from which the 920i sends an email must be added to the server and added to any third-party spam filters as being a "safe sender." The address will follow the format 920_1@companydomain.com, where "1" could be any number, depending on how many 920s are installed.

Of course, before the 920i can begin to function on a network, it needs to be assigned an IP address and be configured. If this has not been done, refer to Section 3.0.

5.2.1   Troubleshooting Rice Lake Equipment on a Network

Due to a high number of variables, problems typically lie within the company's network. To double-check that all RLWS equipment is set up correctly and functioning properly, you can use Rice Lake's free SMTP Test Server program. This simulates a mail (SMTP) server, isolating the iQube and 920i from the network and making it easy to determine where the problem lies. For example, if you have not been able to receive an email from the 920i but the program shows it is functioning properly, you know there is an issue elsewhere on the network.

NOTE: When an error occurs, the 920i makes one attempt to contact the mail server. There is a 15 second timeout when unsuccessful. Before further troubleshooting, you should ensure the Ethernet card has blinking lights. If the lights are blinking, proceed with troubleshooting. If they are not, there is a problem with the card and/or cable.

Common Problems

- Incorrect wiring the card
- Port settings
- Using crossover cable rather than patch cable (e.g., if you are connecting a computer directly to the card, use crossover cable between the card and the computer--and you must use a static IP address; if you are using a computer connected to a local area network, use a patch cable)
- Server address (must be set last)

Using the Email Test Server

1. Visit http://www.ricelake.com/downloads to download the SMTP Test Server program.
2. Once the Email Test Server program is installed, set the appropriate server address on the 920i.
3. Intentionally generate an error.
4. The Email Test Server program will show data sent from the 920i, confirming whether the email is sent successfully.
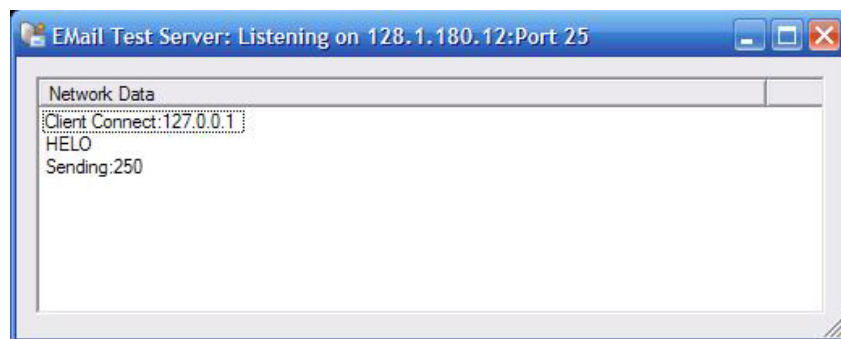

Figure 5-2. SMTP Test Server

Alternatively, you can follow these steps:

1. Ping the 920i to ensure you have network connectivity.
2. Telnet to Port 10001 at the IP address of the card. Press Enter and see if question marks are returned. If they are, the 920i is communicating properly with the card.

📝 *NOTE: Question marks will not be returned after the SMTP server address is set to a value other than zero.*

3. Ensure the port is set up for command.

5.2.2 Using iRev to Upload/Download with a 920i

These parameters need to be set using the Web Configuration so the dumpall used by iRev will be transmitted smoothly and continuously.

1. Set the baud rate to match the 920i serial port.
2. Turn on the Packing Algorithm with a 12ms delay.
3. Set SendCharacter to 0D.
4. Update the settings.
5. Connect to the 920i using iRev TCP/IP on port 10001.

6.0   Streaming

When using a Lantronix TCP/IP module in Rice Lake indicators which are capable of streaming, stream data can be sent to a 920i as a serial scale using a corporate Ethernet backbone. This is referred to as serial tunneling. This section provides a brief overview of how to use serial tunneling. For more extensive information, refer to the following link:

• http://ts.lantronix.com/tutorials/serial-tunnel/Serial_Tunneling.html

NOTE: Make sure you consult with your network administrator prior to setting up any streaming functionality.

6.1   Serial Tunneling

The principle of tunneling is to set up the source scale (in this example, a 720i is used) to stream a LFT Condec format to a receiving unit (920i). These units should be set up and calibrated using RS-232. Data will be sent from the 720i, so it is noted as the sender. Data is received by the 920i, so it is noted as the listener.

1. If not already installed, install an Ethernet TCP/IP card inside each unit. Refer to Section 2.0 on page 7.

2. Using DeviceInstaller, set the connected mode of the sender to 05 and of the listener to 30.

NOTE: The sender will initiate a connection immediately upon going to weigh mode. This will be an autostart mode of the Ethernet card. The listener then is set to open a connection with no other contingencies upon detecting a packet directed to its local port.

3. Using Lantronix Device Installer, set the local port of the listener to 3032 and the remote port of the sender to 3032.

4. Find the listener's remote IP address and enter it in the sender using DeviceInstaller.
    In the following screen captures, IP address 128.1.1.122 was the sender and IP address 128.1.1.123 was the listener.
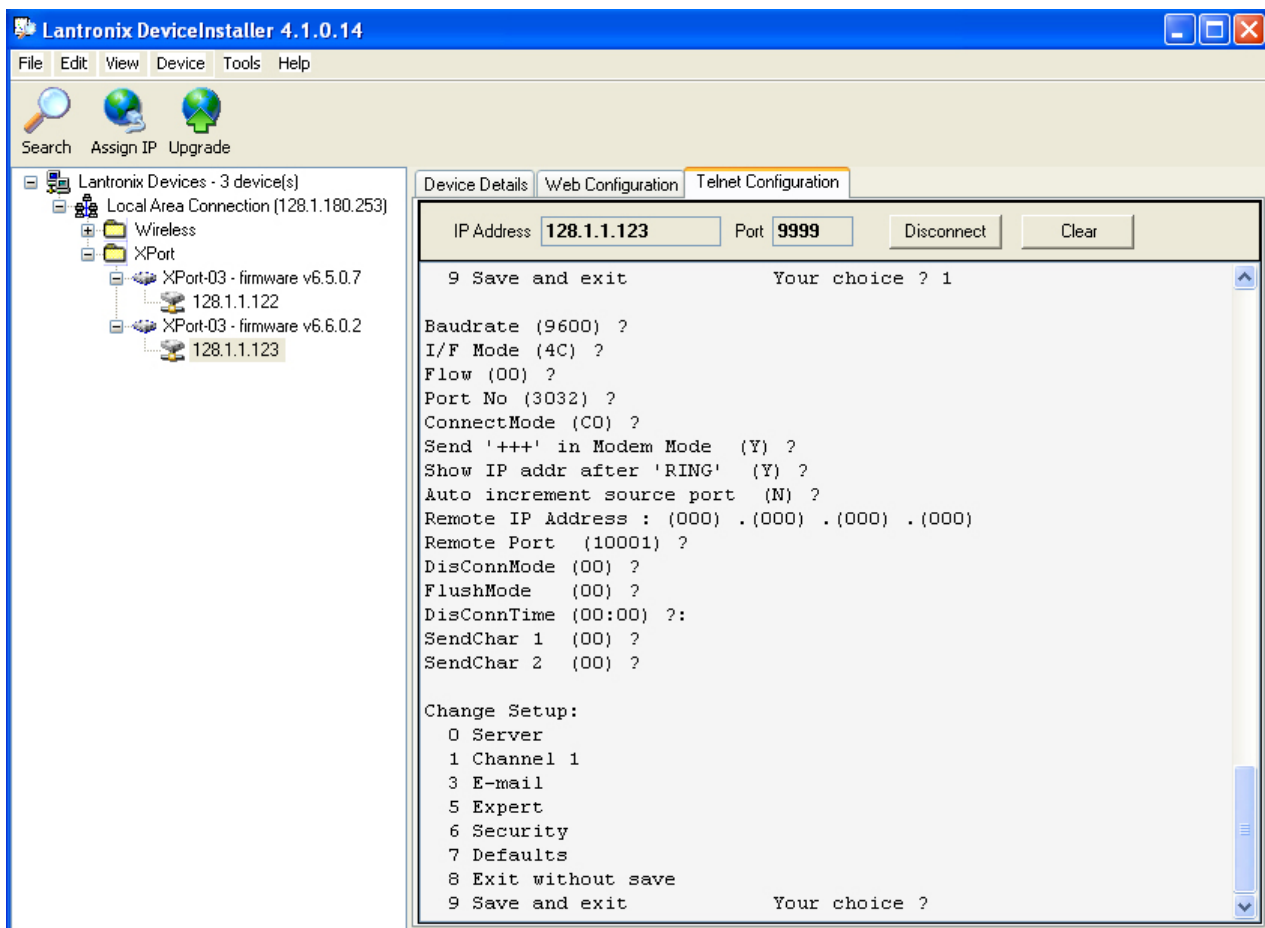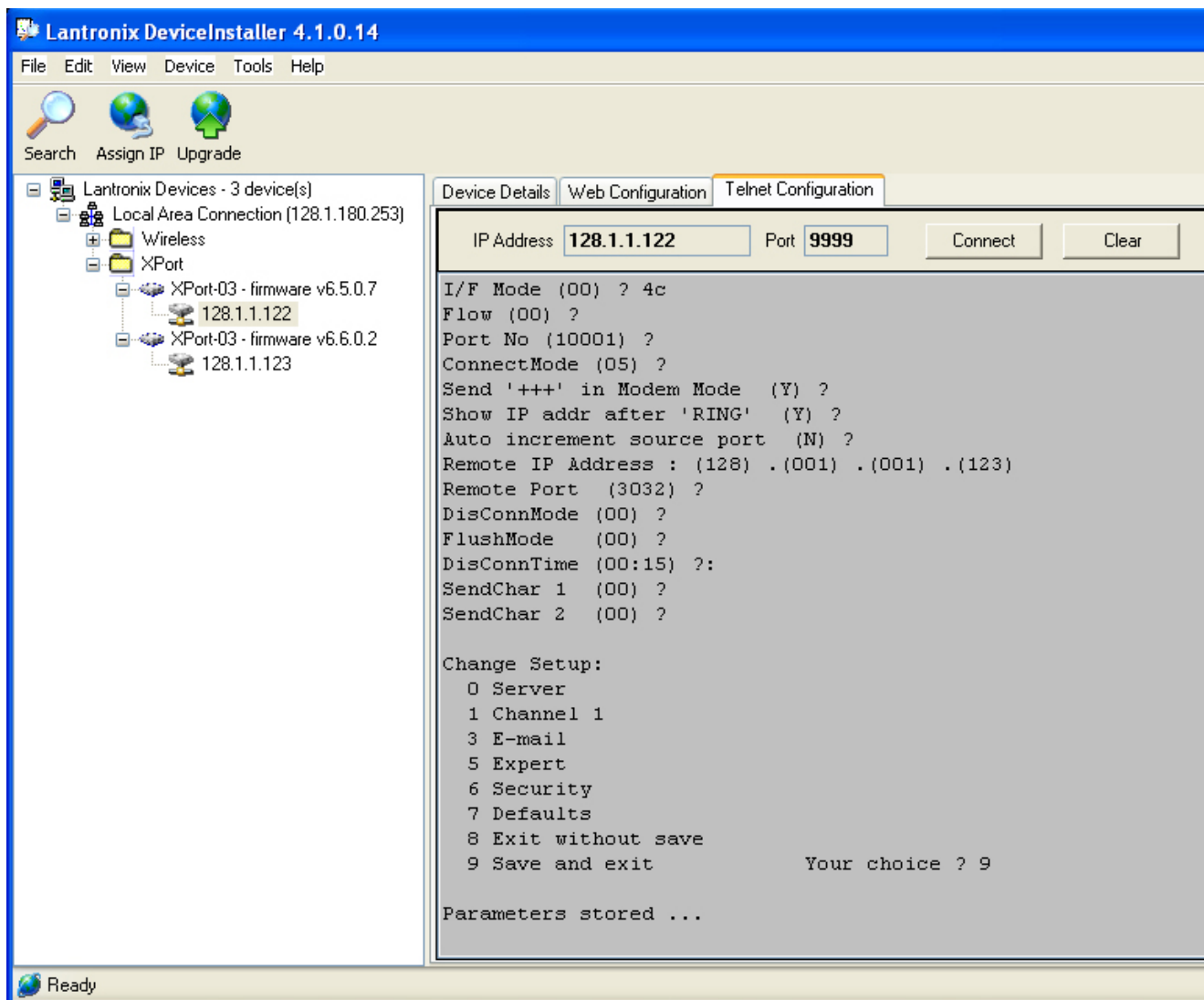

Figure 6-1. Listener setup

Figure 6-2. Sender setup

NOTE: The parameters are set using a telnet connection within DeviceInstaller. We can see that the only parameters changed from default (other than baud rate) is the port for the receiver to look for, the ConnectMode to adjust each for its own function, Listen or Sender, and the Remote IP in the sender to direct the packet to the correct IP address.

These units, once set up, will do an auto connect as soon as either they return to weigh mode or after a power cycle.

7.0   Appendix

PIN	Function	Color
1	TX+	White/Orange
2	TX-	Orange
3	RX+	White/Green
4		Blue
5		White/Blue
6	RX-	Green
7		White/Brown
8		Brown

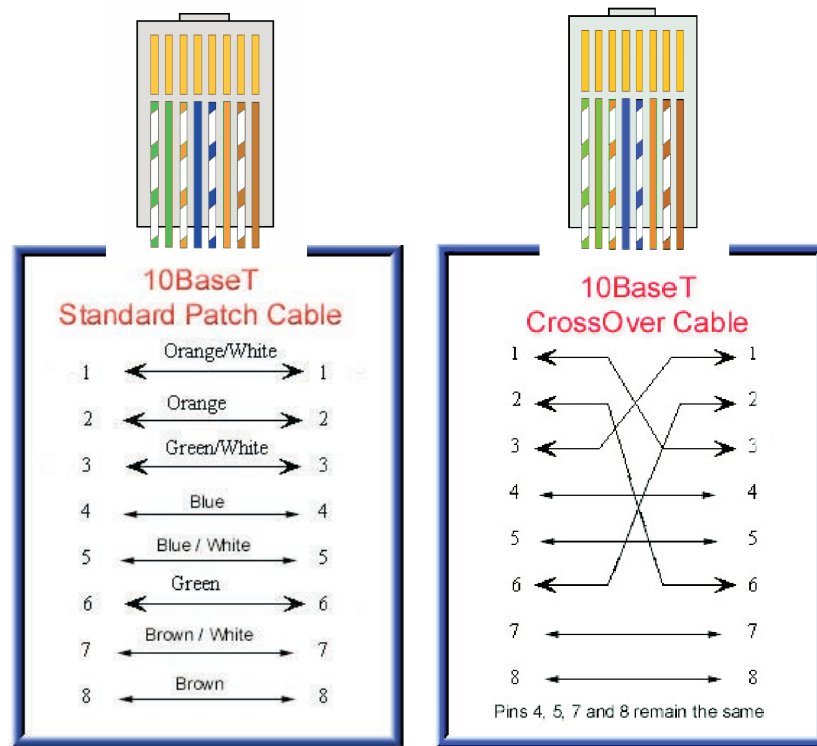*Figure 7-1. RJ-45 Connector Pin Assignments*

Figure 7-2. Standard Patch Cable (left) and Crossover Cable (right)

8.0 Specifications

Power

5 VDC, 250 mA

Supported Protocols

ARP, UDP, TCP, Telnet, SNMP, ICMP, HTTP, BOOTP, DHCP and TFTP

Network Interface

Ethernet: RJ-45 (10/100 Base-T) or AUI

Serial Line Formats

Characters: 7 or 8 data bits
Stop bits: 1 or 2
Parity: odd, even, none

Data Rates

Single port, 300 bps to 115.2 Kbps default 9,600

Dimensions

2.00 x 1.90 x 0.75 in (52 x 49 x 19 mm)

Temperature

Operating: 41 to 122°F (5 to 50°C)

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