

PM4i

Mid-Range Printer



User's Manual

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This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (www.openssl.org).

This product includes cryptographic software written by Eric Young (EAY@cryptsoft.com).

This product uses Regex++, Index software during its operational phases. The owner of Regex++ has granted use of the software to anyone provided such use is accompanied by the following copyright and permission notice:

Regex++, Index. (Version 3.31, 16th Dec 2001)

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Document Change Record

This page records changes to this document. The document was previously released as 934-020-001.

Version Number	Date	Description of Change
002	11/2010	<ul style="list-style-type: none">• Added methods to verify a USB mass storage device is supported by the printer.• Expanded the Upgrading Firmware procedure.
001	9/2009	<ul style="list-style-type: none">• Combined the Fingerprint (P/N 934-022-001) and IPL (P/N 934-020-001) versions of the user's manuals.• Incorporated the <i>EasyLAN User's Guide</i> (P/N 1-960590-03) and the <i>EasyCoder Printer RFID User's Guide</i> (P/N 934-008-002) into this manual.• Removed configuration information from the <i>EasyLAN Ethernet Interface Kit Installation Instructions</i> (P/N 1-960589-01) and the <i>EasyLAN Wireless Interface Kit Installation Instructions</i> (P/N 1-960610-04) and added it to this manual.• Added information to support the latest firmware release, including:<ul style="list-style-type: none">• USB host support• 400 dpi support• New keypad• Ethernet interface• Monotype font support• Multiple network interfaces• Multiple firmware support• IPv6 functionality• Multiple NET connections

Contents

Before You Begin.....	xi
Safety Information.....	xi
Global Services and Support.....	xi
Warranty Information.....	xi
Web Support.....	xii
Telephone Support.....	xii
Service Location Support.....	xii
Who Should Read This Manual.....	xiii
Related Documents.....	xiii
Patent Information.....	xiv

1 Using the Printer 1

Learning About the Printer.....	2
What's New?.....	2
Identifying the Parts of the Printer.....	2
Selecting a Printer Language.....	3
Understanding the Control Panel.....	5
Understanding the Buttons.....	6
Understanding the LEDs.....	6
Understanding the Screen.....	7
Understanding the Printer Sounds.....	8
Loading Media.....	9
Loading Media for Tear-Off Printing.....	9
Loading Media for Peel-Off Printing.....	15
Loading Media for Cut-Off Printing.....	23
Loading Media From an External Supply.....	29
Using the Rotating Media Supply Hub.....	30
Loading Ribbon.....	31
Printing a Test Label.....	37
Creating and Printing Labels.....	39
Printing on RFID Media.....	39

2	Connecting the Printer	41
	Connecting the Printer to Your PC	42
	Connecting the Printer to a PC Through the Serial Port	42
	Connecting the Printer to a PC Through the USB Device Port	43
	Connecting the Printer to a PC Through the IEEE 1284 Port	43
	Connecting the Printer to Your Network	44
	Setting Up Ethernet Communications	44
	Manually Configuring IP Settings	46
	Setting Up 802.11 Radio Communications	47
	Configuring 802.11 Wireless Security Using Fingerprint	50
	Configuring 802.11 Wireless Security Using IPL	53
	Connecting Peripherals to the USB Host Port	57
	Using a USB Mass Storage Device	57
	Connecting a Keyboard to the USB Host Port	58
	Connecting a Bar Code Scanner to the USB Host Port	58
	Connecting a USB Hub to the USB Host Port	59
3	Configuring the Printer	61
	Configuring Your Printer	62
	Configuring Your Printer From the Screen	62
	Configuring Your Printer From the Printer Home Page	64
	Configuring Communications Settings	65
	Configuring Media Settings	65
	Configuring Print Engine Settings (Fingerprint Only)	65
	Configuring Web Shell Settings	65
	Configuring Alerts	67
	Configuring General Network Settings	68
	Configuring Mail Settings	69
	Configuring SNMP Settings	70
	Configuring TCP/IP Settings	71
	Configuring the Network Type	73
	Configuring Avalanche Settings	73
	Configuring Wireless LAN Settings	74
	Configuring 802.1x Settings	75
	Configuring SmartSystems Settings	77
	Configuring Your Printer With PrintSet	77
	Configuring Your Printer With Commands Sent From Your PC	78
	Configuring Your Printer Using SmartSystems Foundation	78
	Choosing an Ethernet or Wireless Network	79

Choosing the Network Type From the Printer Screen	80
Choosing the Network Type Using Printer Commands.....	80
Upgrading Firmware	81
Downloading Fonts and Graphics	83
4 Troubleshooting and Maintaining the Printer	85
Troubleshooting the Printer	86
Contacting Product Support.....	86
Understanding Error Messages.....	87
Troubleshooting Printer Problems and Finding Solutions.....	91
Resetting the Printer	96
Adjusting the Printer	97
Adjusting the Pressure Arm.....	98
Adjusting the Label Stop Sensor.....	99
Adjusting the Printhead Pressure.....	102
Adjusting the Ribbon Break Shaft	104
Adjusting the Label Taken Sensor	105
Maintaining the Printer	106
Cleaning the Printer.....	106
Cleaning the Exterior of the Printer.....	107
Cleaning the Media Guides	107
Cleaning the Printhead.....	109
Replacing the Printhead.....	111
A Specifications	113
Specifications.....	114
Interfaces.....	116
RS-232 Serial Interface	116
USB Interface.....	117
USB Host Interface.....	118
Ethernet Interface.....	118
Parallel IEEE 1284 Interface	119
Media Specifications	120
Accessories for the Printer	129

B	Default Settings	133
	Default Configuration	134
	Fingerprint Default Configuration	134
	IPL Default Configuration	137
C	Fingerprint and IPL Setup Menus	141
	Fingerprint Setup Menus	142
	Fingerprint Main Level Setup Menu	142
	Fingerprint Ser-Com,UART1 Menu	142
	Fingerprint Net-Com,NET1 Menu	142
	Fingerprint COM Menu	143
	Fingerprint Network Menu	143
	Fingerprint RFID Menu	143
	Fingerprint Feedadj Menu	143
	Fingerprint Media Menu	144
	Fingerprint Print Defs Menu	145
	IPL Setup Menus	146
	IPL Main Level Setup Menu	146
	IPL Ser-Com Menu	146
	IPL COM Menu	146
	IPL Network Menu	147
	IPL RFID Menu	147
	IPL Test/Service Menu	147
	IPL Media Menu	148
	IPL Configuration Menu	148
D	Advanced Configuration	149
	Printer File System (Fingerprint)	150
	Device Tree Structure	150
	Devices and Directories	150
	Customizing the Printer Home Page	152
	Web Style Guide Files	153
	Content of a Web Style Guide File	153
	Required Environment Variables	153
	Optional Environment Variables	154
	x-www-url-Encoding Syntax Rules	155
	Memory and Storage	156
	Creating a Web Style Guide File	156

| Index 157

Contents

Before You Begin

This section provides you with safety information, technical support information, and sources for additional product information.

Safety Information

Your safety is extremely important. Read and follow all warnings and cautions in this document before handling and operating Intermec equipment. You can be seriously injured, and equipment and data can be damaged if you do not follow the safety warnings and cautions.

This section explains how to identify and understand warnings, cautions, and notes that are in this document.



A warning alerts you of an operating procedure, practice, condition, or statement that must be strictly observed to avoid death or serious injury to the persons working on the equipment.



A caution alerts you to an operating procedure, practice, condition, or statement that must be strictly observed to prevent equipment damage or destruction, or corruption or loss of data.



Note: Notes either provide extra information about a topic or contain special instructions for handling a particular condition or set of circumstances.

Global Services and Support

Warranty Information

To understand the warranty for your Intermec product, visit the Intermec web site at www.intermec.com and click **Support > Returns and Repairs > Warranty**.

Disclaimer of warranties: The sample code included in this document is presented for reference only. The code does not necessarily represent complete, tested programs. The code is provided “as is with all faults.” All warranties are expressly disclaimed, including the implied warranties of merchantability and fitness for a particular purpose.

Web Support

Visit the Intermec web site at www.intermec.com to download our current manuals (in PDF).

Visit the Intermec technical knowledge base (Knowledge Central) at www.intermec.com and click **Support > Knowledge Central** to review technical information or to request technical support for your Intermec product.

Telephone Support

In the U.S.A. and Canada, call **1-800-755-5505**.

Outside the U.S.A. and Canada, contact your local Intermec representative. To search for your local representative, from the Intermec web site, click **About Us > Contact Us**.

Service Location Support

For the most current listing of service locations, go to www.intermec.com and click **Support > Returns and Repairs > Repair Locations**.

For technical support in South Korea, use the after service locations listed below:

AWOO Systems

102-1304 SK Ventium

522 Dangjung-dong

Gunpo-si, Gyeonggi-do Korea, South 435-776

Contact: Mr. Sinbum Kang

Telephone: +82-31-436-1191

E-mail: mjyun@awoo.co.kr

IN Information System PTD LTD
6th Floor
Daegu Venture Center Bldg 95
Shinchun 3 Dong
Donggu, Daegu City, Korea
E-mail: jmyou@idif.co.kr or korlim@gw.idif.co.kr

Who Should Read This Manual

This manual is for the person who is responsible for installing, configuring, and maintaining the PM4i.

This manual provides you with information about the features of the PM4i, and how to install, configure, operate, maintain, and troubleshoot it.

Before you work with the PM4i, you should be familiar with your network and general networking terms, such as IP address.

Related Documents

Here are some related Intermec documents you might find useful:

- *Intermec Fingerprint Developer's Guide*
- *Intermec Fingerprint Command Reference Manual*
- *Intermec Printer Language (IPL) Developer's Guide*
- *Intermec Printer Language (IPL) Command Reference Manual*
- *DSim Programmer's Guide*
- *ZSim Programmer's Guide*

The Intermec web site at www.intermec.com contains our documents (as .pdf files) that you can download for free.

To download documents

- 1** Visit the Intermec web site at www.intermec.com.
- 2** Click the **Products** tab.
- 3** Using the **Products** menu, navigate to your product page. For example, to find the CN3 computer product page, click **Computers > Handheld Computers > CN3**.
- 4** Click the **Manuals** tab.

Before You Begin

- 5 If your product does not have its own product page, click **Support** > **Manuals**. Use the **Product Category** field, the **Product Family** field, and the **Product** field to help you locate the documentation for your product.

Patent Information

Product is covered by one or more patents. There may be other U.S. and foreign patents pending.

1

Using the Printer

Use this chapter to familiarize yourself with the PM4i printer. This chapter contains these sections:

- **Learning About the Printer**
- **Loading Media**
- **Loading Ribbon**
- **Printing a Test Label**
- **Creating and Printing Labels**
- **Printing on RFID Media**

Learning About the Printer

The PM4i is a rugged label printer that includes integrated USB, RS-232, and Ethernet interfaces. The PM4i also operates as a “smart client,” eliminating the need for a host PC, while retaining the ability to:

- operate additional hardware, such as scanners and other printers.
- access information from a network host.
- change, as needed, with the application for additional functionality.

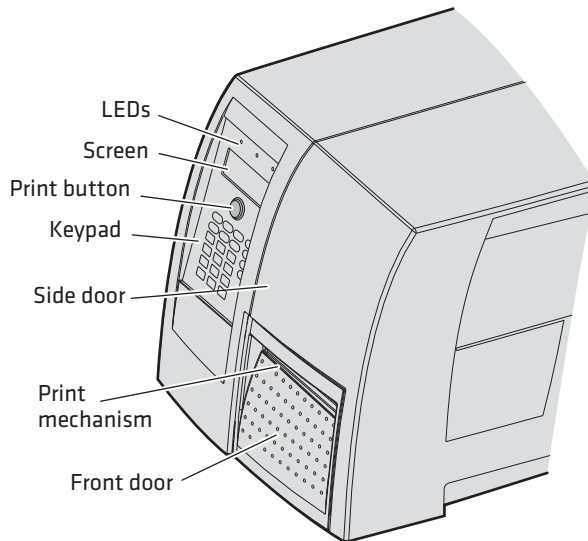
What’s New?

This version of the user’s manual includes information to support these features:

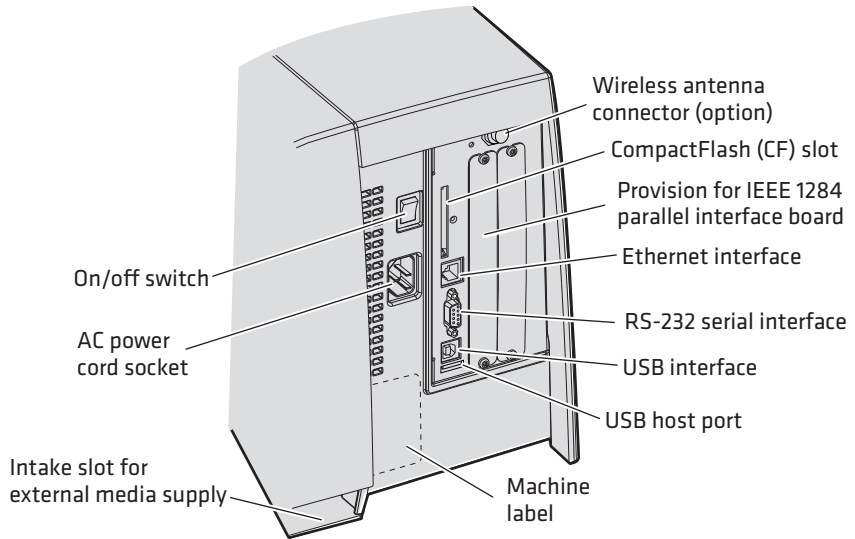
- Verify a USB mass storage device is supported by the printer.
- Using a USB mass storage device to upgrade firmware.

Identifying the Parts of the Printer

Use this section to familiarize yourself with the parts of the printer.



Front View



Back View

Selecting a Printer Language

Your printer comes loaded with different printer command languages. The first time you start your printer, you are prompted to select a printer language. The language you select automatically runs each time you turn on your printer.

Printer Language Descriptions

Printer Language	Description
Fingerprint	Intermec Fingerprint is a BASIC-inspired, printer-resident programming language you use to design label formats and write custom printer application software.
Intermec Printer Language (IPL)	IPL is an easy-to-use programming language that lets you design, download, and modify formats.
ZSim	ZSim is a Zebra™ interpreter program that interprets ZPL II or later programs. To setup, configure, and use ZSim, see the <i>ZSim Programmer's Guide</i> .
DSim	DSim is a Datamax™ simulation program that runs Datamax programs. To setup, configure, and use DSim, see the <i>DSim Programmer's Guide</i> .

To select your printer language

- Press the key that corresponds to the printer language you want to run on your PM4i.



Startup Screen: This screen appears the first time you turn on your PM4i.

The language you select automatically runs each time you turn on your printer.

Once your printer is running a particular printer language, you can change the printer language from the Setup menu. The way that you access the command language menu depends on which language you are currently running.

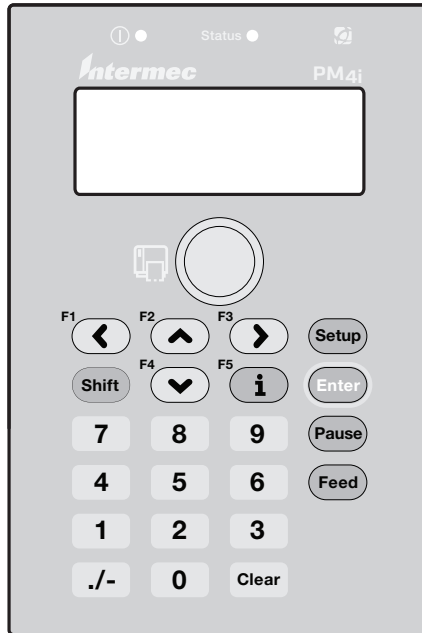
Changing the Printer Language From the Setup Menu

Language	How to Access the Command Language Menu
IPL	<ul style="list-style-type: none">• Go to SETUP > TEST/SERVICE > CMD LANGUAGE.
Fingerprint or Direct Protocol	<ul style="list-style-type: none">• Go to SETUP > PRINT DEFS > CMD LANGUAGE.
ZSim or DSIM	<ol style="list-style-type: none">1 Press Setup.2 Enter the Fingerprint password: 8311.3 Press Enter.4 Go to SETUP > PRINT DEFS > CMD LANGUAGE.

You can also change the printer language from the printer’s home page. For help, see **“Configuring Your Printer From the Printer Home Page” on page 64.**

Understanding the Control Panel

The control panel provides buttons, LEDs, and a liquid crystal display (LCD) for you to interact with the printer.















PM4i Control Panel: Use this illustration to familiarize yourself with the buttons and lights on the PM4i.

Understanding the Buttons

Use the buttons and button combinations to perform functions on the PM4i. If you are using Fingerprint applications, you can assign custom functions to each button or disable individual buttons. For help, see the *Intermec Fingerprint Developer’s Guide*.

Understanding the Function Buttons

Button Name	Button	Description
Print		Feeds or pauses a print job. Reprints the last printed label
Pause		Pauses and resumes printing.
Pause + Shift	 + 	Stops a Fingerprint application.
Setup		Enters Setup mode.
Feed		Feeds a blank label or other media type.
Feed + Shift	 + 	Perform a Testfeed (feed a blank label and adjust the media feed).
i		Display error messages, Ready-to-Work status, and communication channel information.
< >	 or 	After you press  , use these buttons to scroll through error and information messages.

Understanding the LEDs

The PM4i has three LEDs: Power, Status, and the Intermec Ready-to-Work® indicator.

Understanding the LEDs

LED	State	Description
Power	Solid green	Power is on.
Status	Solid green	The printer is ready.
	Flashing green	The printer is communicating.
	Solid red	There is a printer error. For more information, see “Troubleshooting the Printer” on page 86 .

Understanding the LEDs (continued)

LED	State	Description
Intermec Ready-to-Work Indicator	Off	The Intermec Ready-to-Work Indicator is off when the printer: <ul style="list-style-type: none"> • is in Setup mode (you pressed Setup on the keypad). • is in Information mode (after you press the i button). • firmware is being upgraded.
	Solid blue	The printer is powered on and operating.
	Blinking blue	A blinking light indicates one of these conditions: <ul style="list-style-type: none"> • The printer is initializing. • The printer is waiting for external resources. • There is a printer error that requires you to perform an action. For more information, see “Troubleshooting the Printer” on page 86.

Understanding the Screen

The screen provides background illumination and displays two lines of text, each with 16 characters. The screen displays error messages, as well as useful information when you start, setup, and upgrade your printer.

The Intermec Fingerprint programming language and Intermec Direct Protocol allow custom-made messages to be composed and displayed according to the requirements of the application.

Understanding the Printer Sounds

The PM4i plays sounds in response to certain actions. The sounds that are played depend on which version of firmware you are running:

- If you are running IPL:
 - the printer beeps when you press a button.
 - the printer beeps continuously if the printer is out of media or ribbon.
 - you can use an IPL command to create an audio alarm. For help, see the *Intermec Printer Language (IPL) Developer's Guide*.
- If you are running Fingerprint:
 - the printer beeps when you press a button. You can also use a Fingerprint command to turn off this beep.
 - the printer beeps when an error occurs.
 - you can use Fingerprint commands to specify the frequency and duration of beeps for different conditions or even make the printer play simple melodies. For help, see the *Intermec Fingerprint Developer's Guide*.

Loading Media

The PM4i can print on labels, tickets, tags, and continuous stock in various forms. The method you use to load media depends on how you want the printer to operate. The PM4i can print in these modes:

- Tear-off (straight-through)
- Peel-off (self-strip)
- Cut-off
- External supply
- RFID

If you are using Fingerprint, use the **Feed** key to load the same type of media. If you change the media type, or if the printer does not feed the media properly, simultaneously press the **Shift** and **Feed** keys to perform a “testfeed.”

If you are using IPL, save the label with the sensitivity number attached to the media roll. You need this number to set the media sensitivity.

Loading Media for Tear-Off Printing

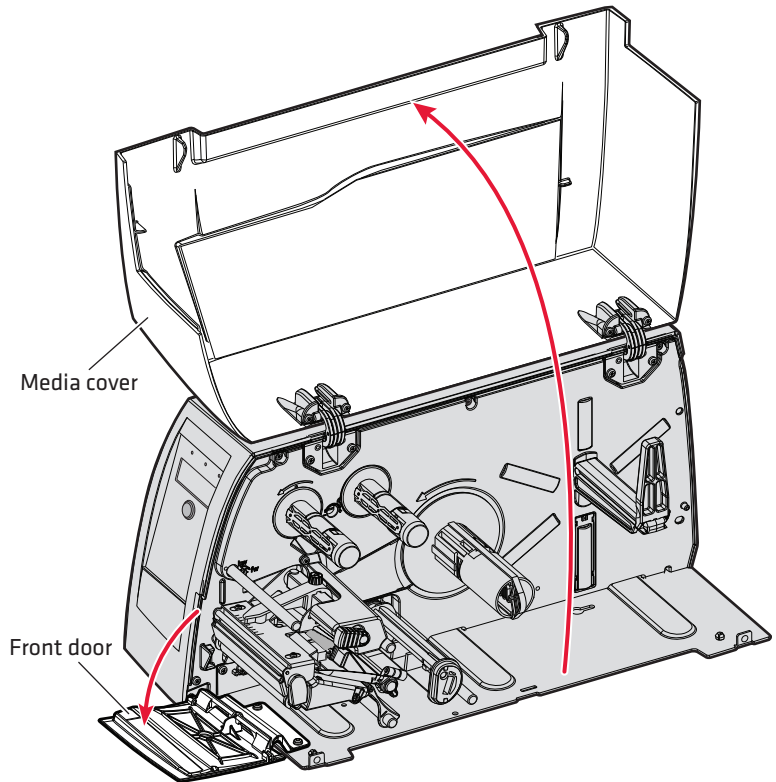
In tear-off, or straight-through, printing mode, you manually tear off the media against the printer’s tear bar. In tear-off mode, use these types of media:

- Non-adhesive continuous stock
- Self-adhesive continuous stock with liner
- Self-adhesive labels with liner
- Tickets with gaps (gap stock), with or without perforations
- Tickets with black marks (mark stock), with or without perforations

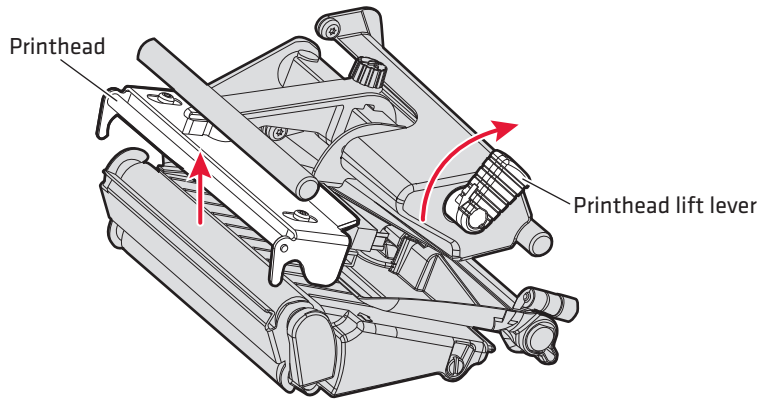
You can also install an optional label taken sensor so that the next copy in the batch is not printed until the current copy is removed. For more information, see **“Accessories for the Printer” on page 129**.

To load media for tear-off printing

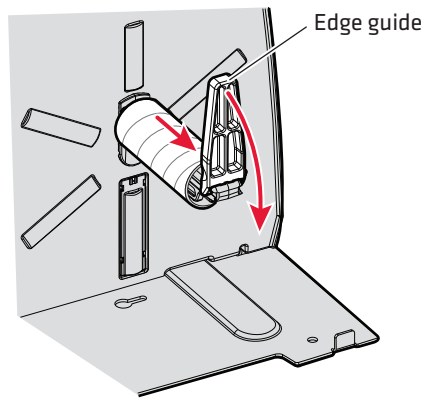
- 1 Open the front door and media cover.



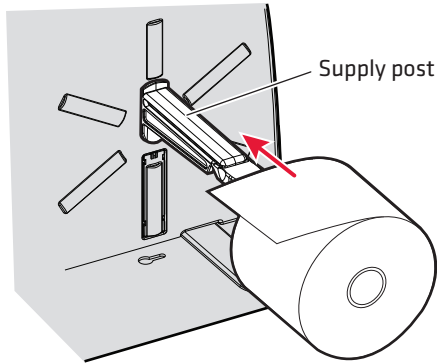
- 2** To raise the printhead, turn the printhead lift lever clockwise.



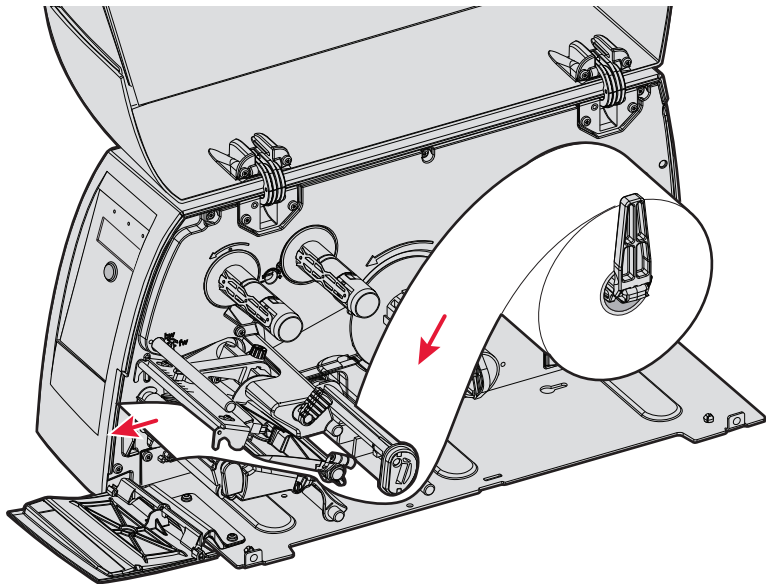
- 3** Pull out the edge guide as far as it goes and fold it down to a horizontal position. Remove any empty core from the media supply roll post.



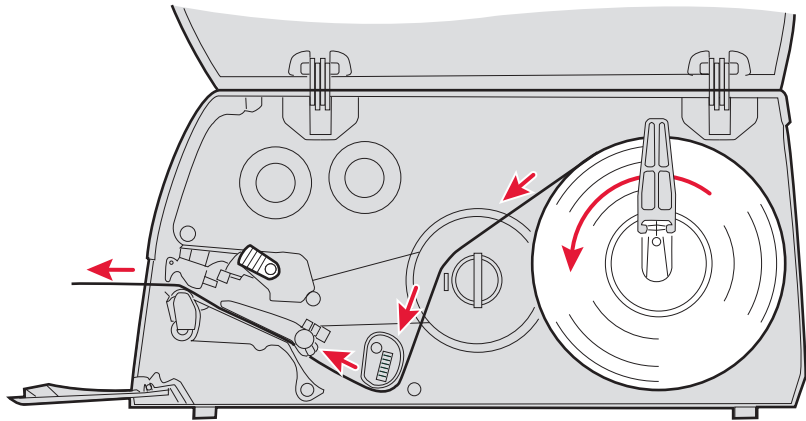
- 4 Fit a new roll of media on the supply post. Fold up and adjust the edge guide so the roll becomes flush with the center section.



- 5 Route the media through the print mechanism and push it toward the center section as far as it goes.

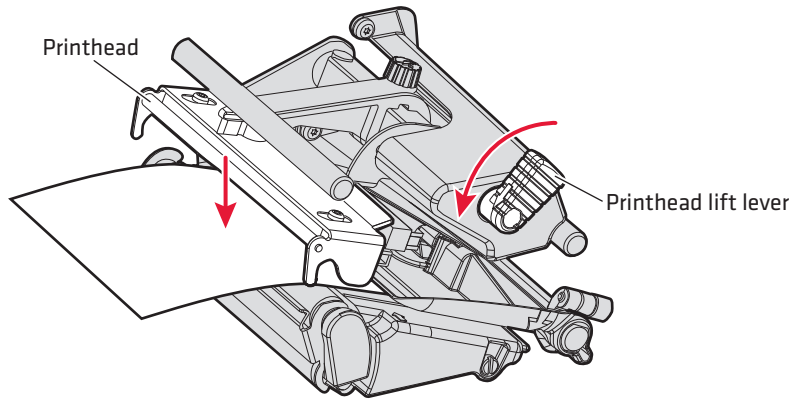


Route the Media

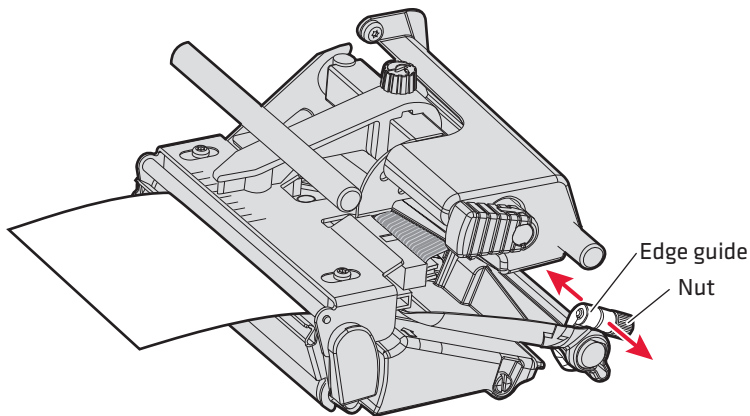


Media Path

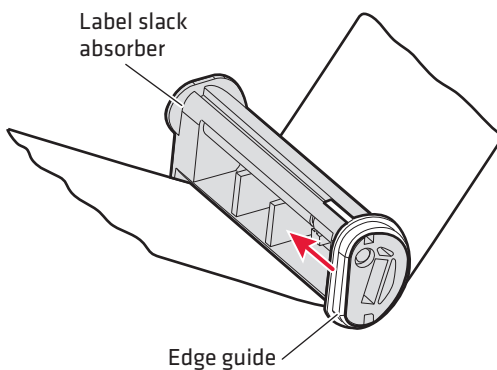
- 6 To lower the printhead, turn the printhead lift lever counter-clockwise.




- 7 Adjust the position of the green edge guide so the media is guided with a minimum of play. Lock with the nut.



- 8 Adjust the position of the edge guide on the label slack absorber according to the width of the media.



- 9 Close the front door and media cover, making sure that the media runs through the slot in the front door.
- 10 Press the  button to advance the media and adjust the media feed. Tear off the media by pulling it downwards.

Loading Media for Peel-Off Printing

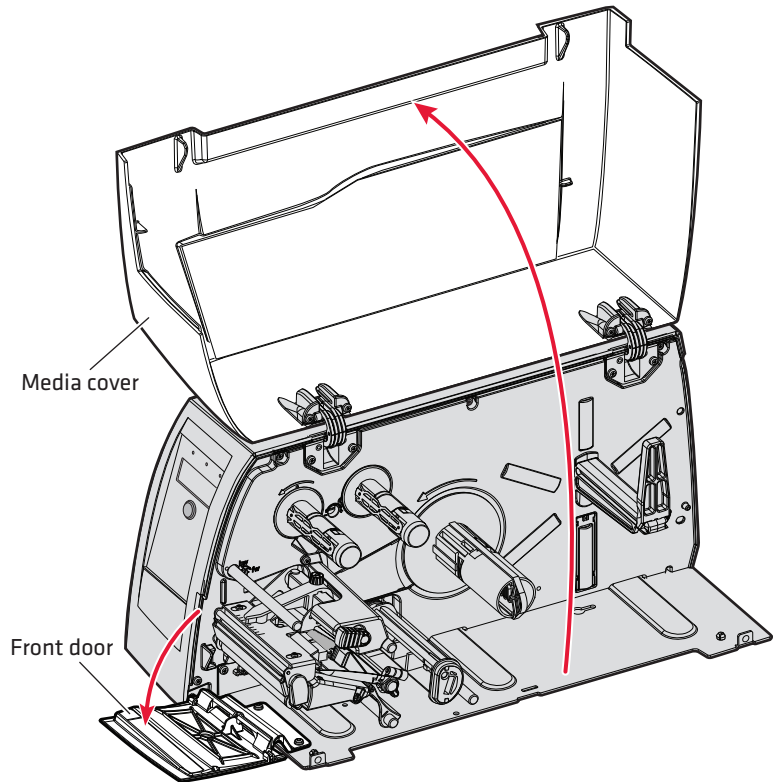
In peel-off, or self-strip mode, self-adhesive labels are separated from the liner immediately after printing. Peel-off printing:

- can only be used for self-adhesive labels with liner.
- requires the optional peel-off assembly.
- cannot be performed with the optional fanfold guide installed.
- sets high demands on the media, such as label stiffness, release characteristics of the adhesive and liner, and resistance against electrostatic charging. Consult your media supplier or test the media to make sure that it is suitable for your application.
- may limit registration performance when printing on labels that have a label length of less than 25 mm (1 in).

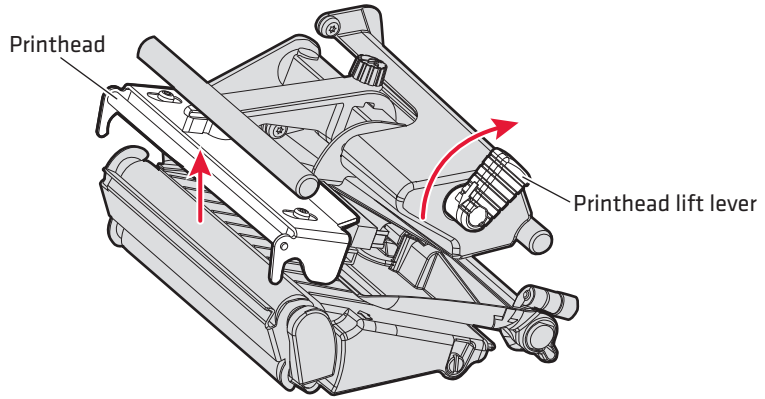
You can also install an optional label taken sensor so that the next copy in the batch is not printed until the current copy is removed. For more information, see **“Accessories for the Printer” on page 129**.

To load media for peel-off printing

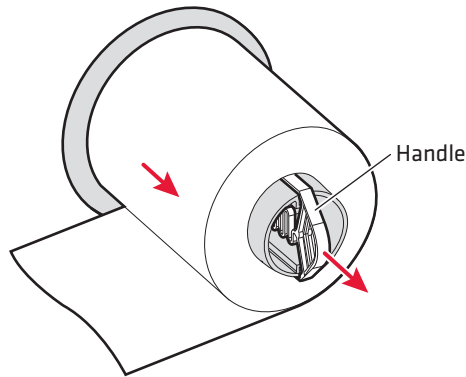
- 1 Open the front door and media cover.



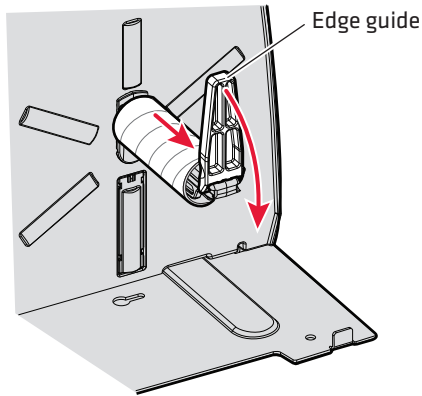
- 2 Turn the printhead lift lever clockwise to raise the printhead.



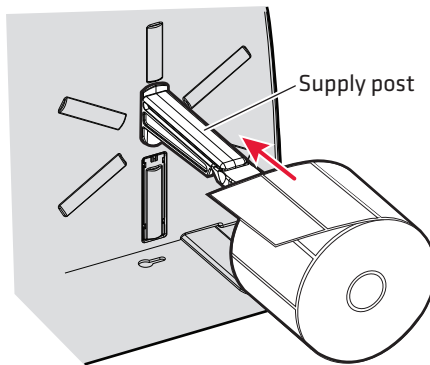
- 3 Pull out the handle to collapse the takeup hub, then remove any liner.



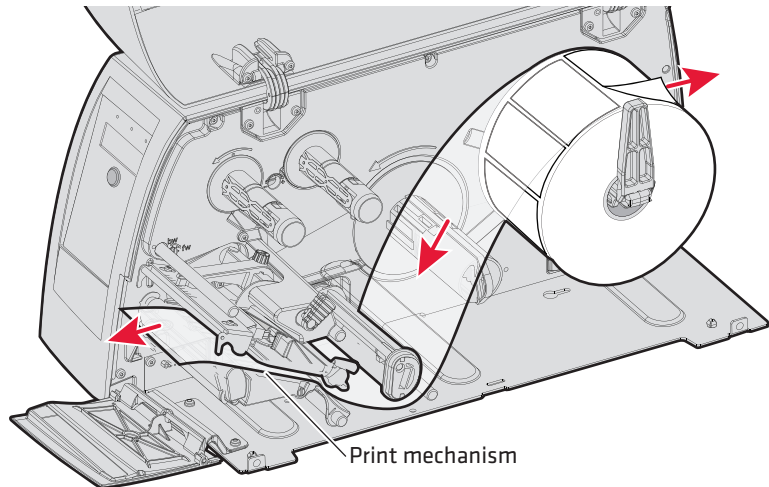
- 4** Pull out the edge guide as far as it goes and fold it down to as far as it goes and fold it down to a horizontal position. Remove any empty core from the media supply roll post.



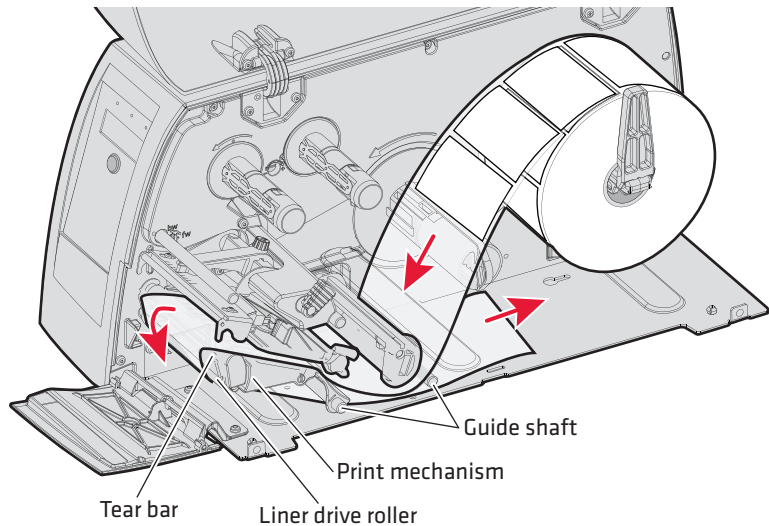
- 5** Fit a new roll of media on the supply post. Fold up and adjust the edge guide so the roll becomes flush with the center section.



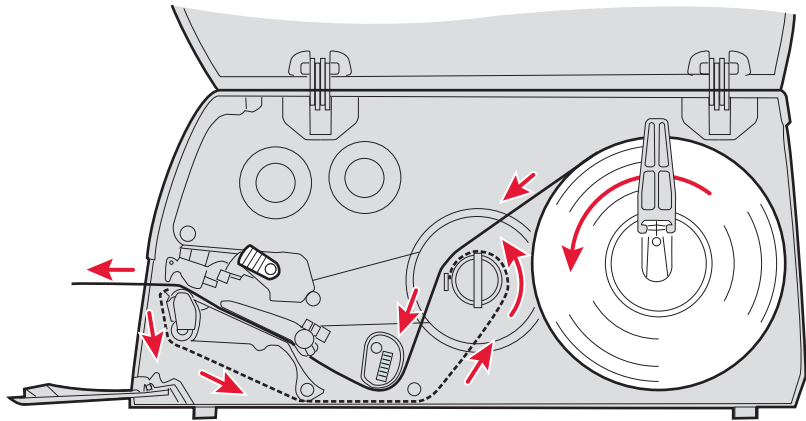
- 6 Remove labels from the first 50 cm (20 in) of the liner. Route the liner through the print mechanism and push it inward toward the center section as far as it goes.



- 7 Route the liner around the tear bar and the liner drive roller and back under the print mechanism and guide shafts.

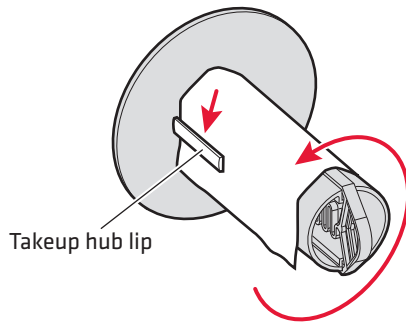


Route the Liner

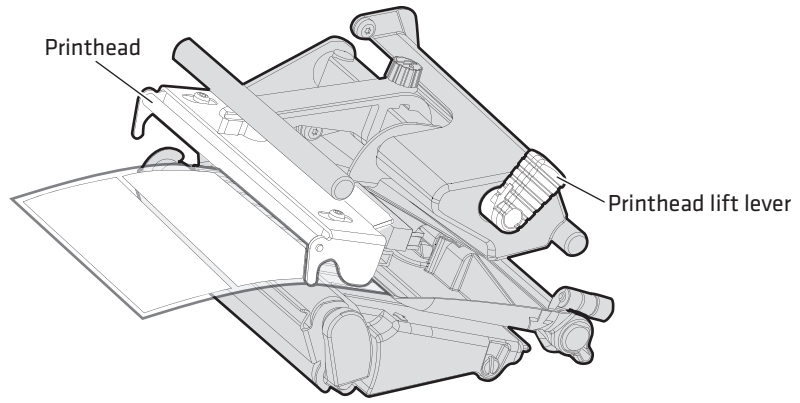


Media and Liner Path

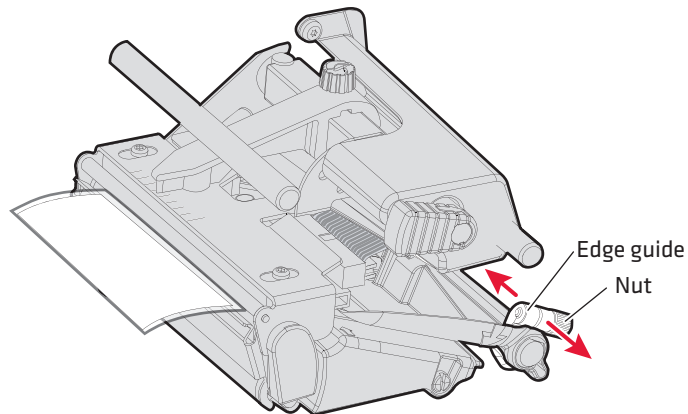
- 8** Insert the start of the liner under the lip of the takeup hub, then rotate the hub counterclockwise a few turns to wind up some of the liner.



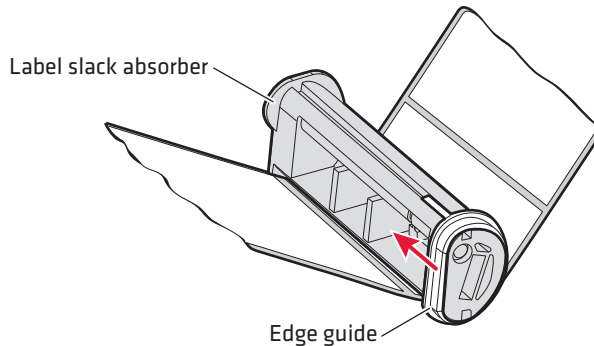
- 9 Turn the printhead lift lever counterclockwise to engage the printhead.



- 10 Adjust the position of the green edge guide so the media is guided with a minimum of play. Lock with the nut.



- 11** Adjust the position of the edge guide on the label slack absorber according to the width of the media.



- 12** Close the peel-off assembly and media cover.
- 13** Adjust the Label Taken Sensor (LTS) so that the media feeds correctly.
 - a** On your printer's keypad, press **Setup** to enter the Setup menu.
 - b** If you are using Fingerprint, go to **PRINT DEFS > LTS > LTS ADJUST**.
If you are using IPL, go to **CONFIGURATION > LTS CALIBRATION** and press **Enter**.
 - c** Press **Enter** to self-calibrate the LTS.
 - d** When you are prompted, remove your test label.
 - e** Press **Enter**.
- 14** Your printer is configured for Peel-Off mode. Press **Setup** to exit the Setup menu.

Loading Media for Cut-Off Printing

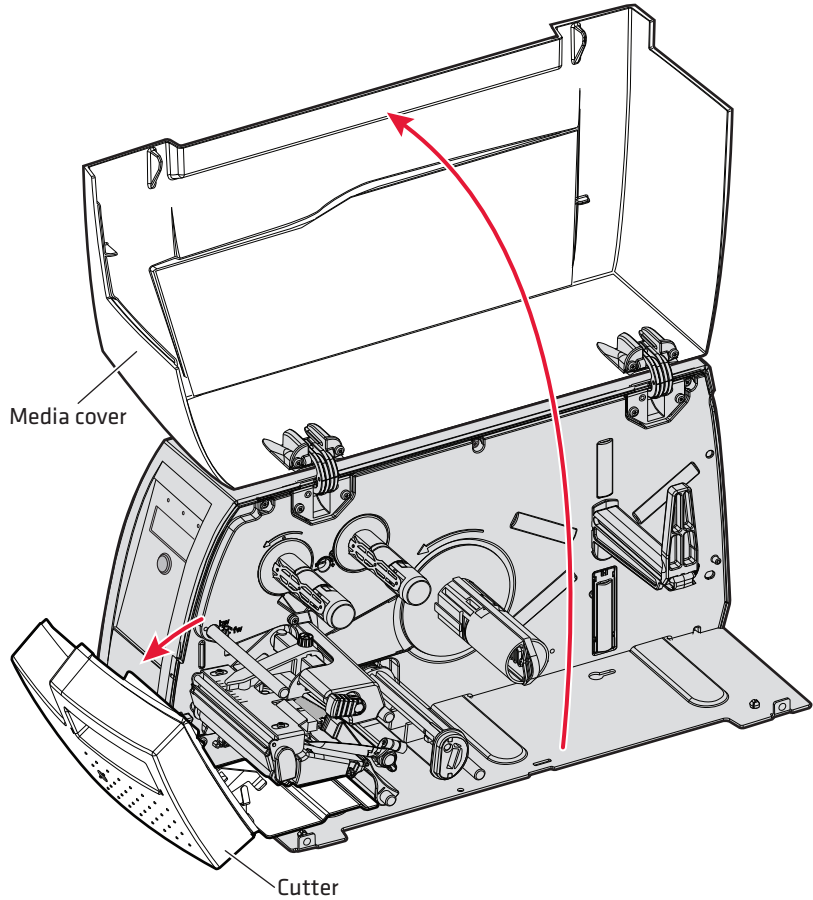
You can install the automatic paper cutter option to cut off the media. Cut-off printing can be used for non-adhesive continuous stock and self-adhesive labels with liner (cut only liner between labels). The cutter option:

- is designed for paper-based media with a thickness between 60 and 175 μm , roughly corresponding to a paper weight of 60 to 175 grams/m² (basis weight 40 to 120 lb).
- should not be used to cut through labels, because the adhesive sticks to the shears, which can damage the cutter.
- is held by a latch inside the media compartment and can be tilted forward to facilitate loading media.
- has a switch that prevents it from operating when it is in the open position.
- can be fitted with an optional tray for collecting cutoff labels.
- requires the front door to be removed.

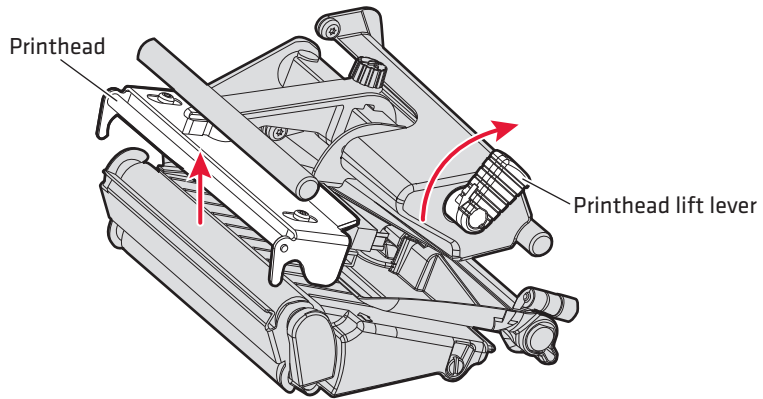
You can also install an optional label taken sensor so that the next copy in the batch is not printed until the current copy is removed. For more information, see **“Accessories for the Printer” on page 129**.

To load media for cut-off printing

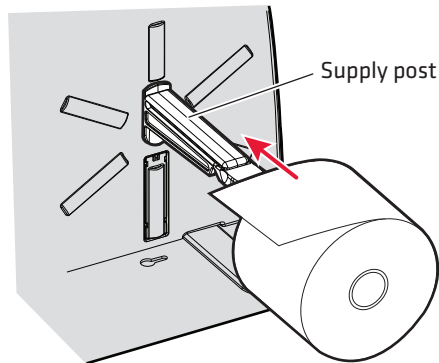
- 1 Open the cutter and the media cover.



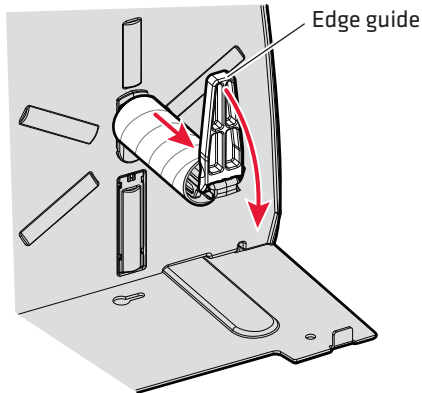
- 2 Turn the printhead lift lever clockwise to raise the printhead.



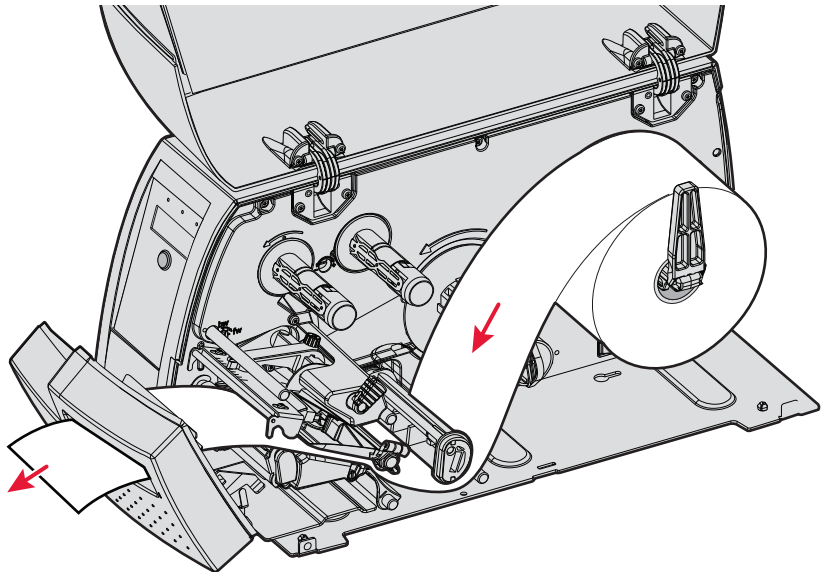
- 3 Pull out the edge guide as far as it goes and fold it down to a horizontal position. Remove any empty core from the media supply roll post.



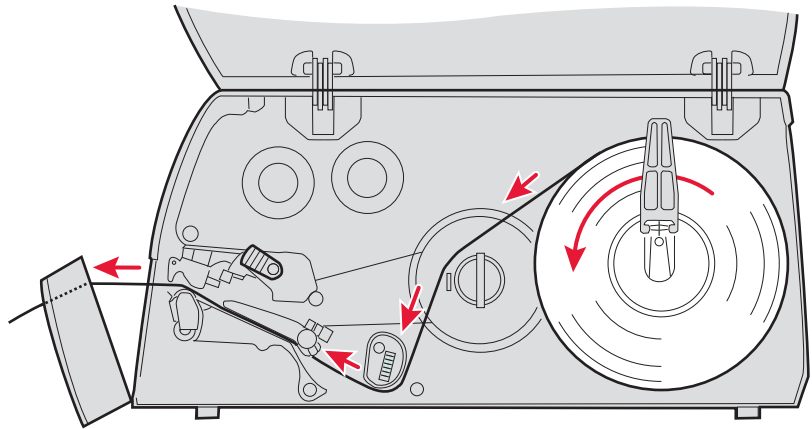
- 4 Fit a new roll of media on the supply post. Fold up and adjust the edge guide so the roll becomes flush with the center section.



- 5 Route the media through the print mechanism and cutter. Then, push it towards the center section as far as it will go.

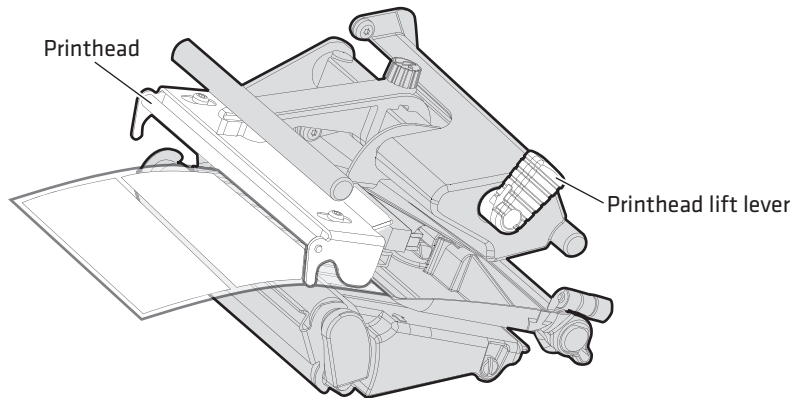


Route the Media

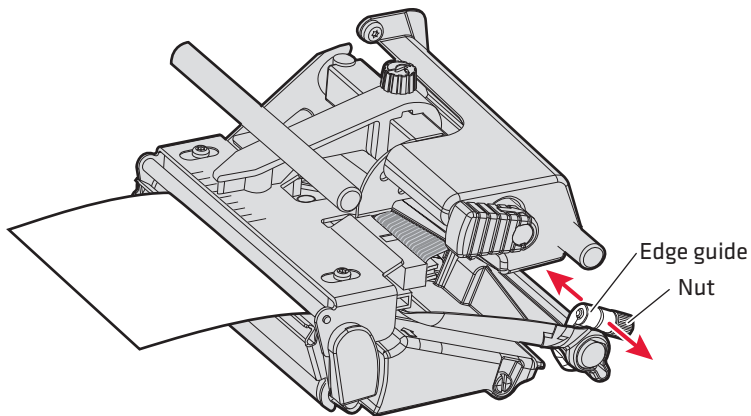


Media Path

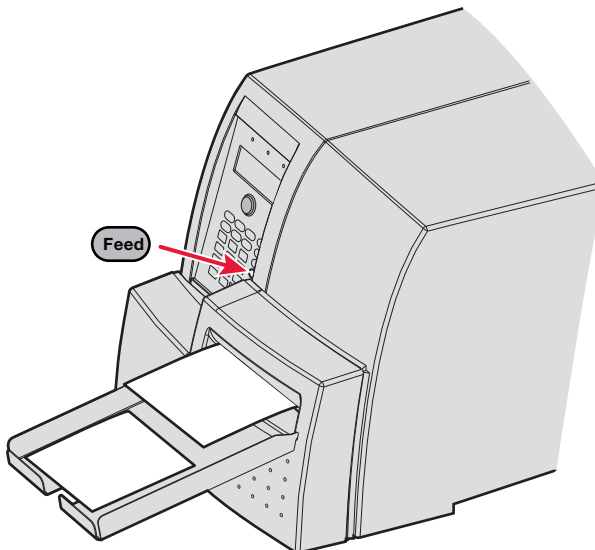
- 6 Turn the printhead lift lever counterclockwise to engage the printhead.



- 7 Adjust the position of the green edge guide so the media is guided with a minimum of play. Lock with the nut.



- 8 Close the media cover and the cutter while pulling the media tight.
- 9 Press the **Feed** button to advance the media and adjust the media feed. The labels can be collected on an optional tray.



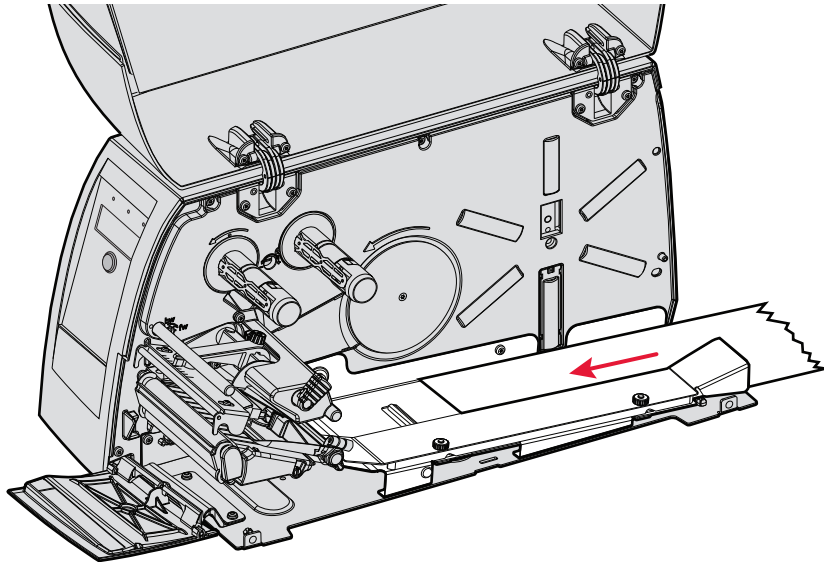
Loading Media From an External Supply

You can place the media supply, such as fanfold tickets or tags, behind the printer. The external supply can be used with tear-off (straight-through) and cut-off printing.

Intermec strongly recommends using a printer fitted with a special fanfold guide. This guide makes loading media easier and accurately guides the media. The fanfold guide can be adjusted for various media widths down to 40 mm (1.57 in).



Note: Make sure to protect the media from dust, dirt, or other foreign particles that can impair the printout quality or cause unnecessary wear to the printhead.

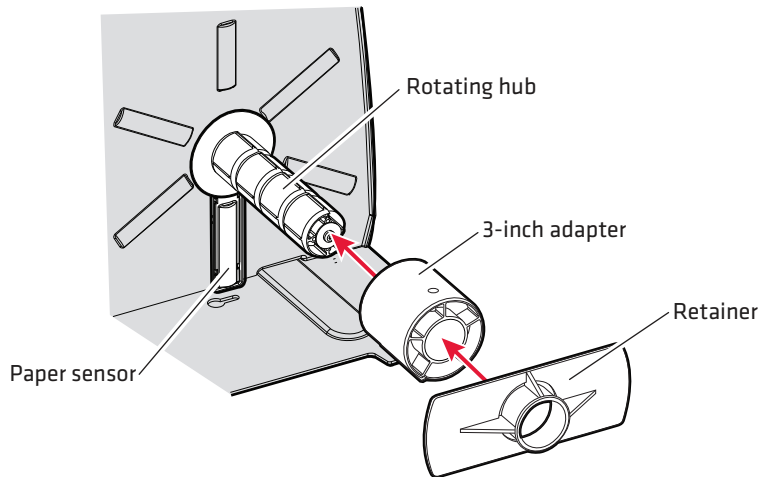


Fanfold Media Path

Using the Rotating Media Supply Hub

In addition to the standard media supply roll post, you can use an optional rotating media supply hub. You can also use these optional accessories:

- An adapter for media rolls with a 76 mm (3 in) core
- A media roll retainer that prevents the media roll from uncoiling
- A paper low sensor that detects when the remaining supply of media reaches a predetermined level



This illustration shows the various options that can be used with the rotating media supply hub.

To load media on the rotating media supply hub

- 1** (Optional) Install the 3-in adapter core.
- 2** Slide the media roll onto the rotating hub. Make sure to push the roll all the way on the hub so that the roll is flush with the disc on the inside of the hub.
- 3** (Optional) Install the retainer.

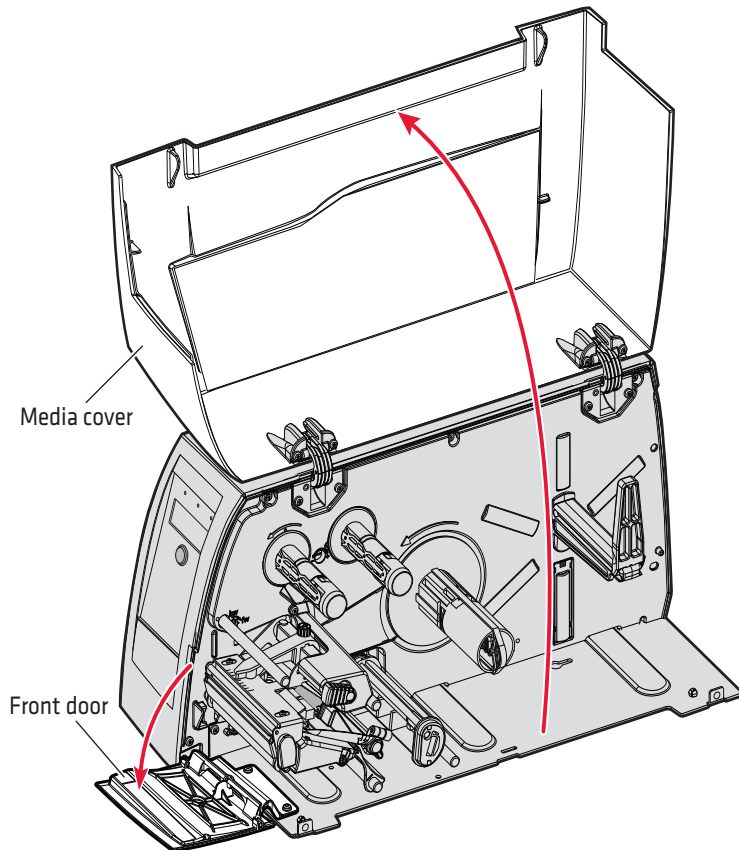
Loading Ribbon

The PM4i can perform direct thermal printing on special heat-sensitive media or thermal transfer printing on special ink-coated ribbon. The printer can use transfer ribbon rolls wound with the ink-coated side facing either outward or inward.

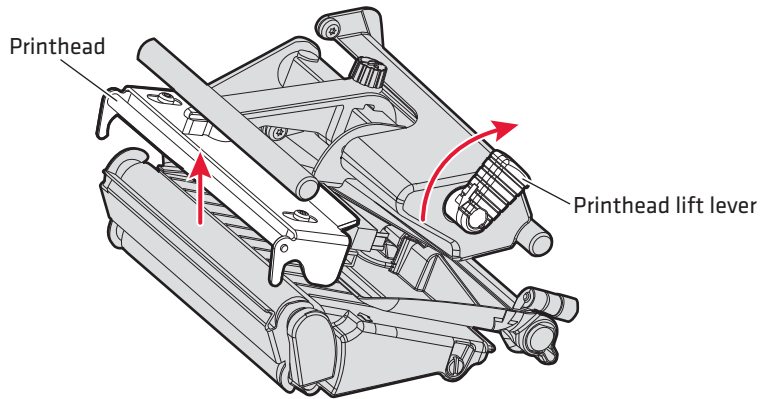
Thermal transfer printing lets you use a wide range of receiving face materials and provides a durable printout that is less vulnerable to external influences, such as oil, chemicals, heat, and sunlight than direct thermal printing. Make sure to select ribbon that matches the type of receiving face material and set up the printer accordingly.

To load ribbon

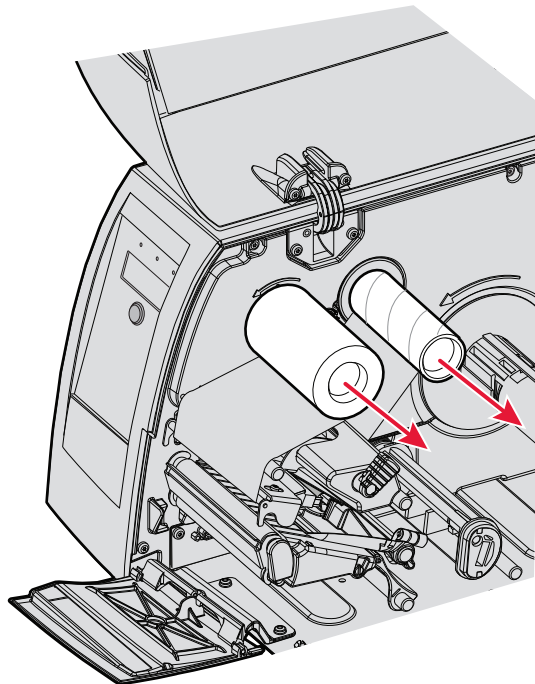
- 1 Open the front door and media cover.



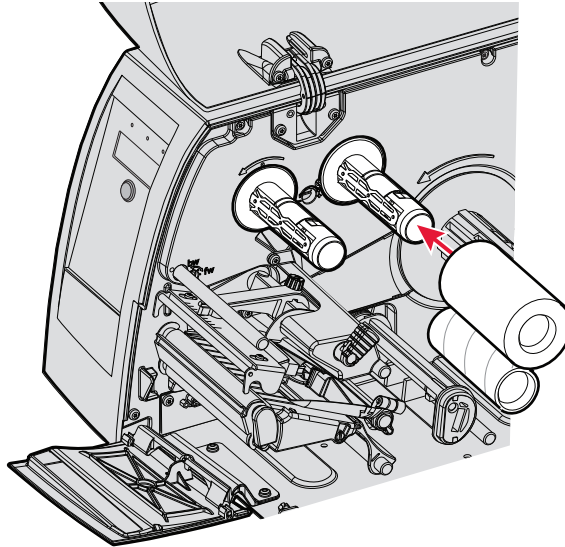
- 2 Turn the printhead lift lever clockwise to raise the printhead.



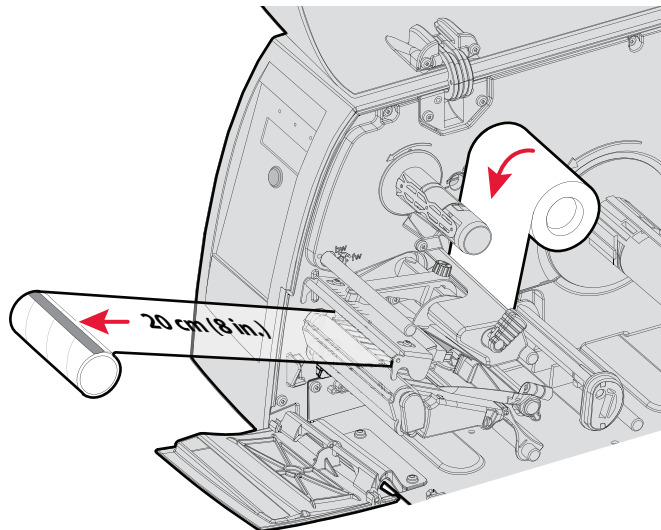
- 3 If necessary, remove any used ribbon and empty ribbon cores.



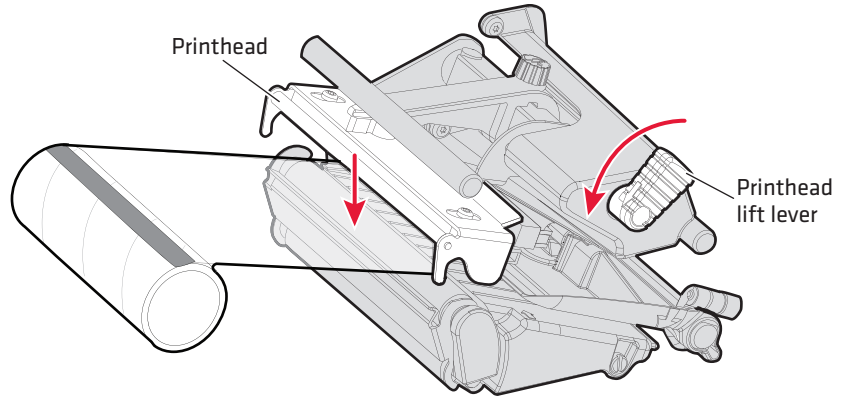
- 4 Slide the ribbon roll onto the supply hub so the ink-coated side faces down when the ribbon is routed through the print mechanism.



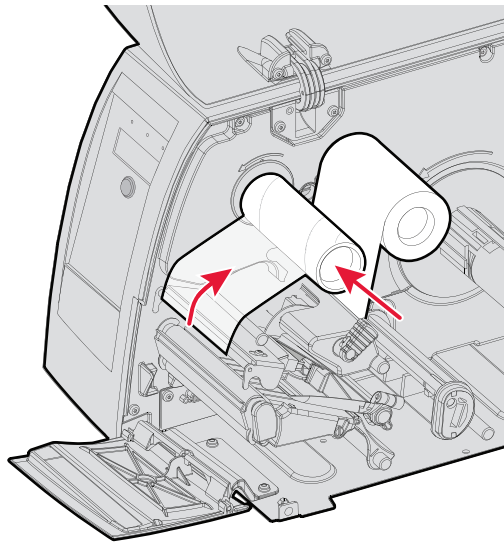
- 5 Route the ribbon through the print mechanism above the transparent upper LSS guide and pull out approximately 20 cm (8 in.) of ribbon leader.



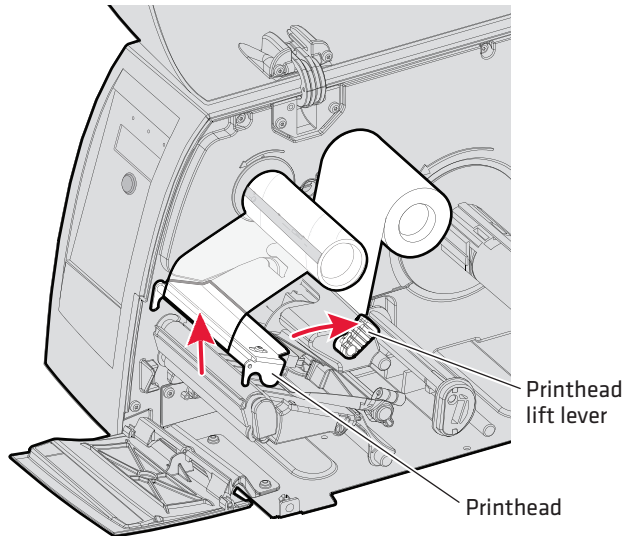
- Without releasing the ribbon, turn the printhead lift lever counterclockwise to engage the printhead and lock the ribbon.



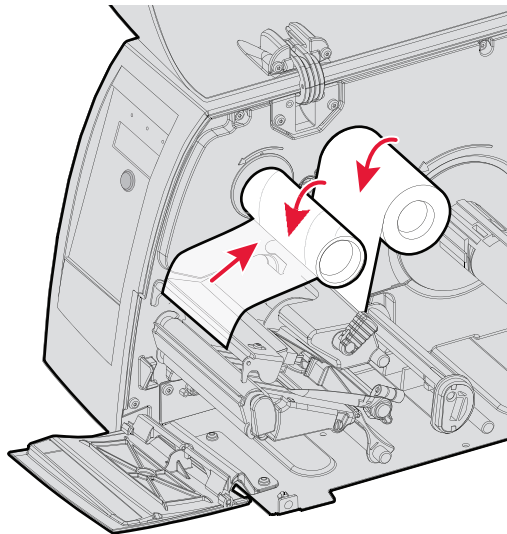
- Slide the empty cardboard core onto the ribbon rewind hub so the ribbon is wound up when the hub rotates counterclockwise.



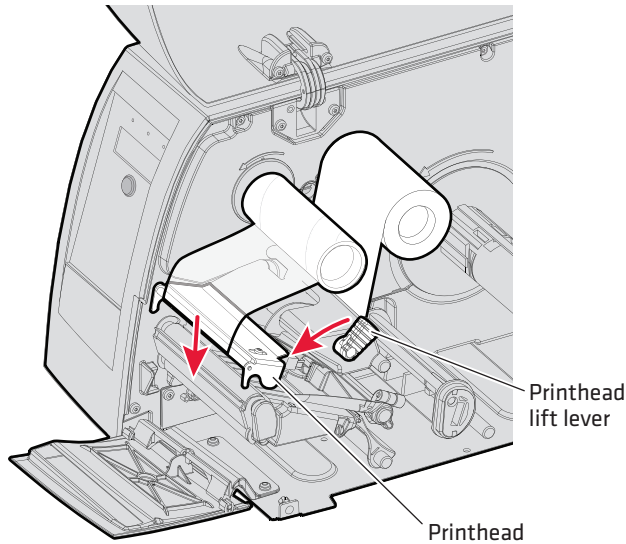
- 8 Turn the printhead lift lever clockwise to raise the printhead and release the ribbon.



- 9 Manually advance the ribbon until all of the transparent leader has passed the printhead and the ribbon becomes tight.



- 10** Turn the printhead lift knob counterclockwise to engage the printhead.



- 11** Close the front door and media cover.
- 12** Set the Paper Type to Thermal Transfer Ribbon (TTR).
 - a** On your printer's keypad, press **Setup** to enter the Setup menu.
 - b** If you are using Fingerprint, go to **Media > Paper Type > Transfer**.
If you are using IPL, go to **Media > Paper Type > TTR**.
 - c** Press **Enter**.
 - d** Press **Setup** to exit the Setup menu.

Printing a Test Label

You can print a test label (perform a testprint) to:

- make sure that your printer is working properly.
- get your printer's setup, hardware, and network information.
- get RFID tag information.
- check print quality and determine which adjustments to make.

To perform a testprint

- 1 Press **Setup** to enter the Setup menu, and use the keypad to go to the TESTPRINT menu:
 - If you are running Fingerprint, go to **SETUP > PRINT DEFS > TESTPRINT**.
 - If you are running IPL, go to **SETUP > TEST/SERVICE > TESTPRINT > CONFIG**.
- 2 Select a testprint to perform. For more information, see the next tables.

Fingerprint Testprint Options

Testprint	Description
Diamonds	Prints a diamond pattern.
Chess	Prints a chess board pattern.
Bar Codes #1	Prints a horizontal set of bar codes.
Bar Codes #2	Prints a vertical set of bar codes.
Setup Info	Contains current configuration parameters stored in the printer's memory, defined pages, defined formats, defined graphics, defined fonts, and any installed printer options.
Hardware Info	Contains printer memory information; printer mileage; printhead settings; firmware checksum, program, and version number.
RFID Test Label	Prints an RFID test label that includes the tag type name.
Network Info	Contains WINS name, MAC address, IP selection, IP address, netmask, default router, name server, mail server, primary WINS server, secondary WINS server, and network statistics.

IPL Testprint Options

Testprint	Description
<hr/>	
Config	
SW	Contains current configuration parameters stored in the printer's memory, defined pages, defined formats, defined graphics, defined fonts, and any installed printer options.
HW	Contains printer memory information; printer mileage; printhead settings; firmware checksum, program, and version number.
Network	Contains WINS name, MAC address, IP selection, IP address, netmask, default router, name server, mail server, primary WINS server, secondary WINS server, and network statistics.
RFID Test Label	Prints an RFID test label that includes the tag type name.
<hr/>	
Test Labels	
Pitch	Contains an even pattern of small dots that reveals failing printhead dots and variations of printout darkness due to uneven printhead pressure or bad energy regulation to the printhead.
Print Quality	Contains bar codes with different characteristics and useful information about the printer model, program version, print speed, and media sensitivity setup.
<hr/>	
Format	
All > Print Formats	Contains a single format that you can use to evaluate the print quality of a particular format. This option prints labels for all the formats stored in the printer's memory.
<hr/>	
Page	
All > Print Pages	Tests the ability of the printer to receive and print single or multiple pages of label data that is sent from the host. This option prints labels for all the pages stored in the printer's memory.
<hr/>	

IPL Testprint Options (continued)

Testprint	Description
UDC All > Print UDC	Tests the ability of the printer to receive and print single or multiple user-defined characters (bitmap graphics) that are sent from the host. This option prints labels for all the UDCs stored in the printer's memory.
Font	Contains all the characters in a single font. This option prints labels for all the user-defined fonts (UDF) stored in the printer's memory.

Creating and Printing Labels

The easiest way to create and print labels, is to use the label design software LabelShop®. You can download LabelShop from the PrinterCompanion CD that shipped with your printer, or you can download it from the Downloads page for your printer on the Intermec web site at www.intermec.com.

You can also use Fingerprint and IPL to create and print labels. For more information, see the *Intermec Fingerprint Command Reference Manual* or the *IPL Command Reference Manual*.

Printing on RFID Media

Media containing RFID tags is slightly thicker where the RFID tag is located. The slight thickness of this part of the label may affect print quality. For thermal transfer labels, Intermec recommends using a high-quality ink ribbon, such as TMX 2304 or TMX 1500.

To achieve the best possible print quality, follow these guidelines:

- After you load RFID media, restart the printer or run a TESTFEED to let the printer identify the RFID media type.
- If necessary, modify the TAGADJUST variable to make sure that the RFID labels are properly aligned with the antenna.
- If necessary, avoid printing on the thickest part of the label.

- For printers running Fingerprint:
 - If you are using thermal transfer labels, start with the ribbon constant set to 80 and the ribbon factor set to 25. You may need to adjust these values depending on the type of media you choose.
 - To write to Gen 2 RFID tags using the TAGFIELD command, set the start and length parameters to even numbers.
- For printers running IPL:
 - Start with the sensitivity set to 565. You may need to adjust this value depending on the type of media you choose.
 - To write to Gen 2 RFID tags, set the start and length parameters of the RFID tag field setup command (a) to even numbers.

For help configuring RFID parameters, see the *Intermec Fingerprint Command Reference Manual* or the *IPL Command Reference Manual*.

2

Connecting the Printer

This chapter contains these sections:

- **Connecting the Printer to Your PC**
- **Connecting the Printer to Your Network**
- **Connecting Peripherals to the USB Host Port**

Connecting the Printer to Your PC

You can easily connect the PM4i to your PC using one of these ports:

- RS-232 serial port
- USB device port
- IEEE 1284 communications port (optional)

Connecting the Printer to a PC Through the Serial Port

You can use a serial connection to communicate with your PC and run PrintSet, LabelShop, or InterDriver. You can also use the serial port to send commands directly to the printer through a terminal connection, for instance with Telnet.

Before you can establish a serial connection, make sure that the settings on the PC match those of your printer.

Serial Port Settings on the Printer

Parameter	Default Setting
Baud rate	9600
Data bits (IPL) or Character length (Fingerprint)	8
Parity	None
Stop bits	1
RTS/CTS (Fingerprint only)	Disable
ENQ/ACK (Fingerprint only)	Disable
XON/XOFF, data to host (Fingerprint only)	Disable
XON/XOFF, data from host (Fingerprint only)	Disable
New line (Fingerprint only)	CR/LF
Receive buffer (Fingerprint only)	1024 bytes
Transmit buffer (Fingerprint only)	1024 bytes

To connect the printer to a PC through the serial port

- 1 Connect one end of the RS-232 cable that ships with your printer to the back of the printer and connect the other end of the cable to a serial COM port on the PC.
- 2 If necessary, change the PC serial port configuration to match your printer.

Connecting the Printer to a PC Through the USB Device Port



Note: You cannot communicate with the printer using PrintSet through a USB connection. To use PrintSet, you must be connected serially or through the Ethernet or 802.11 network.

Intermec recommends that you only connect one printer to each PC, either directly, or through a hub. To connect the printer to a PC through the USB device port, you need:

- a USB Type B to USB Type A cable.
- Intermec InterDriver® software, which is available on the PrinterCompanion CD that ships with the printer. To make sure you have the latest version of InterDriver, you may want to go to the downloads page for the printer on the Intermec web site at www.intermec.com.

To connect the printer to a PC through the USB port

- 1 Download and install the InterDriver software on your PC.
- 2 Connect the USB cable to the Type B connector on the back of the printer and connect the other end to your PC.

You do not need to set up any parameters for USB communications.

Connecting the Printer to a PC Through the IEEE 1284 Port

You can use the parallel connection with LabelShop or Intermec InterDriver. The parallel port supports Universal Plug and Play (UPnP) and additional status reporting through IEEE 1284 nibble ID mode.

If you are using a parallel port to communicate with the printer, you need:

- an IEEE 1284 interface adapter installed in the printer. If you do not have the parallel interface installed in your printer, you can purchase the field installable option and have it installed by an authorized Intermec service technician. For help, contact your Intermec representative.
- a parallel cable to run between the printer and the PC.

To connect your printer to a PC parallel port

- Connect the IEEE 1284 cable connector to the interface adapter port on the back of the printer and connect the other end of the cable into a parallel port on the PC.

Connecting the Printer to Your Network

You can connect your printer to your network using the:

- integrated Ethernet interface.
- optional 802.11 wireless interface.

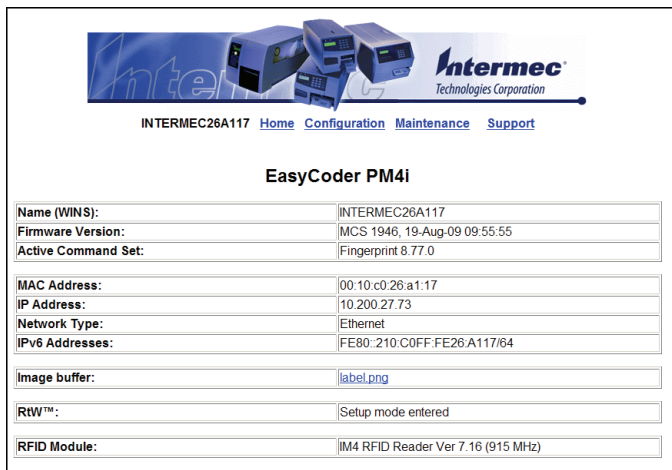
These network interfaces provide features such as security, FTP server, web server, and Alert handling.

Setting Up Ethernet Communications

Use the Ethernet port to set up the PM4i as a network printer. If Ethernet is selected as your Network Type, when you turn on your printer, it automatically retrieves an IP address from the network (DHCP+BOOTP). You can use the network connection with LabelShop or the Intermec InterDriver. You can also use this connection to send commands directly to the printer through a terminal connection (Telnet) or FTP.

To connect your printer to your Ethernet network

- 1 Make sure that Ethernet is selected as your Network Type.
 - a On the keypad, press **Setup** to enter the **Setup** menu.
 - b Go to **SETUP > NETWORK > NETWORK TYPE > ETHERNET**.
 - c Press **Setup** again to exit the **Setup** menu.
- 2 Connect the cable from your Ethernet network to the Ethernet port on your printer's back plate.
- 3 Turn your printer off and then on.
- 4 Enter Information mode by pressing the **i** button. The printer displays interface information in five-second intervals. Note the IP address displayed under **I/O net1**.
- 5 On your PC, start your web browser.
- 6 Enter the IP address of your printer in the address field and press **Enter**. Your printer home page appears.



- 7 When you are prompted to enter a login and password. The default values are: login = admin, password = pass.

For help using the printer web page to configure your printer, see **“Configuring Your Printer From the Printer Home Page” on page 64**.

If your network does not automatically assign an IP address, or the Intermec Ready-to-Work indicator is blinking to indicate a network error, you can use PrintSet (available on the PrinterCompanion CD or as a download from www.intermec.com) to correct the network settings.

Manually Configuring IP Settings

You can configure the IP settings of your printer by sending Fingerprint or IPL commands through a serial connection. After you configure the IP settings, you can disconnect the printer from your PC and communicate with the printer using Ethernet communications.

To configure the IP settings serially using Fingerprint

- 1 Connect the printer to your PC using a serial cable. For help, see **“Connecting the Printer to a PC Through the Serial Port” on page 42.**

- 2 Send the following commands to permanently assign the IP address, subnet mask, default router, and name server:

```
setup "network, IP selection, manual "  
setup "network, IP address, xxx.xxx.xxx.xxx"  
setup "network, netmask, xxx.xxx.xxx.xxx"  
setup "network, default router, xxx.xxx.xxx.xxx"  
setup "network, nameserver, xxx.xxx.xxx.xxx"
```

where *xxx* is a number from 0 to 255.

- 3 Disconnect the printer from the PC.
- 4 On your PC, enter the IP address of the printer in the address field of your web browser (for example <http://10.200.27.94>) and press **Enter**.

The home page of the printer appears.

To configure the IP settings serially using IPL

- 1 Connect the printer to your PC using a serial cable. For help, see **“Connecting the Printer to a PC Through the Serial Port” on page 42.**

- 2 Send the following commands to permanently assign the IP address, subnet mask, default router, and name server:

```
<SI>n n [ , m1 [ , m2 ] ]
```

where:

n is the IP address of the printer in the format n.n.n.n, where *n* is a number from 0 to 255.

,*m1* is the subnet mask address in the format n.n.n.n, where *n* is a number from 0 to 255.

,*m2* is the router address in the format n.n.n.n, where *n* is a number from 0 to 255.



Note: You must specify at least two of the three parameters for the command to take effect.

- 3 Disconnect the printer from the PC.
- 4 On your PC, enter the IP address of the printer in the address field of your web browser (for example <http://10.200.27.94>) and press **Enter**.

The home page of the printer appears.

Setting Up 802.11 Radio Communications

If your printer has an optional 802.11 b/g radio, you can transfer and receive data using wireless communications. This manual assumes that you have already set up your wireless communications network including your access points. This section describes how to set up wireless security on your printer.

The printer supports these authentication modes:

- none
- WEP (64 bit and 128 bit)
- WPA Personal and Enterprise mode (802.1x authentication)
- WPA2 Personal and Enterprise mode (802.1x authentication)



Note: WPA and WPA2 Enterprise mode currently support PEAP, TTLS, LEAP, and EAP-FAST. For LEAP authentication, the printer supports Open EAP, but does not support Network EAP.

To set up the printer to work in your wireless network, you need:

- a serial cable.
- a PC running Windows or Linux.
- PrintSet. PrintSet is available on the CD that ships with your Printer. For the latest version of PrintSet, go to the Downloads page of the Intermec web site at www.intermec.com.
- (optional) Serial port software such as HyperTerminal. If you are using IPL commands with HyperTerminal, you may want to be able to see the commands as you type them on your screen. For help, see “**Configuring Your Printer With Commands Sent From Your PC**” on page 78.

To set up the printer for 802.11 communications using PrintSet

- 1 Download and install PrintSet on your PC.
- 2 Connect one end of the serial cable to your printer, and connect the other end to your PC.
- 3 If necessary, change the serial port settings on your PC to match your printer:

Parameter	Default Setting
Baud rate	9600
Data bits	8
Parity	None
Stop bits	1

- 4 On your PC, start PrintSet.
- 5 In the **General Tasks** box, click **Add Printer**.
- 6 Step through the Add Printer Wizard until you have successfully added your printer.
- 7 In the **Printer Tasks** box, click **Wireless Setup Wizard**.
- 8 Step through the Wireless Setup Wizard to set up wireless network and security parameters.

To set up the printer for 802.11 communications using HyperTerminal

- 1 Connect one end of the serial cable to your printer, and connect the other end to your PC.
- 2 On your PC, open HyperTerminal and set these serial port parameters:

Parameter	Default Setting
Baud rate	9600
Data bits	8
Parity	None
Stop bits	1

- 3 From the host PC, check the wireless settings. For help, see **“Manually Configuring IP Settings” on page 46.**

If you are running IPL, send this command to the printer:

```
<STX><SI>wt<ETX>
```

If you are running Fingerprint, send these commands to the printer:

```
setup write "wlan", "uart1:"
setup write "8021x", "uart1:"
```

- 4 Configure your printer to use the correct SSID and authentication modes. For help, see the next section, **“Configuring 802.11 Wireless Security Using IPL”** or **“Configuring 802.11 Wireless Security Using Fingerprint” on page 50.**
- 5 If you are using certificates for validation, Intermec recommends testing first without the certificate. Only after performing this test should you transfer the certificate to the printer. The printer can accept PEM (.pem), DER (.der), and PKCS #12 (.p12 or .pfx) certificates.
- 6 Verify that the printer is connected to the access point and make sure it has an IP address allocated to it.

Use the following sections to set most of your wireless communication settings. For more information, see the *Intermec Fingerprint Command Reference Manual* or the *IPL Command Reference Manual*.

Configuring 802.11 Wireless Security Using Fingerprint

Use the following procedures to configure 802.11 wireless security parameters on your printer using Fingerprint.

To configure the printer to use WEP authentication

- 1 Send the following commands to login as an admin and set the SSID:

```
run"su -p pass admin"  
setup write "wlan", "uart1:"  
setup "wlan", "SSID", "xxxxxx"
```

where *xxxxxx* can be from 0 to 32 ASCII characters, not including the double quote.

To enter non-alphanumeric octets, use “%*nn*,” where *nn* is two hexadecimal digits representing the value of the character



Note: The default password for logging in as an admin is “pass.” If you have changed the password, you will need to use your password instead of “pass.”

- 2 Send the following commands to configure the WEP keys. The following example sets WEP key 1 to 01234 and enables WEP key 1.

```
setup "wlan", "WEP1", "0x3031323334"  
setup "wlan", ".WEP_KEY", "1"  
setup "wlan", "ACTIVE", "1"  
setup write "wlan", "uart1:"
```

To configure the printer to use WPA-PSK or WPA2-PSK mode

- 1 Send the following commands to login as an admin and set the SSID:

```
run"su-p pass admin"  
setup write "wlan", "uart1:"  
setup "wlan", "SSID", "xxxxxx"
```

where *xxxxxx* can be from 0 to 32 alphanumeric characters.

To enter non-alphanumeric octets, use “%*nn*,” where *nn* is two hexadecimal digits representing the value of the character



Note: The default password for logging in as an admin is “pass.” If you have changed the password, you will need to use your password instead of “pass.”

- 2 Send one of the following WPA/WPA2 ON commands to turn on WPA or WPA2 authentication. Send the WPA-PSK or WPA2-PSK command to set a pre-shared key:

```
setup "wlan", "WPA", "OFF"  
setup "wlan", "WPA2", "ON"  
setup "wlan", "WPA_PSK", "xxxxxxxxxxxxx"  
setup "wlan", "ACTIVE", "1"  
setup write "wlan", "uart1:"
```

where *xxxxxxxxxxxxx* is a value between 8 and 64 characters.

To configure the printer to use WPA or WPA2 Enterprise mode

- 1 Send the following commands to login as an admin and set the SSID:

```
run"su-p pass admin"  
setup write "wlan", "uart1:"  
setup "wlan", "SSID", "xxxxxx"
```

where *xxxxxx* can be from 0 to 32 alphanumeric characters.

To enter non-alphanumeric octets, use “%*nn*,” where *nn* is two hexadecimal digits representing the value of the character



Note: The default password for logging in as an admin is “pass.” If you have changed the password, you need to use your password instead of “pass.”

- 2 Send one of the following WPA/WPA2 ON commands to set up WPA-802.1x or WPA2-802.1x authentication. You should also send the WPA_PSK command that does not contain a value:

```
setup "wlan", "WPA", "OFF"  
setup "wlan", "WPA2", "ON"  
setup "wlan", "WPA_PSK", ""  
setup write "wlan", "uart1:"
```

To view the 802.1x values, send this command:

```
setup write "8021x", "uart1:"
```

- 3** Send these commands to configure the EAP_TYPE:

```
setup "8021x", "EAP_TYPE", "xxxx"
```

where *xxxx* can be OFF, LEAP, PEAP, TTLS, or EAP-FAST.

```
setup "8021x", ".EAP_USER", "xxxx"  
setup "8021x", "EAP_PASS", "xxxx"
```

where *xxxx* is the unique username and the unique password for this protocol.

- 4** If you are using TTLS, you may need to send this command to set the TTLS outer name:

```
setup "8021x", "TTLS_USER", "xxxx"
```

where *xxxx* is the outer name.

- 5** If you are using EAP-FAST, you can use PAC and ACQUIRE_PAC commands. The PAC setting specifies the PAC file to use for EAP-FAST authentication. The ACQUIRE_PAC setting checks to see if automatic PAC file provisioning is enabled. You can set ACQUIRE_PAC to on or off.

- Send the following command to set PAC to use /tmp/my.pac with a pass phrase of “verysecret”:

```
setup "8021x", "PAC", "/tmp/my.pac @verysecret"
```

- Send the following command to set ACQUIRE_PAC to on:

```
setup "8021x", "ACQUIRE_PAC", "ON"
```

- 6** If you are using certificates for validation, here are some commands you may need to use.

- Send the following commands to set a certificate and enable validation:

```
setup "8021x", "CA_CERT", "c:/test.pfx@export"  
setup "8021x", "VALIDATE", "ON"
```

where *c:/test.pfx* is the location and name of the certificate on the printer and *export* is the passphrase.

- Send the following commands to set a common name for server 1 and server 2:

```
setup "8021x", ".SERVER_CN1", "xxxxxxxxxxxx"
setup "8021x", ".SERVER_CN2", "xxxxxxxxxxxx"
```

where *xxxxxxxxxx* is at least 8 characters but less than 96 characters.

- Send the following commands to make sure your values match those used by the access point:

```
setup write "8021x", "uart1:"
setup write "wlan", "uart1:"
```

- You may need to send the following command several times for the wireless station to connect:

```
setup "wlan", "ACTIVE", "1"<ETX>
```

Configuring 802.11 Wireless Security Using IPL

Use the following procedures to configure 802.11 wireless security parameters on your printer using IPL.

To configure the printer to use WEP authentication

- 1 Send the following commands to login as an admin and set the SSID:

```
<STX><ESC>.x,su -p pass admin<ETX>
<STX><SI>ws,SSID,xxxxx<ETX>
```

where *xxxxxx* can be from 0 to 32 ASCII characters.

To enter non-alphanumeric octets, use “%nn,” where *nn* is two hexadecimal digits representing the value of the character.



Note: The default password for logging in as an admin is “pass.” If you have changed the password, you will need to use your password instead of “pass.”

- 2 Send the following commands to configure the WEP keys. The following example sets WEP key 1 to 01234 and enables WEP key 1.

```
<STX><SI>ws,WEP1,0x3031323334<ETX>
<STX><SI>ws,.WEP_KEY,1<ETX>
```

- 3 Send the following command to activate the settings.

```
<STX><SI>ws,ACTIVE,1<ETX>
```

To configure the printer to use WPA-PSK or WPA2-PSK mode

- 1 Send the following commands to login as an admin and set the SSID:

```
<STX><ESC>.x,su -p pass admin<ETX>  
<STX><SI>ws,SSID,xxxxxx<ETX>
```

where *xxxxxx* can be from 0 to 32 alphanumeric characters.

To enter non-alphanumeric octets, use “%*nn*,” where *nn* is two hexadecimal digits representing the value of the character



Note: The default password for logging in as an admin is “pass.” If you have changed the password, you need to use your password instead of “pass.”

- 2 Send one of the following commands to turn on WPA or WPA2 authentication. Send the WPA-PSK or WPA2-PSK command to set a pre-shared key:

```
<STX><SI>ws,WPA,OFF<ETX>  
<STX><SI>ws,WPA2,ON<ETX>  
<STX><SI>ws,WPA_PSK,xxxxxxxxxxxx<ETX>
```

where *xxxxxxxxxxxx* is a value between 8 and 64 characters.

- 3 Send the following command to activate the settings:

```
<STX><SI>ws,ACTIVE,1<ETX>
```

To configure the printer to use WPA or WPA2 Enterprise mode

- 1 Send the following commands to login as an admin and set the SSID:

```
<STX><ESC>.x,su -p pass admin<ETX>  
<STX><SI>ws,SSID,xxxxxx<ETX>
```

where *xxxxxx* can be from 0 to 32 alphanumeric characters.

To enter non-alphanumeric octets, use “%*nn*,” where *nn* is two hexadecimal digits representing the value of the character



Note: The default password for logging in as an admin is `pass`. If you have changed the password, you need to use your password instead of `pass`.

- 2** Send one of the following commands to enable WPA-802.1x or WPA2-802.1x authentication. You should also send the WPA_PSK command that does not contain a value:

```
<STX><SI>ws , WPA , OFF<ETX>  
<STX><SI>ws , WPA2 , ON<ETX>  
<STX><SI>ws , WPA_PSK , <ETX>
```

- 3** Send these commands to configure the EAP_TYPE:

```
<STX><SI>ws , EAP_TYPE , xxxx<ETX>
```

where *xxxx* can be OFF, LEAP, PEAP, TTLS, or EAP-FAST.

```
<STX><SI>ws , . EAP_USER , xxxx<ETX>  
<STX><SI>ws , EAP_PASS , xxxx<ETX>
```

where *xxxx* is the unique username and the unique password for this protocol.

- 4** If you are using TTLS, you may need to send this command to set the TTLS outer name:

```
<STX><SI>ws , TTLS_USER , xxxx<ETX>
```

where *xxxx* is the outer name.

- 5** If you are using EAP-FAST, you can use PAC and ACQUIRE_PAC commands. The PAC setting specifies the PAC file to use for EAP-FAST authentication. The ACQUIRE_PAC setting checks to see if automatic PAC file provisioning is enabled. You can set ACQUIRE_PAC to on or off.

- Send the following command to set PAC to use /tmp/my.pac with a pass phrase of “verysecret”:

```
<STX><SI>ws , PAC , /tmp/my.pac @verysecret<ETX>
```

- Send the following command to set ACQUIRE_PAC to on:

```
<STX><SI>ws , ACQUIRE_PAC , ON<ETX>
```

6 If you are using certificates for validation, here are some commands you may need to use.

- Send the following commands to set a certificate and enable validation:

```
<STX><SI>ws, CA_CERT, c:/testCA.pfx@export<ETX>  
<STX><SI>ws, VALIDATE, ON<ETX>
```

where *c:/testCA.pfx* is the location and name of the certificate on the printer and *export* is the passphrase.

- Send the following commands to set a common name for server 1 and server 2:

```
<STX><SI>ws, .SERVER_CN1, xxxxxxxxxxxx<ETX>  
<STX><SI>ws, .SERVER_CN2, xxxxxxxxxxxx<ETX>
```

where *xxxxxxxxxx* is at least 8 characters but less than 96 characters.

- Send the following command to make sure your values match those used by the access point:

```
<STX><SI>wt<ETX>
```

All variables are returned with the exception of EAP_PASS which always returns “****” if configured and CA_CERT which transmits the name of the last certificate authority successfully installed. An additional read-only variable for the supplicant state, called STATE, is also returned.

- You may need to send the following command several times for the wireless station to connect:

```
<STX><SI>ws, ACTIVE, 1<ETX>
```

Connecting Peripherals to the USB Host Port

You can connect these peripheral devices to the USB host interface port on the printer:

- USB mass storage device
- Keyboard
- Bar code scanner
- USB hub

Using a USB Mass Storage Device

You can use a USB mass storage device (thumb drive) to store additional fonts and images for the printer. You can also use the device to upgrade your firmware. For more information on using the USB mass storage device to upgrade the printer, see **“Upgrading Firmware” on page 81**.

To verify the USB storage device is supported by your printer, insert the USB storage device in the appropriate slot on the back of your printer. On the display screen, one of the following status messages briefly appears:

- USB memory stick connected
- USB memory stick not supported

If no status message appears when you insert the USB storage device, you can manually verify the USB storage device is supported using HyperTerminal.

To verify the USB storage device is supported by your printer

- 1 Connect one end of your serial cable to your printer, and connect the other end to your PC.
- 2 On your PC, open HyperTerminal.
- 3 In HyperTerminal, use one of the following Fingerprint commands:
 - Type **DEVICES**. The list of devices your printer supports appears. If the USB storage device is supported, it appears as drive d: in this list.

- Type **Run “cd d:”** and press **Enter**.
Type **Run “ls”** and press **Enter**. If the USB storage device is supported, the contents of the USB storage device appears.

Connecting a Keyboard to the USB Host Port

You can use an external USB keyboard to input data in Fingerprint applications. Some applications may require more complex input from users than the simple push of a button.

The printer comes with five keyboard layouts: US, Swedish, French, German, and User Defined.

To change the keyboard layout

- 1** Plug your USB keyboard into the USB host connector on the back of the printer.
- 2** Turn on the printer.
- 3** On your printer keypad, press **(Setup)**.
- 4** Navigate to **COM > USB KEYBOARD**.
- 5** Choose a keyboard layout.
- 6** Exit Setup mode by pressing **(Setup)** again.

Connecting a Bar Code Scanner to the USB Host Port

If your printer is running Fingerprint, you can connect a HID (Human Interface Device) bar code scanner to the printer. The “usbhost:” device receives data from the scanner the same way it does from a USB keyboard. You can then use this data in a Fingerprint application.

The keyboard layout you choose (see the previous procedure) applies for connected scanners too.

Connecting a USB Hub to the USB Host Port

You can connect a USB hub to the printer so that you can connect several USB devices to the printer at the same time.



Note: If the USB hub is not powered, you can only connect one USB mass storage device and one HID (keyboard or scanner) peripheral to the USB hub at a time. If the USB hub is powered, you can connect multiple USB mass storage devices and multiple HID peripherals at once.

3

Configuring the Printer

Use this chapter to understand how to configure the printer, upgrade firmware, and download fonts and graphics. This chapter contains these sections:

- **Configuring Your Printer**
- **Choosing an Ethernet or Wireless Network**
- **Upgrading Firmware**
- **Downloading Fonts and Graphics**

Configuring Your Printer


You can change the configuration settings of your printer:

- directly from the screen.
- from the printer home page.
- using PrintSet.
- using commands sent from your PC.
- remotely using SmartSystems Foundation.

Configuring Your Printer From the Screen







To configure your printer from the screen, you need to enter Setup mode.

To enter Setup mode

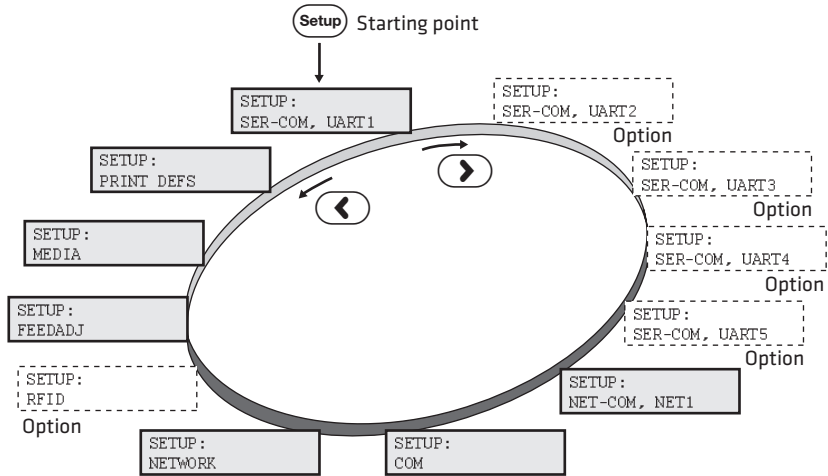
- Press the  button.

You mainly use the arrow keys to navigate in Setup mode.

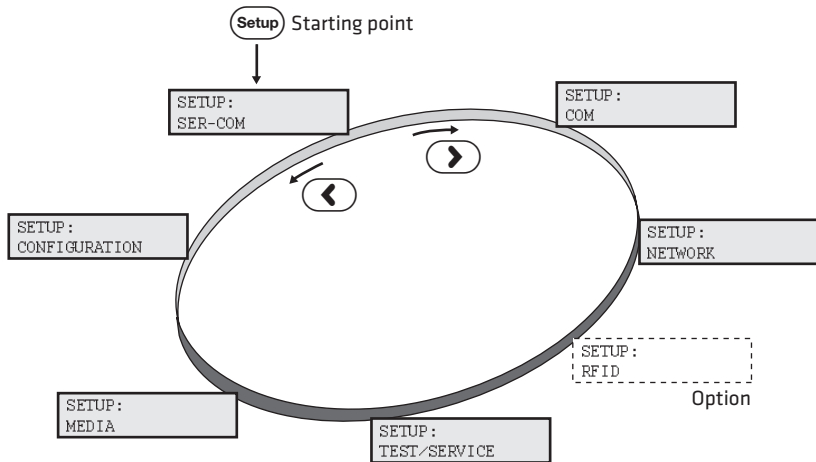
Navigating in Setup Mode

Press This Key:	To Do This:
 or 	Scroll through the main menu and sub-menus.
	Select a sub-menu item.
	Exit a sub-menu without changing the setting.
	Select a sub-menu item.
	Exit Setup mode.

Use the following illustrations to understand the Setup menu. The main menus of the setup tree are organized in a loop. Each main menu branches out to a number of sub-menus. If you have optional accessories installed in your printer, the firmware adds the necessary setup parameters to the Setup tree.



The Main Menus in Setup Mode for Fingerprint



The Main Levels of the Setup Menu in IPL

For more information on the IPL and Fingerprint menu systems, see Appendix C, **“Fingerprint and IPL Setup Menus”** on page 141.

Configuring Your Printer From the Printer Home Page

If you are using an Ethernet or 802.11 wireless connection, you can change configuration settings from your printer's home page.



Note: You should have already connected your printer to your network and obtained an IP address. For help, see “[Connecting the Printer to Your Network](#)” on page 44.

To access your printer's home page

- 1 Start your web browser application.
- 2 In the address field, enter the IP address of your printer.
- 3 Press **Enter**. Your printer's home page appears.

The screenshot shows the printer's home page for the model INTERMEC26A117. At the top, there is a banner with the Intermec Technologies Corporation logo and navigation links: Home, Configuration, Maintenance, and Support. Below the banner, the printer model 'EasyCoder PM4i' is displayed. The main content area consists of several rows of configuration data, each with a label on the left and a value on the right:

Name (WINS):	INTERMEC26A117
Firmware Version:	MCS 1946, 19-Aug-09 09:55:55
Active Command Set:	Fingerprint 8.77.0
MAC Address:	00:10:c0:26:a1:17
IP Address:	10.200.27.73
Network Type:	Ethernet
IPv6 Addresses:	FE80::210:C0FF:FE26:A117/64
Image buffer:	label.png
RTW™:	Setup mode entered
RFID Module:	IM4 RFID Reader Ver 7.16 (915 MHz)

The home page displays the assigned name, firmware version, Active Command Set, MAC address, and IP address of your printer. The home page also displays the contents of the image buffer, as well as the status of the Ready-to-Work indicator.

- 4 Click **Configuration**.
- 5 Click the link for the settings you want to configure.
- 6 When you are prompted, enter your login and password. The default values are: login = `admin`, password = `pass`.

Use the next sections to understand and configure the settings on each configuration page.

Configuring Communications Settings

Use the communications page to configure serial communications, the communications interface, and the keyboard layout.

To configure communications settings

- 1** Click **Printer > Communication**.
- 2** Choose the settings you want to change.
- 3** Click **Submit Setup**.

Configuring Media Settings

Use the media page to view and change media settings such as XSTART position, media type, and contrast.

To configure media settings

- 1** Click **Printer > Media**.
- 2** Enter the correct information for the media you are using.
- 3** Click **Submit Setup**.

Configuring Print Engine Settings (Fingerprint Only)

Use the print engine page to adjust the media feed direction (start and stop adjust positions) and print speed. The value of the head resistance is read-only and is measured by the firmware when the printer starts up.

To configure print engine settings

- 1** Click **Printer > Print Engine**.
- 2** Enter the correct information for the print engine.
- 3** Click **Submit Setup**.

Configuring Web Shell Settings

Use the Web Shell page to view and change test and default settings. You can also use the Web Shell page to print test labels and change the command language.

To configure Web Shell settings

- 1 Click **Printer > Web Shell**.
- 2 Select the action you want to take or the setting you want to change.
 - For the actions at the top of the screen, the printer performs the action and may prompt you to reboot the printer.
 - For the settings at the bottom of the screen, select the settings you want and click **Submit Setup**. A message appears stating, “Application change will take effect at reboot.” You can select Reboot or wait until you are done making other configuration changes.

Use the following table to understand the Web Shell settings.

Understanding the Web Shell Settings

Setting	Description
Testfeed [value]	Calibrates the label stop sensor performs a testfeed. Selecting this setting is equivalent to issuing the TESTFEED command on the printer.
Ribbon Sensor [value]	Detects if the printer runs out of ribbon during printing.
Default Setup	Returns the printer to factory default settings. Passwords, alerts, and the selected application are not changed.
Reboot	Reboots the printer.
Print Test Label	Prints the predefined test label you choose.
Command Language	Sets the command language to Fingerprint, Direct Protocol, IPL, ZSim, or DSIm. You need to reboot the printer for the change to take effect.
Fingerprint Application	Defines the application to run as the default on startup. You need to reboot the printer for the change to take effect.
Standard I/O	Defines the port the printer listens to. You need to reboot the printer for the change to take effect.

Configuring Alerts

Use the Alerts page to view and change the printer alert settings.

To configure alerts

- 1 Click **Printer > Alerts**.
- 2 Change the alert settings:
 - From the **Setting** list, choose **Enabled** or **Disabled**.
 - In the text field, specify a **Delay repeat**.
 - In the **Delay Unit** list, select **seconds** or **occurrences**.
 - In the **Message** text field, enter a message.
- 3 Select the **Notification method**.
- 4 Click **Submit Settings**.

Use the following table to understand the Alert Settings.

Understanding the Alert Settings

Setting	Description
Label Not Taken (Fingerprint only)	Sent when the printed label is not taken from the printer. This setting applies to label and ticket media and requires an optional label taken sensor.
Cutter Error	There was an error related to the label cutter.
Head Lifted	A printer job was sent to the printer while the printhead was lifted.
Out of Ribbon	You have thermal transfer ribbon selected and the printer is out of ribbon.
Pause Mode	The printer is in Pause mode.
Setup Mode	The printer is in Setup mode.
Error Condition (Fingerprint only)	An error has occurred in the Fingerprint application. The error does not have to be critical to the print job for the printer to send this alert.
Application Break (Fingerprint only)	A running Fingerprint application has been interrupted manually or because of an error.
Print Job Complete (Fingerprint only)	The print job has been successfully completed.

Understanding the Alert Settings (continued)

Setting	Description
Odometer Count	The amount of media printed has reached a preset amount, measured in meters or in number of labels. The Delay repeat setting represents how often the alert message will be sent when the preset value is reached.
Notification Method	The method used to send an alert message. You can choose from mail, SNMP-trap, or both.

Configuring General Network Settings

Use the General network page to view the printer name, change passwords, and set restrictions.

To configure general network settings

- 1 Click **Network Admin > General**.
- 2 View or update your settings.



Note: To enter a new password, you need to check the **Set password** check box.

- 3 Click Submit General settings.

Use the following table to understand the general network settings.

Understanding the General Network Settings

Setting	Description
Printer Name	The network identification name (WINS name) of the printer. The default name is INTERMEC followed by the last six positions of the MAC address.
System Location	(Optional) The printer location.
System Contact	(Optional) The printer administrator.
Set Password	You must check this box if you want to change the admin password.
Old Admin Password	You need to enter the old password before you can change the password.
New Admin Password	The new password you want to use.

Understanding the General Network Settings (continued)

Setting	Description
Restrictions	<p>Sets restrictions on who is allowed to upgrade the printer firmware or view and change network settings. You cannot remove “admin” from the list of authorized users.</p> <p>Users allowed to update: Defines who may perform a firmware upgrade using FTP, PrintSet, or IFAB. This setting does not affect upgrading from a Compact Flash card.</p> <p>Users allowed to read/write protected LAN1 settings: (Fingerprint only) Defines who may read/write settings in the LAN1 section.</p> <p>Users allowed to change network settings: (Fingerprint only) Defines who may change the network node in the setup. This setting is not supported if you are setting up the printer from its internal keyboard.</p> <p>Users allowed to change wireless settings: Defines who may change WLAN or 802.1x settings.</p>

Configuring Mail Settings

Use the mail settings page to view and change e-mail (SMTP) server settings.

To configure mail settings

- 1** Click **Network Admin > Mail**.
- 2** Select the mail server settings and enter mail addresses.
- 3** Click:
 - **Submit Mail Settings** to send the changes to the printer.
 - **Submit & Send test mail** to send the changes to the printer and test your new settings.

Use the following table to understand the mail settings.

Understanding the Mail Settings

Setting	Description
Mail (SMTP) Server	<p>Choose a configuration method for your mail server settings:</p> <ul style="list-style-type: none">• SMTP settings from DHCP: Choose this setting if you want the printer to receive settings automatically from your DHCP server. This setting requires that you choose DHCP and IP Selection in the TCP/IP section.• Manual settings: Choose this option to manually configure the Mail Server address and port. The default port is 25.
Mail addresses	<p>Defines the e-mail addresses to use when the printer sends alert messages:</p> <ul style="list-style-type: none">• From address: The address that displays as the sender of alert messages. E-mail will be returned to this address if the recipient is unreachable. To prevent e-mail bounces when the recipient is unreachable, leave this field empty.• To address: The recipient of alert messages. To enter several addresses, separate them with a comma (,) or a semicolon (;).

Configuring SNMP Settings

Use the SNMP page to view and change SNMP settings.

To configure SNMP settings

- 1 Click **Network Admin > SNMP**.
- 2 Change the SNMP settings.
- 3 Click **Add** to add trap settings. You can define up to four authentication failure traps.

After you add a trap, it appears in the Trap Address Settings list. You can edit or delete each trap in the list by clicking **Edit** or **Delete**.

- 4 Click **Submit SNMP settings**.

Use the following table to understand SNMP settings.

Understanding the SNMP Settings

Setting	Description
Read Community	Community with rights to read the SNMP MIBs.
Read/Write Community	Community with rights to read and write SNMP MIBs.
Username	Username when using SNMPv3. The default value is “initial”.
Authentication Key	The authentication key for SNMPv3. The default value is “auth_key”.
Encryption Key	The privacy key for SNMPv3. The default value is “priv_key”.
System Name	Administrative name for the SNMP node.
Authentication Failure Trap	Defines if a trap is sent when an unauthorized SNMP request tries to access the printer. Choose Enable to send the trap.
Trap Address Settings	Click Add to specify these trap address settings: <ul style="list-style-type: none"> • Trap Address: IP address of the receiver of SNMP traps. You can specify up to four trap addresses. • Trap Port: The port where SNMP traps are sent. The default port is 162. • Trap Community: Defines the community to which SNMP traps will be sent. • Friendly Name: A user-defined text string that identifies the trap. • Trap Enable Status: Defines whether the specified trap is enabled.

Configuring TCP/IP Settings

Use the TCP/IP settings page to view and change TCP/IP network settings.

To configure TCP/IP settings

- 1 Click **Network Admin** > **TCP/IP**.
- 2 View or update your settings.
- 3 Click **Submit TCP/IP settings**.

Use the following table to understand the TCP/IP settings.

Understanding the TCP/IP Settings

Setting	Description
IPV4 Settings	<p>Configuration method: The method by which an IP address is assigned to the printer. You can choose between DHCP, BOOTP, DHCP+BOOTP, or MANUAL.</p> <p>Address: The current IP address of the printer.</p> <p>Netmask: Manually assigned netmask for the printer.</p> <p>Default Router: The IP address of the default router.</p>
IPV6 Settings	<p>Configuration method: The method by which an IP address is assigned to the printer. You can choose between:</p> <ul style="list-style-type: none">• AUTO: The IP address is obtained using stateless auto-configuration. This is the default configuration method.• AUTO+DHCP: The IP address is obtained using stateless auto-configuration, but DNS options are obtained using DHCP.• DHCP: The IP address and DNS options are obtained using DHCP.• MANUAL: The IP address is set to a static address that you enter in the Static Address field. <p>Current addresses: A list of all the currently configured IP addresses for the Ethernet interface. The address starting with FE80:: is the link-local address and is available regardless of the configuration method you choose.</p> <p>Static address: This address applies if you selected manual as the configuration method. The IP address is specified as an address and a prefix separated by a slash. You can use “::” to represent a large number of consecutive zeros. You should typically set the prefix to 64.</p> <p>Example: 2001:DB8:0:F101::2/64</p>

Understanding the TCP/IP Settings (continued)

Setting	Description
Name Resolution	<p>DNS Server: The IP address of the name server.</p> <p>DNSv6 Server: The IP address of the name server for IPv6.</p> <p>WINS Server (Primary and Secondary): The IP addresses of the primary and secondary WINS servers. If you chose DHCP or BOOTP for the configuration method, you may see the currently assigned WINS IP addresses depending on the configuration of your DHCP server.</p>
Printer Service	<p>NET1 TCP Port Number: The port number for raw TCP. The default is 9100.</p> <p>NET1 Queuing: Determines whether queuing for the TCP port is turned on, off, or enabled for multiple network connections (Multi).</p>

Configuring the Network Type

Use the Network Type page to choose whether you are using an Ethernet or wireless 802.11 network.

To configure the network type

- 1 Click **Network Admin** > **Network Type**.
- 2 Select either **Ethernet** or **Wireless 802.11**.
- 3 Click **Submit new settings**.
- 4 Reboot the printer for the changes to take effect.



Note: Once you change the network type to Wireless 802.11, you cannot communicate with the printer using Ethernet. You need to change the command through the Setup menu or send a command through a serial connection.

Configuring Avalanche Settings

Use the Avalanche page to view and change Wavelink Avalanche settings.

To configure Avalanche settings

- 1 Click **Network Admin** > **Avalanche**.
- 2 View or update your settings.

3 Click **Submit Avalanche settings**.

Use the following table to understand the Avalanche settings.

Understanding the Avalanche Settings

Setting	Description
Enabler Mode	Click one of the option buttons: <ul style="list-style-type: none">• Disabled: Disables Avalanche.• Manual settings: Enables Avalanche. You need to enter the Agent address and Port in the text fields.• Find agent by broadcast: Enables Avalanche and the network connection broadcasts to find the agent.
Agent authorization	Enter your user name and password in the entry fields.

Configuring Wireless LAN Settings

Use the Wireless LAN page to view and change 802.11 settings.



Note: The Wireless LAN settings are only available if your printer has the wireless 802.11 radio interface option installed and is running Fingerprint 8.77.0 or later, or IPL v2.77.0 or later.

To configure wireless LAN settings

- 1 Click **Network Admin > Wireless LAN**.
- 2 View or update your settings.
- 3 Click **Submit 802.11 settings**.

Use the following table to understand the Wireless LAN settings.

Understanding the Wireless LAN Settings

Setting	Description
SSID	The network name of the printer.
Mode	Set the operating mode of the device to Ad-Hoc or Infrastructure.
WEP	Set Wired Equivalent Privacy (WEP) to on or off.
WEP Keys	You can enter values for up to 4 WEP keys.
Active WEP key	Chooses the active WEP key.

Understanding the Wireless LAN Settings (continued)

Setting	Description
Authentication	Sets the type of authentication for you use for WEP keys. You can choose between Auto, Open System, and Shared.
WPA	Sets the Wi-Fi Protected Access (WPA) to either on or off.
WPA Pre-shared key	Sets the WPA Pre-shared key.
WPA2	Sets the Wi-Fi-Protected Access version 2 to either on or off.
Roaming setting	Sets the roaming reluctance to 1, 2 or 3. Setting the roaming reluctance to 0 turns off the roaming feature.
Current channel	(Read only or read/write for adhoc connections) Shows the current channel being used.
AP MAC Address	(Read only) MAC address of the access point to which the printer is connected.
Signal strength	(Read only) Radio signal strength of the access point.
Speed	(Read only) Speed of the current connection.
Region	(Read only) Shows the country short names provided by the 802.11d standard for the currently selected region or country.

Configuring 802.1x Settings

The 802.1x settings page is only available if you have the optional wireless interface installed in your printer. Use the 802.1x page to view and change 802.1x security settings.

To configure 802.1x settings

- 1** Click **Network Admin > 802.1x**.
- 2** View or update your settings.
- 3** Click **Submit 802.1x settings**.

Use the following table to understand the 802.1x settings.

Understanding the 802.1x Settings

Setting	Description
EAP Type	Choose the Extensible Authentication Protocol (EAP) type: <ul style="list-style-type: none"> • TTLS • LEAP • PEAP • EAP-FAST • Off (disables 802.1x security) (default)
Inner Authentication (TTLS, EAP-FAST, and PEAP only)	Choose the inner authentication method: <ul style="list-style-type: none"> • PAP (TTLS only) • MSCHAPv2 • EAP/MSCHAPv2 • EAP/MD5 • EAP/GTC
Outer Name (TTLS only)	Specify the EAP identity passed in the clear. The default is <code>anonymous</code> .
PAC- Key A-ID Info	The Protected Access Credential (PAC) setting is used to specify the PAC file used by EAP-FAST authentication. This setting is automatically filled up by the printer if <code>ACQUIRE_PAC</code> is enabled and current installed PAC file fails authenticating the printer to the network. You can manually import a PAC file using a pass phrase the same way you install a certificate.
Automatic Provision (PAC)	Set Automatic PAC file Provisioning to on or off.
Root Certificate	The common name of the installed root CA certificate. You can also specify a different certificate (provided that it has already been installed on the printer) by entering the path to the new certificate in this field. If a pass phrase is required, add it to the end of the path in the form of “@passphrase”.
Server Common Name #1 Server Common Name #2 (TTLS and PEAP only)	Specify common names. If you specify one common name, the server certificate common name must match this name for authentication. If you specify two common names, the server certificate common name must match at least one of them. The default is “” (any common name).

Understanding the 802.1x Settings (continued)

Setting	Description
Server Certificate Validation (TTLS and PEAP only)	Enables certificate validation. Specifies whether or not to check if the installed CA certificate is the root of the server certificate.

Configuring SmartSystems Settings

Use the SmartSystems page to view or change the SmartSystems server IP address and the master port number.

To configure the SmartSystems settings

- 1** Click **Network Admin > SmartSystems**.
- 2** View or change the settings.
- 3** Click **Submit SmartSystems settings**.

Configuring Your Printer With PrintSet

Note: You cannot communicate with the printer using PrintSet through a USB connection. To use PrintSet, you must be connected serially or through the Ethernet or 802.11 network.

PrintSet is a printer configuration tool that allows you to easily change your setup parameters. You can also use PrintSet's setup wizards to guide you through common configuration tasks.

To configure the printer with PrintSet

- 1** Make sure that you have a PC running Microsoft Windows 2000 or later.
- 2** Download PrintSet from the downloads page for the PM4i on the Intermec web site at www.intermec.com.
- 3** Connect your printer to your PC using a serial cable. For help, see **“Connecting the Printer to a PC Through the Serial Port” on page 42**.

Configuring Your Printer With Commands Sent From Your PC

You can change configuration parameters by sending commands directly to the printer using your terminal program (HyperTerminal) and a serial or network connection.

If your printer uses the Fingerprint language, you use the SETUP command, followed by the node, subnode, and parameters setting. This Fingerprint example sets the media setting to labels with gaps:

```
SETUP "MEDIA,MEDIA TYPE,LABEL (w GAPS) "
```

If your printer uses the IPL language, you would send this command:

```
<STX><SI>T1<ETX>
```

To see the node, subnode, and parameters for Fingerprint and IPL, see Appendix C, “**Fingerprint and IPL Setup Menus**” on page 141.

Fingerprint automatically sends feedback to HyperTerminal as you type. If you want to see what you are typing with IPL, you need to perform the following procedure.

To see IPL commands as you type

- 1 From the HyperTerminal menu, select **File > Properties > the Settings** tab.
- 2 Click the **ASCII Setup** button.
- 3 Select **Echo typed characters locally**.
- 4 Click **OK** twice.

For more information on how to change configuration settings, see either the *Intermec Fingerprint Command Reference Manual* or the *IPL Command Reference Manual*.

Configuring Your Printer Using SmartSystems Foundation

SmartSystems™ Foundation is an Intermec software platform that lets you manage all of your SmartSystems-enabled devices simultaneously from a central server. The SmartSystems Console displays all SmartSystems-enabled computers and peripherals in your network.

Through the Console, you can:

- drag-and-drop configuration bundles, OS updates, and firmware upgrades to multiple computers.
- create a “golden” device configuration to use when updating other computers.
- remotely change settings on SmartSystems-enabled computers and peripherals.

With an AutoDeploy license, SmartSystems can automatically push software, configuration settings, and other files to connected PM4i printers. AutoDeploy can report on asset locations and battery status, making it easier to manage your mobile devices. The license also enables Scan-to-Connect, which makes connecting additional PM4i printers to your secure wireless network as easy as reading bar codes.

You can download SmartSystems Foundation at no charge from the Intermec web site. For more information on SmartSystems, go to www.intermec.com/SmartSystems. To purchase an AutoDeploy license, contact your local Intermec sales representative.

Choosing an Ethernet or Wireless Network

If you have an 802.11 wireless radio option installed in your printer, you need to choose between an Ethernet network or a wireless 802.11 network.

You can choose the network type of your printer:

- directly from the screen.
- using commands sent from your PC.
- using SmartSystems Foundation. For help, see the previous section **“Configuring Your Printer Using SmartSystems Foundation.”**
- from the printer home page. For help, see **“Configuring the Network Type” on page 73.**
- using PrintSet. For help, see **“Configuring Your Printer With PrintSet” on page 77.**

Choosing the Network Type From the Printer Screen

To configure the printer from the screen, you need to enter Setup mode.

To choose the network type from the printer screen

- 1 Press **Setup** to enter Setup mode.
- 2 Navigate to **Network** > **Network Type** and press **Enter**.
- 3 Select either **Ethernet** or **Wireless 802.11** and press **Enter**.
- 4 Press **Setup** to exit Setup mode.
- 5 Reboot the printer for the change to take effect.

Choosing the Network Type Using Printer Commands

You can use a serial connection to send Fingerprint or IPL commands the printer.

To choose the network type using printer commands

- 1 Connect your printer to your PC using a serial cable. For help, see [“Connecting the Printer to a PC Through the Serial Port” on page 42](#).
- 2 Start a terminal application, such as HyperTerminal.
 - If you are running Fingerprint, send this command to the printer:

```
setup "NETWORK", "NETWORK TYPE", "n"
```

where *n* is either Ethernet or Wireless 802.11.
 - If you are using IPL, send this command to the printer:

```
<STX><SI>n, , , p<ETX>
```

where *p* is either 0 (select Ethernet interface) or 1 (Select Wireless 802.11 interface).
- 3 Reboot the printer for the change to take effect.

Upgrading Firmware

The latest firmware and software is available for download from the Downloads page on the Intermec web site at www.intermec.com. You can upgrade your printer's firmware using:

- PrintSet. You can download PrintSet from the downloads page for the PM4i on the Intermec web site at www.intermec.com.
- a CompactFlash (CF) card.
- a USB storage device (maximum 2 GB).
- a serial or USB connection.
- an Ethernet or 802.11 network connection.

To download firmware updates

- 1 Go to the Intermec web site at www.intermec.com.
- 2 Click **Support > Downloads**.
- 3 Use the **Product Category**, **Product Family**, and **Product** fields, to select the PM4i.
- 4 Click **Submit**. The latest available software appears on the page.
- 5 Download the latest firmware version to your PC.
- 6 Extract the .zip file to a folder on your PC.

To upgrade using PrintSet

- 1 Download the latest version of PrintSet from the Intermec web site at www.intermec.com.
- 2 Select **File > Add Printer**. The Add Printer Wizard starts.
- 3 Under My Printers, select your printer.
- 4 Go to **Printer > Firmware Wizard**.
- 5 Follow the steps to update your firmware.

To upgrade using a CF card

- 1 Copy the firmware upgrade file to a CF card.
- 2 Insert the CF card in the appropriate slot on the back of your printer.
- 3 Turn on your printer.

To upgrade using a USB storage device

- 1 Turn on your printer.
- 2 Verify the USB storage device is supported by your printer. Insert the USB storage device in the appropriate slot on the back of your printer. On the display screen, one of the following status messages briefly appears:
 - USB memory stick connected
 - USB memory stick not supported



Note: If no status message appears when you insert the USB storage device, remove and reinsert the USB storage device. To manually verify the USB storage device is supported, see [“Using a USB Mass Storage Device” on page 57](#).

- 3 Insert the USB storage device in the appropriate slot on your PC.
- 4 In the root directory of the USB storage device, create a folder named “upgrade.”
- 5 Copy the firmware binary upgrade file to the upgrade folder on the USB storage device.



Note: The printer supports 8.3 binary filenames, which means the filename can have up to eight characters and a .bin extension.

- 6 Insert the USB storage device in the appropriate slot on the back of your printer. The upgrade starts. On the display screen, the status message, “Time Out,” appears.
- 7 When the upgrade is complete, the status message, “Check Integrity,” appears. Remove the USB storage device. You may need to restart your printer.

To upgrade using a serial or USB connection

- Use Fingerprint or IPL commands to send the upgrade file to your printer.

For help, see the [Intermec Fingerprint Command Reference Manual](#) or the [IPL Command Reference Manual](#).

To upgrade using an Ethernet or 802.11 network connection

- 1 Start your web browser application.

- 2** In the address field, enter the IP address of your printer.
- 3** Press **Enter**. Your printer's home page appears.
- 4** From the menu at the top of the page, click **Maintenance**. The firmware upgrade screen appears.
- 5** Click **Browse** and browse to the location of the firmware upgrade file.
- 6** Double-click the file, and then click **Upgrade**.

Downloading Fonts and Graphics

The PM4i supports 15 scalable Unicode TrueType and TrueDoc fonts as standard. The Unicode standard allows the use of special characters for various languages including non-Latin fonts, such as Arabic, Cyrillic, Chinese (including enhanced Simplified Chinese GB18030), Japanese, Korean, and Hebrew.

You can download additional fonts to the printer's Flash memory using:

- PrintSet. You can download PrintSet from the downloads page for the PM4i on the Intermec web site at www.intermec.com.
- Fingerprint or IPL commands. For help, see the *Intermec Fingerprint Command Reference Manual* or the *IPL Command Reference Manual*.
- a CompactFlash card or external 2GB USB mass storage device.

4

Troubleshooting and Maintaining the Printer

This chapter contains possible solutions to problems you may encounter while using the printer. This chapter also contains information on booting the printer and performing routine maintenance. This chapter contains these sections:

- **Troubleshooting the Printer**
- **Adjusting the Printer**
- **Maintaining the Printer**

Troubleshooting the Printer

You may have printer operation, print quality, or printer communication problems at some time during the life of your printer. You can easily fix most of the problems you encounter. If you cannot find the answer to your problem in this section, you may need to contact Product Support.

Contacting Product Support

Before contacting Intermec Product Support, you may want to visit the Intermec technical knowledge base (Knowledge Central) at intermec.custhelp.com to review technical information or to request technical support. If you still need help after visiting Knowledge Central, you may need to call Product Support.

To talk to an Intermec Product Support representative in the U.S.A. or Canada, call:

1-800-755-5505

Outside the U.S.A. and Canada, go to www.intermec.com and click Contact to find your local Intermec representative.

Before calling Intermec Product Support, make sure you have the following information ready:

- Printer serial number
- Firmware type and version
- Ethernet, wireless, or serial port settings

You can find all of the information listed above in the printer menu system or on a test print page.

Understanding Error Messages


Use the following tables to troubleshoot common error messages you may see displayed on your printer's screen. Keep in mind that some error messages:

- are specific to the type of firmware you are running.
- have corresponding error numbers.
- cause the Intermec Ready-to-Work indicator to blink or turn off.

Fingerprint Error Messages

Message	Description	Ready-to-Work Indicator Status	Error Number
Out of paper	The printer is out of paper. Load a new roll of media. For help, see “Loading Media” on page 9 .	Blinking	1005
Next label not found	Next label not found	Blinking	1031
Label not taken	Label not taken	Blinking	
Out of transfer ribbon	The printer is out of transfer ribbon. Load a new roll of ribbon. For help, see “Loading Ribbon” on page 31 .	Blinking	1027
Transfer ribbon is installed	This is not an error condition. This message briefly appears after a new roll of transfer ribbon is installed.	Blinking	1058
Head lifted	The printhead is lifted. Lower the printhead.	Blinking	1022
Cutter does not respond	Open and shut the cutter.	Blinking	1059
Cutter error1	Open and shut the cutter.	Blinking	1701
Cutter error2	Open and shut the cutter.	Blinking	1702
Cutter error3	Open and shut the cutter.	Blinking	1703
Cutter open	Shut the cutter.		1704
LSS too high	This error can occur when you run a test feed without any media installed, or if you have incorrect media settings. Load the printer with media and select the appropriate media type. For help, see “Loading Media” on page 9 .	Blinking	1007



Fingerprint Error Messages (continued)

Message	Description	Ready-to-Work Indicator Status	Error Number
LSS too low	This error can occur when you run a test feed without any media installed, or if you have incorrect media settings. Load the printer with media and select the appropriate media type. For help, see “Loading Media” on page 9 .	Blinking	1008
Testfeed not done	The printer did not perform a test feed before it printed out test labels. Performing a test feed calibrates the sensor. To perform a testfeed, press the  button.	Blinking	1606
No RFID support installed	The optional RFID interface is not installed in the printer.	Blinking	1320
No tag found	No RFID tag has been found.	Blinking	1321
Pause Mode Entered	The print job is paused.	Blinking	
Setup Mode Entered	The printer is in Setup mode.	Off	
IP link error	No network connection.	Blinking	
IP configuration error	The printer is trying to acquire an IP address from the network. Wait for the printer to complete the task before taking any action.	Blinking	
Generic DP error	In Direct Protocol, you can enable error handling for specific errors using the ERROR statement. When errors added to the built-in error handling occur, this event is set. The text included in the SNMP trap is the standard text corresponding to the error.	Blinking	
Press any key to continue	If an error occurs in the Fingerprint immediate mode, for example “out of paper” when the print key is pressed, this event is set.	Off	
Application load error	If an application is started but does not run, the Intermec Ready-to-Work indicator blinks. For example, if there is a syntax error in the loaded program file.	Blinking	
RtW blink by application	This condition is set by the Fingerprint SYSHEALTH command. For more information, see the <i>Intermec Fingerprint Command Reference Manual</i> .	Blinking	

Fingerprint Error Messages (continued)

Message	Description	Ready-to-Work Indicator Status	Error Number
RtW off by application	This condition is set by the Fingerprint SYSHEALTH command. For more information, see the <i>Intermec Fingerprint Command Reference Manual</i> .	Off	
Application break	If you perform a user break by pressing (Shift) - (Pause) to stop an application from running, or if a runtime error occurs, the Intermec Ready-to-Work indicator turns off. You can turn the indicator on by changing to Direct Protocol or running an application. But, if the application handles the break (ON BREAK) or runtime error (ON ERROR GOTO), the Intermec Ready-to-Work indicator is not affected, and the application sets the status. For more information, see the <i>Intermec Fingerprint Command Reference Manual</i> .	Off	
Printhead not found	Printhead not found.	Off	
Rebooted	The printer has been rebooted.	Off	
Initializing	The printer is initializing.	Off	
Printer crash	Printer crash. In most instances, when the printer crashes, the screen is reset which causes the Intermec Ready-to-Work indicator to turn off.	Off	
Printer turned off	The printer is off.	Off	
Maintenance	The printer is upgrading its firmware. Wait for the printer to complete this task.	Off	
Power supply Over temperature	The power supply is overheated and needs to cool down.	Off	1718
Printhead too hot	The printhead is overheated and needs to cool down. You need to resend your print job.	Off	1088

IPL Error Messages

Message	Description	Ready-to-Work Indicator Status	Error Number
Paper Out	The printer is out of paper. Load a new roll of media. For help, see “Loading Media” on page 9 .	Blinking	1005
Ribbon Out	The printer is out of transfer ribbon. Load a new roll of ribbon. For helps, see “Loading Ribbon” on page 31 .	Blinking	1031
Ribbon Fitted	This is not an error condition. This message briefly appears after a new roll of transfer ribbon is installed.	Blinking	
Printhead Up	The printhead is lifted. Lower the printhead.	Blinking	1027
Open & Shut Cutter	Cutter error 1. Open and shut the cutter.	Blinking	1058
Open & Shut Cutter	Cutter error 2. Open and shut the cutter.	Blinking	1022
Open & Shut Cutter	Cutter error 3. Open and shut the cutter.	Blinking	1059
Paper Fault	LSS too high. This error can occur when you run a test feed without any media installed, or if you have incorrect media settings. Load the printer with media and select the appropriate media type. For help, see “Loading Media” on page 9 .	Blinking	1701
Paper Fault	LSS too low. This error can occur when you run a test feed without any media installed, or if you have incorrect media settings. Load the printer with media and select the appropriate media type. For help, see “Loading Media” on page 9 .	Blinking	
Paper Fault	The printer did not perform a test feed before it printed out test labels. Performing a test feed calibrates the sensor. To perform a test feed Press the  button.	Blinking	
Press Feed	Press the  button to resume.	Blinking	
Paused	This is not an error condition. This message appears when the print job is paused.	Blinking	
	Setup mode entered.	Off	
	IP link error. No network connection.	Blinking	

IPL Error Messages (continued)

Message	Description	Ready-to-Work Indicator Status	Error Number
	IP configuration error. The printer is trying to acquire an IP address from the network. Wait for the printer to complete the task before taking any action.	Blinking	
No Printhead	Printhead not found	Off	
	Rebooted	Off	
	Initializing	Off	
	Printer crash. In most instances, when the printer crashes, the screen is reset which causes the Intermecc Ready-to-Work indicator to turn off.	Off	
	Printer turned off	Off	
	Maintenance	Off	
Psu Over Temp	Power supply over temperature	Off	
Printhead Hot	The printhead is overheated and needs to cool down. Wait for printing to resume automatically.	Off	

Troubleshooting Printer Problems and Finding Solutions

Use this section to find possible solutions to printer problems.

Print Quality Problems and Possible Solutions

Problem	Possible Solution
The printout is weak, overall.	<p>Try these possible solutions in order:</p> <ul style="list-style-type: none"> • Make sure that your media setting is appropriate for the type of media you are using. • The contrast may be too low. Try increasing the contrast. • The printhead pressure may be too low. Increase the printhead pressure. For help, see “Adjusting the Printhead Pressure” on page 102. • Replace the printhead. For help, see “Replacing the Printhead” on page 111.
The printout is weaker on one side.	Adjust the pressure arm. For help, see “Adjusting the Pressure Arm” on page 98.


Print Quality Problems and Possible Solutions (continued)

Problem	Possible Solution
There are weak spots on the printout.	Try these possible solutions in order: <ul style="list-style-type: none">• There may be foreign particles on the media. Clean or replace the media.• Make sure that your media and ribbon are compatible.• Make sure that you are using high quality media and ribbon.• The contrast may be too low. Try increasing the contrast.• The printhead may be worn. Replace the printhead. For help, see “Replacing the Printhead” on page 111.• The platen roller may be worn. For help, contact your Intermec service representative.
The printout is dark, overall. Or, There is excessive bleeding on the media.	Try these possible solutions in order: <ul style="list-style-type: none">• Make sure that your media setting is appropriate for the type of media you are using.• The contrast may be too high. Try decreasing the contrast.• The printhead pressure may be too high. Decrease the printhead pressure. For help, see “Adjusting the Printhead Pressure” on page 102.• The printhead voltage may be incorrect or the energy control may be faulty. For help, contact your Intermec service representative.
There are dark lines along the media path.	There may be foreign particles on the printhead. Clean the printhead. For help, see “Cleaning the Printhead” on page 109 .
There are white vertical lines on the printout.	Try these possible solutions in order: <ul style="list-style-type: none">• There may be foreign particles on the printhead. Clean the printhead. For help, see “Cleaning the Printhead” on page 109.• There may be missing dots on the printhead. Replace the printhead. For help, see “Replacing the Printhead” on page 111.
Part of a dotted line is missing.	Try these possible solutions in order: <ul style="list-style-type: none">• The printhead may be failing. Replace the printhead. For help, see “Replacing the Printhead” on page 111.• The strobe signal may be failing. For help, contact your Intermec service representative.

Print Quality Problems and Possible Solutions (continued)

Problem	Possible Solution
The inner edge of the printout is missing.	Try these possible solutions in order: <ul style="list-style-type: none"> • The media may not be properly installed or aligned. Reload the media. For help, see “Loading Media” on page 9. • The small core and supply post may be in the upper position. Move the post to the lower position. • The X-start parameter may be set too low. Increase the setting.
The content on my printout is compressed.	The print speed may be too high. Lower the print speed.
Nothing shows up on my thermal transfer printout.	The ink-coated side of the ribbon may not be facing the media. Reload the ribbon. For help, see “Loading Ribbon” on page 31 .
When I feed or print a label, the ribbon is not taken up. Instead, it spills out of the front of the printer.	Make sure Paper Type is set to Thermal Transfer Ribbon (TTR): <ol style="list-style-type: none"> 1 On your printer’s keypad, press (Setup) to enter the Setup menu. 2 If you are using Fingerprint, go to Media > Paper Type > Transfer. If you are using IPL, go to Media > Paper Type > TTR. 3 Press (Enter). 4 Press (Setup) to exit the Setup menu.
The transfer ribbon breaks.	Try these possible solutions in order: <ul style="list-style-type: none"> • Make sure that your media setting is appropriate for the type of media you are using. • Make sure that the ribbon is fitted correctly. Reload the ribbon. For help, see “Loading Ribbon” on page 31. • The energy control may be faulty. For help, contact your Intermec service representative.
The transfer ribbon wrinkles.	Try these possible solutions in order: <ul style="list-style-type: none"> • The ribbon break shaft may not be adjusted correctly. For help, see “Adjusting the Ribbon Break Shaft” on page 104. • You may need to adjust the media edge guide. For help, see “Loading Media” on page 9. • The printhead pressure may be too high. Decrease the printhead pressure. For help, see “Adjusting the Printhead Pressure” on page 102.

Print Quality Problems and Possible Solutions (continued)

Problem	Possible Solution
The media feed is not working properly.	Try these possible solutions in order: <ul style="list-style-type: none">• The media characteristics may have changed. Press the  button.• One of these parameters may not be properly configured: Label rest dots, Media type, or LSS position. Verify the settings for these parameters.• The sensors may be dirty. Clean the media guides. For help, see “Cleaning the Media Guides” on page 107.• The sensors may need to be replaced. For help, contact your Intermec service representative.


Networking Problems and Possible Solutions

Problem	Possible Solution
I am having problems with my Ethernet or 802.11 radio network connection.	Try these possible solutions: <ul style="list-style-type: none">• Make sure that your network cable is:<ul style="list-style-type: none">• securely connected to your printer.• a straight “pin to pin” cable, not a “crossover” cable.• Make sure that your PC is correctly configured for and connected to your network.• Make sure that your printer is correctly configured for your network.
I cannot connect to my printer home page.	If you are connecting your printer with a crossover network cable, you may need to disable the web browser’s proxy settings on your computer to access your printer’s home page.

RFID Problems and Possible Solutions

Problem	Possible Solution
I loaded my printer with RFID media, but it is not writing to the tags.	After you load RFID media, restart the printer or run a TESTFEED to let the printer identify the RFID media type.

RFID Problems and Possible Solutions (continued)

Problem	Possible Solution
The RFID kit is installed, but “RFID” does not appear in the setup tree.	The printer is not communicating properly with the RFID hardware. For help, contact your local Intermec representative.
When I try to set RFID MODE to ENABLE, I get one of these error messages: <ul style="list-style-type: none"> • “Error in filename” (Fingerprint or Intermec Direct Protocol) • “No RFID support” (IPL) 	An RFID kit is not installed in the printer. For help, contact your local Intermec representative.
None of the RFID commands work, and I get this message: “RFID Inactive.”	RFID MODE is disabled. Change MODE to ENABLE.
Printing on regular media (not RFID) is slow and halted in between labels.	RFID MODE is enabled. Change MODE to DISABLE.
I am using an application to write to RFID tags, and the printer is printing “VOID” labels.	<ul style="list-style-type: none"> • The printer may not recognize the RFID media type. For Fingerprint printers, run a TESTFEED. For IPL printers, raise and lower the printhead, and then press  or turn on the printer. • You may need to modify the TAGADJUST parameter. • You may need to adjust the output power (field strength) to the antenna.
When I try to perform a TESTFEED, I get this message, “No tag found.”	<ul style="list-style-type: none"> • Make sure that you are using RFID media. • You may need to modify the TAGADJUST parameter. • The tag may be broken. Try printing on a different label.
I get this error message: “Not supported by tag type.” (Fingerprint)	<p>This error message indicates that a command:</p> <ul style="list-style-type: none"> • may be trying to access a tag data segment that is not available on the RFID media. • is being used with a level of security that is not allowed by the tag type. <p>Make sure that you are using the appropriate media for your application.</p>

RFID Problems and Possible Solutions (continued)

Problem	Possible Solution
When I send a TAGREAD or TAGWRITE command, I get this error message: “Tag format error.”	The TAGFORMAT defined for the operation determines the number of required parameters. You may need to modify the TAGFORMAT. For help, see the <i>Intermec Fingerprint Command Reference Manual</i> or the <i>IPL Command Reference Manual</i> . For more information, see the EPC Tag Data Standard (v1.1, revision 1.27) available from the EPCglobal web site at www.epcglobalinc.org .
Data can be written unlawfully to a write protected ISO 18000-6B tag.	For some ISO 18000-6B tag chips, the functionality to protect the tag memory from being rewritten has not been implemented. Switch to tags with a different chip that have this functionality implemented.
I can read ISO 18000-6B tags, but when I try to read Class 1 tags, I get this error message: “No tag found.”	Class 1 tags require an MPR6100 RFID Radio Module. To order an MPR6100 kit, contact your local Intermec representative.
(Fingerprint only) My printer displays an error code.	Use the error code text to troubleshoot the problem: 1320 No RFID support installed. 1321 No tag found. 1322 Access outside tag memory. 1323 Tag format error. 1324 RFID inactive. 1325 Not supported by tag type. 1326 RFID module too hot. 1327 RFID duty cycle exceeded. 1328 RFID lock error. Tag cannot be locked. 1329 RFID access error. Tag is locked.



Note: If you are using Intermec Direct Protocol, error codes 1320 to 1329 are supported and displayed with the error text.

Resetting the Printer


When you reset the printer, you return it to the factory default settings. Resetting the printer removes all files used to store settings. But, it does not reset settings that have already been read when the files. So, wireless communication settings, such as SSID and keys retain their values from the previous start. However, the next reboot resets them to the factory default values.

Resetting the printer also does not change the selected printer language (Fingerprint, IPL, ZSim, or DSim).

There are two ways to reset the printer:

- Insert a special CompactFlash memory card and restart the printer.
- Use the printer's keypad.

To reset the printer using the keypad


- 1 Turn off the printer.
- 2 Open the right cover and lift the printhead.
- 3 Turn on the printer and press and hold the  key until the printer beeps.
- 4 Quickly press the following keys in sequence:




The following message appears:

Factory Default?

Enter=Yes ESC=No

- 5 Within 10 seconds, press  to reset the printer to its factory default settings. The parameters are reset and the printer continues the normal startup process.

If you do not press  within 10 seconds, the normal startup continues and the printer is not reset.

Adjusting the Printer

You may need to adjust your printer to accommodate your printing needs or improve performance. You can adjust the:

- pressure arm.
- label stop sensor (LSS) position.
- printhead pressure.
- ribbon break shaft.
- label taken sensor.

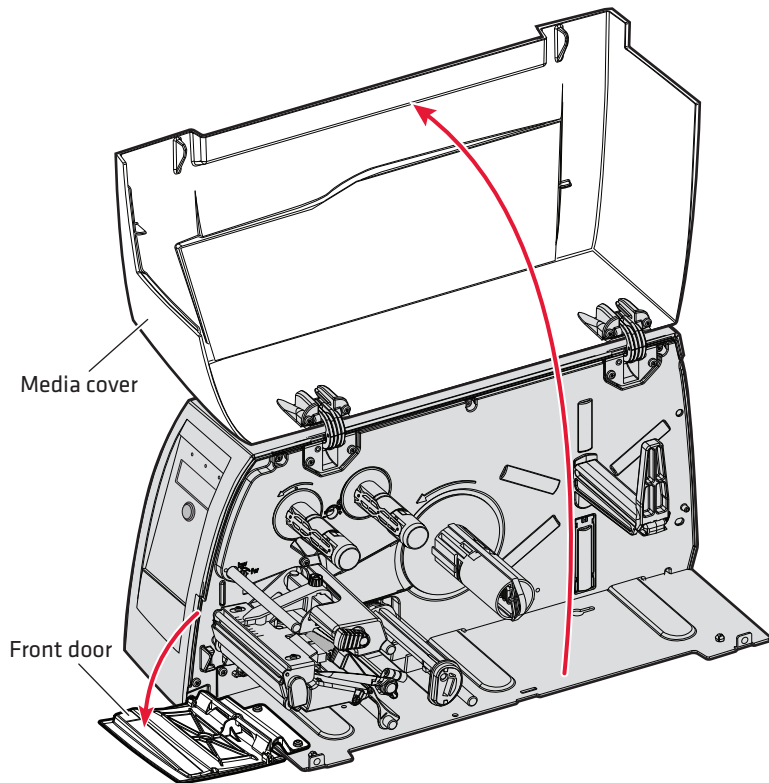
Adjusting the Pressure Arm

The printer is factory-adjusted for full-size media width. If you are using media that is less than full width, Intermec recommends that you adjust the position of the pressure arm so that it is centered on the media and provides even pressure.

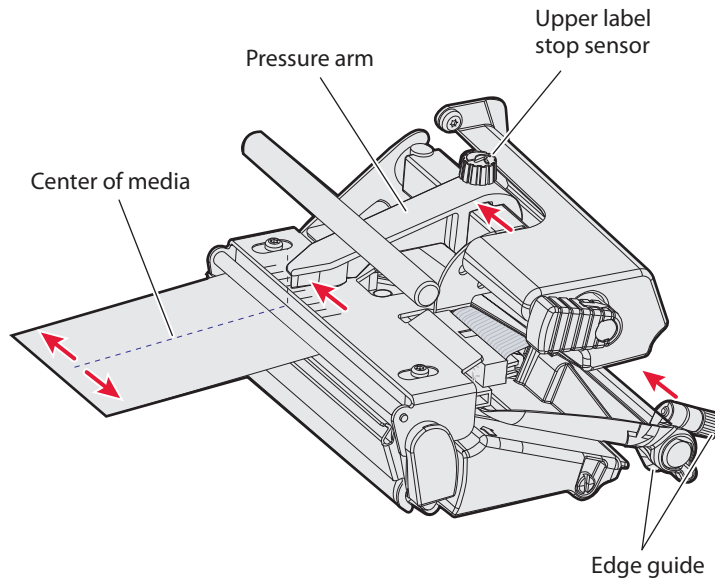
A poorly adjusted pressure arm may be detected by a weaker printout on either side of the media path.

To adjust the pressure arm

- 1 Open the front and side doors.



- 2 Loosen the nut that secures the pressure arm.



- 3 Move the pressure arm inward or outward until the arrow on the tip of the arm is centered with the media.



Note: Move the pressure arm at the part closest to the screw, not at the tip. If the arm is difficult to move, lift the printhead and pull the printhead bracket free from the magnet in the arm.

- 4 When the pressure arm is centered, tighten the nut to secure the arm.
- 5 Adjust the edge guides.

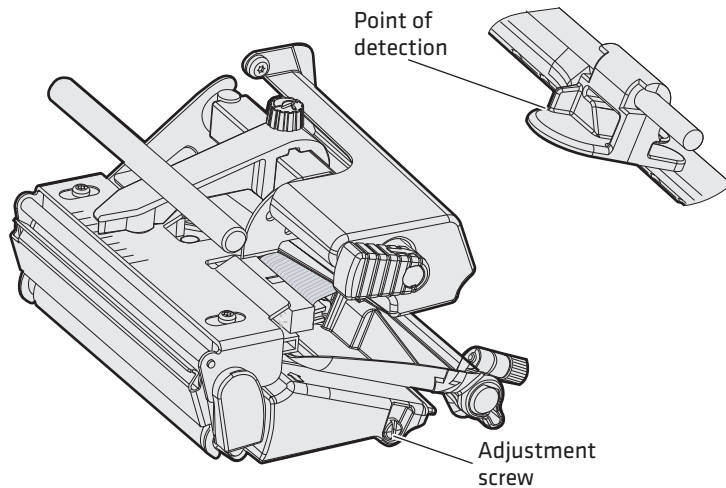
Adjusting the Label Stop Sensor

The label stop/black mark sensor (LSS) is a photoelectric sensor that controls the printer's media feed by detecting gaps between labels, or slots or black marks in continuous stock, depending on the printer's media type setup. The LSS must be aligned with the gaps, slots, or black marks. If you are using irregularly shaped labels, align the LSS with the front tips of the labels.

The LSS can be moved laterally from the inner edge of the media path to 57 mm (2.24 in) outward, which corresponds to the center line of full width media. One part of the sensor is on the upper media guide and the other part of the sensor is under the lower guide.


To adjust the LSS


- 1 Use a slotted screwdriver to turn the adjustment screw.
 - Rotate the screw clockwise to move the sensor toward the center section.
 - Rotate the screw counterclockwise to move the sensor outward, away from the center section.



- 2 Look at the print mechanism from the front with the printhead lifted to make sure that the point of detection on the upper sensor is aligned with the center of the slots or marks in the media.

To test the LSS

- 1 Make sure that your printer is properly configured for the type of media you are using. Go to **SETUP > MEDIA > MEDIA TYPE**.
- 2 Open the right door.
- 3 Lift and lower the printhead.
- 4 Press the  button.
- 5 Make sure there is a label (not a gap or mark) at the LSS.

- 6 Make sure that the media is routed as close to the center section as the guide allows.
- 7 Press  to enter the Setup menu, and use the keypad to go to the LSS menu:
 - If you are running Fingerprint, go to **SETUP > PRINT DEFS > LSS TEST > LSS AUTO**.
 - If you are running IPL, go to **SETUP > TEST/SERVICE > LSS TEST > LSS AUTO**.

The screen displays the LSS AUTO menu with the cursor in the center.

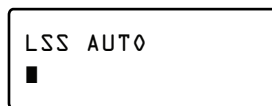


Note: There is no way to adjust the LSS function; the menus only indicate values obtained from the LSS. The test menu can determine if the sensor unit is not physically in position, is blocked by dust or stuck labels, or is defective in some way.

- 8 Check gap detection:
 - a Lift the printhead.
 - b Slowly pull out the media. When the LSS detects a gap or detection slot, the cursor moves to the right.



- 9 Check mark detection:
 - a Lift the printhead.
 - b Slowly pull out the media. When the LSS detects a black mark, the cursor moves to the left.



- 10** If the LSS does not move as described in Steps 8 and 9, make sure that:
- the cursor position is accurate. Refresh the cursor position by pressing the (♥) key.
 - the LSS is laterally aligned with the slots or black marks.
 - both the upper and lower parts of the LSS are aligned with each other.
 - the transfer ribbon is properly loaded so it does not interfere with the LSS. For help, see **“Loading Ribbon” on page 31**.
 - the LSS guides are clean and free from stuck labels or other objects that may interfere with the light that goes from one part of the LSS to the other. For help, see **“Cleaning the Printer” on page 106**.
 - the media does not have some kind of preprint that may disturb detection.
 - there is enough difference between the black marks and the surrounding areas.
 - the liner is transparent enough.
 - the LSS works properly with another type of media.

Adjusting the Printhead Pressure

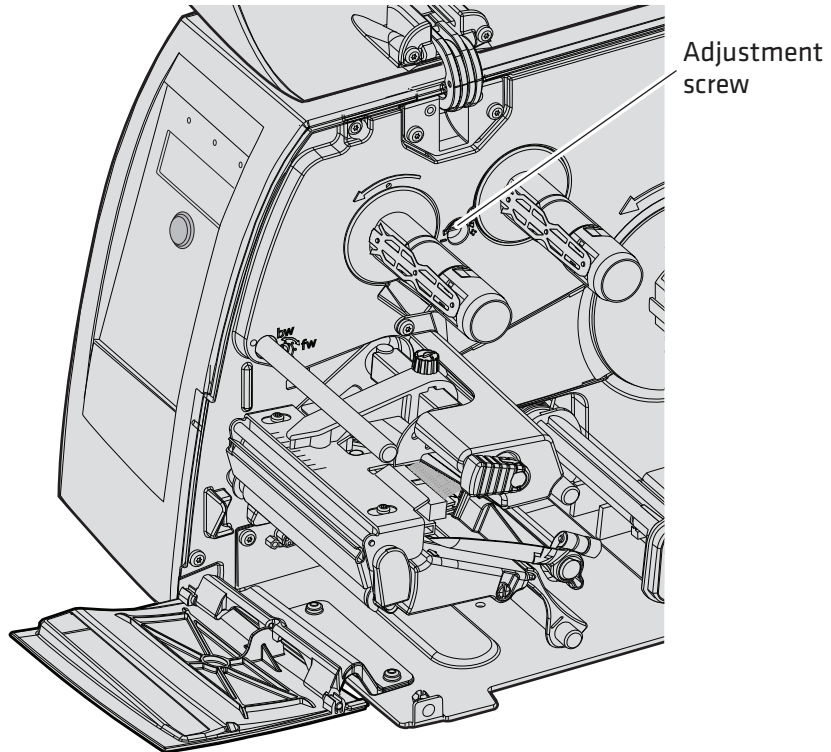
The pressure of the thermal printhead against the direct thermal media is factory-adjusted. But, you may need to adjust the printhead pressure to accommodate thicker or thinner media.



Note: Do not use a higher printhead pressure than necessary, because it may increase the wear of the printhead and shorten its life.

To adjust the printhead pressure

- 1 Using a slotted screwdriver, turn the adjustment screw clockwise for more pressure and a darker printout (+) or counterclockwise for less pressure (-) and a lighter printout.



- 2 Print testprint labels to check the print quality. For help, see **“Printing a Test Label” on page 37.**

To return the printhead pressure to the factory default setting

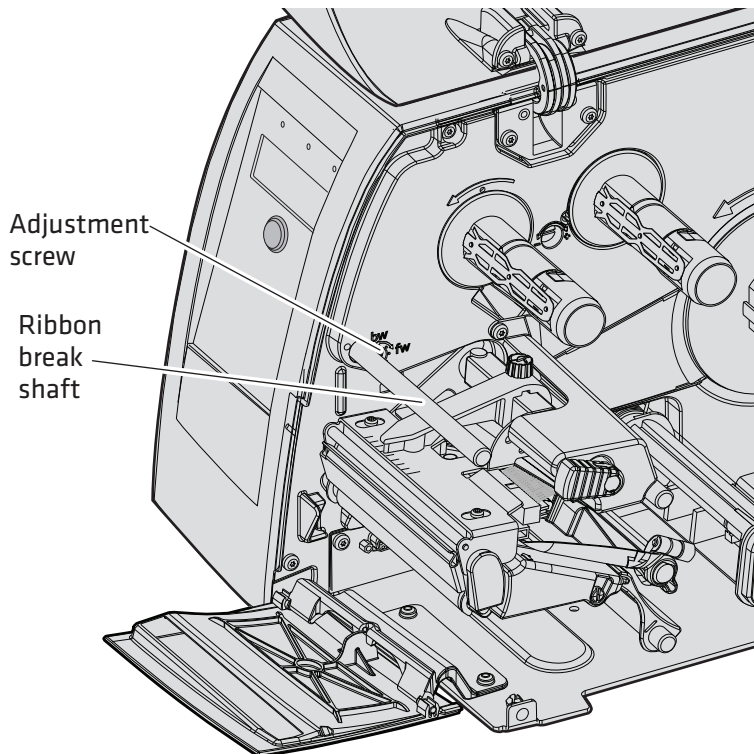
- Tighten the screw (+) as far as you can, and then loosen it (-) four full turns.

Adjusting the Ribbon Break Shaft

If ribbon wrinkling occurs, you may need to adjust the alignment of the front ribbon break shaft so that it runs parallel to the printhead and the ribbon supply and rewind hubs.

To adjust the ribbon break shaft

- Using a slotted screwdriver, carefully turn the adjustment screw:
 - If the ribbon tends to slide outward, turn the screw clockwise (cw) to move the outer end of the break shaft forward.
 - If the ribbon tends to slide inward, turn the screw counterclockwise (ccw) to move the outer end of the break shaft backward.



Adjusting the Label Taken Sensor

If you are using the optional label taken sensor (LTS), you may need to adjust the sensitivity depending on ambient light conditions and the reflective characteristics of the back side of the media.

To adjust the LTS

- 1 Press **(Setup)** to enter the Setup menu, and use the keypad to go to the LTS menu:
 - If you are running Fingerprint, go to **SETUP > PRINT DEFS > LTS**.
 - If you are running IPL, go to **SETUP > TEST/SERVICE > LTS**.
- 2 Modify one or more LTS settings.

Setting	How to Modify
LTS Adjust	<ol style="list-style-type: none"> 1 Press (Enter). The printer feeds a label. 2 Remove the label and press (Enter) again. The printer displays the sensitivity value that is automatically selected by the firmware and the range in which the LTS will work. 3 Press (Enter) again to proceed to the LTS Test menu.
LTS Test	<ol style="list-style-type: none"> 1 Press (Enter). The printer feeds a label. 2 Remove the label. The printer automatically feeds another label. 3 Repeat Steps 1 and 2 until you are sure the LTS is working properly. 4 Press (Enter) to stop the test and exit.
LTS Value	<ol style="list-style-type: none"> 1 Press (Enter). 2 Enter a new LTS value within the range indicated in the LTS Adjust menu (0 to 10).

Maintaining the Printer

To keep your printer working properly, you should perform regular maintenance.

Cleaning the Printer

To properly maintain your printer, you should regularly clean it. You can clean the:

- exterior of the printer.
- media guides.
- printhead.



Warning

To avoid possible personal injury or damage to the printer, never insert any pointed or sharp objects into the printer.



Caution

Use only the cleaning agents specified in this section. Intermec is not responsible for damage caused by any other cleaning materials used on this printer. Clean the printer with a cotton swab saturated with alcohol.



Follow ESD
Procedures

When cleaning or replacing the printhead, take precautions to avoid electrostatic discharges.

Follow these guidelines for cleaning the printer:

- Always remove the power cord before cleaning.
- Never spray the printer. Protect it from water when cleaning the premises.
- Never use any sharp tools for removing stuck labels. The printhead and rollers are delicate.

Cleaning the Exterior of the Printer

Clean the exterior of the printer as needed.

To clean the exterior of the printer

- Wipe external surfaces with a soft cloth slightly moistened with water or a mild detergent.

Cleaning the Media Guides

Both parts of the label stop sensor, which controls the media feed, are covered by plastic guides. The guides are transparent to allow the light to pass between the two parts of the label stop sensor. These areas must be kept clean from dust, stuck labels, and adhesive residue.

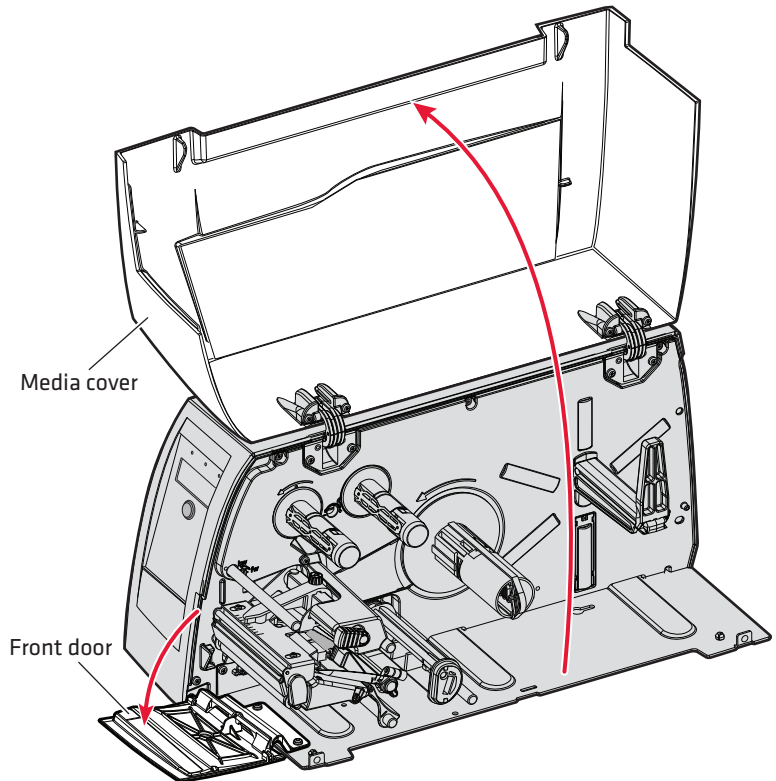
If your printer starts to feed labels in an unexpected way, pull out the upper guide check for objects, such as dust, adhesive residue, or labels, that may be blocking the beam of light. If necessary, clean the guides.



Isopropyl alcohol [(CH₃)₂CHOH; CAS 67-63-0] is a highly flammable, moderately toxic, and mildly irritating substance.

To clean the media guides

- 1** Open the front door and media cover.



- 2** Loosen the screw on the edge guide.
- 3** Pull both the upper LSS guide and the edge guide straight out.
- 4** Clean the guides with a cleaning card or a soft cloth soaked in isopropyl alcohol. Be careful not to scratch the guides.
- 5** Replace the upper LSS guide and the edge guide. Make sure that the LSS fits into the holder on the upper LSS guide.

Cleaning the Printhead

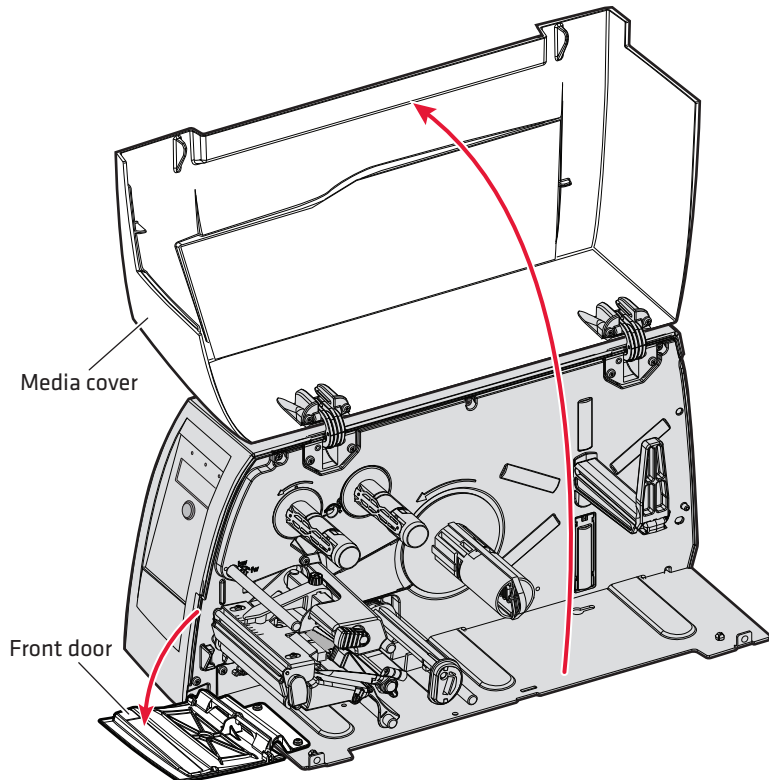
Cleaning the printhead on a regular basis is important for the life of the printhead and for the printout quality. You should clean the printhead each time you replace the media. This section describes how to clean the printhead using cleaning cards. If additional cleaning is required, for example removing adhesive residue from the platen roller or tear bar, use a cotton swab moistened with isopropyl alcohol.



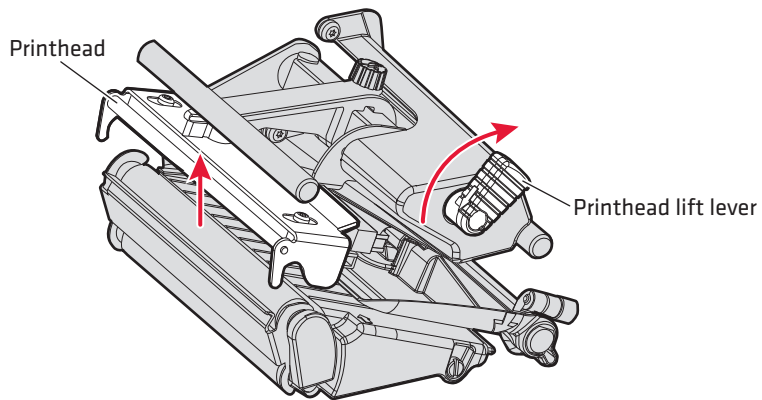
Isopropyl alcohol [(CH₃)₂CHOH; CAS 67-63-0] is a highly flammable, moderately toxic, and mildly irritating substance.

To clean the printhead

- 1 Open the front door and media cover.



- 2 Turn the printhead lift lever clockwise to raise the printhead.



- 3 Remove any media and transfer ribbon.
- 4 Open the cleaning card envelope and pull out the cleaning card. Read the warning text.
- 5 Insert most of the cleaning card under the printhead, and then lower the printhead.
- 6 Pull out the cleaning card and raise the printhead.
- 7 Wait for approximately 30 seconds to allow the cleaning fluid to dissolve the residue.
- 8 Repeat Steps 5 through 7.
- 9 If necessary, repeat the process with a fresh cleaning card.
- 10 Allow the cleaned parts to dry before loading media and ribbon.

Replacing the Printhead

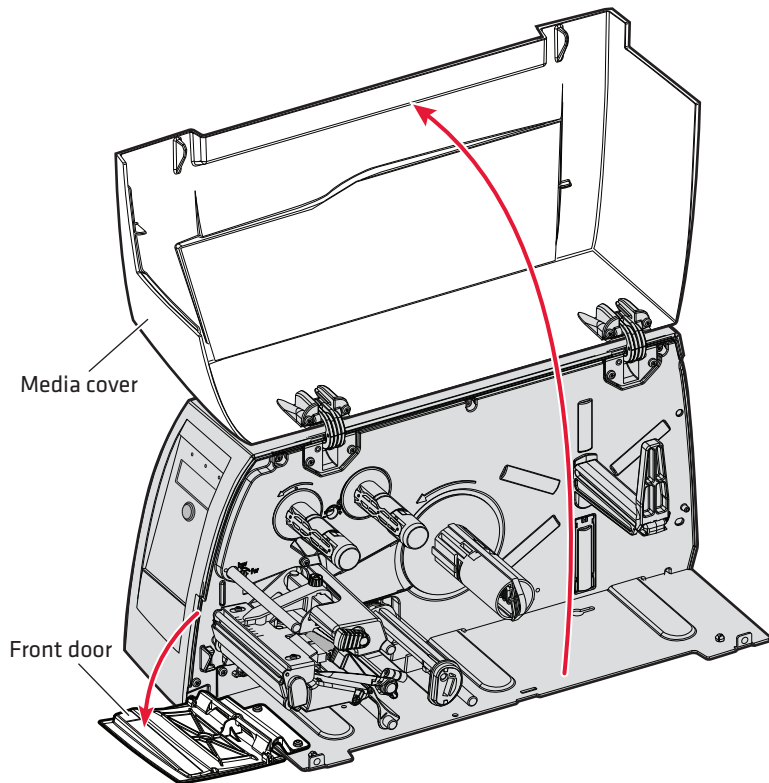
The printhead is subject to wear both from the direct thermal media or ribbon and from the rapid heating and cooling process during printing. So, you need to periodically replace the printhead.

How often you need to replace the printhead depends factors such as the print images, the type of direct thermal media or ribbon in use, the amount of energy to the printhead, the print speed, and the ambient temperature.

You must turn off the power before replacing the printhead. The firmware can only detect the new printhead when the printer is restarted.

To replace the printhead

- 1 Open the front door and media cover.



Chapter 4 – Troubleshooting and Maintaining the Printer

- 2** Turn the printhead lift lever clockwise to raise the printhead.
- 3** Remove any media and transfer ribbon.
- 4** Pull the printhead bracket away from the magnet in the pressure arm.
- 5** Disconnect the printhead bracket from the print mechanism as indicated by the arrows and pull out the printhead as far as the cables allow.
- 6** Disconnect the cables from the printhead:
 - Note the snap-lock on the inner connector.
 - Be sure to pull at the connectors, not at the cables.
- 7** Connect the two cables to the replacement printhead.
- 8** Install the printhead. Make sure that the printhead cables run freely.
- 9** Turn the printhead lift lever counterclockwise so the magnet engages the printhead bracket.
- 10** Load a new supply of media and ribbon.

A

Specifications

This appendix contains specifications for the printer and media. It also contains information about accessories for the printer.

Specifications

Physical Specifications

Dimensions: 54.3 x 26.1 x 29.8 cm (21.38 x 10.28 x 11.73 in)

Weight: 13.5 kg (29.76 lbs.)

Power Specifications

Printer Voltage: ~100-240 V, 2-1A, 50/60Hz

Temperature and Humidity Specifications

Operating Temperature: 5°C to 40°C (41°F to 104°F)

Storage Temperature: -20°C to 70°C (-4°F to 158°F)

Relative Humidity: 20 to 80% non-condensing

Communications and Connectivity

- Serial port (RS-232)
- USB device
- USB full speed host
- Ethernet, 100 Mbps
- 802.11b/g (optional)
- IPv6

Memory

- 32MB RAM
- 16MB Flash
- CompactFlash (CF) card (optional)
- USB memory device (optional)

Print Speed and Resolution

Specification	Description
Print Mode	Direct Thermal Transfer
Print Speed (variable)	100 to 150 mm/sec (4 to 6 in/sec) at 300 dpi and 406 dpi 100 to 200 mm/sec (4 to 8 in/sec) at 203 dpi
Printhead Resolution	8 dots/mm at 203 dpi 11.8 dots/mm at 300 dpi 16 dots/mm at 406 dpi
Print Width (max)	104 mm (4.095 in) at 203 dpi 105.7 mm (4.161 in) at 300 dpi 104.0 mm (4.095 in) at 406 dpi
Print Length (max)	409.5 cm (161.25 in)
Media Width (min/max)	25 to 114.3 mm (1 to 4.5 in)
Media Roll Diameter (max)	213 mm (8.38 in)
Medial Roll Core Diameter	38 to 40 mm (1.5 in) or 76 mm (3 in)
Ribbon Width (min/max)	25 to 110 mm (1 to 4.33 in)
Ribbon Roll Diameter (outer) (max)	82 mm (3.2 in) 450 m (1475 ft) of ribbon
Ribbon Roll Core Diameter (inner)	25.4 mm (1.00 in)
Print Directions	4

Interfaces

This section describes the standard interfaces available on the PM4i printer.

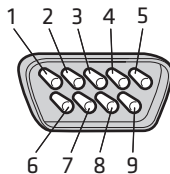
RS-232 Serial Interface

Use this table to understand the default settings of the serial port.

Default Settings of the Serial Port

Parameter	Default Setting
Baud rate	9600
Character Length or Data Bits	8
Parity	None
Stop Bits	1
Handshaking	none (Fingerprint XON/XOFF (IPL))

The printer end of the serial cable is a DB9 pin and the PC end is dependent on the model of the PC.



RS-232 Serial Cable DB9 Pins

Serial Cable Pins and Description

Pin	Signal	Description
1		External +5 V DC, Max 500 mA
2	TXD	Transmit data
3	RXD	Receive data
4		
5	GND	Ground
6		

Serial Cable Pins and Description (continued)

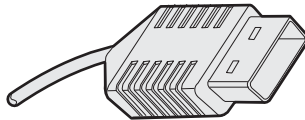
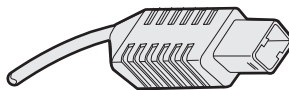
Pin	Signal	Description
7	CTS	Clear to send
8	RTS	Request to send
9		

USB Interface

The printer supports USB full speed v2.0 Host. To use the USB interface to print from a PC, you need to have the Intermec InterDriver printer driver installed on your PC. For help setting up USB communications, see **“Connecting the Printer to a PC Through the USB Device Port” on page 43.**

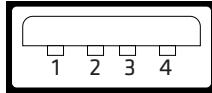
The printer is a “self-powered device.” Intermec recommends that you only connect one printer to each USB port on the PC, either directly or through a hub. You can connect other devices, such as a keyboard or a mouse, to the same hub. If you need more than one USB printer to a host, you should use different USB ports.

The USB cable that ships with the printer has a USB Type A connector on one end to connect to the PC and a USB Type B connector on the other end to connect to the printer. You do not need to configure communications for the USB port.

**USB Type A Connector****USB Type B Connector**

USB Host Interface

The printer has a USB host interface for connecting USB devices such as HID bar code scanners and keyboards, USB storage devices, and USB hubs.



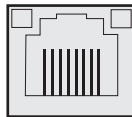
USB Host Interface

USB Host Interface Pins and Descriptions

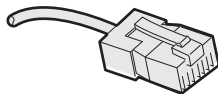
Pin	Description
1	VBUS
2	D-
3	D+
4	Gnd

Ethernet Interface

The Ethernet interface has an RJ-45 socket for use with a standard RJ-45 cable. The interface supports 10/100 Mbps Fast Ethernet (10BASE-T, 100BASE-TX) and is fully compliant with the IEEE 802.3u standard. The network card MAC address can be found on the label below the socket.



Ethernet Socket



Ethernet Connector

One yellow and one green LED indicate the network status.

Understanding the Ethernet LEDs

LED	Status	Description
Green	On	Link
	Off	No link
	Blinking	Network activity
Yellow	On	100BASE-TX
	Off	10BASE-T

Parallel IEEE 1284 Interface

The parallel port supports Universal Plug and Play (UPnP) and additional status reporting through IEEE 1284 nibble ID mode.

Parallel IEEE 1284 Pins and Descriptions

Pin	Description	Transmitter	Comments
1	nStrobe	Host	
2 to 9	Data 0-7	Host	
10	nAcknowledge	Printer	
11	Busy	Printer	
12	Perror	Printer	
13	Select	Printer	
14	nAutoFd		
15 to 16	Not connected		
17	Chassis ground		
18	External +5 V DC		Max 500 mA
19 to 30	Signal ground		
31	nInit		
32	nFault	Printer	
33	Signal ground		
34 to 35	Not connected		
36	nSelectIn		

Media Specifications

Core and Roll Specifications

Measurement	Value
Core inside diameter, standard	38 to 40 mm (1.5 in)
Core inside diameter, with adapter	76.2 mm (3 in)
Core width	must not protrude outside the media
Maximum roll outside diameter	213 mm (8.38 in)
Minimum media width, standard	25 mm (1.00 in)
Minimum media width, fanfold guides	40 mm (1.57 in)
Minimum media width, non-adhesive strip	25.0 mm (1.00 in)
Maximum media width, non-adhesive strip	114.3 mm (4.50 in)
Minimum media width, self-adhesive strip, with liner	25.0 mm (1.00 in)
Maximum media width, self-adhesive strip, with liner	114.3 mm (4.50 in)
Minimum media width, self-adhesive strip, without liner	25.0 mm (1.00 in)
Maximum media width, self-adhesive strip, without liner	114.3 mm (4.50 in)

Non-Adhesive Strip

Media Width (a)

Measurement	Value
Maximum	114.3 mm (4.50 in)
Minimum	25.0 mm (1.00 in)

Media Type

Set media type to one of these values:

- Fingerprint:
 - FIX LENGTH STRIP
 - VAR LENGTH STRIP
- IPL: CONTINUOUS



Non-Adhesive Strip

Self-Adhesive Strip

Media Width Including Liner (a)

Measurement	Value
Maximum	114.3 mm (4.50 in)
Minimum	25.0 mm (1.00 in)

Liner (b)

The liner must not extend more than a total of 1.6 mm (0.06 in) outside the face material and should protrude equally on both sides.

Media Width Excluding Liner (c)

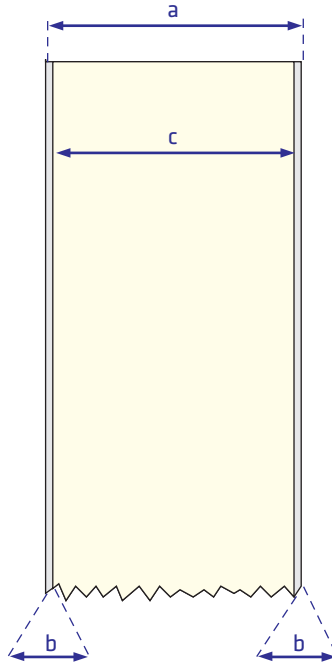
Measurement	Value
Maximum	112.7 mm (4.43 in)
Minimum	23.8 mm (0.94 in)

Appendix A – Specifications

Media Type

Set media type to one of these values:

- Fingerprint:
 - FIX LENGTH STRIP
 - VAR LENGTH STRIP
- IPL: CONTINUOUS



Self-Adhesive Strip

Self-Adhesive Labels

Media Width Including Liner (a)

Measurement	Value
Maximum	114.3 mm (4.50 in)
Minimum	25.0 mm (1.00 in)

Liner (b)

The backing paper must not extend more than a total of 1.6 mm (0.06 in) outside the labels and should protrude equally on both side. Recommended minimum transparency: 40% (DIN 53147).

Label Width Excluding Liner (c)

Measurement	Value
Maximum	112.7 mm (4.43 in)
Minimum	23.8 mm (0.94 in)

Label Length (d)

Measurement	Value
Maximum	Dependent on SDRAM size
Minimum	8.0 mm (0.32 in)



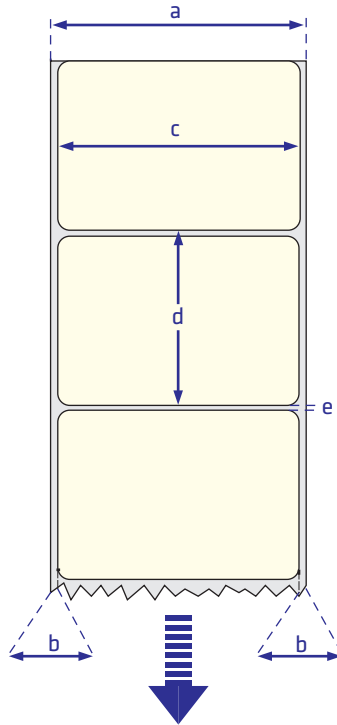
Note: Under ideal circumstances, a minimum label length of 4 mm (0.16 in) could be used. It requires the sum of the label length (d) and the label gap (e) to be larger than 7 mm (0.28 in), that batch printing is used, and that no pull back of the media is performed. Intermec does not guarantee that such short labels will work, but it is up to users to test this in their unique application.

Label Gap (e)

Measurement	Value
Maximum	21.3 mm (0.83 in)
Recommended	3.0 mm (0.12 in)
Minimum	1.2 mm (0.05 in)

Appendix A – Specifications

The Label Stop Sensor (LSS) must be able to detect the extreme front edges of the labels.



Self-Adhesive Labels

Media Type

Set media type to one of these values:

- Fingerprint: LABEL (w GAPS)
- IPL: GAP

Tickets With Gaps (Gap Stock)

Media Width (a)

Measurement	Value
Maximum	114.3 mm (4.50 in)
Minimum	25.0 mm (1.00 in)

Copy Length (b)

Measurement	Value
Maximum length between slots	Dependent on SDRAM size
Minimum length between slots	8.0 mm (0.32 in)



Note: Under ideal circumstances, a minimum ticket length of 4 mm (0.16 in) could be used. It requires the sum of the copy length (b) and the detection slit height (e) to be larger than 7 mm (0.28 in), that batch printing is used, and that no pull back of the media is performed. Intermec does not guarantee that such short tickets will work, but it is up to users to test this in their unique application.

LSS Detection Position (c)

This position is variable. For help, see [“Adjusting the Label Stop Sensor” on page 99](#).

Detection Slit Length (d)

The length of the detection slit (excluding corner radii) must be a minimum of 2.5 mm (0.10 in) on either side of the LSS detection position (c).

Detection Slit Height (e)

Measurement	Value
Maximum	21.3 mm (0.83 in)
Recommended	1.6 mm (0.06 in)
Minimum	1.2 mm (0.05 in)

Appendix A – Specifications

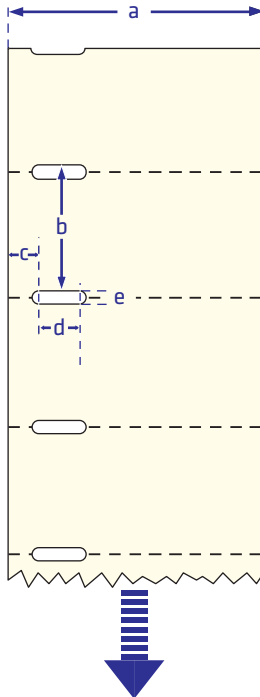
Media Type

Set media type to one of these values:

- Fingerprint: TICKET (w GAPS)
- IPL: MARK



Note: Do not allow a perforation to break the edge of the media, because the media may split and jam the printer.



Tickets With Gaps (Gap Stock)

Tickets With Black Mark (Mark Stock)

Media Width (a)

Measurement	Value
Maximum	114.3 mm (4.50 in)
Minimum	25.0 mm (1.00 in)

Copy Length (b)

Measurement	Value
Maximum	Dependent on SDRAM size
Minimum	8.0 mm (0.32 in)

LSS Detection Position (c)

This position is variable. For help, see [“Adjusting the Label Stop Sensor” on page 99](#).

Black Mark Width (d)

The detectable width of the black mark should be at least 5.0 mm (0.2 in) on either side of the LSS detection point.

Black Mark Length (e)

Measurement	Value
Maximum	21.3 mm (0.83 in)
Common	12.5 mm (0.5 in)
Minimum	5.0 mm (0.2 in)

Black Mark Y-Position (f)

Intermec recommends that you place the black mark as close to the front edge of the ticket as possible and use a negative Stop Adjust value to control the media feed, so the tickets can be properly torn off.

Media Type

Set media type to one of these values:

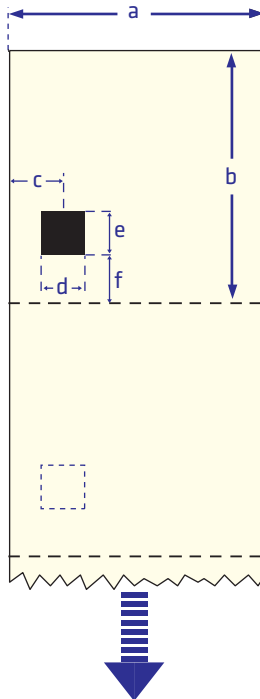
- Fingerprint: TICKET (w MARK)
- IPL: MARK



Note: The black mark should be non-reflective carbon black on a whitish background. Do not allow a perforation to break the edge of the media, because the media may split and jam the printer.



Note: Try to avoid preprint that may interfere with the detection of the black mark. However, if you are running Fingerprint, you can use the command LBLCOND to temporarily disable the sensor for a specified amount of media feed to avoid unintentional detection. For help, see the *Intermec Fingerprint Command Reference Manual*.



Tickets With Black Mark (Mark Stock)

Media With RFID Tags or Inlays

When printing on RFID media, special consideration must be taken to the position and shape of the tag. Specific recommendations for different kinds of Intermec-approved RFID media can be found on the Intermec web site at www.intermec.com. Additional information is provided in the documentation that came with your RFID kit.

Accessories for the Printer

You can use these accessories (sold and ordered separately) with the PM4i. To order accessories, contact your local Intermec sales representative.

Integral Liner Takeup Unit

Use this accessory, which comes with a guide shaft, for peel-off (self-strip) printing.

Paper Cutter

Use this accessory to cut off continuous paper-based stock or liner between labels. You can collect the cut-off labels, tickets, or tags in an optional tray.

If you are running Fingerprint or Direct Protocol, you can control the paper cutter using the commands CUT, CUT ON, and CUT OFF. For help, see the *Intermec Fingerprint Command Reference Manual*.

Media Supply Hub

Use the rotating media supply hub for media roll cores with an internal diameter of 38 to 40 mm (1.5 in).

Paper Sensor

You can use the paper sensor with a rotating media supply hub to detect when the remaining media supply has reached a preset minimum diameter. You can set this diameter in Setup mode.

Media Roll Retainer

Use the media roll retainer with a rotating media supply hub to keep large media rolls in place. With the media roll retainer installed, you can only use media with a maximum width of 100 mm (3.9 in).

76 mm (3-in) Adapter

Use the 76 mm (3-in) adapter with a rotating media supply hub to use media rolls with 76 mm (3-in) inner diameter cores. The adapter cannot be used with a media supply roll post.

Label Taken Sensor

The Label Taken Sensor (LTS) is a photoelectric sensor that enables the printer's firmware to detect if the last printed label, ticket, tag, etc. has been removed before printing another copy. The LTS cannot be used with a paper cutter.

If you are running Fingerprint or Direct Protocol, you can enable or disable the LTS using the commands `LTS& ON` and `LTS& OFF`. For help, see the *Intermec Fingerprint Command Reference Manual*.

Internal Fanfold Guide

Use the internal fanfold guide to facilitate loading media from an external supply. The internal fanfold guide cannot be used in peel-off (self-strip) mode or with the label slack absorber.

Tear-Off Bar

The adjustable tear-off bar is particularly useful when delicate media is used in peel-off operation.

Real Time Clock

The Real Time Clock (RTC) automatically keeps track of the current time. The RTC has its own backup battery backup that lasts for at least 10 years.

External Keyboard Converter

Use this converter to connect a standard PS2 keyboard to your printer's serial port.

Font Card

The font card is a CompactFlash memory card loaded with double-byte font sets including Kanji, Korean, and Chinese.

Side Door With Keylock

If the media is valuable or sensitive, such as tickets, you can install a side door that can be locked with a key.

CompactFlash Protection Plate

The protection plate provides extra security by covering a CompactFlash card inserted in the back of the printer.

Special Printheads

Your printer comes with an 8 dots/mm (203.2 dots/in) thermal printhead. But, you can use optional printheads for special applications.

8 dots/mm (203.2 dots per in)

Media Thickness	Standard or Option
Max 175 µm (7 mils)	Standard
170 to 220 µm (6.6 to 8.7 mils)	Option
170 to 220 µm (6.6 to 8.7 mils) 3 mm offset	Option

11.81 dots/mm (300 dots per in)

Media Thickness	Standard or Option
Max 175 µm (7 mils)	Option
170 to 220 µm (6.6 to 8.7 mils)	Option

Interface Boards

A number of interface boards are available for use with the PM4i printer. The interface boards are either installed at the factory or can easily be installed by an Intermec authorized service technician.

The PM4i can accommodate these interface boards:

- 802.11 Radio Interface Board
- Parallel Interface Board (IEEE 1284)
- Double Serial Interface Board
- Serial/Industrial Interface Board
- RFID/Serial Interface Board

B

Default Settings

Default Configuration

The following tables list the default values of the configuration commands supported on the PM4i. If you restore the printer to factory default settings, the printer uses these values.

The commands are grouped by function and reflect the organization of the IPL and Fingerprint setup menus. For detailed information on most of the commands, see the *Intermec Fingerprint Command Reference Manual* or the *IPL Command Reference Manual*.

Fingerprint Default Configuration

Ser-Com “uart1:” Parameters

Parameter	Default Value
Baud rate	9600
Character length	8
Parity	None
Stop bits	1
Flow control	
RTS/CTS	Disable
ENQ/ACK	Disable
XON/XOFF; data to host	Disable
XON/XOFF; data from host	Disable
New line	CR/LF
Receive buffer	1024 bytes
Transmit butter	1024 bytes

Net-Com “net1:” Parameters

Parameter	Default Value
New line	CR/LF

COM Parameters

Parameter	Default Value
USB keyboard	US

Network Parameters

Parameter	Default Value
IP selection	DHCP+BOOTP
IP address	N/A
Netmask	N/A
Default router	N/A
IPv6 selection	Auto
IPv6 address	N/A
Nameserver	N/A
Nameserver6	N/A
DHCP response	Broadcast
MAC address	N/A
Network type	Ethernet (if no 802.11 radio is installed) Wireless 802.11 (if an 802.11 radio is installed)

RFID Parameters

Parameter	Default Value
Mode	Enable
Tagadjust	+0%
Retries	1
Voidtext	N/A
Fieldstrength	100

Feedadjust Parameters

Parameter	Default Value
Startadjust	0
Stopadjust	0

Media Parameters

Parameter	Default Value
X-start	
8 dots/mm = 203.2 dpi	24 dots
11.81 dots/mm = 300 dpi	36 dots
Width	
8 dots/mm = 203.2 dpi	832 dots
11.81 dots/mm = 300 dpi	1248 dots
Length	
8 dots/mm = 203.2 dpi	1200 dots
11.81 dots/mm = 300 dpi	1800 dots
Media type	Label (with gaps)
Paper type	Thermal transfer
Ribbon constant	90
Ribbon factor	25
Label offset	0
Ribbon sensor	14
Low diameter (ribbon)	0 dots
Label constant	85
Label factor	40
Contrast	+0%
Paper sensor	10
Low diameter (paper)	0 dots
Testfeed	N/A
Testfeed mode	Fast
Len (slow mode)	0

Print Defines Parameters

Parameter	Default Value
Head resistance	N/A
Testprint	N/A
Print speed	100 mm/sec
LSS test	N/A
Clip default	Off
Cmd language	N/A

Print Defines Parameters (continued)

Parameter	Default Value
Label taken sensor (LTS)	
LTS adjust	N/A
LTS test	N/A
LTS value	10

IPL Default Configuration**Ser-Com Parameters**

Parameter	Default Value
Baud rate	9600
Data bits	8
Parity	None
Stop bits	1
Protocol	XON/XOFF

COM Parameters

Parameter	Default Value
USB keyboard	US

Network Parameters

Parameter	Default Value
IP selection	DHCP+BOOTP
IP address	N/A
Netmask	N/A
Default router	N/A
IPv6 selection	Auto
IPv6 address	N/A
Nameserver	N/A
Nameserver6	N/A

Network Parameters (continued)

Parameter	Default Value
DHCP response	Broadcast
MAC address	N/A
Network type	Ethernet (if no 802.11 radio is installed) Wireless 802.11 (if an 802.11 radio is installed)

RFID Parameters

Parameter	Default Value
Mode	Enable
Tagread	N/A
Tagadjust	+0%
Retries	1
Voidtext	N/A
Fieldstrength	100

Test/Service Parameters

Parameter	Default Value
Testprint Config Test labels Format Page UDC Font	N/A
Data dump	No
Memory reset	All
LSS test	N/A
Cmd language	N/A

Media Parameters

Parameter	Default Value
Media type	Gap
Paper type	DT (Direct Thermal)
LBL length dots	1200 dots
Testfeed mode	Fast
Sensitivity	420
Darkness	0%
LBL rest point	0
Form adj dots X	0
Form adj dots Y	0
Ribbon low	0
Paper low	0

Configuration Parameters

Parameter	Default Value
Emulation mode	None
Print speed	4 in/sec
Cutter	Not installed
LTS calibration	Not installed

Appendix B – Default Settings

C

Fingerprint and IPL Setup Menus

The setup parameters of the printer control the way the printer operates. This appendix provides an overview of the setup menu you can use to configure parameters for your PM4i printer.

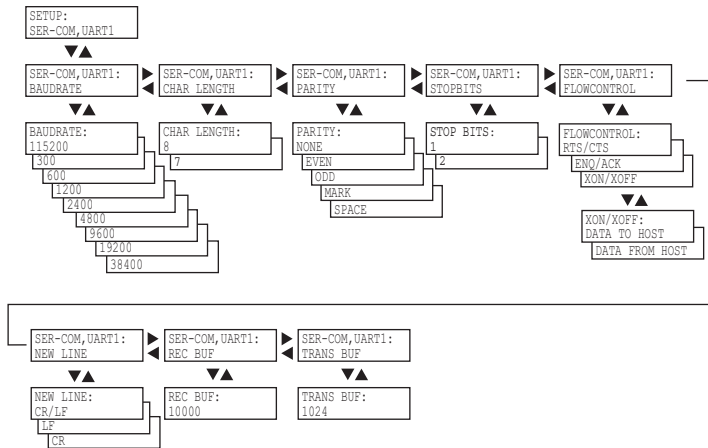
Fingerprint Setup Menus

Use this section to learn about the Fingerprint setup menus and options.

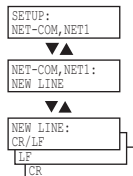
Fingerprint Main Level Setup Menu



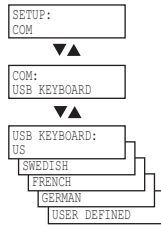
Fingerprint Ser-Com, UART1 Menu



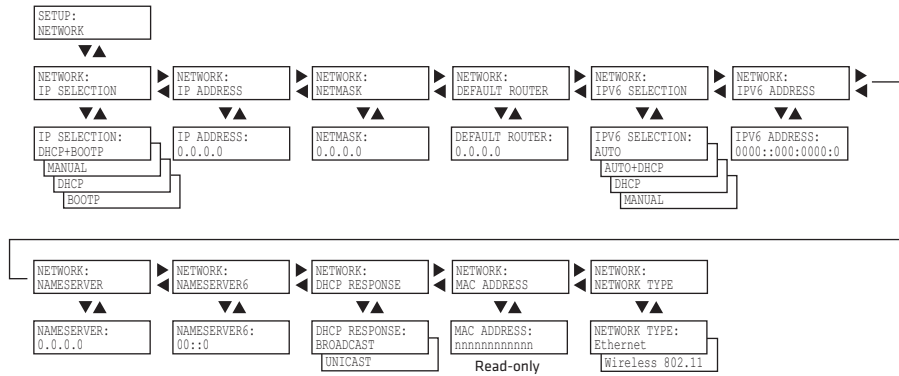
Fingerprint Net-Com, NET1 Menu



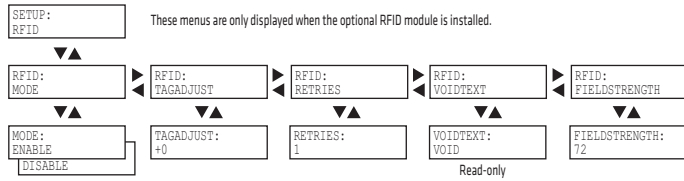
Fingerprint COM Menu



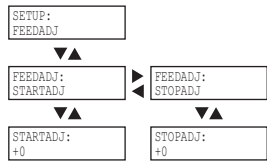
Fingerprint Network Menu



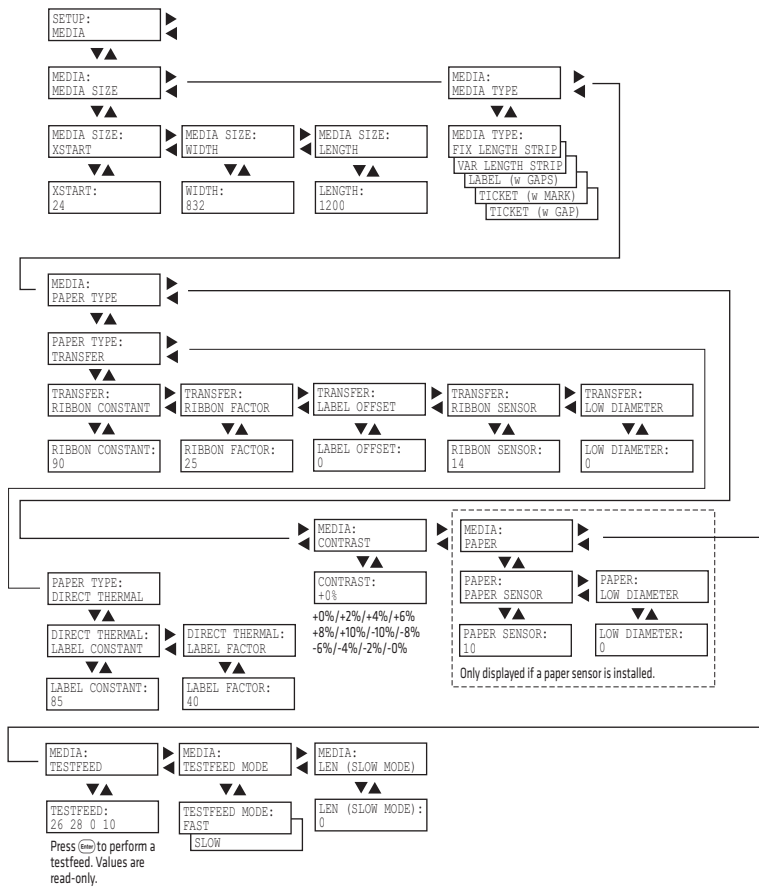
Fingerprint RFID Menu



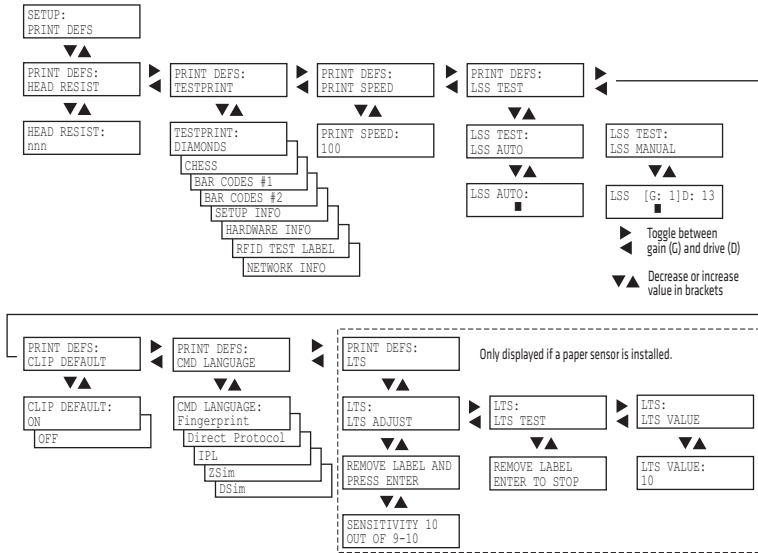
Fingerprint Feedadj Menu



Fingerprint Media Menu



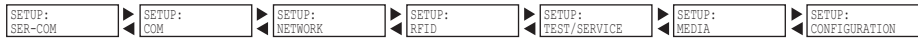
Fingerprint Print Defs Menu



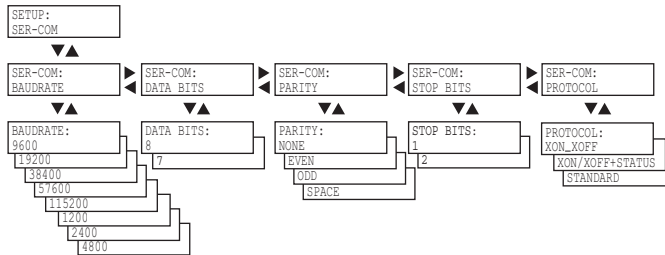
IPL Setup Menus

Use this section to learn about the IPL setup menus and options.

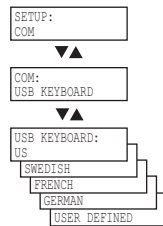
IPL Main Level Setup Menu



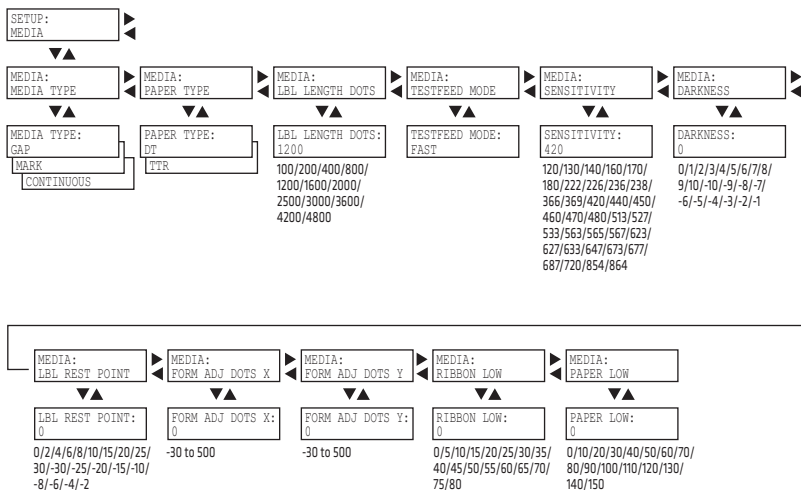
IPL Ser-Com Menu



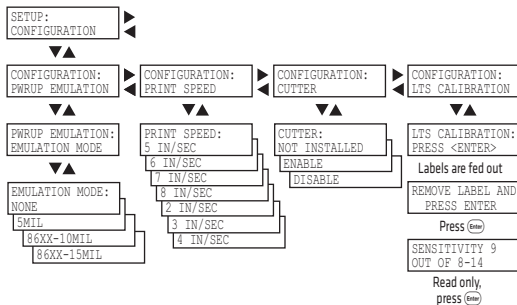
IPL COM Menu



IPL Media Menu



IPL Configuration Menu



D

Advanced Configuration

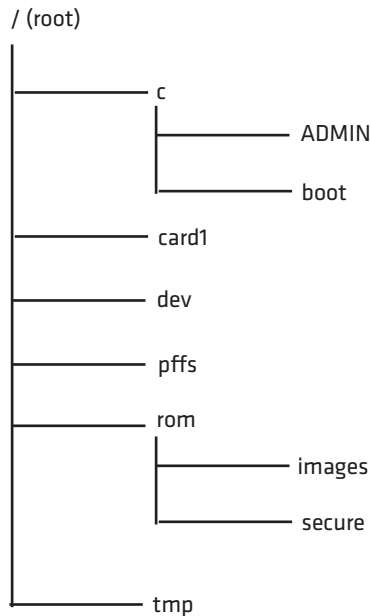
This appendix contains information on the printer file system and how to modify the appearance of the printer web page.

Printer File System (Fingerprint)

As you access the printer for communications, you encounter different parts of the printer file system. The following sections contain a device tree structure and brief descriptions of the different devices and directories of the file system.

Device Tree Structure

This illustration shows the device tree structure of the printer.



Devices and Directories

The file system of the printer is case-sensitive, which is important because filenames in Fingerprint commands are translated into capital letters by default. Directories or files with lowercase names are inaccessible for Fingerprint commands and programs.

The commands you use depend on how you navigate the printer file system:

- If you are accessing the printer through an FTP client or a web browser, you can easily navigate through the different devices and directories. Lowercase letters are not an issue for FTP or a web browser.
- If you are accessing the printer through raw TCP (“net1:”), you use Fingerprint to communicate with the printer. Because Fingerprint commands are translated into uppercase letters, you are restricted from accessing devices and directories with lowercase names. For more information on using Fingerprint, see the *Intermec Fingerprint Command Reference Manual*.

/(root)

The root node is write protected to preserve the device and file structure of the printer.

/c (or c:)

/c is the user file system. You can create directories here to store files such as programs, fonts, and images.

/c/ADMIN (or c:ADMIN)

This directory is only accessible for the admin user. It contains start order, Fingerprint restrictions, and other configuration parameters only configurable for an administrator.

/c/boot (or c:boot)

This directory contains the firmware, password file, and other system information.

/card1 (or card1:)

This directory is the CompactFlash (CF) card file system used to store files such as large fonts and images. You can also use the CF card to upgrade printer firmware.

/dev

This directory contains devices used for input/output, such as uart1, Flash, net1, parallel IEEE 1284.

/pffs (or pffs:)

The power fail file system is used to store files that need to be saved when the printer is turned off. Files stored in this location cannot exceed 256 bytes each. The total size of the “pffs” unit is 32 KB.

/rom (or rom:)

This device is used to store a collection of files that are available by default in the printer, for example the default web pages, fonts, and images.

/rom/images (or rom:images)

This directory is used to store images used for the default web pages.

/rom/secure (or rom:secure)

This directory is used to store the password protected web pages.

/tmp (or tmp:)

This is the printer’s temporary read/write memory. Files in this location are not saved when the power is turned off or if there is a power failure. Do not store valuable data in this location. You may want to use “tmp:” instead of “/c” to temporarily store data, because data can be written to SDRAM faster than to the flash memory.

Customizing the Printer Home Page

The easiest way to modify the appearance of the printer web page is to create an HTML file called “INDEX.HTM” on the device “/c” with custom designed logo and colors. From this file you can easily link to the printer configuration pages. The web server generates these web pages with dynamic information on the fly. This process makes the real-time generated pages of the printer appear in the Intermecc style. The colors and logo of the customer are ignored.

Web Style Guide Files

The printer network cards customizes the default web pages by changing the configuration of the engine that generates the pages. While generating the pages, the web server accesses configuration parameters, like the background color, the name of logos to display on the page and generates the HTML code. Default configuration of these parameters makes the printer's web page appear in the Intermec style, with corporate colors and logos. When changing the parameters, the web pages are permanently customized.

Customization of these parameters has to be done in specific files called “*Web Style Guide Files*”, assigning user-defined values to several support environment variables.

Web style guide files contain parameters to set web page content and layout. These files can be stored either on /c or pffs:

In the file system, /c has priority over pffs;, which implies that if there is a web style guide on /c (for example /c/webstyleguide.0), the printer will not look for pffs:webstyleguide.1. Intermec recommends that you store web style guides on pffs to minimize the risk of them being accidentally removed.

Content of a Web Style Guide File

A Web Style Guide file has to contain a set of mandatory environment variables and it can also contain optional variables. All variables have to be lowercase, followed by a “=” sign and a consistent value. There is no specific order of the variables.

Required Environment Variables

Use the reference table below to understand all of the required environment variables.

Understanding Required Environment Variables

Variable	Description
bgco	Background color, BGCOLOR attribute of BODY tag.
coli	Copyright link, link to html file showing Copyright notes.
cona	Company name.

Understanding Required Environment Variables (continued)

Variable	Description
loat	Logotype attributes, contains all attributes for the IMG-tag to replace the Intermec logo.
trna	Trade name.

Optional Environment Variables

The optional environment variables are used to specify extra parameters; for instance, these variables permit to change the printer's model name. The web server only recognizes the following model names:

- PF2i
- PF4i
- PM4i
- PX4i
- PX6i

The web server checks the available hardware and then displays the correct model name in the web page. If the page has to show a different name of the printer, the web style guide file has to contain the optional variable printer=your name.

Optional Variables Reference Table

Variable	Description	Comments
alco	Active link color, ALINK attribute of BODY tag.	
BGLI	Background image link, BACKGROUND attribute of BODY tag.	
heon	Help on, enables a help link on the page.	If this parameter is in the webstyle guide file, the variables "heli" and "hena" must have a value.
heli	Help link, link associated to the Help tag.	
hena	Help link name, the label to be shown on the web page.	

Optional Variables Reference Table (continued)

Variable	Description	Comments
lico	Link color, LINK attribute of BODY tag.	
suon	Support link on, enables a support link on the page.	If this parameter is in the webstyle guide file, then the variables “suli” and “suna” must have a value.
suli	Support link, this is the link associated with the support tag.	
suna	Support link name, this is the label to be shown on the web page.	
teco	Text color, TEXT attribute of the BODY tag.	
vlco	Visited link color.	

x-www-url-Encoding Syntax Rules

The value given to environment variables has to be specified respecting the x-www-url-encoding syntax rules. According to the syntax rules, characters can be inserted using the notation %<ASCII Hex>. For example, space in the ASCII table has the Hex number 20 so it corresponds to %20. For example, “Intermec Technologies Corporation” corresponds to “Intermec%20Technologies%20Corporation” (it can also be written “Intermec+Technologies+Corporation”).

Colors are specified according to the RGB syntax: %23cdcdcd corresponds to #cdcdcd.

Any quotation marks (%22) must be preceded by a back slash (\).

The file must contain only one line, where the different variables and values are separated by ampersand (&) characters.

Memory and Storage

Web Style Guide files are designed to be placed on the printer's pffs, as mentioned. Due to the memory limits of the pffs the environment variables have very short name (4 bytes), which may make them less user friendly to use, but this allows more space to be used for the value of the variable.

There is also a size limit per file that is set to 256 bytes. In case the Web Style Guide File you want to create is bigger than 256 bytes, the content has to be split in more than one file.

The parser daemon will start looking for the first Web Style Guide File which has to be named "webstyleguide.0", then it will try to read the next file called "webstyleguide.1" and so on.

Creating a Web Style Guide File

You can create Web Style Guide Files with a standard text editor and then transfer them to the printer. Follow these rules when creating a Web Style Guide File:

- The name has to be lowercase.
- The first file has to have extension ".0". The following files have to have sequential extension number if one number is missing in the sequence the parser will stop reading the files.
- The split point between one web style guide and the other cannot be in the middle of a line. The last line of the file has to be consistent in the syntax and the first line of the following web style guide file has to be a new line.
- If variables are specified more than one time, the last value is the one assumed.

Intermec recommends that you use the FTP server to transfer the files.

Example (the default Web Style Guide):

```
bgco=%23ffffff&loat=src%3d%22/rom/images/  
itclogol.gif%22+align%3dbottom+alt%3d%22Intermec_  
Technologies_Corporation%22+border%3d0  
&cona=Intermec+Technologies+Corporation&coli=copyrigh  
t.htmf&suli=support.htmf&suna=Support&suon=t&trna=Eas  
yCoder
```



Index

Numerics

- 76 mm (3-in) adapter, accessory 130
- 802.11
 - choosing as network type 73, 79
 - radio
 - communications, setting up 47
 - connection, troubleshooting 94
 - security, setting from web page 74
- 802.1x
 - configuring from web page 75
 - settings, described 76

A

- accessories, printer 129
- adjusting
 - LSS position 99
 - LTS 105
 - pressure arm 98
 - printhead pressure 102
 - ribbon break shaft 104
- advanced configuration 149
- alerts
 - configuring from web page 67
 - settings, described 67
- application break, error message 89
- application load error, error message 88
- authentication modes, supported 47
- Automatic Provision (PAC), turning on or off 76
- Avalanche
 - configuring from web page 73
 - settings, described 74

B

- back view of printer 3
- bar code scanner, connecting to printer 58
- batch takeup
 - label taken sensor accessory 130
 - loading media 15, 23
- blank printout, troubleshooting 93
- bleeding, troubleshooting 92
- buttons, understanding 6

C

- calibrating the sensor 90

- CF card
 - font card accessory 130
 - protection plate, accessory 131
 - using to download fonts and graphics 83
 - using to upgrade firmware 81
- changing command language 4
- Class 1 tag, troubleshooting 96
- cleaning
 - exterior 107
 - media guides 107
 - printhead 109
- COM menu
 - Fingerprint 143
 - IPL 146
- command language
 - changing from the Setup menu 4
 - changing from web page 65
 - selecting at startup 3
- communications
 - page 65
 - ports and options 114
 - setting up 802.11 radio 47
 - setting up Ethernet 44
 - settings, configuring 65
- compressed printout, troubleshooting 93
- configuration
 - advanced 149
 - menu, IPL 148
 - settings, changing 62–79
- contacting Product Support 86
- control panel
 - illustrated 5
 - understanding 5
- core and roll, media specifications 120
- creating labels 39
- cut-off printing, loading media 23
- cutter, error message 87, 90

D

- default configuration
 - Fingerprint 134
 - IPL 137
 - serial port settings 42
 - settings 134–139
 - viewing and changing with web page 65
- device tree structure 150

- DHCP, default setting 44
- directories, printer 150
- downloading
 - firmware 81
 - fonts and graphics 83
- DSim, command language
 - changing 4
 - described 3
- E**
- EAP Type, choosing 802.1x with
 - web page 76
- error
 - messages, understanding 87
 - numbers ??–90
- error in filename, error message 95
- Ethernet
 - choosing as network type 79
 - choosing network type 73
 - connection, troubleshooting 94
 - interface description 118
 - LEDs, understanding 119
 - setting up communications 44
- exterior, cleaning 107
- external keyboard converter,
 - accessory 130
- external supply, loading media 29
- F**
- factory default
 - resetting the printer 96
 - settings 134–139
- Feed button, described 6
- Feedadj menu, Fingerprint 143
- file system, Fingerprint printer 150
- Fingerprint
 - COM menu 143
 - command language
 - changing 4
 - described 3
 - configuring wireless security 50
 - default configuration 134
 - Feedadj menu 143
 - Media menu 144
 - Net-Com, NET1 menu 142
 - Network menu 143
 - Print Defs menu 145
 - RFID menu 143
 - Ser-Com, UART1 menu 142
 - Setup menu illustration 63
 - sounds, described 8
 - using commands to upgrade
 - firmware 82
 - using to configure network type 80
 - using to configure the printer 78
 - using to download fonts and graphics 83
 - using to serially configure IP settings 46
- firmware
 - downloading updates 81
 - upgrading
 - overview 81
 - using PrintSet 81
 - with CF card or USB mass storage device 81
 - with printer commands 82
 - upgrading with web page 82
- font card, accessory 130
- fonts, downloading 83
- front view of printer 2
- G**
- General network web page
 - configuring settings 68
 - understanding settings 68
- generic DP error, error message 88
- graphics, downloading 83
- H**
- head lifted, error message 87
- home page
 - customizing printer 152
 - illustration 45
 - printer login and password 45
- humidity specifications 114
- HyperTerminal
 - sending configuration
 - commands 78
 - setting up wireless
 - communications 49
 - turning on typing with IPL 78
- I**
- i button, described 6
- IEEE 1284
 - interface, pins and descriptions 119
 - port, using to connect printer to PC 43
- incomplete printout,
 - troubleshooting 93

- Information button, described 6
 - Information mode, using to find IP address 45
 - initial startup screen 4
 - inner authentication, choosing
 - 802.1x with web page 76
 - Integral Liner Takeup Unit 129
 - InterDriver software, how to download 43
 - interface
 - Ethernet 118
 - IEEE 1284 119
 - serial 116
 - standard 116
 - USB 117
 - USB host 118
 - interface board, accessory 131
 - Intermec Ready-to-Work Indicator
 - blinking 87, 88, 90, 91
 - described 7
 - off 88–91
 - internal fanfold guide, accessory 130
 - IP address
 - configuring manually 46
 - retrieving with DHCP 45
 - IP configuration error, error message 88, 91
 - IP link error, error message 88
 - IP settings, configuring serially 46
 - IPL
 - COM menu 146
 - command language
 - changing 4
 - described 3
 - Configuration menu 148
 - configuring wireless security 53
 - default configuration 137
 - Media menu 148
 - Network menu 147
 - RFID menu 147
 - Ser-Com menu 146
 - Setup menu illustration 63
 - sounds, described 8
 - Test/Service menu 147
 - using commands to upgrade firmware 82
 - using to configure network type 80
 - using to configure the printer 78
 - using to download fonts and graphics 83
 - using to serially configure IP settings 46
 - IPV4 settings, web page, described 72
 - IPV6 settings, web page, described 72
 - ISO 18000-6B tag, write protected 96
- K**
- keyboard
 - changing layout 58
 - configuring layout from web page 65
 - connecting to the printer 58
 - Knowledge Central, web site 86
- L**
- label
 - creating and printing 39
 - printing test 37
 - label not taken, error message 87
 - label taken sensor, accessory 130
 - LEDs, described 6
 - line
 - dark, troubleshooting 92
 - missing, troubleshooting 92
 - white, troubleshooting 92
 - loading media
 - batch takeup 15, 23
 - cut-off printing 23
 - described 9
 - from an external supply 29
 - LTS 15, 23
 - peel-off printing 15
 - rotating media supply hub 30
 - self-strip printing 15
 - tear-off printing 9
 - loading ribbon 31
 - login name, home page 45
 - LSS position, adjusting 99
 - LSS too high, error message 87
 - LSS too low, error message 88
 - LSS, testing 100
 - LTS
 - adjusting 105
 - loading media 15, 23
 - settings, described 105

M

- mail settings, configuring from web page 69
- maintaining the printer 106
- maintenance, error message 89
- media
 - feed direction, configuring 65
 - loading 9
 - menu
 - Fingerprint 144
 - IPL 148
 - not feeding, troubleshooting 94
 - RFID, printing on 39
 - roll diameter, max and min 115
 - settings, configuring 65
 - specifications 120
 - core and roll 120
 - non-adhesive strip 120
 - self-adhesive labels 123
 - self-adhesive strip 121
 - tickets with black mark 127
 - tickets with gaps 125
 - thicker or thinner, adjusting for 102
 - web page 65
 - width, max and min 115
- media guides, cleaning 107
- media roll retainer, accessory 129
- media supply hub, accessory 129
- memory and storage, web style guide 156
- memory, printer 114
- missing part of printout, troubleshooting 93
- missing printout, troubleshooting 93

N

- navigating in Setup mode 62
- Net-Com, NET1 menu, Fingerprint 142
- Network menu
 - Fingerprint 143
 - IPL 147
- network type
 - choosing Ethernet or wireless 802.11 79
 - choosing from the screen 80
 - choosing with printer commands 80
 - configuring from web page 73

- network, connecting your printer 44
- new features 2
- next label not found, error message 87
- no printhead, error message 91
- no RFID support installed, error message 88
- no RFID support, error message 95
- no tag found, error message 88, 95, 96
- non-adhesive strip, media specifications 120
- not supported by tag type, error message 95

O

- optional environment variables, web style guide 154
- out of paper, error message 87
- out of transfer ribbon, error message 87

P

- paper cutter, accessory 129
- paper fault, error message 90
- paper out, error message 90
- paper sensor, accessory 129
- parallel port
 - pins and descriptions 119
 - using to connect printer to PC 43
- password
 - changing with web page 68
 - home page 45
- pause button, described 6
- peel-off printing, loading media 15
- performing a testprint 37
- physical specifications 114
- power LED, described 6
- power specifications 114
- power supply over temperature, error message 89, 91
- press feed, error message 90
- pressure arm, adjusting 98
- print button, described 6
- Print Defs menu, Fingerprint 145
- print engine settings, configuring 65
- print speed, configuring 65
- print width, max and min 115

- printer
 - accessories 129
 - adjusting 97
 - break shaft 104
 - LSS 99
 - LTS 105
 - pressure arm 98
 - printhead pressure 102
 - back view 3
 - choosing network type from the screen 80
 - configuring 62–79
 - from screen 62
 - from the home page 64
 - using commands 78
 - using PrintSet 77
 - using SmartSystems Foundation 78
 - connecting to a PC 42–44
 - through the IEEE 1284 port 43
 - through the serial port 42
 - through the USB device port 43
 - connecting to your network 44
 - directories, Fingerprint file system 150
 - file system, Fingerprint 150
 - front view 2
 - home page
 - problems connecting to, troubleshooting 94
 - home page, login name and password 45
 - identifying parts 2
 - initial startup screen 4
 - learning about 2
 - maintaining 106
 - memory 114
 - modifying web page 149
 - resetting 96
 - ribbon break shaft, adjusting 104
 - slow, troubleshooting 95
 - sounds, described 8
 - specifications 114
 - standard interfaces 116
 - troubleshooting 86
 - printer crash, error message 89
 - printer home page
 - illustration 45
 - using to configure printer 64
 - printer name, viewing 68
 - printhead
 - cleaning 109
 - pressure, adjusting 102
 - replacing 111
 - special, accessory 131
 - up, error message 90
 - printhead hot, error message 91
 - printhead not found, error message 89, 91
 - printhead too hot, error message 89
 - printing
 - a test label 37
 - labels, how to 39
 - on RFID media 39
 - printout
 - blank, troubleshooting 93
 - compressed, troubleshooting 93
 - dark, troubleshooting 92
 - incomplete, troubleshooting 93
 - lines, troubleshooting 92
 - partly missing, troubleshooting 93
 - spots, troubleshooting 92
 - weak, troubleshooting 91
 - PrintSet
 - using to configure the printer 77
 - using to download fonts and graphics 83
 - using to set up wireless communications 48
 - using to upgrade firmware 81
 - Product Support, contacting 86
 - PSU over temperature, error message 91
- R**
 - real time clock, accessory 130
 - replacing, printhead 111
 - required environment variables, web style guide 153
 - resetting the printer 96
 - RFID
 - error codes, troubleshooting 96
 - media, printing on 39
 - menu
 - Fingerprint 143
 - IPL 147
 - troubleshooting 94–96
 - RFID inactive, error message 95

- ribbon
 - breaks, troubleshooting 93
 - loading thermal transfer 31
 - not winding, troubleshooting 93
 - roll diameter, max and min 115
 - width, max and min 115
 - wrinkles, troubleshooting 93
 - ribbon break shaft, adjusting 104
 - ribbon out, error message 90
 - rotating media supply hub, loading media 30
 - RS-232 serial interface 116
 - RtW blink by application, error message 88
 - RtW off by application, error message 89
- S**
- scanner, connecting to printer 58
 - screen
 - choosing network type 80
 - initial startup 4
 - understanding 7
 - using to configure the printer 62
 - security, configuring wireless 74
 - selecting a command language 3
 - self-adhesive labels, media
 - specifications 123
 - self-adhesive strip, media
 - specifications 121
 - self-strip printing, loading media 15
 - sensor, calibrating 90
 - Ser-Com, UART1 menu,
 - Fingerprint 142
 - serial communications,
 - configuring from web page 65
 - serial interface
 - default settings 116
 - illustration and pin descriptions 116
 - serial port
 - default communication settings 42
 - using to connect printer to PC 42
 - Setup button, described 6
 - Setup menu
 - changing command language 4
 - Fingerprint illustration 63
 - IPL illustration 63
 - setup menus
 - Fingerprint 142
 - IPL 146
 - Setup mode
 - entering 62
 - navigating 62
 - Shift button, described 6
 - side door with keylock, accessory 130
 - slow printing, troubleshooting 95
 - SmartSystems
 - configuring with web page 77
 - Foundation, using to configure the printer 78
 - SNMP
 - configuring with web page 70
 - setting descriptions 71
 - sounds, described 8
 - specifications
 - humidity 114
 - media 120
 - physical 114
 - power 114
 - printer 114
 - temperature 114
 - SSID 74
 - status LED, described 6
 - style guide
 - content of web 153
 - creating web 156
 - memory and storage 156
 - optional environment variables 154
 - required environment variables 153
 - URL encoding syntax rules 155
 - web pages 153
- T**
- tag format error, error message 96
 - TCP/IP
 - configuring with web page 71
 - setting described 72
 - tear-off bar, accessory 130
 - tear-off printing, loading media 9
 - temperature specifications 114
 - test labels
 - printing from Setup menu 37
 - printing from web page 65
 - Test/Service menu, IPL 147

- testfeed not done, error message 88
- testfeed, described 6
- thermal transfer ribbon, loading 31
- thumb drive. See USB mass storage drive
- tickets with black mark, media specifications 127
- tickets with gaps, media specifications 125
- troubleshooting
 - printer 86
 - resetting the printer 96
- U**
- updates, downloading firmware 81
- upgrading firmware 81
- URL encoding syntax rules, web style guide 155
- USB
 - host interface, pins and descriptions 118
 - hub, connecting to printer 59
 - interface description 117
- USB device port, using to connect printer to PC 43
- USB host port
 - connecting a USB hub 59
 - connecting bar code scanner 58
 - connecting keyboard 58
 - connecting peripherals 57
- USB mass storage device
 - using to download fonts and graphics 83
 - using to upgrade firmware 81
 - using with printer 57
- V**
- views, printer 3
- W**
- Wavelink Avalanche, configuring from web page 73
- weak printout
 - preventing 98
 - troubleshooting 91
- web page
 - creating a web style guide 156
 - customizing the home page 152
 - modifying printer 149
 - style guide content 153
 - style guide files 153
 - using to configure printer 64
 - using to upgrade firmware 82
- Web Shell settings
 - configuring 65
 - described 66
- web style guide files 153
- WEP
 - configuring with Fingerprint 50
 - configuring with IPL 53
 - keys 74
 - web page setting and description 74
- wireless LAN, configuring from web page 74
- wireless security
 - configuring from web page 74
 - configuring with Fingerprint 50
 - configuring with IPL 53
- WPA 75
 - configuring with Fingerprint 51
 - configuring with IPL 54
- WPA2
 - configuring with Fingerprint 51
 - configuring with IPL 54
- WPA2-PSK
 - configuring with Fingerprint 50
 - configuring with IPL 54
- WPA-PSK 75
 - configuring with Fingerprint 50
 - configuring with IPL 54
- wrinkling, troubleshooting 104
- write protected ISO 18000-6B tag 96
- Z**
- ZSim, command language
 - changing 4
 - described 3



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PM4i Mid-Range Printer User's Manual



P/N 935-025-002