Adjusting The Media Support Disks

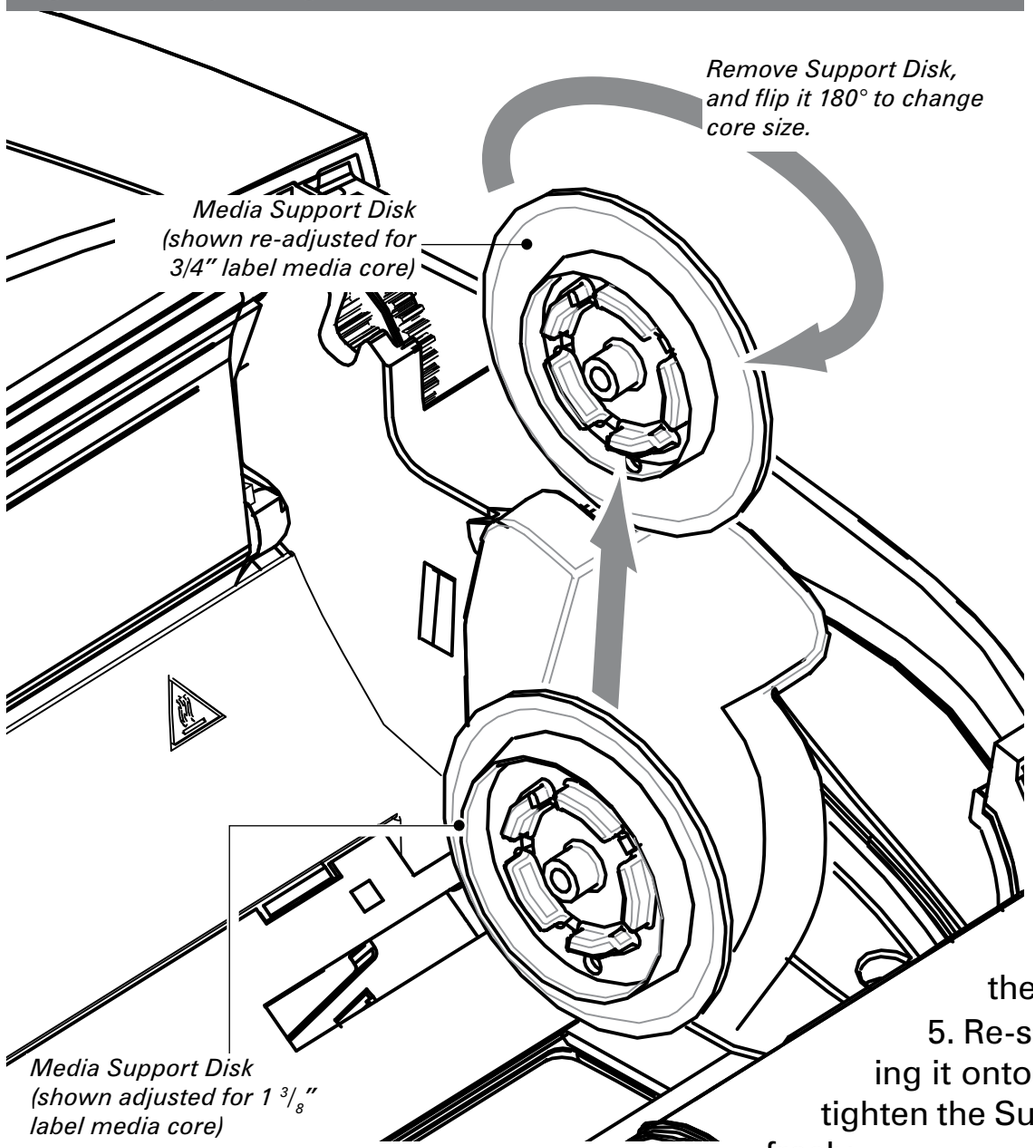
Media Core Size

Media supplied for the P4T Series printers will have two possible core sizes, depending on the media type. Journal media and most label media is supplied with a 0.75" [19.1 mm] diameter core to maximize the amount of media contained on a roll.

P4T printer media supports are set at the factory for 0.75" diameter media cores.

RP4T printers (equipped with the RFID encoder) are configured for media with 1.38" [35.05 mm] diameter cores since RFID media cannot be wound around a small diameter core without both degrading its ability to feed properly past the printhead and causing possible damage to the embedded RFID circuitry.

Figure 8- Adjusting the Media Core Diameter



Changing The Media Support Core Diameter Size

It may become necessary to change the media core size in the field to allow use of different media.

The media support disks are designed for both sizes of media cores, and they can be adjusted by removing them, flipping their position and re-securing them to the printer.

1. Open the Media Cover and remove any label media.
2. Use Phillips head screwdriver with a long blade to keep the screw attaching the Support Disk to the printer from turning.
3. Rotate the Support Disk while keeping the attachment screw from turning, and remove it.
4. Flip the Media Support Disk so that the desired core diameter ridge faces towards the inside of the printer. Please refer to Figure 8.
5. Re-secure the Support Disk by tightening it onto the attaching screw. Do not over tighten the Support Disk. It must be able to spin freely.

Repeat this procedure on the other Support Disk.

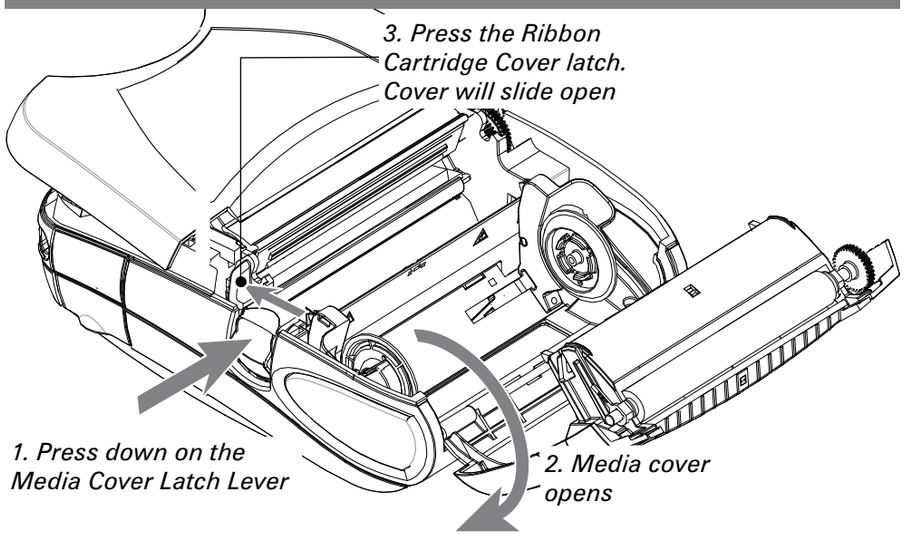
Always ensure that both Support Disks are adjusted for the same size media core.

Replace the Media Support Disks if they have been adjusted for different core sizes more than 5 (five) times.

Section Continues

Load the Ribbon Cartridge

Figure 9.1-Open the Printer Covers



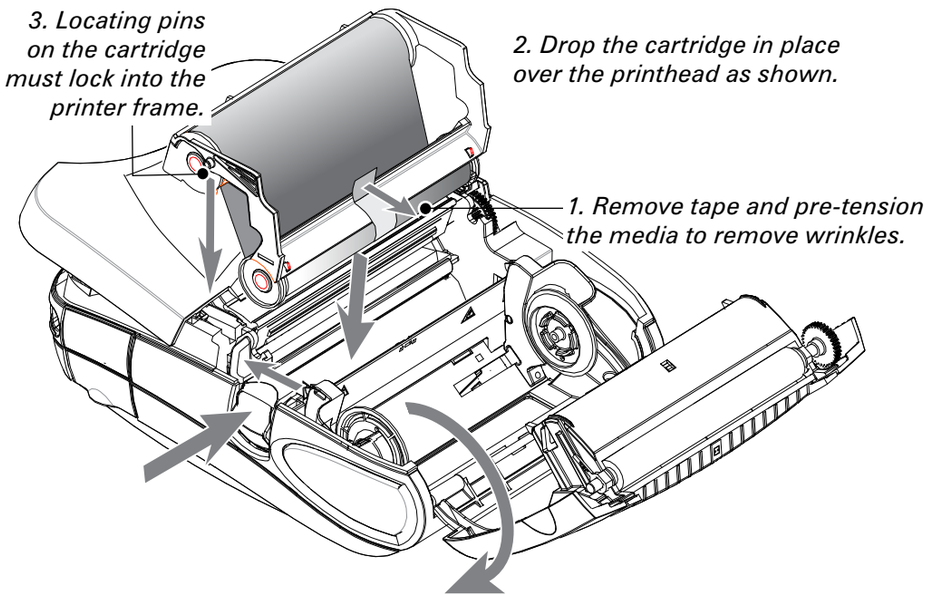
If you are using media that requires Thermal Transfer media, perform this step. If you are using journal stock, or media that uses direct thermal technology to print labels, omit this step.

1. Open the Printer Covers

Refer to Figure 9.1.

- Press the latch release button on the side of the printer as shown at "1" in figure 9.1. The media cover will open automatically
- Press on the Ribbon Cartridge Cover latch. The cover will slide open.

Figure 9.2-Load the Ribbon Cartridge



2. Load the Ribbon Cartridge.

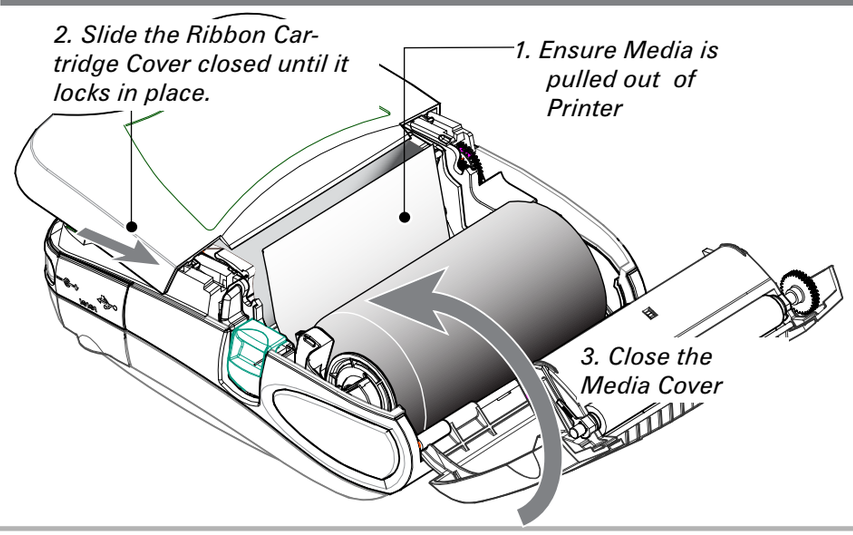
Refer to Figure 9.2.

Select the correct Thermal Transfer cartridge for the media you will be using. Consult a Zebra sales representative for information regarding proper media selection for your application.

- Remove the tape holding the transfer ribbon in place.
- Pre-tension the transfer ribbon to remove wrinkles by turning the take-up roll until the media is stretched flat between the two rolls of the Ribbon Cartridge cartridge.
- Drop the appropriate cartridge in place. The locating pins on either side of the cartridge must be secured in the printer frame.

The Ribbon Cartridges are protected by a security device which verifies compatiblity with P4T Series printers. Use of third party cartridges will cause the printer to malfunction, and will void the factory warranty.

Figure 9.3-Close the Printer Covers



3. Close the Printer Covers

Refer to Figure 9.3.

- If you have not done so, load label media into the printer as detailed previously, ensuring that the media has been pulled out of the printer past the printhead.
- Slide the Ribbon Cartridge cover closed until it latches in place.

Always close the Ribbon Cartridge cover before closing the media cover.

- Close the media cover and ensure it latches in place.

Section Continues

Printer Controls

Operator Controls

The printer control panel has buttons for the power on/off and media feed functions and a display which provides information regarding printer functions and application prompts. Two navigation keys provide easy selection of menu options.

The "Scroll Forward" button allows scrolling through the various options and settings. The "Scroll Back" button allows scrolling back through previously viewed menus. Pressing the "Select" button selects the currently highlighted option or function.

The status icons at the top of the screen indicate the state of various printer functions per the table below. Refer to the *Troubleshooting* section for more information on the printer status icons.

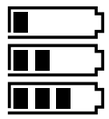
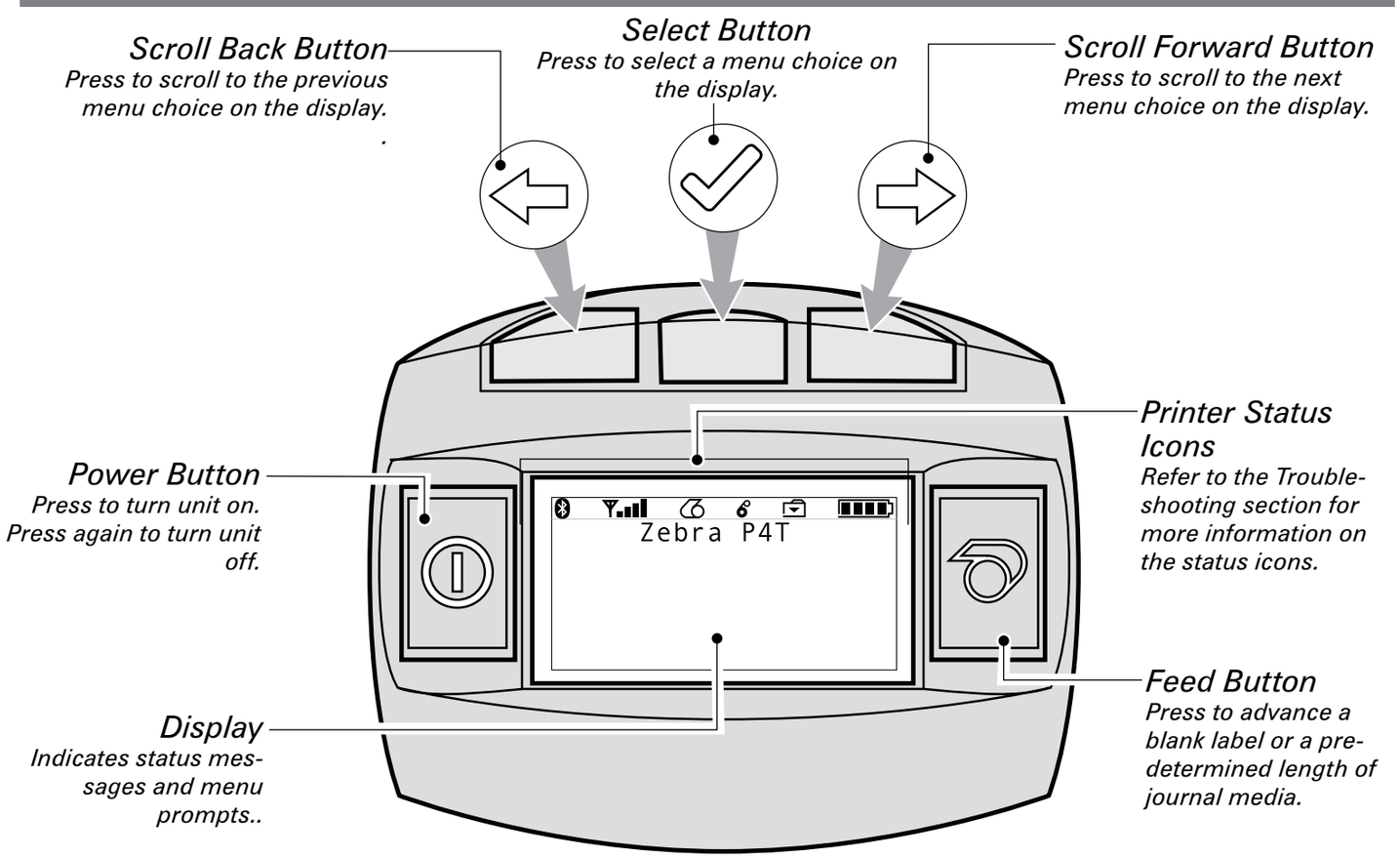
	Indicates a Bluetooth connection is established. This icon is functional only on P4T Series printers with a Bluetooth wireless option installed.
	Indicates that the printer is associated with a wireless Local Area Network (LAN) using an 802.11b/g compliant radio. This icon is functional only on a P4T Series printer with a WLAN wireless option installed.
	A flashing icon indicates that the printer does not detect any label media. This could indicate an out of media condition, or improperly loaded media.
	A flashing icon indicates that the thermal transfer film is depleted.
	A flashing icon indicates that data is being transferred to the printer.
	A flashing outside element of the battery icon indicates low charge status. You should suspend any printing operations and recharge or replace the Battery Pack as soon as is convenient.
	Cycling charge level elements within the battery icon indicate the P4T Series battery is being charged by the AC Adapter. Refer to Charger section of this manual.

Figure 10 -P4T Series Printer Controls & LCD Icons



If the printer displays: "Please Recondition the Battery" and beeps five times, the user should recondition the battery to return it to optimal operation.
To recondition the battery, charge the battery fully overnight and then use the printer until the printer shuts down due to a low battery condition.
Charge the battery again until it is fully charged. At that point the battery will be reconditioned. If the battery is not reconditioned properly the indicated battery charge level will indicate that there is more charge remaining in the battery pack than is actually available. Reconditioning performed as prompted by the printer will ensure accurate capacity indication throughout the serviceable life of the battery.

Section Continues

Programmable LCD Settings

In addition to the status icons, the LCD on the control panel can display many of the printer's settings and functions as text as determined by the printer's application. Applications can be written to allow the user to view and /or modify these settings using the scroll and select keys on the display. Refer to the following tables for a partial set of printer features that can be programmed to display on the LCD.

The LCD has a backlighting option which allows viewing of the screen in a dark environment, or provides better contrast in a very bright environment. Use of the display backlight will decrease the time the printer will run between charges. Refer to the section "Extending Battery Life" for more information.

Extended LCD Functions

Function	Default setting	Scroll & Select Options
Sensor Type	Bar	• Bar
		• Gap
Baud Rate	19200	• 9600
		• 19200
		• 32400
		• 57600
		• 115200
Data Bits	8	• 7
		• 8
Parity	N (none)	• E (Even)
		• N (None)
		• O (Odd)
LCD Contrast	8	• Increase (15max.)
		• Decrease (15 max.)
No-activity Timeout	120 sec.	• Decrease (0 min.)[2]
		• Increase (120 max.)
Audio Volume	3	• 1 – Low
		• 2 – Medium
		• 3 - High
Media Type	Journal	• Journal
		• Label
LCD Backlight[3]	Momentary On	• Momentary On w/ time delay
		• Off
Factory Reset (Resets all to factory set values)	No	• No
		• Yes

NOTES:
1: LCD menu options are under specific application control. Not all options may be available In your printer's application.
2: A No-activity timeout value of "0" means the printer will remain on until powered off by the operator.
3: LCD Backlight turns on when any key other than FEED is pressed.

Section Continues

Display Functions Not Controlled from the Keypad

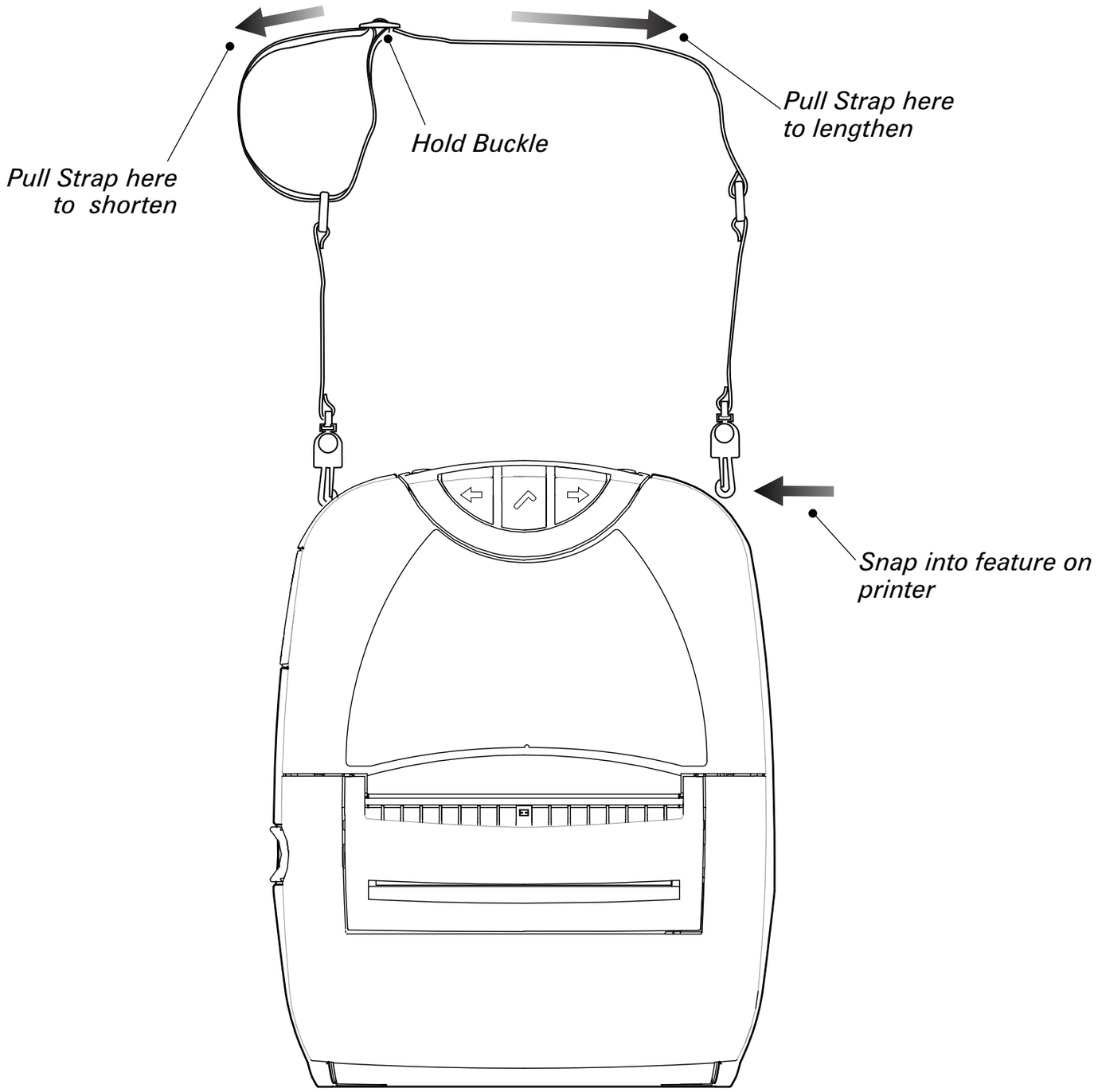
While the parameters in this table can appear on the display they can be set only by using a PC running Zebra's Label Vista label creation program and a data cable link to the printer.

Function	Default setting	Scroll & Select Options
WLAN ID	Factory Set Value	N/A
Tear-off Position (Top of Form)	00	• Increase (max. = +10)
		• Decrease (min. = -120)
Network & RF Settings		• All protocols On
		• Protocols On or Off individually
Bridge Mode	Off	• Off
		• On
DTR/VBUS-Power Off	Off	• On
		• Off
Present-at	000	• Increase (max.= +120)
		• Decrease (min. = 000
Bluetooth parameters	n/a	Displays current Bluetooth operating parameters
802.11g operating parameters	n/a	Displays current 802.11g WLAN parameters
Media Type	Journal	•Journal
		•Label

Section Continues

Adjustable Shoulder Strap

Figure 11- Shoulder Strap



Refer to figure above. Snap each end of the shoulder strap into the retaining features on top of the printer. Hold the buckle and adjust the strap as shown until you achieve the desired length.

Section Continues

Verify the Printer Is Working

Before you connect the printer to your computer or portable data terminal, make sure that the printer is in proper working order. You can do this by printing a configuration label using the "two key reset" method. If you can't get this label to print, refer to the "Troubleshooting" section of this manual

Printing a Configuration Label

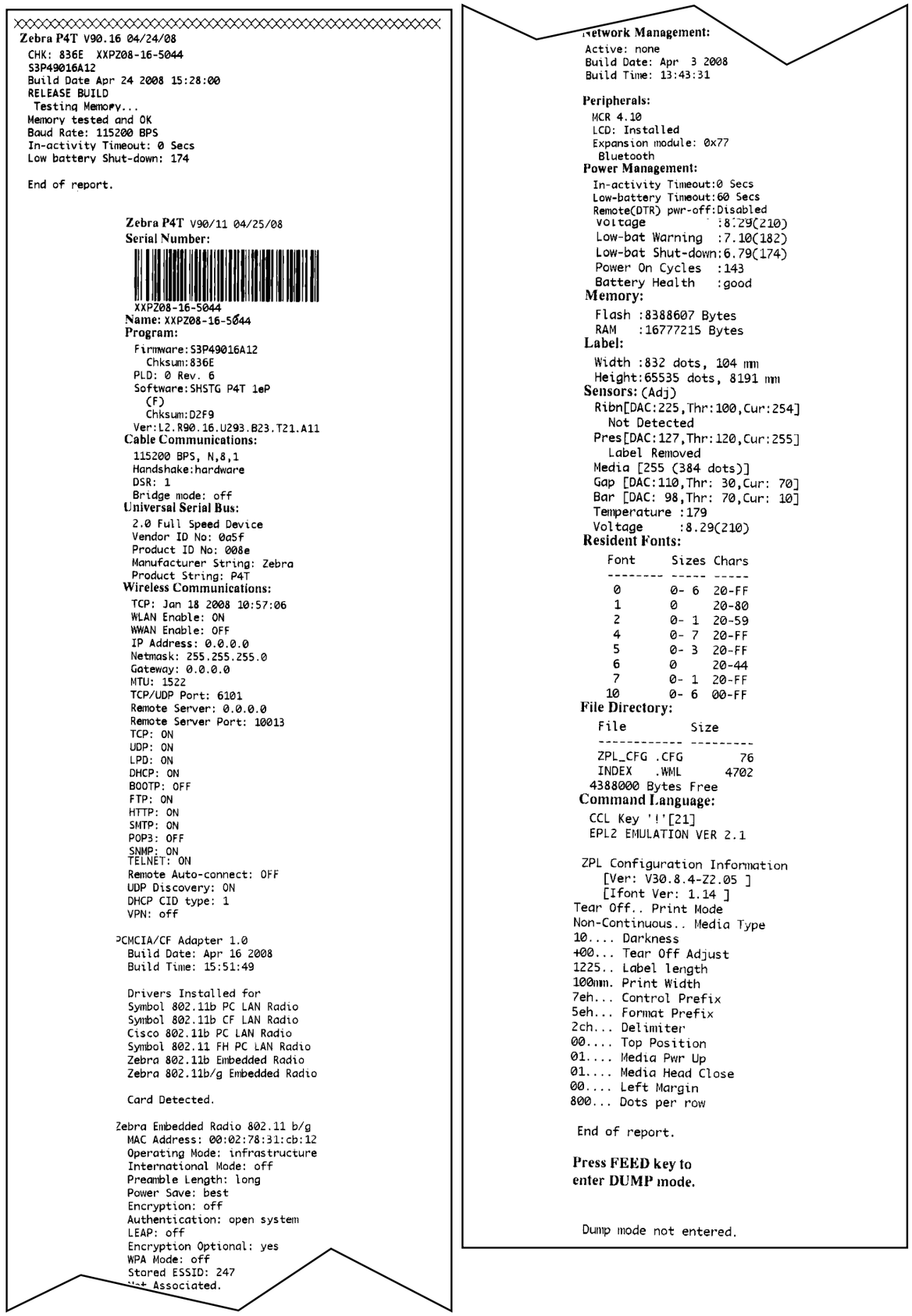
1. Turn the printer off. Load the media compartment with journal media (media with no black bars printed on the back)
2. Press and hold the Feed Button.
3. Press and release the Power button and keep the Feed button pressed. When printing starts, release the Feed button.

The unit will print a line of interlocking "x" characters to ensure all elements of the printhead are working, print out the version of software loaded in the printer and then print two reports.

The first report indicates the printer model, ROM version, serial number, baud rate, etc. The second report prints out more detailed information on the printer's configuration and parameter settings. If no second report appears, there is no application loaded.

See the Troubleshooting Section for a further discussion on how to interpret the configuration label as a diagnostic tool.

Figure 12 -Sample P4T Series Configuration Label



Connecting the Printer

The printer must establish communications with a host device which sends the data to be printed. Communications occur in three basic ways:

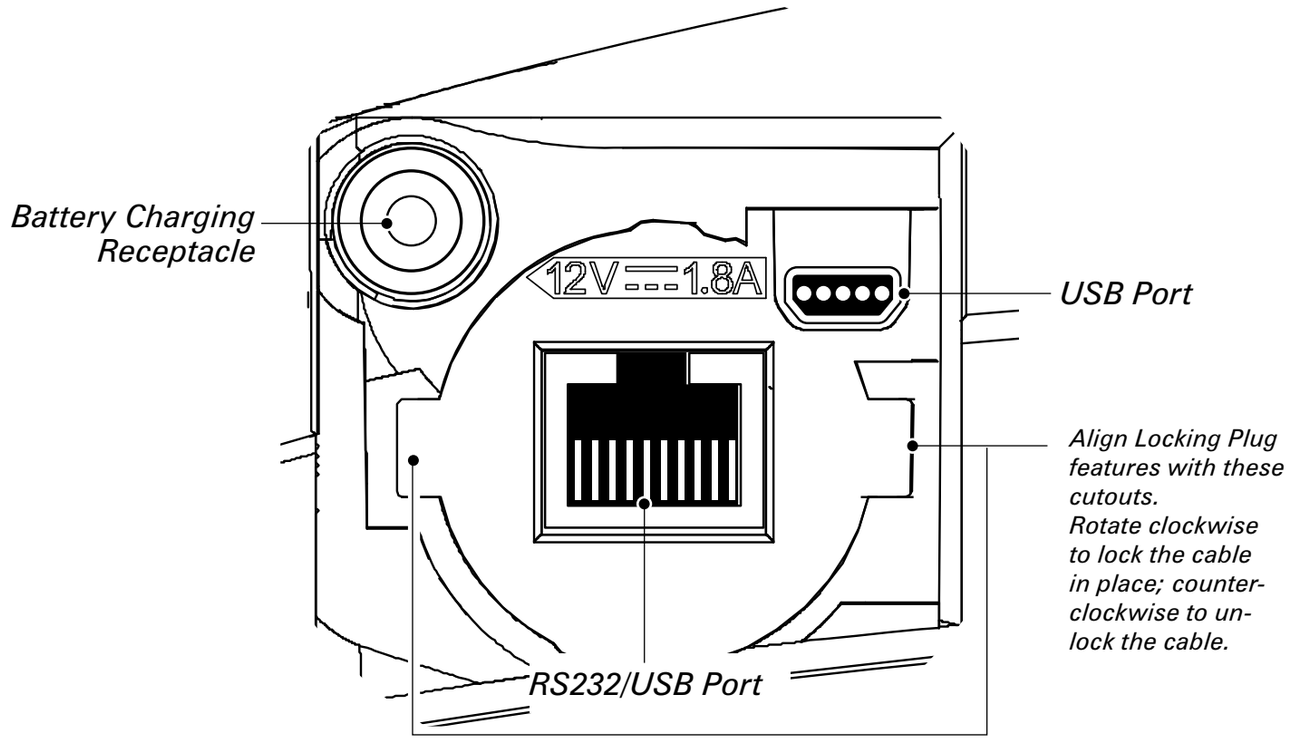
- By a cable between the printer and its host terminal using either RS232C or USB protocols
- By means of a Bluetooth short-range radio frequency link
- By means of a wireless LAN (Local Area Network) per 802.11b/g specifications

Cable Communications

Caution • The printer should be turned off before connecting or disconnecting any communications cable.

Note • All P4T series printers can communicate by cable; the specific cable used with your printer can vary with the host terminal.

Figure 13: P4T Series Communication Ports



Serial (RS232C) or USB Port

The 10- pin modular connector on your communications cable plugs into the combination RS232C/USB communications port on the side of the printer. Signals and pin assignments for both communications ports are in the Specifications section of this manual.

The protocol used with this port is determined by the communications cable you are using. Refer to Appendix A for more information on the communications cables offered with the P4T Series.

Plug the connector into the RS232 port and ensure its locking device has clicked into position.

The other end of the cable must be plugged into the host terminal as shown in Figure 14, or to a serial port on a computer as shown in Figure 15.

Section Continues

USB

P4T Series Printers also have a USB type B port located directly above and to the right of the RS232C port. (Refer to Figure 13)

The USB port is configured with the USB Open HCI interface driver allowing it to communicate with Windows® based devices. USB drivers are included in the Zebra Universal Driver which can be downloaded from www.zebra.com. Other terminals or communications devices may require the installation of special drivers to use the USB connection. Consult your Zebra re-seller or the factory for further details.

Figure 14- Connecting to a Terminal

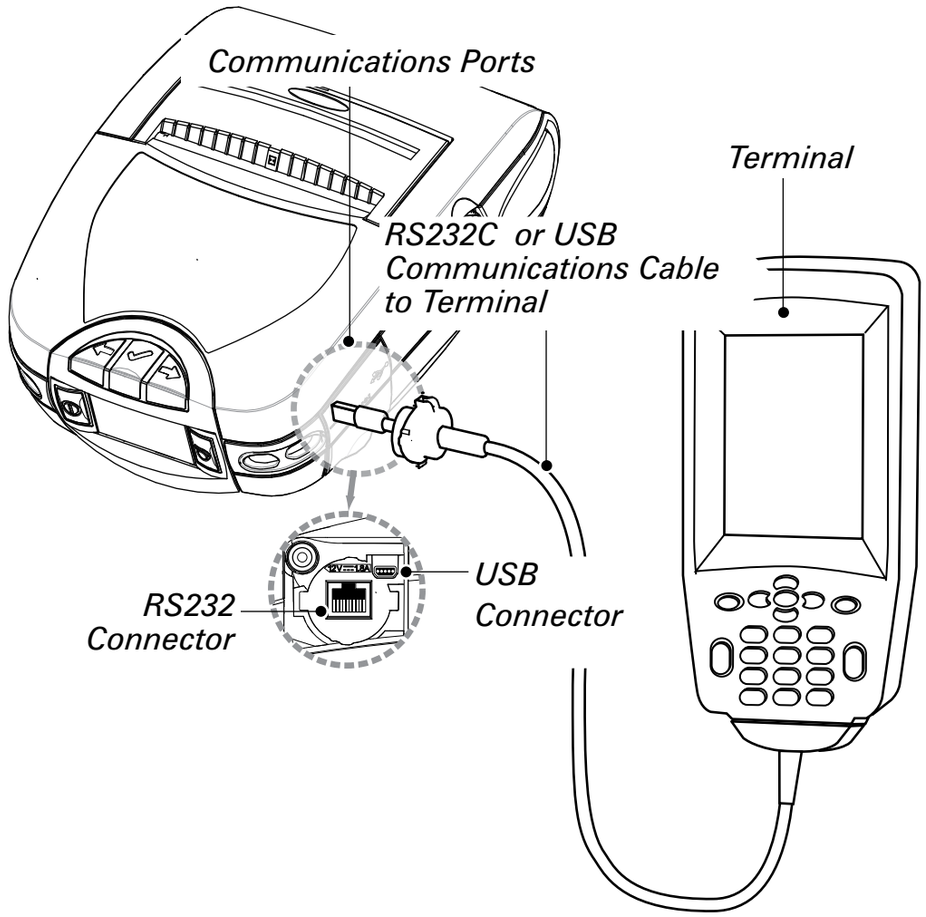
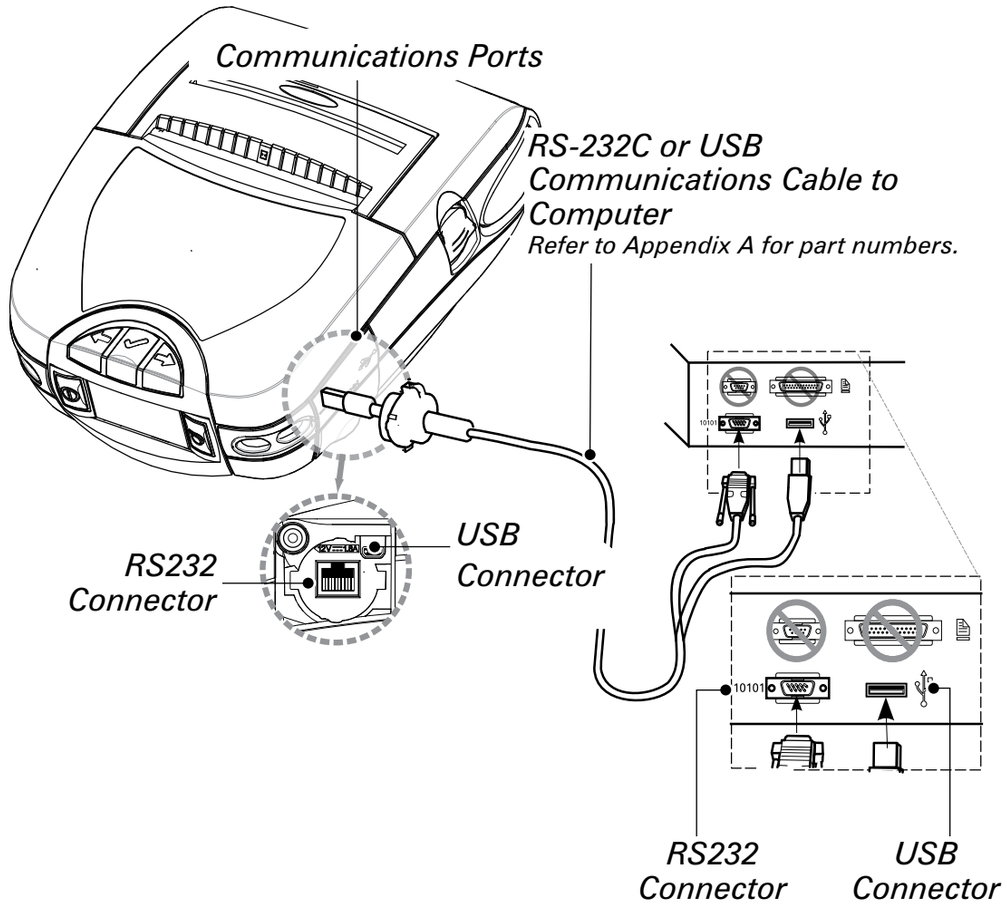


Figure 15- Connecting to a PC

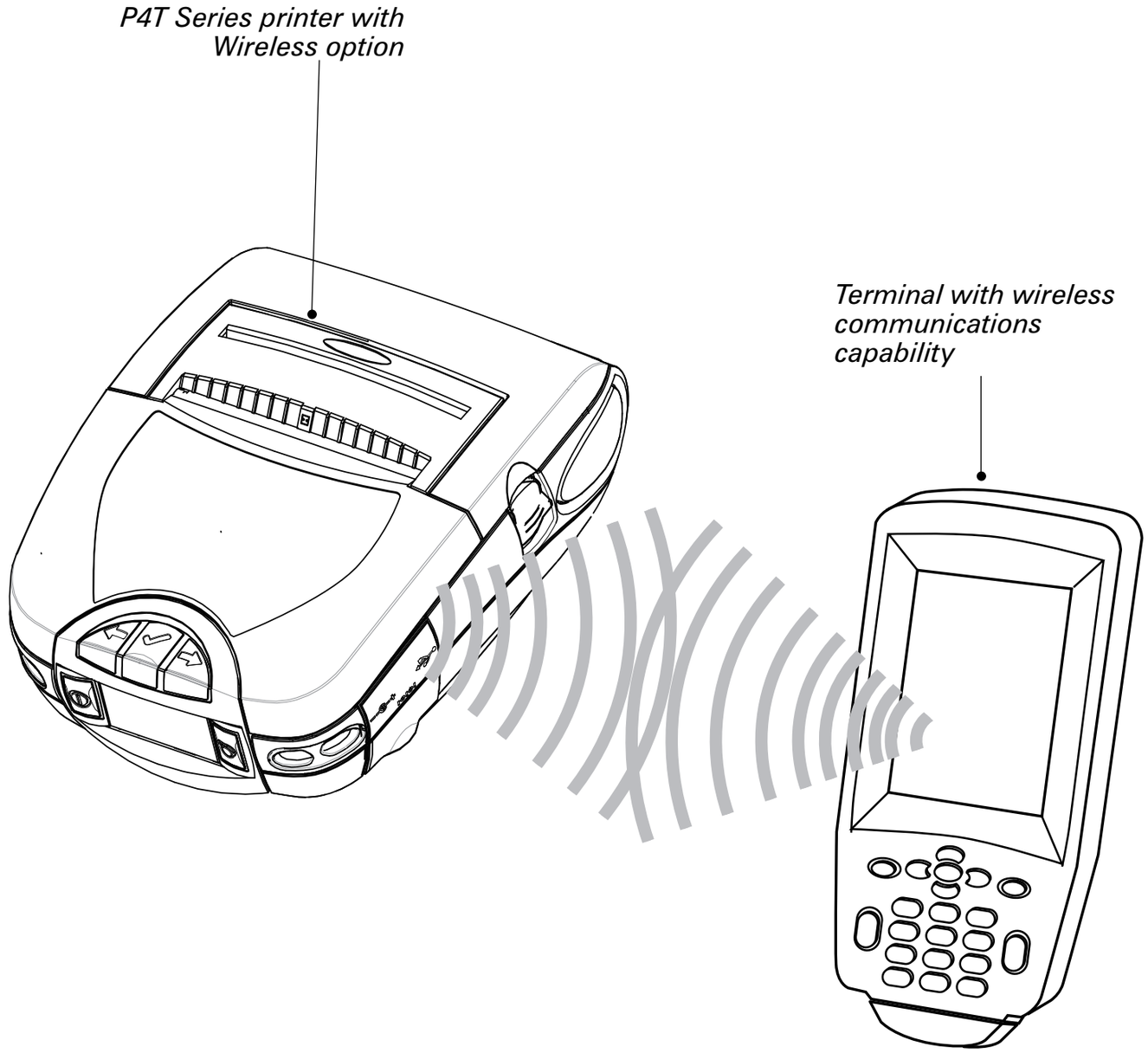


Section Continues

Connect the Printer by Radio

If your P4T Series printer has a radio option, you can connect wirelessly to either a terminal or a wireless network (WLAN.) Refer to the Mobile Printer Wireless Configuration Guide available on the product CD or at *www.zebra.com/manuals* for help on setting up wireless communications with your printer.

Figure 16- Connecting Wirelessly to a Terminal



Section Continues

Wireless Communications

Wireless Communications with Bluetooth®

"Bluetooth" is a worldwide standard for the exchange of data between two devices via radio frequencies. Bluetooth radios are relatively low powered to help prevent interference with other devices running at similar radio frequencies. This limits the range of a Bluetooth device to about 10 meters (about 32 feet).

Both the printer and the device it communicates with must follow the Bluetooth standard.

Bluetooth Networking Overview

Each Bluetooth enabled P4T series printer has a unique Bluetooth Device Address (BDA) loaded into its radio module when manufactured.

Bluetooth software is always running in the background, ready to respond to connection requests. One device (known as the master or the client) must request a connection with another. The second device (the slave or the server) then accepts or rejects the connection. A Bluetooth enabled P4T series printer will normally act as a slave creating a miniature network with the terminal sometimes referred to as a "piconet."

For the most part, communications using Bluetooth are initiated and processed without any operator intervention.

P4T Series printers can be equipped with both a Bluetooth and an 802.11b/g radio, allowing communications with both Bluetooth enabled devices and a Wireless Local Area Network (WLAN) (see discussion below).

Wireless Local Area Network Overview

P4T Series printers can be equipped with several radio options which use the industry standard 802.11b or g WLAN protocols.

- P4T Series Wireless Network Printers with the Zebra 802.11b/g WLAN radio module can be identified by the Product Configuration Code (PCC) on the serial number label on the back of the printer. Printers with this option will have a "K" as the seventh character of the PCC Code. Printers with this option may also be identified by the FCC ID: ***TBD*** on printers built for the North American region.
- P4T printers with both an 802.11b/g WLAN radio and a Bluetooth radio running in the same unit are considered to be dual radio devices. Printers with this option will have an "A" as the seventh character of the PCC Code.

RP4T model printers cannot be configured with the 802.11g/ Bluetooth dual radio option.

Dual radio equipped P4T units will have a Bluetooth radio FCC ID "***T.B.D.***" and 802.11b Compact flash radio FCC ID "***T.B.D.***". The FCC ID numbers and other regulatory information for both radios are also located on the serial number label of printers built for the North American region.

Refer to Appendix D of this manual for more information on locating the Product Configuration Code.

Printers equipped with either of the 802.11b/g radio options allow wireless communication as a node within a WLAN and its wireless capabilities allow communications from any point within the WLAN's perimeter. P4T printers equipped with the dual Bluetooth/802.11b/g WLAN radio configuration can be linked to both a WLAN and a Bluetooth network simultaneously.

Methods of establishing communications to P4T Series printers will vary with each LAN application. General information on establishing WLAN communications can be found in either the "CPCL Programmers Manual" or the "Quick Start Guide for Mobile Wireless Printers" both available on-line at the Zebra Web site *www.zebra.com/manuals*. More information and LAN configuration utilities may also be found in Zebra's Label Vista™ program (version 2.8 and later). The latest version of Label Vista may be downloaded from Zebra's Web site.

Setting Up the Software

P4T Series printers use Zebra's CPCL Programming language which was designed for mobile printing applications. CPCL is fully described in the "CPCL Programmers Manual", available on-line at the Zebra Web site.

You can also use Label Vista™, Zebra's Windows based label creation program which uses a graphical interface to create and edit labels in the CPCL language.

All P4T Series printers support an interpreter for the ZPL II programming language. RP4T printers (with RFID encoding/reading capabilities) use the ZPL programming language's extensive set of RFID commands.

If you plan to use ZPL II , refer to the appropriate Programming Guides available on-line from Zebra's Web site.

If you have a printer with wireless capabilities, you can refer to the "Wireless Configuration Guide." also available on the Zebra web site.

If you choose to use a third party label preparation system, follow the installation instructions included in the package.

Radio Regulatory Information

Bluetooth ZBR4 Radio

Caution • Exposure to Radio Frequency Radiation.

The radiated output power of this internal Bluetooth radio is far below the FCC radio frequency exposure limits. The internal Bluetooth radio operates within guidelines found in radio frequency safety standards and recommendations. Do not use the printer in an unauthorized manner.

Note • The following section only applies when the TBD-ZBR4 Bluetooth Radio (TBD) is installed in a P4T Series printer. Unless specified elsewhere in this manual, the antenna used for this transmitter must not be co-located or must not operate in conjunction with any other antenna.

European Regulatory Information for the TBD-ZBR4 Bluetooth Radio

This device is intended for use in all EU and EFTA member states.
Europe – EU Declaration of Conformity
This device complies with the essential requirements of the R&TTE Directive 1999/5/EC. The following test methods have been applied in order to prove presumption of compliance with the R&TTE Directive 1999/5/EC:

- EN 60950: 2000 Safety of Information Technology Equipment
- EN 300 328-2 V1.4.1 (2003-04) Technical requirements for spread-spectrum radio equipment
- EN 301 489-1/-17 V1.4.1/1.2.1 (2002-08) EMC requirements for spread-spectrum radio equipment.

This device is a 2.4 GHz wireless LAN transceiver, intended for indoor home and office use in all EU and EFTA member states.

CE

Important Notice:
This device is a portable RF printer intended for commercial and industrial use in all EU and EFTA member states.

WLAN Module Using 802.11b/g Radio

The following section only applies when the 802.11b/g WLAN module (FCC ID: TBD) is installed in a P4T Series printer). Other than conditions specified elsewhere in this manual, only one of the radio options can be installed in the printer at one time and the antenna used for these transmitters must not be co-located or must not operate in conjunction with any other antenna.
P4T Series models have the FCC ID number on a label on the back of the unit.

Caution • Use of a P4T Series printer with the radio module marked with FCC ID: TBD meets the FCC requirements for radio frequency (RF) radiation exposure in the standard body worn configuration with no minimum separation. In this configuration, which applies whether the belt clip or shoulder strap is used, the face of the printer from which paper is transported is facing away from the user's body. The standard configuration must always be used when the printer is body worn.

The P4T Series printer with this radio option has been SAR tested. The maximum SAR value measured is: TBD W/Kg (1g average

European Regulatory Information for this Radio

AT	BE	CY	CZ	DK
EE	FI	~~FR~~	DE	GR
HU	IE	IT	LV	LT
LU	MT	NL	PL	PT
SK	SI	ES	SE	GB

Note: -Member states in the EU with restrictive use for this device are crossed out!
This device is also authorized for use in all EFTA member states (**CH, IS, LI, NO**)

CE 0336

Important Notice:
This device is a portable RF printer intended for commercial and industrial use in all EU and EFTA member states except in France where restrictive use applies

Section Continues

Europe – EU Declaration of Conformity

This device complies with the essential requirements of the R&TTE Directive 1999/5/EC. The following test methods have been applied in order to prove presumption of compliance with the R&TTE Directive 1999/5/EC:

- EN55022:1998

European Emissions Standard

- EN 60950: 2000

Safety of Information Technology Equipment

- EN 300 328-2 V1.2.1 (2001-12)

Technical requirements for spread-spectrum radio equipment

- EN 301 489-17 V1.2.1 (2002-08)

EMC requirements for spread-spectrum radio equipment.

This device is a 2.4 GHz wireless LAN transceiver, intended for indoor home and office use in all EU and EFTA member states, except in France where restrictive use applies.

The use of this frequency band in France is subject to restrictions. You may only use channels 10 and 11 (2457 and 2462 MHz) on French territory, except in those French departments as listed in the table below where channels 1-13 (2412-2472 MHz) may be used. For more information see http://www.anfr.fr/ and/or http://www.art-telecom.fr

01	Ain	36	Indre	69	Rhone
02	Aisne	37	Indre et Loire	70	Haute Saone
03	Allier	39	Jura	71	Saone et Loire
05	Hautes Alpes	41	Loir et Cher	72	Sarthe
08	Ardennes	42	Loire	75	Paris
09	Ariege	45	Loiret	77	Seine et Marne
10	Aube	50	Manche	78	Yvelines
11	Aude	54	Meurthe et Moselle	79	Deux Sievres
12	Aveyron	55	Meuse	82	Tarn et Garonne
16	Charente	57	Moselle	84	Vaucluse
19	Correze	58	Nievre	86	Vienne
2A	Corse Sud	59	Nord	88	Vosges
2B	Haute Corse	60	Oise	89	Yonne
21	Cote d'Or	61	Orne	90	Territoire de Belfort
24	Dordogne	63	Puy de Dome	91	Essonne
25	Doubs	64	Pyrenees Atlantique	92	Hauts de Seine
26	Drome	65	Hautes Pyrenees	93	Seine St Denis
27	Eure	66	Pyrenees Orientales	94	Val de Marne
32	Gers	67	Bas Rhin		
35	Ille et Vilaine	68	Haute Rhin		

Republic of China Regulatory Information for the 802.11b/g Radio

經型式認證合格之低功率射頻電機,非經許可,公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。低功率射頻電機之使用不得影響飛航安全及干擾合法通信;經發現有干擾現象時,應立即停用,並改善至無干擾時方得繼續使用。前項合法通信,指依電信法規定作業之無線電通信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

According to "Administrative Regulations on Low Power Radio Waves Radiated Devices" Without permission granted by the DGT, any company, enterprise, or user is not allowed to change frequency, enhance transmitting power or alter original characteristic as well as performance to a approved low power radio-frequency devices. The low power radio-frequency devices shall not influence aircraft security and interfere legal communications; If found, the user shall cease operating immediately until no interference is achieved. The said legal communications means radio communications is operated in compliance with the Telecommunications Act.

The low power radio-frequency devices must be susceptible with the interference from legal communications or ISM radio wave radiated devices.

Section Continues

802.11b/g and Bluetooth Co-located Radio Modules

*The following section only applies when the CF (Compact Flash) WLAN module (With FCC ID:**TBD**) and Bluetooth module (FCC ID:**TBD**) are installed in a P4T printer. This co-located radio configuration has demonstrated compliance to FCC regulations. The FCC ID numbers are on the serial number label on the back of the printer and can be read with the module installed.*

Caution • Use of a P4T printer with the radio module marked with both "FCC ID:TBD" and "TBD" meets the FCC requirements for radio frequency (RF) radiation exposure in the standard body worn configuration with no minimum separation. In this configuration, which applies whether the belt clip or shoulder strap is used, the face of the printer from which paper is transported is facing away from the user's body. The standard configuration must always be used when the printer is body worn.

P4T printers with this radio option have been SAR tested. The maximum SAR value measured was TBD W/kg averaged over 1 gram.

European Regulatory Information for the Compact Flash 802.11b Radio and Bluetooth Co-located Radio Modules

AT	BE	CY	CZ	DK
EE	FI	~~FR~~	DE	GR
HU	IE	IT	LV	LT
LU	MT	NL	PL	PT
SK	SI	ES	SE	GB

Note: -Member states in the EU with restrictive use for this device are crossed out!
This device is also authorized for use in all EFTA member states (**CH, IS, LI, NO**)

Europe – EU Declaration of Conformity

This device complies with the essential requirements of the R&TTE Directive 1999/5/EC. The following test methods have been applied in order to prove presumption of compliance with the R&TTE Directive 1999/5/EC:

- EN 60950: 2000

Safety of Information Technology Equipment

- EN 300 328-2 V1.2.1 (2001-12)

Technical requirements for spread-spectrum radio equipment

- EN 301 489-17 V1.2.1 (2002-08)

EMC requirements for spread-spectrum radio equipment.
This device is a 2.4 GHz wireless LAN transceiver, intended for indoor home and office use in all EU and EFTA member states, except in France where restrictive use applies.
The use of this frequency band in France is subject to restrictions. You may only use channels 10 and 11 (2457 and 2462 MHz) on French territory, except in those French departments as listed in the table below where channels 1-13 (2412-2472 MHz) may be used. For more information see http://www.anfr.fr/ and/or http://www.art-telecom.fr

01	Ain	36	Indre	69	Rhone
02	Aisne	37	Indre et Loire	70	Haute Saone
03	Allier	39	Jura	71	Saone et Loire
05	Hautes Alpes	41	Loir et Cher	72	Sarthe
08	Ardennes	42	Loire	75	Paris
09	Ariege	45	Loiret	77	Seine et Marne
10	Aube	50	Manche	78	Yvelines
11	Aude	54	Meurthe et Moselle	79	Deux Sievres
12	Aveyron	55	Meuse	82	Tarn et Garonne
16	Charente	57	Moselle	84	Vaucluse
19	Correze	58	Nievre	86	Vienne
2A	Corse Sud	59	Nord	88	Vosges
2B	Haute Corse	60	Oise	89	Yonne
21	Cote d'Or	61	Orne	90	Territoire de Belfort
24	Dordogne	63	Puy de Dome	91	Essonne
25	Doubs	64	Pyrenees Atlantique	92	Hauts de Seine
26	Drome	65	Hautes Pyrenees	93	Seine St Denis
27	Eure	66	Pyrenees Orientales	94	Val de Marne
32	Gers	67	Bas Rhin		
35	Ille et Vilaine	68	Haute Rhin		

Section Continues

RFID Encoder

The following section only applies when the RFID encoder is installed in an RP4T printer. The RFID encoder may be installed in conjunction with either the Bluetooth or 802.11g radio options detailed previously, but may not be installed with the Bluetooth/802.11g dual radio option.

P4T Series printers will have the fifth character of the Product Configuration Code (PCC) per the following table:

RFID option	PCC digit "4"	Printer Model
No RFID	0	P4T
US	1	RP4T
EU	2	RP4T
Japan	3	RP4T
China	4	RP4T
Korea	5	RP4T

Units built for the North American region will also have the (FCC ID: ***TBD***) on a label on the back of the unit.

Caution • Use of a RP4T printer with the RFID Encoder marked with FCC ID: TBD meets the FCC requirements for radio frequency (RF) radiation exposure in the standard body worn configuration with no minimum separation. In this configuration the face of the printer from which paper is transported is facing away from the user's body. The standard configuration must always be used when the printer is body worn.

The RP4T printer with this radio option has been SAR tested. The maximum SAR value measured is: TBD W/Kg (1g average