M- Class
Operator's Manual

M CLASS™

DATAMAX®

Copyright Information:

CG Triumvirate is a trademark of Agfa Corporation.
CG Times based upon Times New Roman under license from the Monotype Corporation.
Windows is a registered trademark of the Microsoft Corporation.
All other brand and product names are trademarks, service marks, registered trademarks, or registered service marks of their respective companies.

Firmware (Software) Agreement

The enclosed Firmware (Software) resident in the Printer is owned by Licensor or its suppliers and is licensed for used only on a single printer in the user's Trade or Business. **The User agrees not to, and not to authorize or permit any other person or party to, duplicate or copy the Firmware or the information contained in the non-volatile or programmable memory.** The firmware (Software) is protected by applicable copyright laws and Licensor retains all rights not expressly granted. In no event will Licensor or its suppliers be liable for any damages or loss, including direct, incidental, economic, special, or consequential damages, arising out of the use or inability to use the Firmware (Software).

Information in this document is subject to change without notice and does not represent a commitment on the part of Datamax Barcode Products Corporation. No part of this manual may be reproduced or transmitted in any form or by any means, for any purpose other than the purchaser's personal use, without the expressed written permission of Datamax Corporation.

All rights reserved. Printed in the United States of America.

© Copyright 2005 by Datamax Corporation

Part Number: 88-2313-01

Revision: E

Agency Compliance and Approvals:

UL60950 Information Technology Equipment
C22.2 No. 950-M93

Listed

EN60950

<u>For 230 Volt Operation (Europe):</u> Use a cord set, marked "HAR," consisting of a min H05VV-F cord which has a minimum 0.75 square mm diameter conductors, provided with an IEC 320 receptacle and a male plug for the country of installation rated 6A, 250V

<u>Für 230 Volt (Europa):</u> Benützen Sie ein Kabel, das mit "HAR" markiert ist, bestehend mindestens aus einem H05VV-F Kabel, das mindestens 0,75 Quadratmillimeter Drahtdurchmesser hat; sowie eine IEC320 Steckdose und einen für das Land geeigneten Stecker, 6A, 250 Volt.

As an Energy Star Partner, the manufacturer has determined that this product meets the Energy Star guidelines for energy efficiency.

The manufacturer declares under sole responsibility that this product conforms to the following standards or other normative documents:

EMC: EN 55022 (1993) Class B
              EN 50024 (1998)

Safety: This product complies with the requirements of EN 60950 /A11:1997

Gost-R

BE01

FCC: This device complies with FCC CFR 47 Part 15 Class A.

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

Important Safety Instructions

This printer has been carefully designed to provide many years of safe, reliable performance. As with all types of electrical equipment, however, there are a few basic precautions you should take to avoid hurting yourself or damaging the device:

- Carefully read the installation and operating instructions provided with your printer.

- Read and follow all warning instruction labels on the printer.

- Place the printer on a flat, firm, solid surface.

- To protect your printer from overheating, make sure all openings on the printer are not blocked.

- Do not place the printer on or near a heat source.

- Do not use your printer near water, or spill liquid into it.

- Be certain that your power source matches the rating listed on your printer. If you are unsure, check with your dealer or with your local power company.

- Do not place the power cord where it will be walked on. If the power cord becomes damaged or frayed replace it immediately.

- Do not insert anything into the ventilation slots or openings on the printer.

- Only qualified, trained service technicians should attempt to repair your printer.

Contents

Printer Overview

Getting Started

Setting Up the Printer

Using the Front Panel (Non-display printers)

Using the Front Panel (Display-equipped printers)

Maintenance and Adjustments

Troubleshooting

Specifications

Appendix A

Appendix B

Appendix C

Appendix D

Appendix E

Appendix F

Warranty

Glossary

Printer Overview

1.0   Introduction

Congratulations on your M-Class printer purchase. The M-Class family, hereafter referred to as 'the printer', blends the rugged durability of die-cast construction with state-of-the-art electronics and user-friendly features to redefine the standard in industrial thermal printers. Available in direct and optional thermal transfer configurations, the printers use unique front panel designs to simplify operation, while its USB, RS232 serial, IEEE 1284 compliant parallel, or optional (*M-4208 and M-4306, only*) internal print server allows easy interfacing to any host system.

This manual provides all the information necessary to operate the printer.

To print labels or tags, simply refer to the instructions included with the software you have chosen to create the labels. A Windows™ printer driver can be found on our website (http://www.datamaxcorp.com/) or on the included CD-ROM. If you wish to write a custom program, a copy of the *Class Series Programmer's Manual* can also be found on the CD-ROM.

1.1 About this Printer

This printer offers the following standard and optional features:

1.1.1 Standard Features

Printing

➢ Direct Thermal Printing

➢ On Demand and Batch Printing

➢ 203 DPI (M-4206 and M-4208) 300 DPI (M-4306) Printhead

➢ Date and Time Stamp

➢ AGFA Scalable Font Engine

➢ 2 Resident Scaleable fonts, CG Triumvirate™ regular and bold-condensed *(M-4208 and M-4306 only)*

Memory

➢ 2 MB FLASH Memory (*256K available to user, designated as Module B)*

➢ 4 MB DRAM Memory *(M-4206)*

➢ 8 MB DRAM Memory *(M-4208 and M-4306))*

Interfaces

➢ USB interface

➢ DB-9 RS-232 serial interface

➢ IEEE 1284 Centronics® parallel interface

Operational

➢ Simple Media Loading

➢ Media Tearbar

➢ Fan-fold media compatible from the bottom and rear of printer

1.1.2 Optional Features

Thermal Transfer

A printing method that uses ribbon to produce exceptional image clarity (as compared to most direct thermal stocks). Note that this option must be specified for use with either 'coated side in' or 'coated side out' ribbon.

Media Cutter

A rotary-type mechanism to automatically cut material with a maximum thickness of .010" (.254 mm) into minimum lengths of 1.0 inches (25.4 mm). Designed for ease of operation, the Media Cutter is automatically detected, configured, and enabled when installed on the printer.

Peel and Present Mechanism (also requires the Internal Rewind option)

An output control device that automatically separates printed labels from the backing material and allows subsequent printing to occur only after the removal of a previously printed label. Minimum label length is 0.75 inches (19 mm). Designed for ease of operation, the Peel and Present Mechanism is automatically detected, configured, and enabled when installed on the printer.

Internal Rewind

An internal mechanism capable of winding printed labels or the label backing material only (when using the Peel and Present option) into a maximum four-inch outer diameter roll.

Present Sensor

An output control device that allows subsequent printing to occur only after the removal of a previously printed label. Designed for ease of operation, the Present Sensor is automatically detected, configured, and enabled when installed on the printer.

FLASH Memory Expansion

An optional Main Circuit Card Assembly available with 4MB (*M-4206*) or 8MB (*M-4208 and M-4306*) of Flash memory for International Language Printing Capability (ILPC) and/or additional fonts and graphics.

ILPC

A font set that allows International Language Print Capability consisting of one of the following:

- ➢ CG-Times (western European) Scalable font
- ➢ Kanji Gothic B Scalable font
- ➢ Simplified Chinese GB Scalable font
- ➢ Korean Hangul font

External Ethernet Connectivity *(uses printer's parallel port)*

A print server (the DMX100) that is an external Network Interface Controller (NIC) to provide Ethernet® connectivity.

Internal Ethernet Connectivity *(printers equipped with a front display, only)*

An internal Network Interface Controller (NIC) that enables the printer to provide Ethernet® connectivity. Features include:

- ➢ Automatic selection of 10BaseT (Thinnet) or 100BaseT Fast Ethernet connection.
- ➢ Integral HTTP Server to allow monitoring and management from a standard Web browser program.
- ➢ FTP printing to allow printing directly from a Web browser or other FTP client.
- ➢ LPR/LPD over TCP/IP for UNIX platforms and Microsoft's Windows.
- ➢ Raw sockets support over selectable TCP/IP port with filters for selected UNIX environment.
- ➢ IP SNMP support of MIB-2, proprietary NIC MIB and public and proprietary (private) Printer MIB.
- ➢ SNMP traps to alert administrators of printer errors (paper/ribbon out, head up, etc).
- ➢ DHCP, BootP, and RARP services supported

MCL *(printers equipped with a front display, only)*

A software tool suite designed for data collection applications. Once enabled, the printer can accept input data from peripheral devices such as barcode scanners, weigh scales, and keyboards without the need of a host computer, requesting and sending data to locally resident lookup files or remote databases, enhancing communication capabilities within your system while reducing your hardware investment.

Getting Started

2.0   Before Using the Printer

Removing the Packaging

Inspect the shipping container(s) for damage. If damage is evident, immediately notify the shipping company to report the nature and extent of the damage.

The printer is carefully packaged to avoid any damage during transit. In order to operate the printer, you will need to remove the packaging materials (for example, the tape and foam) that were placed in the printer for shipment. Complete the following steps prior to connecting power or attempting to load media.

➢ Ensure that the arrow on the box is pointing up, and then open the box.

➢ Remove the top piece of packing foam.

➢ Lift the printer from the box.

➢ Remove the printer from the plastic bag.

➢ Remove any tape or additional packing foam from the inside of the printer.

> ☑ **Note:**   It is a good idea to save all packaging materials in the event that shipping the printer is ever required.

Inspecting the Printer

After removing the printer from the packaging material, check the contents. The following items should be included:

➢ Printer

➢ Power Cord

➢ CD-ROM and Documentation

➢ Any special or additionally purchased items.

Additional Requirements

The following items are necessary for generating labels from your printer. Contact your customer support or sales representative for advice on which media and software may best be suited for your application.

➢ Serial, USB or Parallel cable

➢ Ethernet cable for optional LAN connectivity

➢ Applicable Media

➢ Applicable Software

Setting Up the Printer

3.0 Introduction

This Section explains how to connect your printer, load media (and ribbon, if equipped for thermal transfer).

3.1 Connecting the Printer

3.1.1 Power Connection

☑ *Note: Before connecting the AC Power Cord or interface cables to the printer, ensure the Power On/Off Switch is in the 'Off' position.*
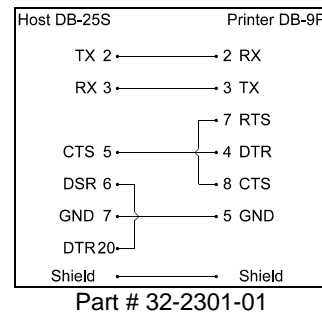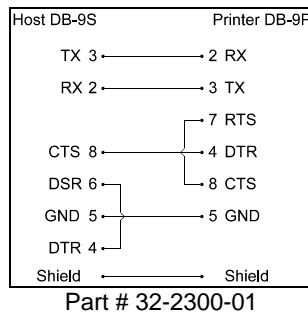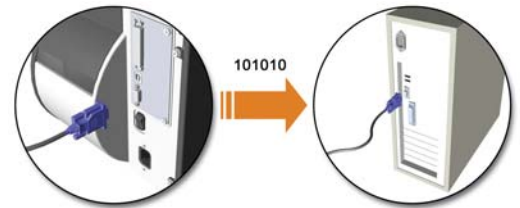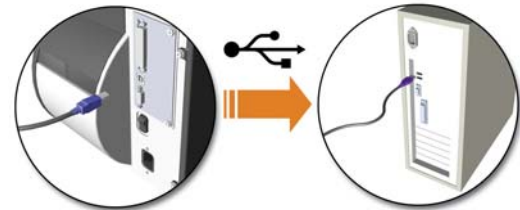
1. Place the printer on a firm, level surface.

2. Ensure that the Power Switch on the Printer is in the 'Off' position.

3. Connect the AC Power Cord to the receptacle on the back of the Printer, and then plug the AC Power Cord into a properly grounded outlet. (The power supply automatically detects and then adjusts to the applied line voltage; see Section 8.0 for the acceptable voltage ranges.)
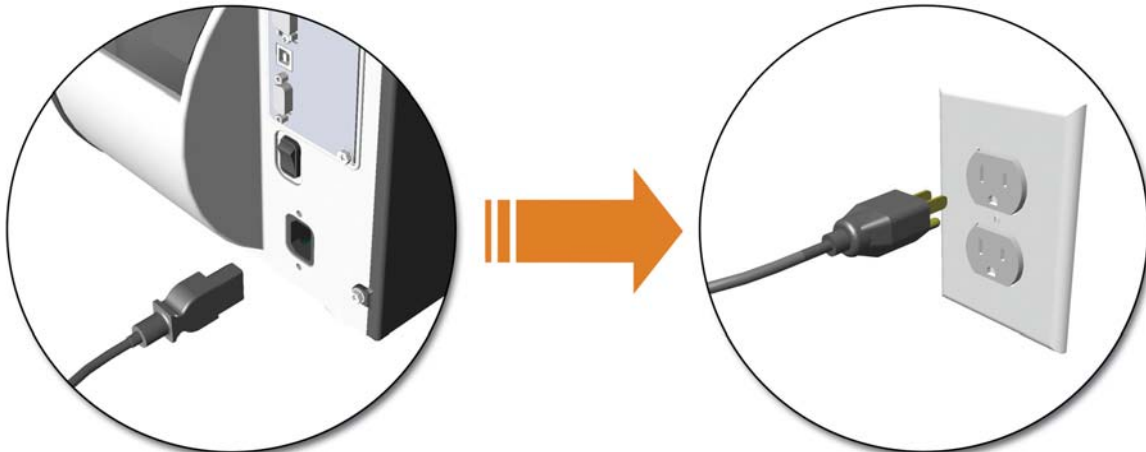
3.1.2 Interface Connection

The printer can be connected to the host via the parallel, USB, serial, or optional network interface. The printer will automatically connect to the first port that delivers valid data. Once established, the printer's power must be cycled 'Off' and 'On' to change an interface connection.

- The **Parallel Connection** needs a Centronics® IEEE 1284 cable with a 36-pin male connector for unidirectional (forward channel) communications, or an IEEE 1284 Compliant cable for bi-directional communications (forward and reverse channels). Also, for bi-directional communications your host must have supporting software. See Section 5 for more information.

- The **USB Connection** needs a USB cable and is supported in Windows®95 and greater operating systems. Depending upon the operating system of your host computer, installation requirements may differ slightly.

- The **Serial Connection** needs a serial interface cable with specific pin-outs for proper communications (part numbers and pin-outs are given, below; contact your reseller to order). The interface supports RS-232C communications via a DB-9 connector. Serial port settings are menu-selectable and must match your host's serial port settings; see Section 4, for non-display printers or Section 5 for display-equipped printers.

| Host DB-9S	Printer DB-9P	Host DB-25S	Printer DB-9P
TX 3	2 RX	TX 2	2 RX
RX 2	3 TX	RX 3	3 TX
	7 RTS		7 RTS
CTS 8	4 DTR	CTS 5	4 DTR
DSR 6	8 CTS	DSR 6	8 CTS
GND 5	5 GND	GND 7	5 GND
DTR 4		DTR 20	
Shield	Shield	Shield	Shield
Part # 32-2300-01		Part # 32-2301-01	

- The **Optional Internal Ethernet Print Server** is available only for display-equipped printers. When using this interface, refer to Appendix C, or the instructions included with the option for proper cabling, setup, and configuration.

3.2   Loading Media

Load media into the printer as follows:

1.   Open the media cover and lower the Media Hub Guide and Media Guide.

2.   Press in on the Printhead Latch and raise the Printhead Assembly.
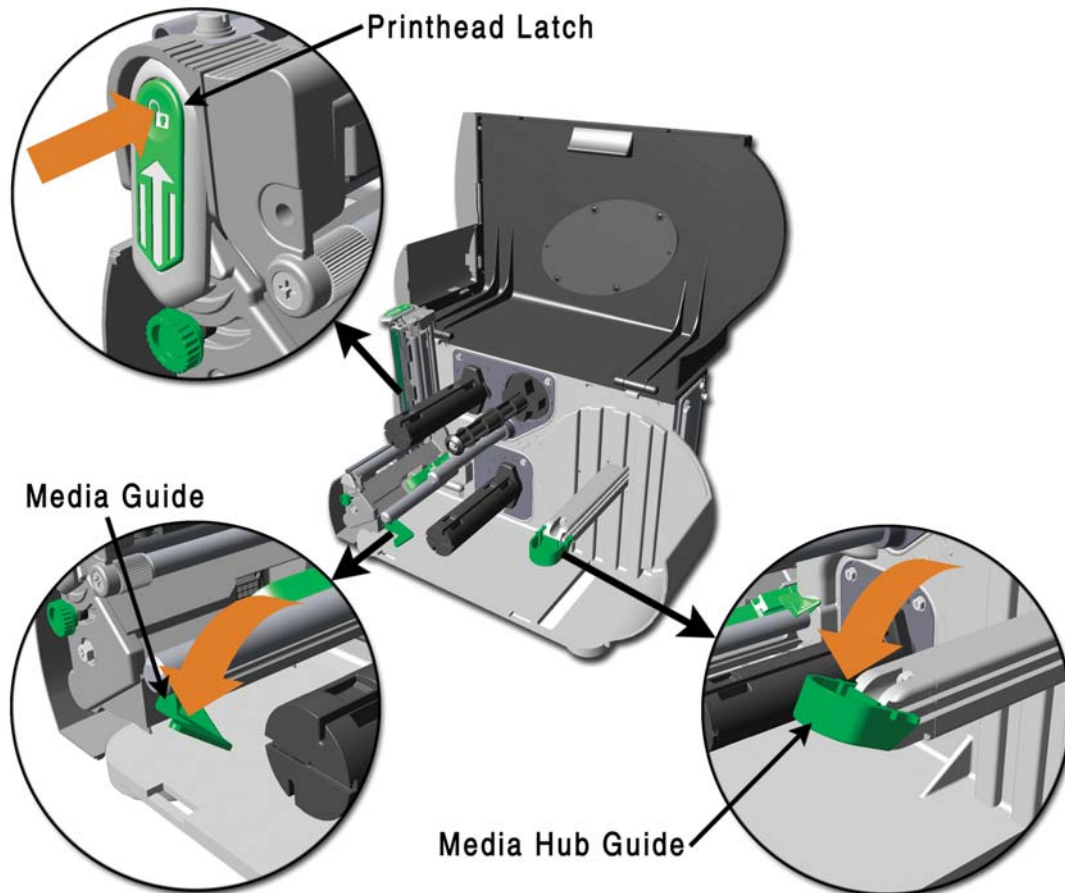
3. Slide the Roll Media onto the Media Hub and raise the Media Hub Guide. The Media Hub Guide should be pushed inward so that it is just touching the Roll Media.

4. Route the Media through the printer as shown. Raise the Media Guide. The Media Guide should be pushed inward so that it is just touching the edge of the Media.
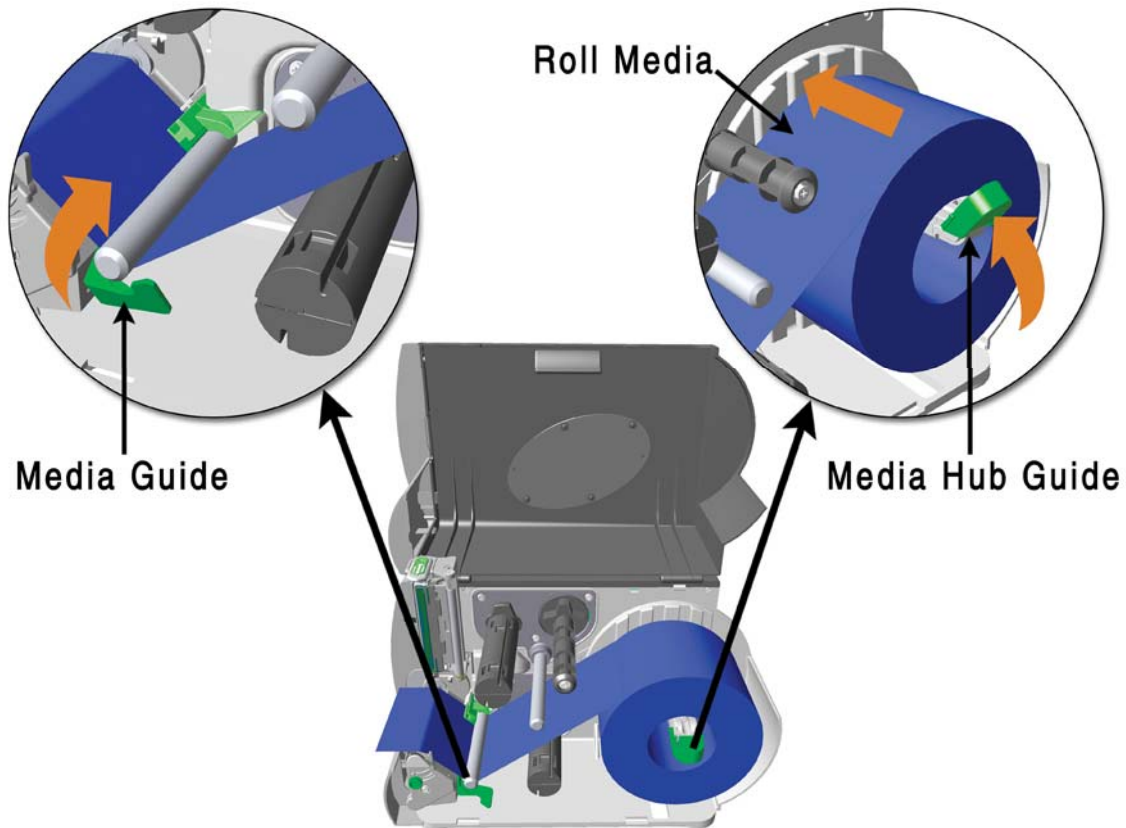
Media Guide

Roll Media

Media Hub Guide

5. Close the Printhead Assembly and press down until it locks into place.

Printhead Assembly

CLICK
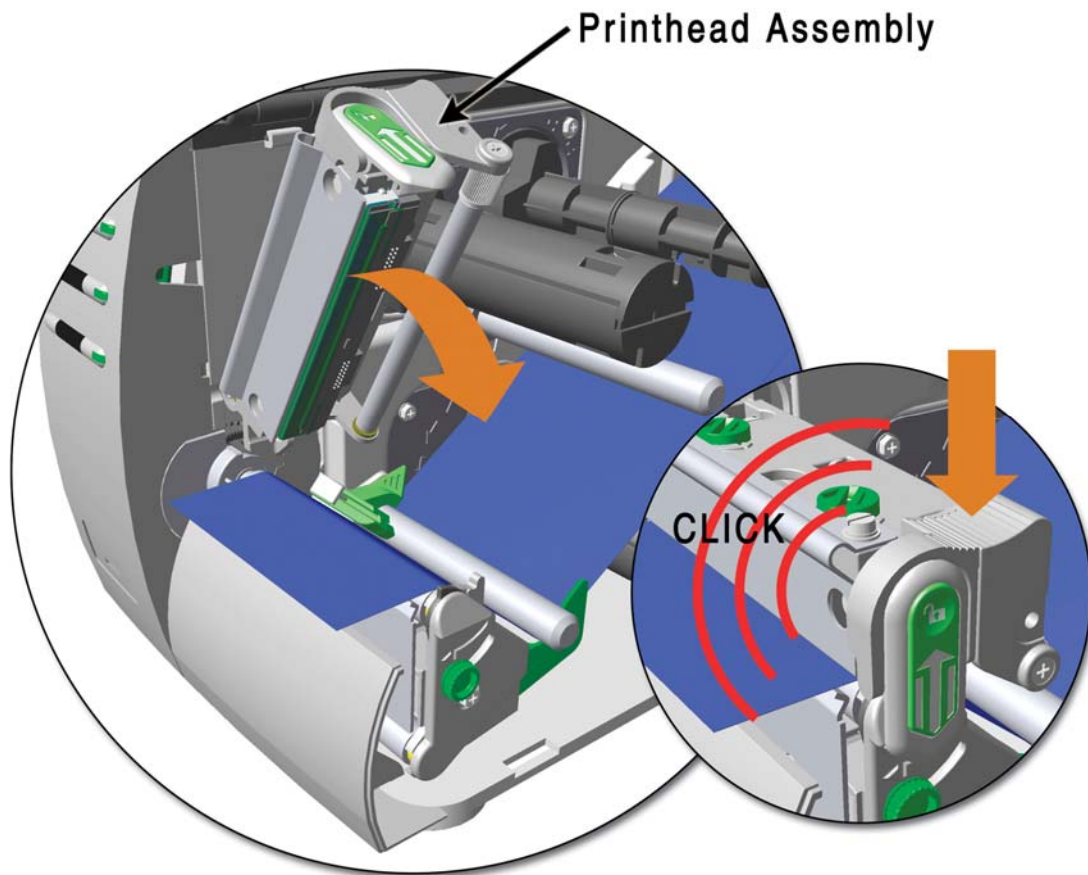
6. Close the cover and press the ⊹ FEED button several times to position the media and ensure proper tracking.

If the printer does not correctly sense the top of each label, as denoted by the ⊘ ERROR light, it may be necessary to:

Printers without front display: Perform the Auto Media Sensor Calibration, see section 4.7.1.

Printers with front display: Press and hold the ⊹ FEED button until at least one label gap or mark is advanced then release. For additional calibration procedures, see section 5.4

☑ *Note:*   *The printer is factory set to use 4-inch media (and ribbon, if thermal transfer equipped). When using a different width of media/ribbon, please refer to section 6.2.*

3.3 Media Sensor Adjustment

The Media Sensor needs to be positioned so that the printer can detect the presence of media and the top-of-form (except for continuous stock, where the TOF is set through the front panel.

To adjust:

❶ With media loaded, as described in Section 3.2, grasp the Slide Tab and move the Sensor Eye Mark into position over media according to the table below.

❷ If loading media, return to the media loading instructions.

Media Sensor Selection and Adjustment		
Media Type	**Sensor Eye Mark Position**	**Sensing Required**
Die-cut	Near the middle of the label	Gap
Notched	Centered over the notch	Gap
Reflective	Centered over the black mark	Reflective
Continuous	Near the middle of the media	Continuous
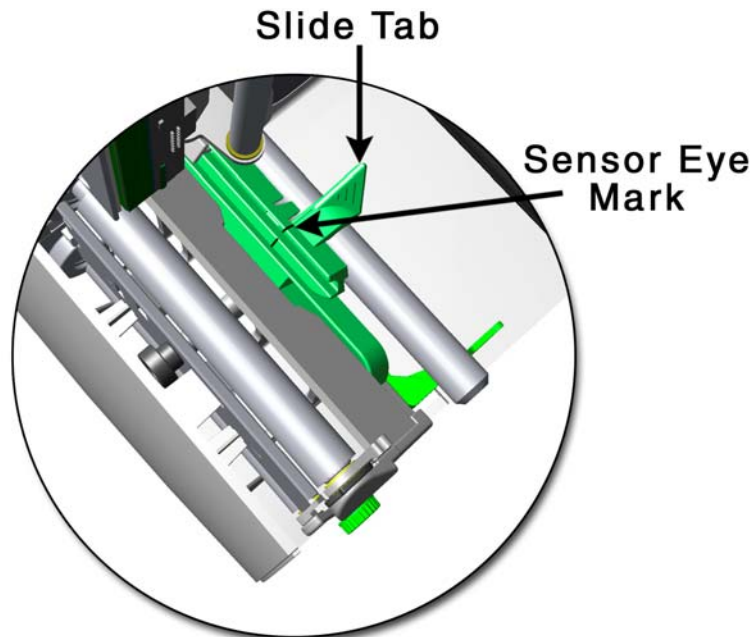
3.4   Loading Ribbon

Ribbon is required with thermal transfer media. It is recommended that the width of the ribbon be slightly wider than the media being used. Depending upon the type of Ribbon Supply Hub (see 3.4.1 for examples), the printer must use either ribbons with the 'coating side in' or ribbons with the 'coating side out'. To load:

> ☑ **Note:** *Using a ribbon that is slightly wider than your media (and liner, if any) will help protect against printhead wear.*

1. Open the media cover. Press in on the Printhead Latch and raise the printhead assembly.
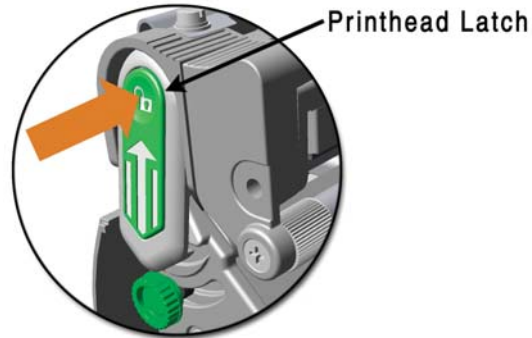
2. Slide the Ribbon Roll onto the Ribbon Supply Hub until it rests against the hub's flange. Ensure the ribbon unwinds in the correct direction (see 3.4.1 for examples). Illustrations depict a 'Coated Side In' assembly.
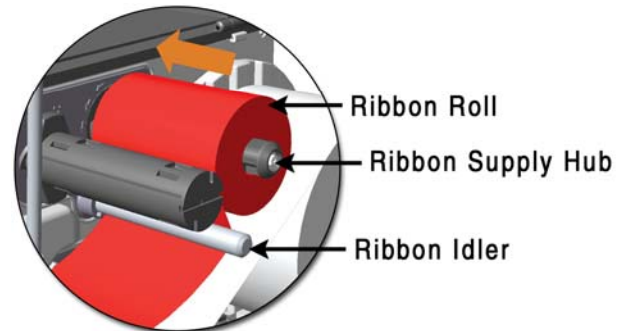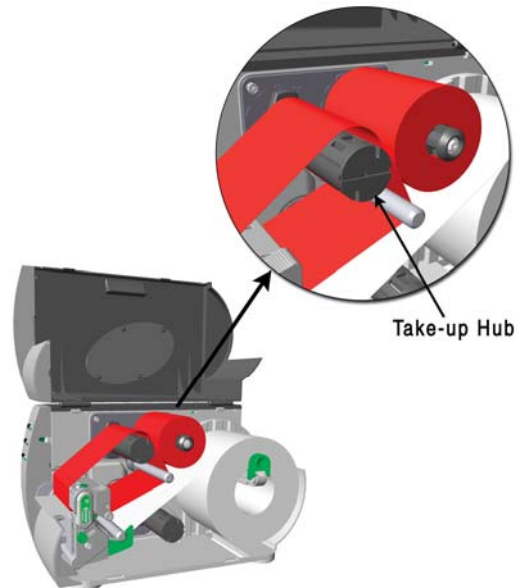

3. Route the ribbon under the Ribbon Idler and then out the front of the printer approximately 12 inches.

Printhead Assembly
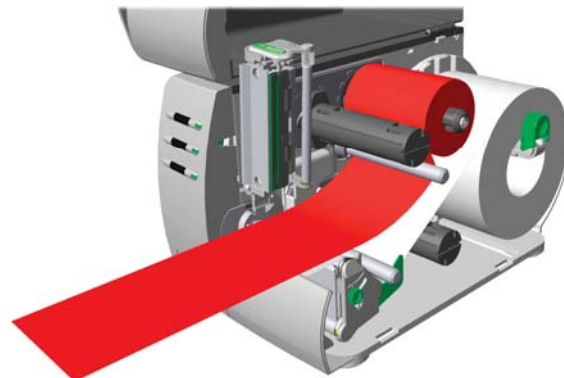
4. Close the Printhead Assembly and press down until it locks into place.

CLICK
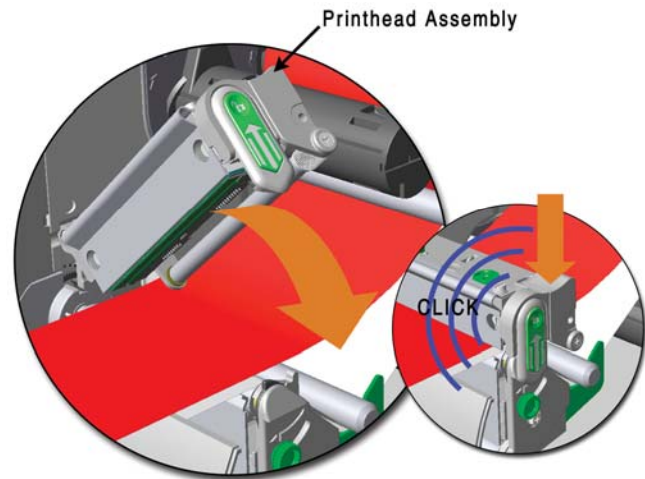
5. Route the ribbon up and then around to the Ribbon Take-Up Hub, winding it several times in a clockwise direction to secure it in place.

Take-up Hub

6. Close the cover and press the ⟳ FEED button several times to position the ribbon and ensure proper tracking.

7. The 'Media Type' setting within the printer's setup must be set to 'Thermal Transfer' to print using a ribbon;

Printers without front display: See section 4.5.2

Printers with front display: See section 5.1.2

3.4.1 Ribbon Routing (Coated Side In & Coated Side Out)

> ☑ **Note:** *Directional Arrows near the Ribbon Supply Hub indicate the correct ribbon route. Ribbon types are available with the ink (coating) layer wound 'in' or 'out'. These types are NOT interchangeable for use with the printer. Ensure the inked side of the ribbon faces the media and <u>NOT</u> the printhead.*
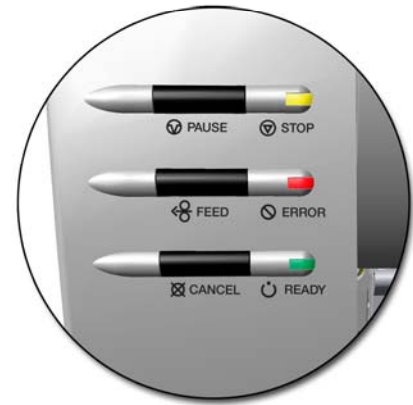
Ribbon Routing Diagrams

'Coating Side In' Ribbon Supply Hub

'Coating Side Out' Ribbon Supply Hub
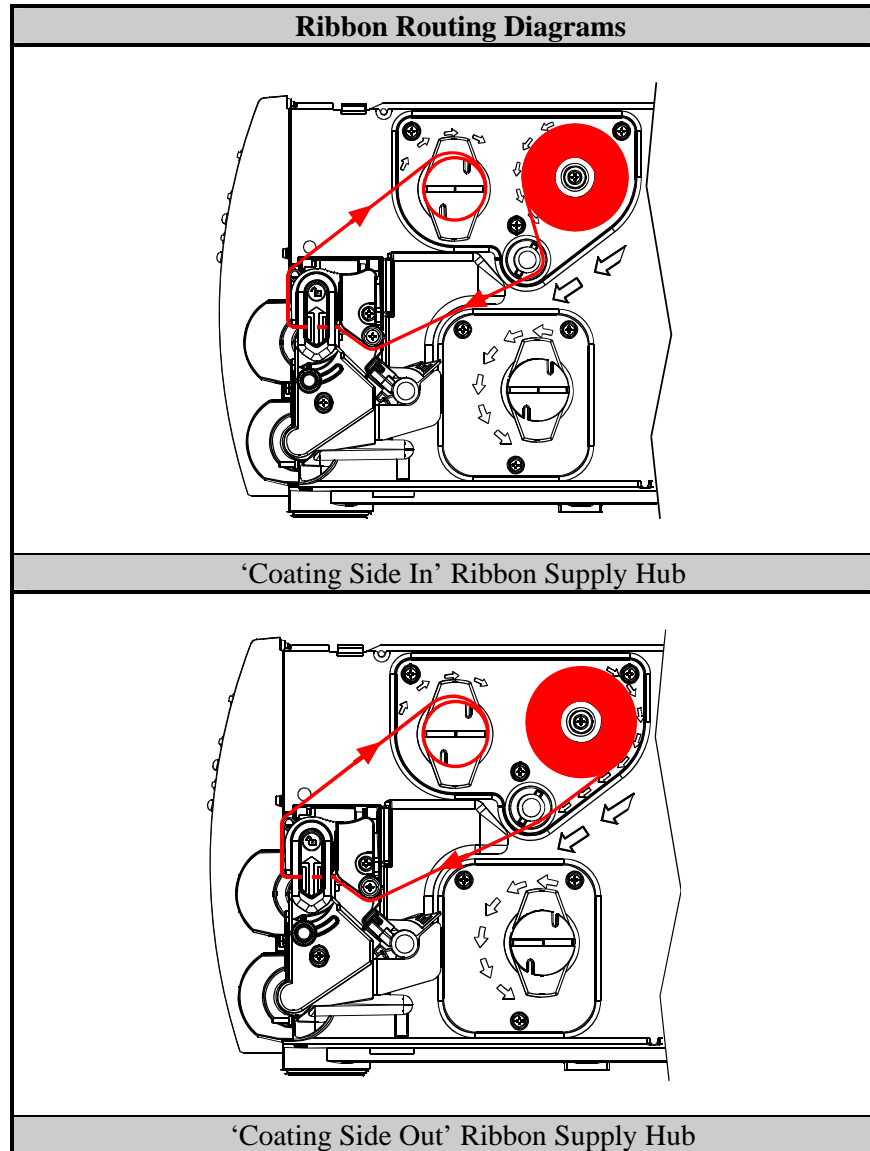
4 Using the Front Panel (non-display printers)

4.0   Introduction

The Front Panel consists of three indicator lights and three function buttons. The functions of these lights and controls are listed in the following sections.
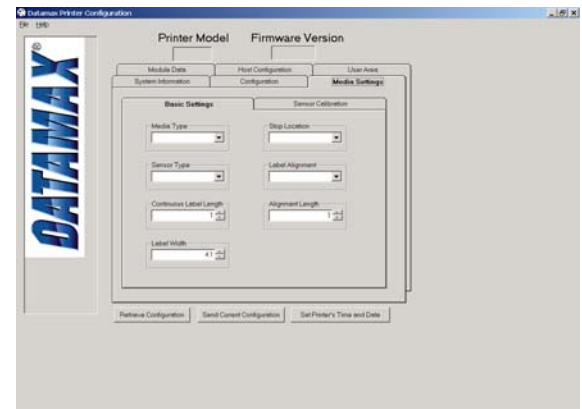

4.01   DMXConfig

DMXConfig (located on the M-class CD-ROM) is a Windows-based configuration utility that can simplify printer setup. This application allows the user to make changes to the existing printer setup without using the front panel buttons. Visit our website at www.datamaxcorp.com/software/m-class/ for the latest releases.
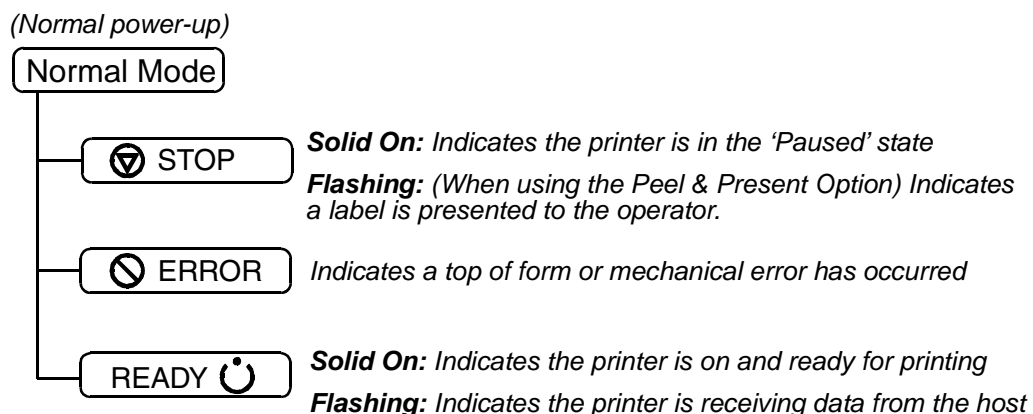
DMXConfig Features:

➢ Simplify Printer Setup Process

➢ Allows Real-Time Control/Query of Printer Configuration

➢ Define and Save Optimal Configurations for Applications i.e. Ribbon / Label Stock Combinations

➢ Saved Configurations can be Shared with other Printers and Sent via Email

➢ Download Files, Formats and Fonts

➢ Query Memory Modules

(Sample screenshot)

4.1 Lights

(Normal power-up)

Normal Mode

STOP **Solid On:** *Indicates the printer is in the 'Paused' state*
Flashing: *(When using the Peel & Present Option) Indicates a label is presented to the operator.*

ERROR *Indicates a top of form or mechanical error has occurred*

READY **Solid On:** *Indicates the printer is on and ready for printing*
Flashing: *Indicates the printer is receiving data from the host*

➢ Both the READY and STOP Lights will be on during power-up initialization and a warm reset.

4.2 Buttons

The three buttons, PAUSE, FEED, and CANCEL perform different functions based on the printer's operational mode. The printer operates in one of the following modes:

Normal: Normal printer functions. See Section 4.3.

Express Setup: Allows quick access to the most common printer settings, (Sensor Type, Media Type, and Option Control. See Section 4.4.

Printer Setup: Allows changes to the printer's operational settings. See Section 4.5.

Calibration: Allows the 'calibration' of the media being used for the correct sensing of the top of form. See Section 4.7.

4.3   Normal Mode - Button Functions

In 'Normal' mode, the printer's buttons control normal operations such as pause, feed, and cancel, as well as the test and reset functions by using button combinations as detailed below.

(Normal power-up)

Normal Mode

⊘ PAUSE   *Pauses/Un-pauses the printer*

⬳ FEED   *Feeds one label. Clears fault conditions*
Press and Hold to perform "Label Alignment", see section 4.6

⊗ CANCEL   *Cancels the current batch of labels. Press the Pause button to print the next batch of labels in the printer's buffer*
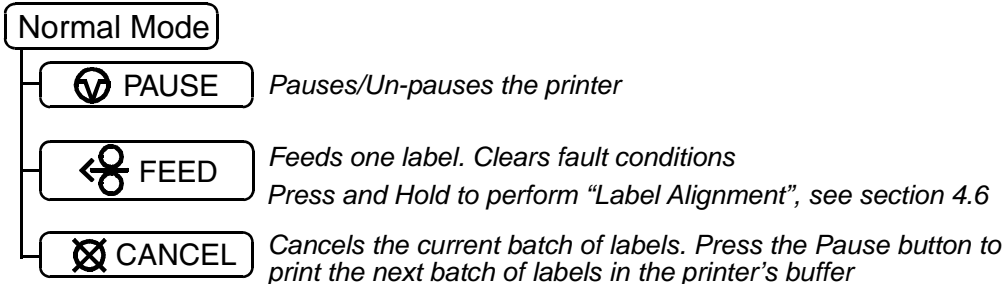
Button Combinations *(push buttons simultaneously)*

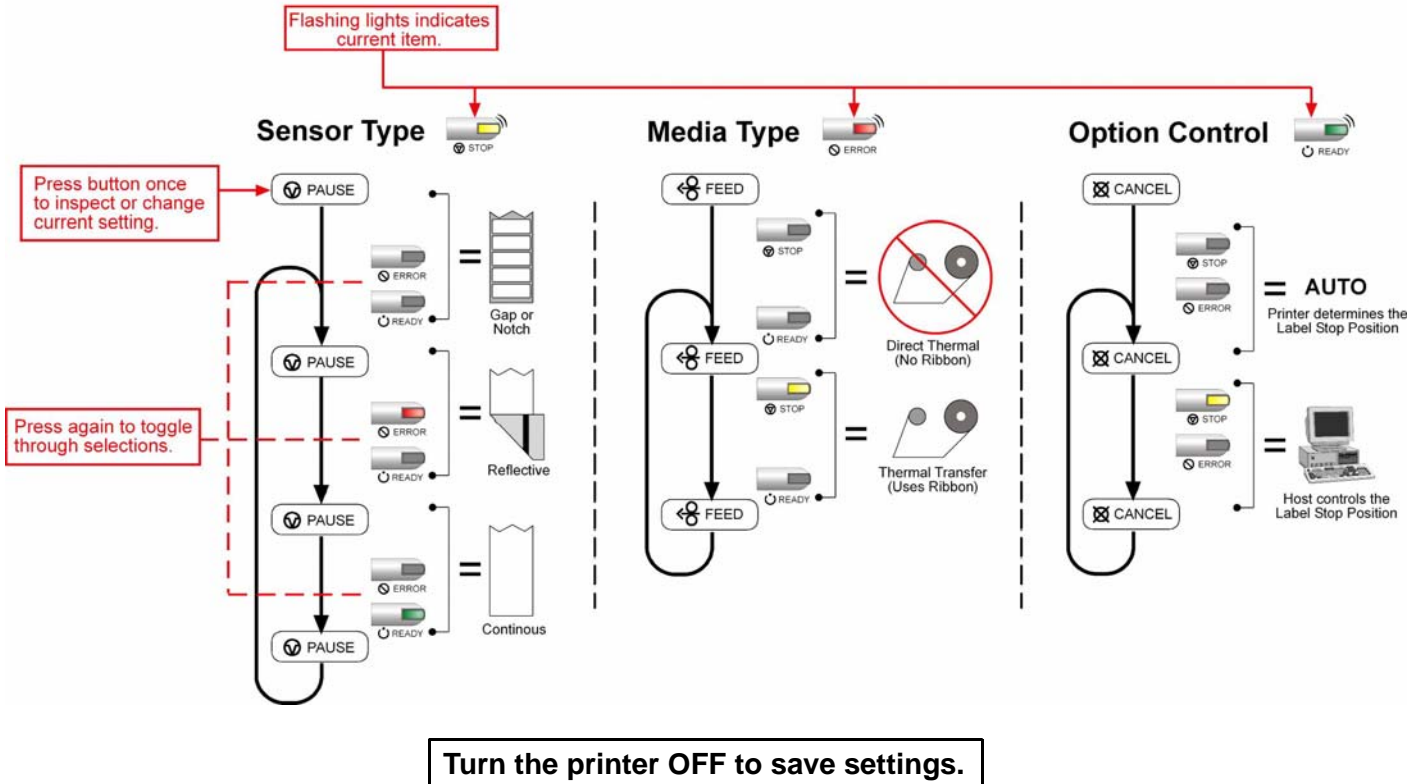| ⊘ PAUSE	+	⬳ FEED	Prints the Test Label, see Section 4.8.2.
⊘ PAUSE	+	⊗ CANCEL	Performs a warm reset and returns to the Normal Mode of operation.
⬳ FEED	+	⊗ CANCEL	Produces Database Configuration and Test Labels, see Section 4.8.1

4.4 Express Setup Mode - Button Functions

The Express Setup is a unique printer feature that allows users quick access to the most commonly used printer settings. The selected setting is represent by a specific combination of the printer's indicator lights for each of the three items, (Sensor Type, Media Type, and Option Control). To enter the Express Setup…

Press and Hold the (PAUSE) & (FEED) buttons and turn the printer ON.

Continue to hold the buttons, release when all lights flash, approx. 17 seconds

Use the (PAUSE) (FEED) (CANCEL) buttons for setup.

Flashing lights indicates current item.

Sensor Type

Press button once to inspect or change current setting.

- PAUSE
- = Gap or Notch (ERROR / READY)
- PAUSE

Press again to toggle through selections.

- = Reflective (ERROR / READY)
- PAUSE
- = Continous (ERROR / READY)
- PAUSE

Media Type

- FEED
- = Direct Thermal (No Ribbon) (STOP / READY)
- FEED
- = Thermal Transfer (Uses Ribbon) (STOP / READY)
- FEED

Option Control

- CANCEL
- = AUTO, Printer determines the Label Stop Position (STOP / ERROR)
- CANCEL
- = Host controls the Label Stop Position (STOP / ERROR)
- CANCEL

Turn the printer OFF to save settings.

4.5   Printer Setup Mode - Button Functions

In 'Printer Setup' mode, the buttons control the setting of the printer's operational items such as media settings, communications, and options as detailed below.

> ☑ **Notes:** *It is recommended that the Printer Setup Mode not be entered while in Peel Mode or with the optional Present Sensor enabled. Depending on label size this can cause unpredictable results.*
>
> *Printer and cutter faults are disabled during* [Printer Setup Procedure]*, but can still occur while printing "test" labels.*
>
> *If at any time you wish to discard your changes and revert back to the previous values, simply turn off power to the printer.*
>
> *If you wish to restore Factory Defaults see Section 6.7.*

To change Printer Setup:
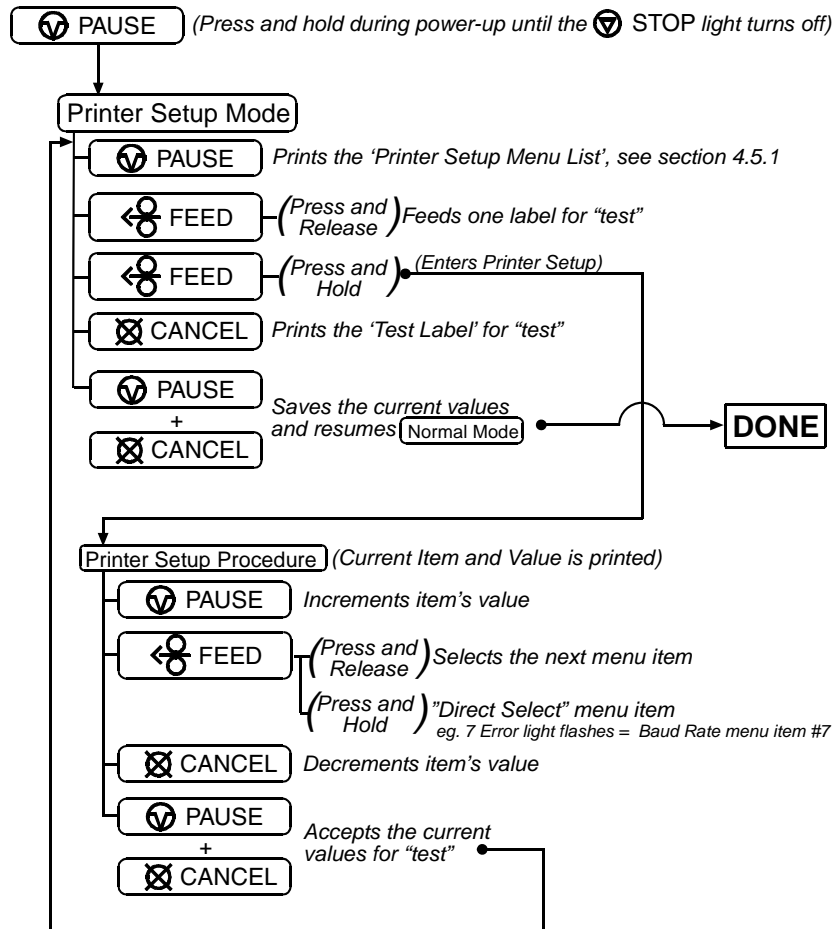
> ☑ **Note:** *When adjusting CONT FORM LENGTH, LABEL WIDTH, or ALIGN LENGTH, momentarily pressing F1 or F2 will change the value by one, or hold down the button until the Fault light flashes to change the value by ten for each flash.*

4.5.1 Printer Setup Menu List

The Printer Setup Menu List label, shown below, contains the printer's current values for each menu item that can be modified via the front panel (See Section 4.5.2 for a detailed item description.)

The Menu Item Numbers correspond to the item's position in the Menu List for selection when pressing the ⟷ FEED button during the Printer Setup Procedure (see Section 4.5). For example to "Direct Select" the BAUD RATE Menu Item press and hold the ⟷ FEED button for 7 flashes of the ⊘ ERROR light and then release or for the TOF GAIN item hold ⟷ FEED for 12 flashes, etc.

Menu Item Numbers   Values   Menu Items

```
 1)   DIRECT       = MEDIA TYPE
 2)   EDGE         = SENSOR TYPE
 3)   NO           = PRESENT SENSOR
 4)   NO           = CUTTER EQUIPPED
 5)   127          = SOP ADJUST, 0.005 in.
 6)   127          = PRESENT ADJUST, 0.005 in.
 7)   9600         = BAUD RATE, bps
 8)   8            = DATA BITS
 9)   STD          = CONTROL CODES
10)   100          = CONT FORM LENGTH, 0.01 in.
11)   3            = OOS MAXVOLT, 0.1 Volts
12)   12           = TOF GAIN
13)   10           = TOF DELTA, 0.1 Volts
14)   0            = TOF LOW, 0.1 Volts
15)   426          = LABEL WIDTH, 0.01 in.
16)   64           = SCALABLE FONT, 4KB
17)   128          = INTERNAL MODULE, 4KB
18)   NO           = LABEL ALIGNMENT
19)   100          = ALIGNMENT LENGTH, 0.01 in.
20)   AUTO         = OPTION CONTROL
21)   DPL          = INPUT MODE
22)   STANDARD     = DPL EMULATION
23)   10           = HEAT
24)   NO           = EXACT TIME
25)   NO           = GPIO
26)   NO           = NO REPRINT
```

☑ **Note:**   When using narrow media, the 'Menu Items' column may be truncated.

4.5.2 Menu Items and Values

The table below details the Printer Setup Menu List items with a brief description of the item's function, and the possible values. A "*" denotes the default setting.

1) MEDIA TYPE	2) SENSOR TYPE	3) PRESENT SENSOR
Sets printing for direct thermal (no ribbon) or thermal transfer (ribbon) media.	Selects the sensor type used to detect the media's Top Of Form (TOF) mark.	Enables/Disables the optional Present Sensor feature.
Possible Values:	*Possible Values:*	*Possible Values:*

* DIRECT THERMAL
  THERMAL TRANSFER
	* EDGE: gap / notch TOF marks
	  REFL (Reflective): black marks
	  CONT (Continuous): no TOF marks
		* AUTO
		  NO
		  YES

4) CUTTER EQUIPPED	5) SOP ADJUST	6) PRESENT ADJUST
Enables/Disables the optional Media Cutter feature.	Sets the start of print (SOP) location, relative to the top of form.	Specifies an additional amount to feed the label after printing.
Possible Values:	*Possible Values:*	*Possible Values:*

* AUTO
  NO
  YES
	Range: 0 – 255; nominal = *128
	
	(0 = close to edge; 255 = farthest from edge)
		Range: 0 – 255; nominal = *128
		
		(0 = close to edge; 255 = farthest from edge)

7) BAUD RATE	8) DATA BITS	9) CONTROL CODES
Sets the serial port baud rate. (Must match the host setting).	Sets the serial data word length (Must match the host setting).	Allows code selection listed in Programmer's manual.
Possible Values:	*Possible Values:*	*Possible Values:*

600 to 38.4k; default = *9600 BPS	* 8
	  7
		* (STD) Standard Codes
		      (ALT) Alternate Codes

10) CONT FORM LENGTH	11) OOS MAXVOLT	12) TOF GAIN
Sets the page (label) size when the 'SENSOR TYPE' is set to continuous media**.**	Sets the media sensor level for the Out Of Stock condition.	Sets media sensor Top of Form gain value.
Possible Values:	*Possible Values:*	*Possible Values:*
Range: 0 – 9999; default = *100 (Units = .01 inch)	Range: 0 – 16; nominal = *2 (Units = .1 volt)	Range: 0 – 15; nominal = *10

13) TOF DELTA	**14) TOF LOW**	**15) LABEL WIDTH**
Sets the minimum media sensor change required to signify a label gap or mark.	Sets the minimum media sensor reading for paper (gap/notch) or mark (reflective).	Sets the label width.
Possible Values:	***Possible Values:***	***Possible Values:***
Range: 0 – 50; nominal = *10 (Units = .1 volt)	Range: 0 – 50; nominal = *0 (Units = 0.1 volt)	Range: 75 – 426; default = *426 (Units = .01 inch)

16) SCALABLE FONT	**17) INTERNAL MODULE**	**18) LABEL ALIGNMENT**
Sets the number of memory blocks to allocate for scalable fonts.	Sets the number of memory blocks to allocate for the internal RAM module.	Sets the label alignment method *(see Section 4.6)*.
Possible Values:	***Possible Values:***	***Possible Values:***
Range: 0 – 128; default = *64 (Units = 4K Bytes)	Range: 0 – 128; default = *128 (Units = 4K Bytes)	YES (user manually determines 'ALIGN LENGTH') AUTO (printer determines 'ALIGN LENGTH') * NO (no Label Alignment used)

19) ALIGN LENGTH	**20) OPTION CONTROL**
Leading edge distance of two successive labels. Must be entered if 'LABEL ALIGNMENT' is set to Yes *(see Section 4.6)*.	Sets label stopping (and in certain cases the starting) location for different printer configurations.
Possible Values:	***Possible Values:***
0 – 999; default =100* (Units = .01 inch)	* AUTO (Automatically sets the stop location. Installed options will be 'auto-sensed' and the appropriate stop position will automatically be set. Host commands are ignored.) HOST (Sets stop position according to options installed. If no options are installed the printer sets stop location to the next label's start of print. Host commands will override.)

21) INPUT MODE

Selects between the standard or template interpretation of incoming data.

Possible Values:

* DPL   (printer constructs the label using the standard DPL commands)

  LINE (printer constructs the label using a preloaded template form)

22) DPL EMULATION

This instructs the firmware to process specific DPL data (Start of Print, DPI, and Imaging function) according to the selected printer emulation.

Possible Values:

* STANDARD
  ALLEGRO (Allegro Emulation)
  P PLUS (Prodigy Plus Emulation)
  PRODIGY (Prodigy Emulation)

23) HEAT

Controls the 'burn-time' of the printhead. This is the equivalent of Heat Setting on most label software programs.

Possible Values:

Range: 0 – 30; default = *10

24) EXACT TIME

Instructs the printer to wait until the system is idle before the next label's data and time fields are formatted to eliminate any discrepancy between the buffered and printed times.

Possible Values:

YES or NO; default = *NO

25) GPIO

Sets the printer's option port to function for GPIO applications, (see Appendix F for more information).

Possible Values:

YES or NO; default = *NO

26) NO REPRINT

When a fault condtions is detected, printing stops and the ERROR light turns on. After the problem is corrected, the FEED Key must be pressed to clear the fault. The label in process is *not* reprinted.

Possible Values:

YES or NO; default = *NO
(NO = NO REPRINT" disabled, reprinting will occur.)
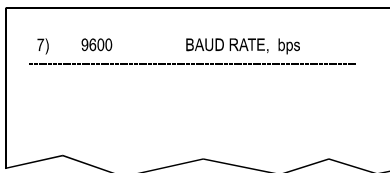
☑ **Note:** *All of the values for these Menu Items will be stored in non-volatile memory for future power-ups.*

4.5.3 Step by Step Modification of the Printer Setup

The following is an example of Printer Setup modification. Although this example will detail how to modify the serial Baud Rate, the same method can be used to change any of the printer's menu item settings.
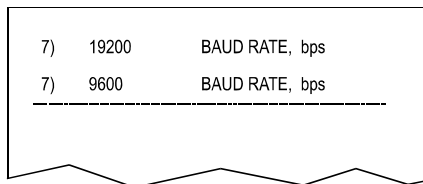
☑ **Note:** *It is recommended that the Printer Setup Mode not be entered while in Peel Mode or with the optional Present Sensor enabled. Depending on label size this can cause unpredictable results.*

1. With printer 'Off' and properly loaded with media, press and hold the ⊘ PAUSE button while powering 'On' the printer. Continue to hold the button until the ⊘ STOP light turns off, then release it.

2. Press and hold the ⊷ FEED button and count 7 flashes of the ⊘ ERROR light, then release it. The following printout should be produced:

```
  7)      9600          BAUD RATE,  bps
  ------------------------------------------------------
```

3. Press the ⊘ PAUSE button one time to increment to the 19200 bps value. The following printout should be produced:

```
  7)      19200         BAUD RATE,  bps
  7)      9600          BAUD RATE,  bps
  ------------------------------------------------------
```

4. At this point you will accept the current values for "test" and exit the Printer Setup Procedure by simultaneously and briefly pressing the ⊘ PAUSE + ⊠ CANCEL buttons. Wait until the ⊘ STOP light goes off.

☑ **Note:** *If you wish to discard your changes and revert back to the previous values simply turn off power to the printer before Step 5.*

5. Now you can save your changes and resume [Normal Mode] by simultaneously and briefly pressing the ⊘ PAUSE + ⊠ CANCEL buttons. Wait until the ⊘ STOP light goes off.

6. To confirm that your changes have been made press the ⬦ FEED + ⊠ CANCEL buttons simultaneously, this will print the Database Configuration Label. The label should show the new Baud Rate value of 19200.

Label 1

```
WED NOVEMBER 10, 2003 21:41:31
323
VER: M4206 - 05.08 11/07/03      COUNTER INFORMATION
BOOT 83-2383-05E                  ABSOLUTE VALUES   7-16-2003
CODE 83-2385-05H                   LENGTH_____         773 INCHES
FPGA 83-2384-05B                   TIME_____          20 HOURS
FONT 83-2460-01C                  RESETTABLE VALUES 7-16-2003
UMOD 83-2472-01A                   LENGTH_____        969 INCHES
 256K FLASH MODULE B               TIME_____          56 HOURS
SYSTEM FLASH SIZE_____2 MBYTES
SYSTEM RAM CHECKS_____ GOOD       MEMORY CONFIGURATION
SYSTEM RAM SIZE___ 4096 KBYTES    INTERNAL MODULE A_____   128
SYSTEM RAM AVAIL__ 3180 KBYTES    SCALABLE FONTS_____    64
                                  LABEL SIZE      0426:10912
AUTO DETECTION                    IN
 CUTTER_____NOT DETECTED
 PRESENT SENSOR_____NOT DETECTED
 CURRENT STOP LOC__TEAR

EXPRESS SETUP
 MEDIA SENSOR_____EDGE
 PRINT METHOD_____TRANSFER
 OPTION CONTROL_____AUTO


INPUT VALUES
PAPER_____ 207
POT_____  33
TRAN_____ 157
REFL_____   0
RIBN_____ 237
TEMP_____  64
VOLT_____ 218
PRESENT SENSOR_____   0
```

Label 2

```
CONFIGURATION
SERIAL PORT SELECTED
19.2; 8BITS  ⬅            ●
EDGE
MEDIA TYPE_____ TRANSFER
CONT FORM LENGTH__   0
PRESENT ADJUST____  128
SOP ADJUST_____  128
TOF LOW_____   0   0
TOF DELTA_____  10  10
TOF GAIN_____   7   5
OOS MAXVOLT_____   3   2
LABEL ALIGNMENT___  AUTO
ALIGN LENGTH_____   611
OPTION CONTROL____  AUTO
INPUT MODE_____  DPL
DPL EMULATION_____  STANDARD
HEAT_____   10
EXACT TIME_____  NO
GPIO_____  NO
NO REPRINT_____  NO
SYMBOL SET_____  PM
FONT SUBSTITUTION_  NONE

IGNORE COMMANDS
SYMBOL SET SELECT_  NO
CNTRL CODES_____  NO
HEAT_____  NO
SPEED_____  NO
SOP OFFSET_____  NO
```

4.6   Label Alignment

The Label Alignment function is intended for use when the label length is less than the distance between the printhead and the media sensor or where label waste at power-up is a concern. Label Alignment (see table below) is not recommended for label lengths greater than 6.5 inches or for media containing 2 or more form lengths.

Label Stock	Label Alignment Setting
Continuous	NO
6.5 inches or less	YES or AUTO
6.5 inches or more	NO
Multiple length labels	NO

The Label Alignment function is chosen via the menu system (see Section 4.5) or by host commands. The three possible modes, YES, AUTO, and NO, are detailed in the following sections.

4.6.1   Label Alignment = YES

In this mode, the operator must supply an 'ALIGN LENGTH' value. This value must be physically measured from leading edge to leading edge of two successive labels, as shown. The measurement must be as accurate as possible. For very short labels, errors as small as 0.01" can result in noticeable print variations on the labels between the media sensor and the printhead.

The measured value must be sent to the printer via the host computer or entered using the Printer Setup Mode (see Section 4.5).

Then, in Normal Mode, press and hold the ⬍ FEED button (about 4 seconds). The printer will align the label to the top of form position.
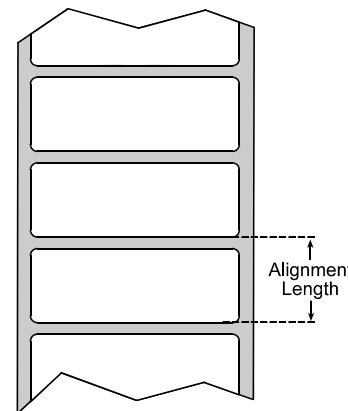
Alignment Length

☑ **Note:** *If media with a different label length is subsequently loaded, the 'ALIGN LENGTH' must be recalculated and re-entered.*

4.6.2 Label Alignment = AUTO

In this mode, the printer automatically calculates the 'ALIGN LENGTH' thus eliminating the need to physically measure the label. This mode is usually preferred in applications that require frequent media changes to labels of different lengths.

To perform an Auto Alignment, in Normal Mode press and hold the ⟨FEED⟩ button (about 4 seconds). The printer will feed labels to calculate the label length. Following the calculation, the printer will save the measurement and align to the top of form position. Auto Alignment can result in wasted labels during the measurement process (the longer the label length the greater the waste).

Auto Alignment with the Present Sensor enabled:

If the printer is equipped with the Present Sensor option and that feature is enabled, while the label length is calculated the printer will pause and illuminate the ⊘ STOP light after each movement. The operator must press the ⊘ PAUSE button for the alignment to continue. This allows the operator to remove any labels as required; however, labels should not be forcibly removed since they may not actually be positioned for removal, but at an interim position required for measurement.

4.6.3 Label Alignment = NO

When Label Alignment is not enabled (i.e., set to NO), printing begins at the current label position without alignment, assuming the label is at the start of print position. Additionally, if the label length is short, labels between the printhead and the media sensor may be unused.

4.6.4 Label Alignment Troubleshooting

If you experience label alignment problems, the following table offers possible causes and solutions.

Problem	Possible Cause	Solution
Attempting to perform Label Alignment results in no paper movement.	With the Present Sensor enabled, Label Alignment cannot be performed without a Label Length.	➢ Set Label Alignment to AUTO, press and hold ⬦ FEED until media moves for the automatic length measurement. *~OR~* ➢ Re-measure the Label Alignment Length. Use Printer Setup mode to enter the new length. Print a Database Configuration label to ensure the new length has been set.
First label is wasted during alignment. All labels thereafter print to the correct start of print position.	Alignment Length is too long. *~OR~* For labels whose length and stop position cause them to stop between labels on the media sensor, the alignment function can result in wasted labels.	➢ Set Label Alignment to AUTO, press and hold ⬦ FEED until paper moves for automatic Label Alignment length measurement. *~OR~* ➢ Re-measure Label Alignment Length, use Menu Setup to set new length, ensure desired length has been set. ➢ Obtain a slightly different label Alignment Length measurement. Using the Label Alignment AUTO mode, hold the ⬦ FEED button to force an alignment and label measurement. Ensuring slack in the label stock may result in a slightly different measurement. The Alignment Length may also be set manually via the Setup Menu. Increasing or decreasing the value by 1 or 2 units (in./100) may help to prevent the wasted labels; however, this may result in incorrect print positions for labels that are short in length.
Label Alignment is incorrect. Pressing ⬦ FEED successively results in a short label length, one-inch.	Label Alignment Length is not correct. The default Label Alignment Length is 1.00", and will result in this behavior when any larger label length is used without setting the appropriate length.	➢ Set Label Alignment to AUTO. Press and hold ⬦ FEED until paper moves for automatic Label Alignment Length measurement. *~OR~* ➢ Measure the label length and use the Setup Menu to set the new length. Print a Database Configuration label to ensure the new length has been set.

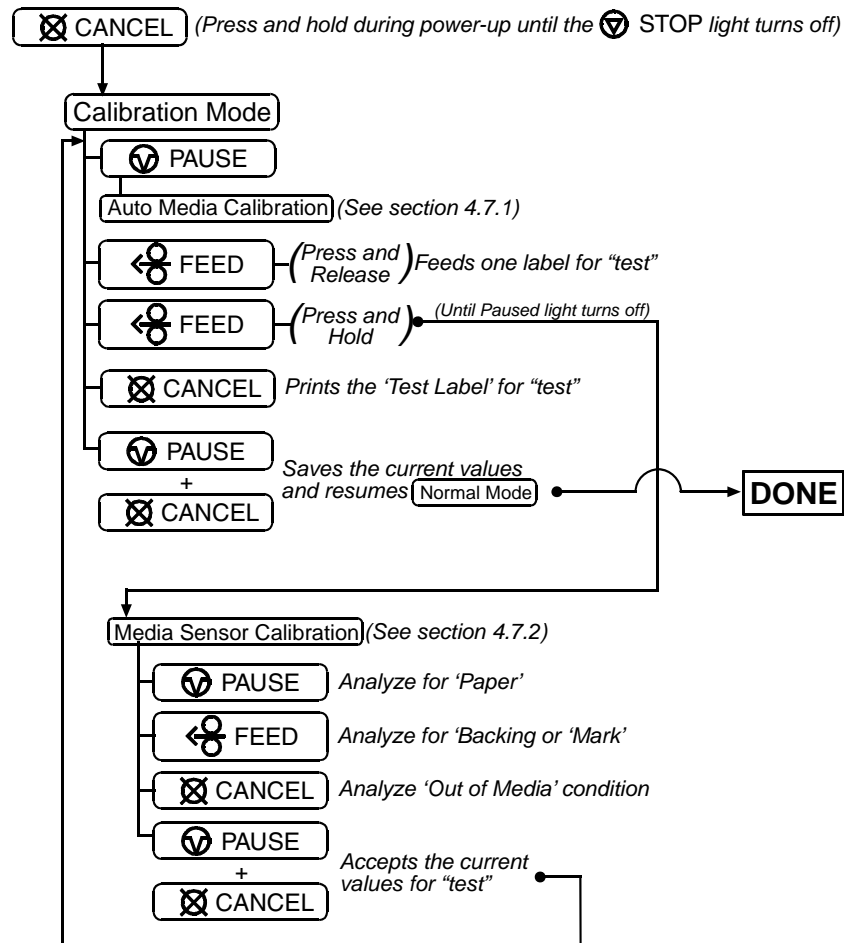| Problem	Possible Cause	Solution
Label Alignment is incorrect. Pressing ⬧ FEED successively results in a label length longer than actual, one-inch.	Label Alignment Length is not correct. The default Label Alignment Length is 1.00", and will result in this behavior when any larger label length is used without setting the appropriate length	➤ Set Label Alignment to AUTO. Press and hold ⬧ FEED until paper moves for automatic Label Alignment length measurement. *~OR~* ➤ Measure the label length and use the Setup Menu to set the new length. Print a Database Configuration label to ensure the new length has been set.
Tear Mode is selected but the label stop position (present position) is not far enough forward.	Another present position has been determined. Enabling the Present Sensor causes the label stop position (present position) to be approximately 0.1" behind the peel bar. *~OR~* The Present Adjust value is not correct.	➤ Disable the Present Sensor. *~OR~* ➤ Ensure the host computer is not providing a Present Distance shorter than is required for the Tear Bar. ➤ Use the Setup Menu to modify the Present Adjust value.
Tear Mode is selected but the label stop position (present position) is too far forward.	Another present position has been determined. *~OR~* The Present Adjust value is not correct.	➤ Ensure the host computer is not providing a Present Distance longer than is required for the Tear Bar. ➤ Use the Setup Menu to modify the Present Adjust value.
The ⊘ ERROR light illuminates during label alignment.	The label supply is empty	➤ Load media.

4.7   Calibration Mode – Button Functions

In 'Calibration' mode, the buttons allow the printer to adjust to the media being used. Calibration can be performed either automatically or manually, as detailed below.

☑ **Notes:**   Before calibrating, ensure that the Printhead Carrier Assembly is latched down, that the cover is closed, and that the media sensor has been set for the appropriate media type, see Section 4.5.2.

Printer and cutter faults are disabled during [Auto Media Calibration] and [Media Sensor Calibration], but can still occur while printing "test" labels.

If at any time you wish to discard your changes and revert back to the previous calibration simply turn off power to the printer. Also, Factory Defaults can be restored, see Section 6.7

To perform Calibration:

[⊗ CANCEL]   *(Press and hold during power-up until the* ▽ *STOP* light turns off)*

[Calibration Mode]

[▽ PAUSE]

[Auto Media Calibration] *(See section 4.7.1)*

[⬅ FEED]   (*Press and Release*) *Feeds one label for "test"*

[⬅ FEED]   (*Press and Hold*) *(Until Paused light turns off)*

[⊗ CANCEL]   *Prints the 'Test Label' for "test"*

[▽ PAUSE] + [⊗ CANCEL]   *Saves the current values and resumes* [Normal Mode]

DONE

[Media Sensor Calibration] *(See section 4.7.2)*

[▽ PAUSE]   *Analyze for 'Paper'*

[⬅ FEED]   *Analyze for 'Backing or 'Mark'*

[⊗ CANCEL]   *Analyze 'Out of Media' condition*

[▽ PAUSE] + [⊗ CANCEL]   *Accepts the current values for "test"*

4.7.1 Auto Media Sensor Calibration

Auto Media Sensor Calibration automatically establishes the optimum sensing values for the media you are using.

> ☑ **Note:** Before calibrating, be sure the media sensor is set for the appropriate media type, see Section 4.5.2; also, ensure that the Printhead Carrier Assembly is latched down and the cover is closed.

To automatically calibrate the media sensor:

1. With the desired media loaded, hold the ⊠ CANCEL button while powering up the printer. Continue to hold the button until the ⊘ STOP light turns off then release it.

2. Next press the ⊘ PAUSE button. *The printer will feed approximately ten inches of media to calculate the TOF Delta and Low values to be used.*

3. Upon completion, one of the following lights will flash five times to denote the result of the auto calibration attempt:

    ⊘ STOP light = Successful calibration. Proceed to Step 4.

    ⃠ ERROR light = Unsuccessful calibration, try again. If the calibration continues to fail proceed to Section 4.7.2.

> ☑ **Note:** If you wish to discard the changes and revert back to the previous calibration simply turn off the printer before Step 4.

4. Now save the changes and resume ⌊Normal Mode⌋ by pressing the ⊘ PAUSE + ⊠ CANCEL buttons simultaneously and briefly. Wait until the ⊘ STOP light goes off.

4.7.2 Manual Media Sensor Calibration

The Manual Media Sensor Calibration procedure should be used in cases where the printer continues to suffer from media sensing problems after performing or attempting to perform the Auto Media Sensor Calibration (see Section 4.7.1).

> ☑ **Note:** Before calibrating, be sure the media sensor is set for the appropriate media type, see Section 4.5.2; also, ensure that the Printhead Carrier Assembly is latched down and the cover is closed.

To manually calibrate the media sensor:

1. Hold the ⊠ CANCEL button and power-up the printer. Continue to hold the button until the ⊝ STOP light turns off; then release the button. Next, press and hold the ⇐⊟ FEED button, continue to hold the button until the ⊝ STOP light turns on; then release the button.

2. Remove all the material from the media sensor, (see Section 3.3 for the sensor's location), close the Printhead Carrier Assembly, and then press the ⊠ CANCEL button. *The printer will flash the ⊘ ERROR light as it analyzes the no media condition.*

3. Position the backing material or the black (reflective) mark in the media sensor, close the Printhead Carrier Assembly, and then press the ⇐⊟ FEED button. *The printer will flash the ⊘ ERROR light as it analyzes the top of form mark.*

4. Place the media with the backing attached (if any) in the media sensor, close the Printhead Carrier Assembly, and then press the ⊘ PAUSE button. *The printer will flash the ⊘ ERROR light as it analyzes the material.*

5. Simultaneously and briefly press the ⊘ PAUSE + ⊠ CANCEL buttons to accept the calibration for "test" and exit the [Media Sensor Calibration]. One of the following lights will flash five times to denote the result of the manual calibration attempt:

    ⊝ STOP light = Successful calibration. Proceed to Step 6.

    ⊘ ERROR light = Unsuccessful calibration. Retry the procedure beginning at Step 1.

6. Use the ⇐⊟ FEED button (feeds a label), and the ⊠ CANCEL button (prints a test label) to test the current calibration.

> ☑ **Note:** If you wish to discard the changes and revert back to the previous calibration simply turn off the printer before Step 7.

7. Now save the changes and resume [Normal Mode] by pressing the ⊘ PAUSE + ⊠ CANCEL buttons simultaneously and briefly. Wait until the ⊝ STOP light goes off.

4.8   Internal Labels

The following section details the printer's internally generated configuration and test labels.

4.8.1   Database Configuration and Test Labels

The Database Configuration Label provides valuable printer information including the firmware version, memory allocations, enabled options, and label-counter data.

To print the Database Configuration and Test Labels:

With the printer on, loaded with media (at least 4 inches wide) and ribbon (if printing with thermal transfer media), press the ⬍ FEED + ⊠ CANCEL buttons simultaneously.

The first label printed will be the Database Configuration Label.

Label 1

```
WED NOVEMBER 10, 2003 21:41:31
323
VER: M4206 - 05.08 11/07/03       COUNTER INFORMATION
BOOT 83-2383-05E                   ABSOLUTE VALUES    7-16-2003
CODE 83-2385-05H                    LENGTH_____        773 INCHES
FPGA 83-2384-05B                    TIME_____         20 HOURS
FONT 83-2460-01C                   RESETTABLE VALUES 7-16-2003
UMOD 83-2472-01A                    LENGTH_____        969 INCHES
 256K FLASH MODULE B                TIME_____         56 HOURS
SYSTEM FLASH SIZE_____2 MBYTES
SYSTEM RAM CHECKS_____ GOOD        MEMORY CONFIGURATION
SYSTEM RAM SIZE____ 4096 KBYTES    INTERNAL MODULE A_____   128
SYSTEM RAM AVAIL__ 3180 KBYTES     SCALABLE FONTS_____    64
                                   LABEL SIZE       0426:10912
AUTO DETECTION                     IN
 CUTTER_____NOT DETECTED
 PRESENT SENSOR_____NOT DETECTED
 CURRENT STOP LOC__TEAR

EXPRESS SETUP
 MEDIA SENSOR_____EDGE
 PRINT METHOD_____TRANSFER
 OPTION CONTROL____AUTO


INPUT VALUES
PAPER_____ 207
POT_____  33
TRAN_____ 157
REFL_____   0
RIBN_____ 237
TEMP_____  64
VOLT_____ 218
PRESENT SENSOR_____   0
```

Label 2

```
CONFIGURATION
SERIAL PORT SELECTED
19.2; 8BITS
EDGE
MEDIA TYPE_____ TRANSFER
CONT FORM LENGTH__   0
PRESENT ADJUST_____ 128
SOP ADJUST_____ 128
TOF LOW_____  0   0
TOF DELTA_____ 10  10
TOF GAIN_____  7   5
OOS MAXVOLT_____  3   2
LABEL ALIGNMENT____ AUTO
ALIGN LENGTH_____ 611
OPTION CONTROL_____ AUTO
INPUT MODE_____ DPL
DPL EMULATION_____ STANDARD
HEAT_____  10
EXACT TIME_____ NO
GPIO_____ NO
NO REPRINT_____ NO
SYMBOL SET_____ PM
FONT SUBSTITUTION_ NONE

IGNORE COMMANDS
SYMBOL SET SELECT_ NO
CNTRL CODES_____ NO
HEAT_____ NO
SPEED_____ NO
SOP OFFSET_____ NO
```
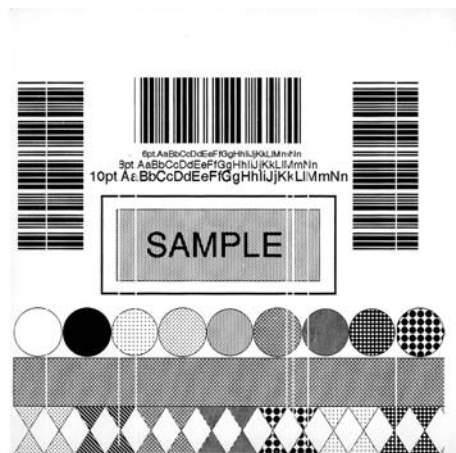
The second label printed is the Test Label. This label is used to test the condition of the printhead, as shown below:
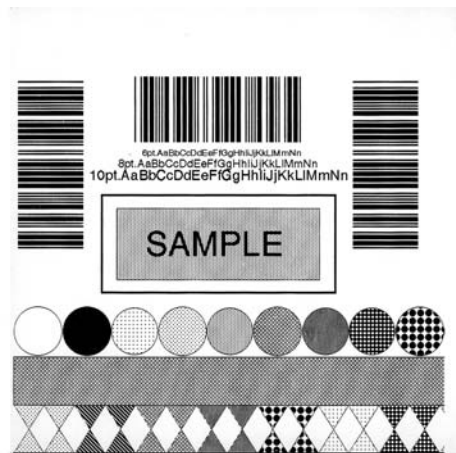
Good Print Quality Label:

Even pattern consistency indicates correct printhead operation.


Faulty Print Quality Label:

Streaks indicate a dirty or faulty printhead. See Section 6.1 for cleaning instructions.

4.8.2 Test Label

The Test Label is used to evaluate the current printer setup for print quality, label tracking, and print positioning.

To print the Test Label:

With the printer loaded with media (at least 4 inches wide), and ribbon (if printing with thermal transfer media), simultaneously press the ⊗ PAUSE + ⬌ FEED buttons.
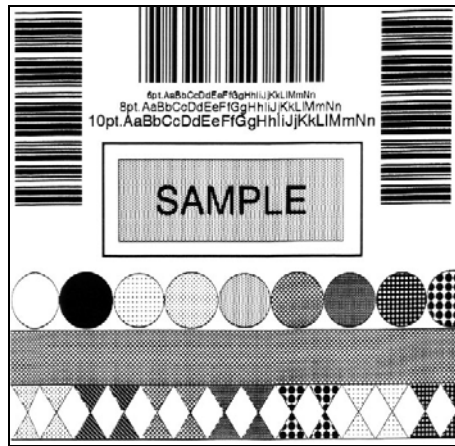
Using the Front Panel (display printers)

5.0 Introduction

Controlling Printer Settings with the Internal Printserver

If your printer is equipped with the optional Internal Printserver, many of the printer's setting and parameters can be modified and controlled via the built-in HTML pages resident in the printer. These pages can be accessed using any web browser by simply entering the IP address in the URL bar.

The front panel is comprised of three indicator lights, a Liquid Crystal Display and five mode-dependant keys. The selectable modes (Ready, Menu and Quick Test) and the related functions of the printer keys are detailed below.

> ☑ **Note:** To Adjust the LCD contrast, press and hold the ☰ **MENU** key for 10 to 20 seconds to modify the LCD contrast level.

5.0.1 Ready Mode: Normal Operation (Ready Light 'On')
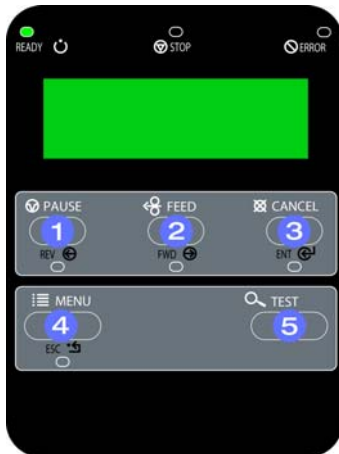
❶ ⓥ **PAUSE**

The PAUSE Key temporarily suspends printing. Pressing it again will return the printer to normal operation.

❷ ⚙ **FEED**

The FEED Key advances one label, and clears any corrected faults.

Pressing and holding causes the printer to perform a Quick Media Calibration; see Section 5.4.1.

❸ ⊗ **CANCEL**

The CANCEL Key 'pauses' the printer and then prompts you for confirmation. If yes, the current job is cancelled. The printer remains paused.

Pressing and holding four seconds will reset the printer and clear temporary host settings (soft reset).
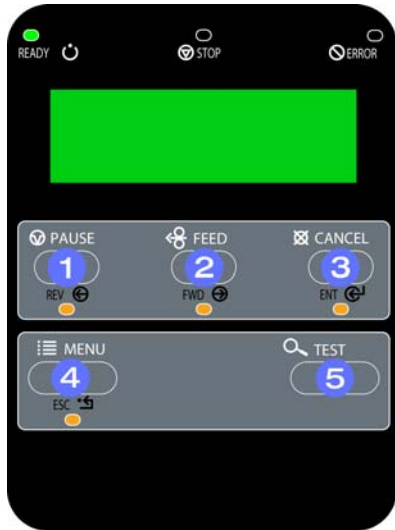
❹ ☰ **MENU**

The MENU Key toggles between the Ready and Menu Modes. In the Ready Mode, pressing and holding four seconds will change the display contrast.

❺ ⌕ **TEST**

The TEST Key enters (or exits) the Quick Test Menu.

5.0.2 **Menu Mode:** Configuration (Ready Light 'Flashing')

❶ REV⟵

The LEFT ARROW Key scrolls to the previous menu item on the same menu level. It also decrements numerical values in most menu selections.

❷ FWD⟶

The RIGHT ARROW Key scrolls to the next menu item. It also increments numerical values in most menu selections.

❸ ENT↵

The ENTER Key selects the function, item or displayed value. It also moves between selections within multiple parameter fields.

❹ ESC⤺

The ESCAPE Key moves to the previous menu level, and finally back to the Ready Mode.

❺ ⌕ TEST

When a print job is in progress, pressing the TEST Key will terminate the job. The printer will prompt you for confirmation; if 'Yes,' the current job is cancelled and then Menu Mode is restored.

5.0.3 **Quick Test Mode:** Print Test Labels

> ☑ *Note:* *The Quick Test Mode functions are disabled while processing data from communications interfaces until the Host Timeout value expires. Also, You can program a time delay between the printings of test labels using the 'Print Test Rate' feature; see Section 5.1.7*
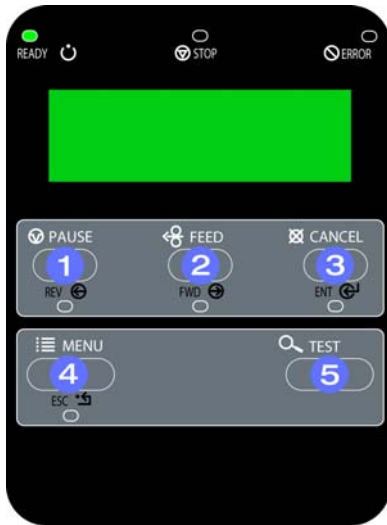
❶ REV⬅
The LEFT ARROW Key scrolls to the previous test function.

❷ FWD➡
The RIGHT ARROW Key scrolls to the next test function.

❸ ENT⏎
The ENTER Key will change the selected test label quantity of 2, 100, 1000, or 9999 (except the 'Configuration Label', quantity of one). Holding down the key scrolls quantities.

❹ ESC↰
The ESCAPE Key will exit the Quick Test Mode without printing.

❺ �🔍 TEST
The TEST Key will print the selected test label at the selected quantity. During test label printing, this key also functions as a cancel key (the printer will prompt you for confirmation before cancellation occurs).

5.0.4 Indicator Lights
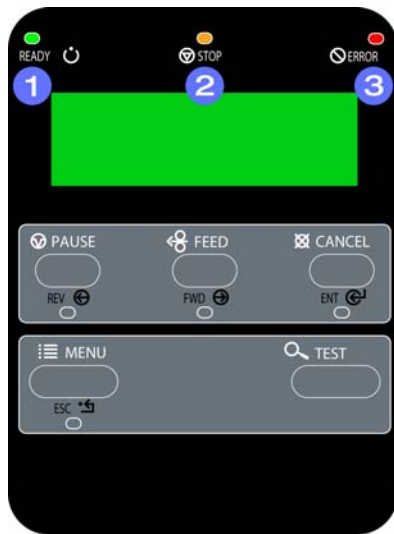
❶ ⏻ READY

'On' indicates that the printer is powered 'On' and, after initialization, it indicates the Ready Mode.

'Slow Flashing' indicates Menu Mode.

'Fast Flashing' indicates data is being received and processed.

❷ ⊘ STOP

'On' indicates a 'Paused' condition.

❸ ⊘ ERROR

'Slow Flashing' indicates a Warning. 'Fast Flashing' indicates a Fault. See Section 7.1 for a listing of associated messages.

5.0.5 LCD

❶ Liquid Crystal Display

The display provides several types of information:

- Following a brief power-up sequence (initialization), the 'Ready' message.

- The time and date, if the printer has received it from one of the following: the host, the front panel setting, or the Time and Date option.

- A label counter during a batch print job.

- The Menu System when in Menu Mode.

- Any prompt, condition, downloading, warning, or fault message.

5.1 The Menu System

Printer operation can be controlled through the user interface, allowing the operator access to these six menu system branches: Media Settings; Print Control; Printer Options; System Settings; Communications; and, Diagnostics.

While in the menu system, the current selection will be indicated with an asterisk (*) next to the displayed item on the LCD. Selections designated with a section symbol (§) will require a printer reset before becoming effective. A reset will be automatically invoked when exiting the menu system and answering 'Yes' to the 'Save Changes' prompt. Changes made will be saved. When power is removed, the new settings will be restored upon power-up.

The same functional commands from your host computer may, in some cases, override the printer's menu settings. In addition, as a security feature for the prevention of accidental or unauthorized changes, the menu system has a password protection feature.

> ☑ *Note: In the following subsections, the factory default settings are denoted with the '✧' symbol. Selections denoted with a diamond (♦) can only be changed through the menu system - all other selections can be overridden by host software commands. Consult the Class Series Programmer's Manual for specific information.*

5.1.1 Entrance and Exit Prompts

With 'Ready' displayed on the LCD, press the ⦙☰ **MENU** Key to enter Menu Mode.

> ☑ *Note: While in Menu Mode, the printer will stop processing new DPL (or bitmapped) data.*

MENU MODE	Depending upon the configuration of the printer, the following Entrance and Exit Prompts may be displayed when accessing or leaving the Menu System.
ENTER PASSWORD 0 0 0 0	You are attempting to enter Menu Mode. Security has been enabled and now the correct user-definable password is required before accessing the Menu Mode functions.
KEEP HOST CHANGES? ENTER = YES	You are now entering Menu Mode. Existing Host commands have affected the configuration of the printer. Pressing ENTER will save these changes; otherwise, the printer will revert to previously saved settings.
SAVE CHANGES? ENTER = YES	You are now exiting Menu Mode, but have made changes to the printer's settings. Pressing ENTER will reconfigure your printer according to these changes; otherwise, the printer will revert to previously saved settings. ☑ *Note: If changes have been made that require a reset, the printer will automatically invoke that reset.*

5.1.2 Media Settings

MEDIA TYPE	Selects the printing method.
DIRECT THERMAL	For use with heat sensitive media.
✧THERMAL TRANSFER	For use with media requiring a ribbon to create an image.

SENSOR TYPE	Selects the top-of-form (TOF) sensing method for the media.
✧GAP	The printer recognizes the TOF by sensing gaps in the media.
CONTINUOUS	No TOF sensing. The LABEL LENGTH setting determines the length.
REFLECTIVE	The printer recognizes the TOF by sensing reflective (black) marks on the media.

LABEL LENGTH ✧04.00in (0-99.99)	When the Sensor Type is set to Continuous, this value is used to determine the TOF.
MAXIMUM LABEL LENGTH ✧16.00in (0-99.99)	Sets the maximum length between TOF marks (gap or reflective). If this limit is exceeded, a top of form fault is declared.
PAPER OUT DISTANCE ✧00.25in (0-99.99)	Sets the length of travel before an out of stock condition is declared.
LABEL WIDTH 203DPI > ✧04.26in (.75-4.26) 300DPI > ✧04.16in (.75-4.16)	Sets the maximum limit for the printable width. Objects extending beyond this limit will be clipped off and not printed.
RIBBON LOW DIAMETER ♦ ✧1.38 in (1.00-2.00)	Sets the threshold for a low ribbon indication.

SENSOR CALIBRATION ♦	Adjusts the printer to sense your media.
PERFORM CALIBRATION	The user follows steps to allow the printer to calculate the empty, gap (or mark), and paper values to set the media sensor.
ADVANCED ENTRY	The user directly inputs the best values to adjust the media sensor.
SENSOR LEVELS	Sets threshold values for the media sensor parameters. Manual entry for paper, gap (or mark), and empty thresholds.
SENSOR GAIN	Observe A/D reading and set SENSOR GAIN. Adjusts the sensitivity of the sensor for custom label stock.

PRINTHEAD CLEANING	Controls the printhead cleaning routine.
CLEAN HEAD SCHEDULE ✧000 in. (* 1000)	Specifies the inch (or centimeter) count to reach before prompting a printhead cleaning. If the number specified is exceeded three times, the printer will fault until cleaning is initiated. ☑ *Notes: The default value (zero) disables this function. Also, the number specified is multiplied by one thousand.*
CLEAN HEAD COUNTER 0 in.	Indicates the number of inches (or centimeters) since printhead cleaning was last initiated.
RESET COUNTER	Allows the clean head counter to be set to zero
CLEAN HEAD NOW	Initiates printhead cleaning and resets the Clean Head Counter. ☑ *Notes:* *Remove ribbon, if installed.* *Enter Menu Mode / Media Settings / Media Type and set the printer for Direct Thermal.* *Ensure that full width media is installed.* *See Section 6.1 for detailed instructions.*

5.1.3 Print Control

HEAT ✧10 (0-30)	Controls the 'burn-time' of the printhead. This is the equivalent of Heat Setting on most label software programs.
PRINT SPEED M-4206 > ✧6 in/s (2-6) M-4208 > ✧8 in/s (2-8) M-4306 > ✧6 in/s (2-6)	Controls the rate of label movement during the printing process.
FEED SPEED M-4206 > ✧6 in/s (2-6) M-4208 > ✧8 in/s (2-8) M-4306 > ✧6 in/s (2-6)	Controls the rate of label when the FEED Key is pressed.
REVERSE SPEED M-4206 > ✧4 in/s (2-5) M-4208 > ✧4 in/s (2-5) M-4306 > ✧4 in/s (2-5)	Controls the rate of label movement during backup positioning for start of print, cutting or present distance.
ROW OFFSET ✧00.00in (0-99.99)	Shifts the vertical start of print position. This is the user setting for row adjustment.
COLUMN OFFSET ✧00.00in (0-99.99)	Shifts the horizontal, left-justified start of print position to the right <u>without</u> shifting the Label Width termination point to the right. This is the user setting for Column Adjust.
PRESENT DISTANCE ✧0.00in (0-4.00)	Sets the label stop position past the start of print. When the next label format is received, it will automatically be back fed to the start position. If the present distance is set to zero, the printer will operate without reversing.
CUSTOM ADJUSTMENTS ♦	These factory adjustments independently change the listed parameters to finely tune the printer and compensate for slight mechanical differences sometimes evident if multiple printers share label formats.
DARKNESS ✧32 (1-64)	Controls the printhead strobe time to fine-tune the HEAT setting.
CONTRAST ✧32 (1-64)	It allows relative print edge (gray) adjustment for the print quality, which allows fine-tuning for specific media/ribbon mix.
ROW ADJUST ✧000 DOTS (-150 -150)	Shifts the vertical start of print position in dots upward or downward to fine-tune the ROW OFFSET setting.
COLUMN ADJUST ✧000 DOTS (0-128)	Shifts both the horizontal start of print position and the LABEL WIDTH termination point to the right in dots to fine-tune the COLUMN OFFSET setting.
PRESENT ADJUST ✧064 DOTS (0-128)	Adjusts the label stopping position in dots to fine-tune the PRESENT DISTANCE setting.

5.1.4 Printer Options

MODULES	Memory available for user storage of graphics, fonts and label formats. (The physical presence of the respective memory module must be detected to show the function selections in the menu system.
PRINT DIRECTORY	Prints a label directory of selected, or of all available modules, the available space on these modules, the files present, and the type of module and files.
PRINT FILE	The user may select from a list of available files for sample printing.
FORMAT MODULE	The user may select from a list of available modules for formatting – all data will be erased.
DELETE FILE	The user may select from a list of available files for deleting (protected modules will not appear). Bytes will not be retrieved until the module that contained the deleted file is packed.
PACK MODULE	Packing the module removes files marked as deleted and defragments existing file structures to recover space.
PRESENT SENSOR	Used for on-demand label dispensing, where a printed label blocking the sensor will inhibit further printing until removed. (The physical presence of the Present Sensor must be detected to show the ENABLE/DISABLE selections, else NOT INSTALLED will be displayed momentarily).
MODE	Sets Present Sensor to desired mode of operation.
✧AUTO	Enables the present sensor when option is installed – present sensor or peel and present mechanism. Stop location (present distance is automatically set appropriately for the installed hardware.
ENABLED	Enables the sensor for on-demand printing. Stop location (present distance is automatically set appropriately for the installed hardware.
DISABLED	*Disables the sensor.*
RETRACTION DELAY ✧070 x 10mS (1-255)	Time delay prior to moving label to next start of print in milliseconds.

CUTTER	Used to cut media into separate labels. (The physical presence of a device must be detected to show the ENABLE/DISABLE selections, else NOT INSTALLED will be momentarily displayed).
✧AUTO	Enables the cutter when option is installed. Stop location (present distance is automatically set appropriately for the installed hardware.
ENABLED	Enables cutting.
DISABLED	Disables cutting.

GPIO PORT ♦	Used to interface the printer to external controlling devices (see Appendix D).
GPIO DEVICE	Sets the GPIO Port to work with a specific type of device.
✧DISABLED	Disables the GPIO Port.
APPLICATOR	Enables the GPIO for a label applicator.
BARCODE VERIFIER	Enables the GPIO for a bar code verifier.
START OF PRINT	Programmable signal input that controls the Start of Print (SOP) process.
✧ACTIVE HIGH	SOP signal must go 'high' for at least 50 milliseconds to initiate printing.
ACTIVE LOW	SOP signal must go 'low' for at least 50 milliseconds to initiate printing.
END OF PRINT	Programmable signal output that signifies the End of Print (EOP) process.
✧LOW PULSE	Outputs a low pulse (approximately 30 milliseconds long) following printing.
HIGH PULSE	Outputs a high pulse (approximately 30 milliseconds long) following printing.
ACTIVE LOW	Outputs a logic 'low' following printing.
ACTIVE HIGH	Outputs a logic 'high' following printing.

5.1.5 System Settings

CONFIGURATION FILE ♦	Options for storage and recall of printer configuration files. See Appendix E for details.
RESTORE AS CURRENT	Provides a list of available configuration files. Selecting a file from the list causes a printer reset; afterward, the printer is configured according to the activated file.
SAVE SETTING AS	Saves the entire effective configuration of the printer to a file. Unique names with up to nineteen characters are possible.
DELETE FILE	Provides a list of available configuration files. Files selected are immediately removed, freeing the module. ☑ **Note**: *A currently activated file cannot be deleted.*
FACTORY SETTING FILE	Provides a list of available configuration files. The selected file will be restored whenever a Level 1 reset is performed; see Section 6.7.
INTERNAL MODULE D ✧1024 KB (100-5120)	Sets the number of 1K blocks allocated for the internal RAM 'D' module.
DEFAULT MODULE ✧D	Sets the default module used to store files when no other module is specified. Available choices are G=FLASH memory or D=RAM memory
SCALEABLE FONT CACHE ✧0312 KB (100-5120)	Sets the number of 1K blocks allocated for the scaleable font engine. Available memory dependent upon model.
SINGLE BYTE SYMBOLS	Selects the code page used to print single byte fonts unless otherwise specified in DPL.
✧PC_850 MULTILINGUAL	One of many selectable standard sets; see the *Class Series Programmer's Manual* for details.
DOUBLE BYTE SYMBOLS	When equipped with the ILPC option, this selects the code page used to print double byte fonts unless otherwise specified in DPL; see the *Class Series Programmer's Manual.*
✧UNICODE	Unicode (including Korean)
GB	Government Bureau Industry Standard; Chinese (PRC)
BIG 5	Taiwan encoded
JIS	Japanese Industry Standard
SHIFT JIS	Shift Japanese Industry Standard
EUC	Extended UNIX Code
TIME AND DATE	Allows the user to set the time and date.

MEDIA COUNTERS ♦	Internal record of inches printed and time of use.
ABSOLUTE COUNTER	Shows the number of inches printed since being set at the factory. Not resettable.
RESETTABLE COUNTER	The number of inches printed since the last reset. User resettable.
RESET COUNTER	Resets the Resettable Counter to zero.

PRINT CONFIGURATION	Prints the effective configuration of the system. In addition, if settings were changed that require a reset to become effective, this will be indicated with the '§' symbol. A bulleted item (●) indicates that it was changed via the host, but not saved in non-volatile memory.

CONFIGURATION LEVEL ♦	To upgrade the application program (resident software) version of the printer, the hardware and software compatibility levels must match for the update to be accepted. This information is displayed here; it is also printed on a configuration label.
PRINTER KEY	Each printer has a unique Key number in the following form: vvvv-cwxx-yyyyyy-zzz Where: vvv - represents the model number of the application loaded cwx - represents the hardware / software feature level, where: c – represents the printer class. w – represents hardware feature level of the main board. xx – represents the software feature level. Software feature levels are accepted up to the 'xx' value (increases beyond this level require an authorization code) 10 = Standard DPL 20 = Internal CG Times Font yyyyy - is a manufacturing date code zz - is a unique time stamp
APPLICATION VERSION	Displays the Application version of the printer's firmware.
BOOT LOADER	Displays the Boot Loader version of the printer's firmware.
UPGRADE PRINTER CODE	This function is used to upgrade the software feature level of the printer. Datamax authorization is required.
UNLOCK FEATURE	This function is used to unlock the additional optional features within the printer. Datamax authorization is required.

SET FACTORY DEFAULTS	Parameters in this menu listing with the '✧' symbol are the designated defaults.
SET FACTORY DEFAULTS	Overwrite the current settings with the factory default settings or, if selected, will restore the Factory Setting File. ☑ **Note:** *The reset will be automatic. If no Factory Setting File is used, all menu settings will be restored except CUSTOM ADJUSTMENTS, and the media and ribbon sensor calibrations.*

FORMAT ATTRIBUTES	Affects the manner in which overlapping text and graphics are treated as the label is printed. Consult the *Class Series Programmer's Manual* for details.
✧XOR	Intersecting text strings, images, and bar codes print on top of one another.
OPAQUE	Interacting text strings, images, and bar codes are obliterated by those formatted last. Each character cell is treated as opaque.
TRANSPARENT	Intersecting text strings, images, and bar codes will not be printed. (An odd number of overlapping objects will print.)

LABEL ROTATION ♦	Instructs the printer to rotate the label format 180 degrees before printing.
ENABLED	Label formats are flipped top to bottom.
✧DISABLED	Label formats are printed normally.

IMAGING MODE ♦	Instructs the printer whether to pre-image the label format. ☑ **Note:** *This selection can affect the accuracy of time-stamped labels and throughput.*
✧MULTIPLE LABEL	The printer images multiple labels as memory permits, achieving the fastest throughput; however, if time-stamping, the time will reflect the moment the label is imaged rather than when actually printed.
SINGLE LABEL	The printer images the next label only after the previous label has been successfully printed. Single processing provides time-stamps that are more accurate, but it slows label throughput time.

PAUSE MODE	When enabled, suspends printing between each label until the PAUSE Key is pressed.
ENABLED	Requires an operator press the PAUSE Key after each label.
✧DISABLED	The printer completes label batch without pausing between labels.

PEEL MODE	Specifies that a Feed operation be prevented when the label is presented and not removed, or if the printer is to wait for the GPIO start of print signal.
ENABLED	Feed is inhibited according to the above criteria.
✧DISABLED	Feed is always enabled.

SECURITY ♦	Provides the user with the ability to password-protect all settings available through the User Interface. *Default password is: 1 2 3 4*
SELECT SECURITY	Enable or disable the security feature of the User Interface.
MENU AND TEST	The Menu and Test areas will require a password before access is granted.
SECURE MENU	The Menu area will require a password before access is granted.
✧DISABLED	All menu items are accessible without protection.
MODIFY PASSWORD	Modify the numeric password required to access the menu system when security is enabled.

UNITS OF MEASURE	Selects the measurement system in which the system's settings are represented in the menu system and on configuration labels.
✧IMPERIAL	Inch standard: lengths and counters given in inches.
METRIC	Metric standard: lengths given in millimeters and counters in centimeters.

INPUT MODE ♦	Defines the type of printer language.
✧DPL	Standard DPL processing.
LINE	Standard DPL processing with addition Line mode Template processing enabled. Line Mode exacts data terminated by a carriage return to be inserted in a DPL template and printed.

DPL EMULATION ♦ *(not available with M-4306)*	Determines SOP Emulation (start of print (<STX>O)) see above, Column Emulation (see above), positions barcodes as does selected printer.
✧STANDARD	Start of print 220; the below exceptions are disabled.
ALLEGRO	*Allegro, Prodigy Plus, and Prodigy emulations enabled:*
PRODIGY PLUS	• Data Terminator – I 2 of 5 Barcodes (IDs D, J, and L), the first non-numeric character processed will terminate the barcode data field. • Bar Size – I 2 of 5 Barcode (ID L), when the bar size is specified greater than P (25), the size is automatically decreased to 10.
PRODIGY	• Human Readable Fonts – The EAN and UPC barcodes (IDs B, C, F, G, M, and N) print a fixed font size. • Lines and boxes: Rotations 2 and 4 are affected by the vertical multi-plication factor defined in the DPL Dxx command. • Column positions greater than the printhead width are adjusted back to the printable area and printed. • Barcodes (rotation 3, upside down / right to left) with row position less than barcode height result in row position equal to barcode height, that is, barcodes falling off label leading edge are pushed back onto the label. • <STX>L (Label Command) followed by no printable fields result in no paper movement. (When disabled a blank label is printed). *Allegro Only:* • The row position is calculated based on 194 DPI.
COLUMN EMULATION ♦ ** Not available in M-4306*	Compensation for location of column position 0 via columnar dots per inch (dpi) emulation.
✧203 in (180 - 250)	Dpi emulation, smaller numbers shrink text from right to left.

SOP EMULATION ♦	Enables the <STX>O and <STX>f print positioning commands to allow backward compatibility with label formats designed for other printers.
110 (PRODPLUS)	Emulates the Prodigy Plus® printer.
220 (ALLEGRO)	Emulates the Allegro® printer.
250 (PRODIGY)	Emulates the Prodigy™ printer.
✧DISABLED	No emulation: natural start of print position. (System Commands <STX>O and <STX>f are ignored).
BACK AFTER PRINT	When the present distance is set with the GPIO enabled, this determines the timing of the label back up.
ENABLED	Commands the printer to immediately back up the label after the applicator issued start of print signal is received for faster throughput.
✧DISABLED	The printer will not initiate repositioning until the next label is ready to print. May help prevent the curling of the label edge.
FONT EMULATION ♦	The selected font is substituted for all Datamax internal fonts. This function provides the printer to define a new default font without changing the host DPL data streams.
✧STANDARD FONTS	
CG TIMES	
USER ID S50	
MENU LANGUAGE ♦	Selects the language in which the menu system messages and configuration label are shown. Only languages that are resident will be available.
✧ENGLISH	English
FRANCAIS	French
ITALIANO	Italian
DEUTSCH	German
ESPAÑOL	Spanish
USER DEFINED	User defined, downloaded language(s) and displayed only if present.

FAULT HANDLING♦		When a fault condition (ribbon out, media out, etc.) is detected, this setting determines the level of intervention and the disposition of the label being printed at the time the fault occurred.
	LEVEL	Selects the printer's action, the action required by the operator, and the label's reprint status.
	✧STANDARD	Printing stops and a fault message is displayed. After the problem is corrected, the FEED Key must be pressed to clear the fault. The label in process is reprinted.
	VOID AND RETRY	Depending upon the RETRY COUNT, one of the following actions when faulted: - If the Retry Count setting has not been exceeded, 'VOID' is printed on the label in process and reprinting occurs automatically; - If the Retry Count has been exceeded, printing stops and a fault message is displayed. After the problem is corrected, the FEED Key must be pressed to clear the fault. The label in process is reprinted; or, - If the CANCEL Key is pressed the operator now has the option of canceling the reprint: To allow the reprint, press the ESCAPE Key or to cancel the reprint, press the ENTER Key (the operator now has the option of canceling the entire label batch by pressing the ENTER Key again.) ☑ *Note: VOID will not be printed when insufficient space exists for the height of the text (see VOID DISTANCE, below) or if the fault occurred after the entire label was completed (i.e., when the label reaches its Present Distance at or above the TOF).*
	NO REPRINT	Printing stops and a fault message is displayed. After the problem is corrected, the FEED Key must be pressed to clear the fault. The label in process is *not* reprinted.
VOID DISTANCE ✧0.50 in (.10-2.00)		Sets the distance to backup the faulted label to print 'VOID' on its trailing edge, which also indirectly establishes the font size of the void message.
RETRY COUNT ✧1 (0-3)		Establishes the number of times the printer will attempt to reprint a label. If the last label printed in this count has been voided, the printer will stop and display a fault message.

5.1.6 Communications

SERIAL PORT A ♦	Controls the communications settings for Serial Port A.
BAUD RATE	Determines the serial communication rate.
38400	38400 bits per second
28800	28800 bits per second
19200	19200 bits per second
✧9600	9600 bits per second
4800	4800 bits per second
2400	2400 bits per second
1200	1200 bits per second
PROTOCOL	Sets the data flow control (handshaking) method.
✧BOTH	Uses both handshaking methods.
SOFTWARE	XON/XOFF
HARDWARE	CTS/DTR
NONE	No flow control is used.
PARITY	Sets Word parity
✧NONE	No parity
ODD	Odd parity
EVEN	Even parity
DATA BITS	Sets Word length
7	Seven bit Word length
✧8	Eight bit Word length
STOP BITS	Sets the number of stop bits
✧1	One stop bit
2	Two stop bits
PARALLEL PORT A♦	Controls the communications settings for Parallel Port A.
PORT DIRECTION	Determines if data is sent from the printer to the host via the parallel port.
✧UNI-DIRECTIONAL	One-way printer communication.
BI-DIRECTIONAL	Enables IEEE 1284 back-channel operation.

NIC ADAPTER♦		Network Interface Card Adapter (optional). If not present, this displays 'NOT INSTALLED' when accessed. After making changes to these parameters, save the changes, exit the menu system, the printer will then reset for the changes to take effect.
IP ADDRESS		The static IP address of the NIC Adapter. This is in standard dotted-decimal format.
SUBNET MASK		The static subnet assigned to the NIC Adapter.
GATEWAY		Specifies the network gateway address the NIC Adapter should use.
SNMPTRAP DESTINATION		Selects the Network IP address where all SNMP Traps will be sent. If zeroed, no traps are sent. The Receiver must have SNMP service installed.
IP DISCOVERY		This is the address discovery method used by the NIC Adapter if a static address is not utilized. If no server for any of the discovery methods is found, the static value specified is used.
		☑ *Note: For faster NIC Adapter boot times, disable any discovery methods not used.*
	✧ENABLED	Default. Modifications to IP, Subnet Mask, or Gateway addresses will not be allowed.
		WARNING! An IP Address assigned by a server has precedence over any static IP Address stored in the NIC Adapter.
	DISABLED	Disables IP Discovery.
		☑ *Note: Select this option to ensure that any stored static IP is used by the NIC Adapter.*
SET FACTORY DEFAULTS		Resets all of the network parameters to factory default settings. Including some parameters that are not accessible through the printer's menu.

Not available when "IP Discovery" is enabled

HOST SETTINGS ♦		Settings which affect all communications with a host.
	HOST TIMEOUT ✧10 SEC (1-60)	The number of seconds a communications port must be idle before the printer may process data from a different port. This value is also used to "timeout" an image / label format download (i.e., if, at any time, data flow stops before a complete label format is received, the data will be ignored).
	CONTROL CODES	Allows the operator to change the prefix of the software commands interpreted by the printer.
		✧STANDARD CODES	Hex 01 = SOH command; Hex 02 = STX command; count-by = ^; Hex 1B = ESC; Hex 0x0D = Carriage Return
		ALTERNATE CODES	Hex 5E = SOH command; Hex 7E = STX command; count-by = @; Hex 1B = ESC; Hex 0x0D = Carriage Return
		ALTERNATE CODES 2	Hex 5E = SOH command; Hex 7E = STX command; count-by = @; Hex 1B = ESC; Hex 0x7C = Carriage Return
		CUSTOM CODES	Each DPL command (SOH, STX, CR, and count-by) may be selected by entering the desired Hex code. (The ↑ and ↓ Keys will scroll the characters, while the ENTER Key selects character and then advances the cursor.)
	FEEDBACK CHARACTERS	Returns a Hex 1E, [RS], after each label successfully prints, and a Hex 1F, [US], after each batch of labels is printed.
		ENABLED	Feedback characters are sent to the host.
		✧DISABLED	No feedback characters are sent.
	ESC SEQUENCES	Allows data containing invalid ESC control code sequences to be processed, helpful because some systems send a "banner" to the printer.
		✧ENABLED	Normal printer operating mode.
		DISABLED	ESC sequences are ignored and the data is processed. Bitmapped font downloads are disabled in this mode.
	HEAT COMMAND	Allows the user to disable the DPL Heat Command, providing compatibility with other DATAMAX printers.
		✧ENABLED	Normal printer operating mode.
		DISABLED	DPL Heat commands are ignored. The heat value is controlled via the menu setting; see Section 5.1.3.

SPEED COMMANDS	Allows the user to disable the DPL speed commands (Print, Feed, Slew, and Reverse).
✧ENABLED	Normal printer operating mode.
DISABLED	DPL speed commands are ignored. The speeds are controlled via the menu setting; see Section 5.1.3.
TOF SENSING COMMANDS	Allows the user to disable the DPL Top of Form commands (Gap, Continuous, and Reflective).
✧ENABLED	Normal printer operating mode.
DISABLED	DPL TOF commands are ignored. The TOF is controlled via the menu setting; see Section 5.1.2.
SYMBOL SET COMMAND	Allows the user to disable the DPL Single and Double Symbol Set selection commands.
✧ENABLED	Normal printer operating mode.
DISABLED	DPL Symbol Set commands are ignored. The Symbol Set selection is controlled via the menu setting; see Section 5.1.5.
CNTRL-CODES (DATA)	Allows the user to remove control codes (data < 20 Hex) from the data fields. The selected line terminator is processed.
✧ENABLED	Normal printer operating mode.
DISABLED	DPL Control Code (SOH, STX, CR, ESC, and ^) functions are ignored.
STX-V SW SETTINGS	Allows the user to disable DPL software switch settings commands.
✧ENABLED	Normal printer operating mode.
DISABLED	DPL option-enable command (<STX>V) is ignored.

5.1.7 Diagnostics

HEX DUMP MODE ♦	Most commonly used for troubleshooting. Prints data and instructions received from the host rather than interpreting them as label formats; see Section 7.2.
ENABLED	Prints raw ASCII data received from the host rather than executing the commands.
✧DISABLED	Executes and prints label formats (normal operating mode).
OPTIONS TESTING ♦	Allows or performs diagnostics of specific options within the printer.
TEST PRESENT SENSOR	Performs a functional test of the present sensor.
TEST CUTTER	Performs a functional test of the cutter.
PERFORM TEST 1 TIME	The test will cycle the selected number of times (1, 10, or 100) with the results displayed following each attempt.
PRINT TEST RATE (min) ♦ ✧000 (0-120)	The number of minutes to delay between the printing of batches of Quick Test Labels.
SENSOR READINGS ♦	Analog Sensor readings are displayed.
THR TRAN RIBM 24V PS HD RANK 255 255 255 255 255 255 255	Live sensor values are displayed. Maximum values are shown in this example, where: THR = thermistor sensor; TRAN = transmissive (gap) media sensor (REFL is shown if the SENSOR TYPE is set to 'reflective'); RIB M = ribbon motion sensor; 24V = 24 volt DC power supply sensor; PS = Present sensor; HD = head-down sensor; and, RANK = the value of the printhead ranking resistor.
RIBBON SENSOR LIMITS ♦	Displays ribbon sensor ADC low and high values used for motion detection.
RIBBON ADC LOW HIGH 070 164	Approximate default values are shown here (actual values will vary).

5.1.8 MCL Options

MCL AT POWER-UP ♦		MCL (Macro Command Language) is tool suite designed for data collection applications. The printer will accept input data from peripheral devices and the application can request and send data to locally resident lookup files or remote databases.
	ENABLED	After power to the printer is turned 'Off' and 'On,' MCL will be started. The printer is now ready to accept input data from peripheral devices such as barcode scanners, weigh scales, and keyboards without the need of a host computer.
	✧DISABLED	Normal printer functions.
START MCL ♦		MCL with be started after exiting from the menu.

5.2   Display Messages

The printer displays several different types of information (if not in the menu system or Quick Test Mode):

➢ User Prompts and Condition Messages (also see Section 5.1.1 for a listing of the Enter/Exit Prompts)

➢ Application and Boot Loader Updating Messages (see Section 6.8)

➢ Fault and Warning Messages (see Section 7.1)

5.2.1 User Prompts and Condition Messages

User Prompts alert the operator to a required action. Condition Messages are used to indicate an operational state.

User Prompts and Condition Messages		
Displayed Message	**Description**	**Condition(s)**
CLEARING FAULTS	The printer is trying to clear a fault condition.	Occurs when the FEED Key is pressed after the correction of a fault.
CALIBRATING	A media calibration is being performed.	The FEED Key was pressed and held.
CANCEL REPRINT? ENTER KEY = YES	The CANCEL or TEST Key was pressed during the fault handling process.	The faulted label will be cancelled if ENTER is pressed, then the remaining labels in the batch will be printed.
CANCEL BATCH? ENTER KEY = YES	The CANCEL or TEST Key was pressed during a batch job.	The current print batch will be cancelled if ENTER is pressed; the remaining labels will not be printed.
PAUSED	The printer is paused or offline.	The printer is in a paused condition.

User Prompts and Condition Messages		
Displayed Message	**Description**	**Condition(s)**
READY	Ready Mode.	Normal operating mode. The printer is ready to receive and process label formats.
REMOVE LABEL	A label is awaiting removal.	The Present Sensor option is enabled and a label blocks the sensor. Remove the label to continue printing.
SYSTEM INITIALIZING	Normal power-up and soft reset condition.	Follows the 'SYSTEM RESET IN PROGRESS' message after a reset or power-up.
SYSTEM RESET IN PROGRESS	Normal power-up and soft reset condition.	Occurs when the user resets the printer via the host or Front Panel.
UNCALIBRATED	The media calibration is not set.	Perform calibration; see Section 5.4.
XXXX OF XXXX PRINTING	The print job is being processed.	Batch status indication, updated with each label printed.

5.3 Quick Test Mode

This section explains the functions of the resident Quick Tests, accessible by pressing the $\mathbb{Q}$ TEST Key on the Front Panel.

> ☑ **Notes:** (1) *With the exception of the Configuration Label, all Quick Test labels require 4-inch (102mm) wide media to print the entire format. If using narrower media, change the Label Width setting (Section 5.1.2) to match your media's width to avoid printing on the platen.*
>
> (2) *During any Quick Test, press the* $\mathbb{Q}$ TEST *Key or the* ESC•↰ *Key to stop printing.*
>
> (3) *Using the 'Print Test Rate' feature (Section 5.1.7), a time delay can be set for printing labels in Quick Test Mode.*

5.3.1 Print Quality Label

The Print Quality Label provides an indication of overall print quality at a pre-selected heat and speed setting. This format consists of compliant bar codes in fence and ladder orientations, assorted font sizes, and graphic fill patterns. These can be used to ensure conformance, as well as aesthetics.

To print a Print Quality Label:

❶ Press the $\mathbb{Q}$ TEST Key.

❷ Use the FWD⊕ Key to scroll to 'Print Quality Label'.

❸ Use the ENT↵ Key to select a quantity; see Section 5.0.3.

❹ Press the $\mathbb{Q}$ TEST Key to start printing.
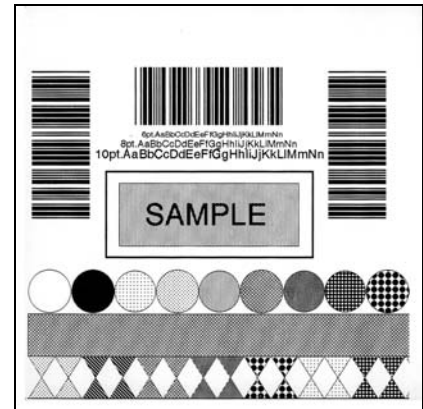
5.3.2 Configuration Label

The Configuration Label provides printer valuable database information, as detailed in Section 5.1.

To print a Configuration Label:

❶ Press the 🔍 TEST Key.

❷ Use the FWD⮕ Key to scroll to 'Print Configuration'.

❸ Press the 🔍 TEST Key to print.

> ☑ *Note: The contents of this label may vary with the application version and printer model and equipped options. To capture all the information, use media at least 2 inches wide (51mm) with the Label Width setting matched accordingly (see Section 5.1.2).*

CONFIGURATION
FRI 09:38PM 21NOV2003
PRINTER KEY:
 4208-MD10-030915-198
APPLICATION VERSION:
 83-2407-08B 8.01 1/14/2004
MCL Version: 1.03
BOOT LOADER:
 83-2406-08B 08.01 01/14/2004

SYSTEM INFORMATION
PRINT BUFFER SIZE:
 117 in.
FLASH SIZE:
 2 MB
RAM TEST:
 PASS
OPTIONAL LANGUAGES:
 NONE
CONFIGURATION FILE:
 NONE

MEDIA SETTINGS
MEDIA TYPE
 RIBBON TRANSFER
SENSOR TYPE
 GAP
LABEL LENGTH
 04.00 in.
MAXIMUM LABEL LENGTH
 16.00 in.
PAPER OUT DISTANCE
 00.25 in.
LABEL WIDTH
 4.16 in.
RIBBON LOW DIAMETER
 1.40 in.
SENSOR CALIBRATION
 PAPER SENSOR LEVEL
 143
 GAP SENSOR LEVEL
 19
 TRAN SENSOR LEVEL
 7
 REFL PAPER LEVEL
 170
 MARK SENSOR LEVEL
 40
 REFL SENSOR LEVEL
 15
 EMPTY SENSOR LEVEL
 9
CLEAN HEAD SCHEDULE
 000 in. (*1000)
CLEAN HEAD COUNTER
 0 in.

PRINT CONTROL
HEAT
 10
PRINT SPEED
 6.0 in/sec
FEED SPEED
 6.0 in/sec
REVERSE SPEED
 4.0 in/sec
ROW OFFSET
 00.00 inches
COLUMN OFFSET
 00.00 inches
PRESENT DISTANCE
 0.00 inches
CUSTOM ADJUSTMENTS:
 DARKNESS
 32
 CONTRAST
 32
 ROW ADJUST
 0 DOTS
 COLUMN ADJUST
 0 DOTS
 PRESENT ADJUST
 64 DOTS

PRINTER OPTIONS
MODULES
 D: FORMATTED
 G: FORMATTED
 X: FORMATTED
 Y: FORMATTED
PRESENT SENSOR:
 NOT INSTALLED
CUTTER
 NOT INSTALLED

SYSTEM SETTINGS
FACTORY SETTING FILE
 NONE
INTERNAL MODULE
 1024 KB
DEFAULT MODULE
 D
SCALABEL FONT CACHE
 312 KB
SINGLE BYTE SYMBOLS
 PC-850 MULTILINGUAL
DOUBLE BYTE SYMBOLS
 UNICODE
MEDIA COUNTERS:
 ABSOLUTE COUNTERS
 374 in.
 07MAY2003
 RESETTABLE COUNTERS
 374 in.
 07MAY2003

FORMAT ATTRIBUTES
 XOR
LABEL ROTATION
 DISABLED
IMAGING MODE
 MULTIPLE LABEL
PAUSE MODE
 DISABLED
PEEL MODE
 DISABLED
SECURITY
 DISABLED
UNITS OF MEASURE
 IMPERIAL
INPUT MODE
 DPL
DPL EMULATION
 STANDARD
COLUMN EMULATION
 203 DOTS
SOP EMULATION
 DISABLED
BACK AFTER PRINT
 DISABLED
FONT EMULATION
 STANDARD FONTS
MENU LANGUAGE
 ENGLISH
FAULT HANDLING:
 LEVEL
 STANDARD
 VOID DISTANCE
 0.50 in.
 RETRY COUNT
 1

COMMUNICATIONS
SERIAL PORT A:
 BAUD RATE
 9600
 PROTOCOL
 BOTH
 PARITY
 NONE
 DATA BITS
 8
 STOP BITS
 1
USB PORT
 INSTALLED

PARALLEL PORT A:
 PORT DIRECTION
 UNI-DIRECTIONAL
NIC ADAPTER:
 MAC:00-0d-70-00-00-09
 IP ADDRESS
 192.000.000.192
 SUBNET MASK
 000.000.000.000
 GATEWAY
 000.000.000.000
 SNMPTRAP DESTINATION
 000.000.000.000
 IP DISCOVERY
 ENABLED

HOST SETTINGS:
 HOST TIMEOUT
 10 sec
 CONTROL CODES
 STANDARD CODES
 FEEDBACK CHARACTERS
 DISABLED
 ESC SEQUENCES
 ENABLED
 HEAT COMMAND
 ENABLED
 SPEED COMMANDS
 ENABLED
 TOF SENSING COMMANDS
 ENABLED
 SYMBOL SET COMMAND
 ENABLED
 CNTRL-CODES (DATA)
 ENABLED
 STX-V SW SETTINGS
 ENABLED

DIAGNOSTICS
HEX DUMP MODE
 DISABLED
PRINT TEST RATE(min)
 0
SENSOR READINGS
 THR TRAN RIBM 24V
 190 134 011 171
 PS HD RANK
 000 244 009
RIBBON SENSOR LIMITS
 RIBBON ADC LOW
 007
 RIBBON ADC HIGH
 232

MCL OPTIONS
MCL AT POWER-UP
 DISABLED

5.3.3   Quick Ribbon Test Label

The Quick Ribbon Test Label features a compliant picket-fence bar code that can be used to verify thermal transfer and print quality functions.

To print a Quick Ribbon Test Label:

❶ Press the 🔍 TEST Key.

❷ Use the FWD➡ Key to scroll to 'Ribbon Test Label'.

❸ Use the ENT↵ Key to select a quantity; see Section 5.0.3.

❹ Press the 🔍 TEST Key to start printing.

5.3.4   Validation Label

The Validation Label is another useful tool for evaluating overall print quality.

To generate a Validation Label:

❶ Press the 🔍 TEST Key.

❷ Use the FWD➡ Key to scroll to 'Validation Label'.

❸ Use the ENT↵ Key to select a quantity; see Section 5.0.3.

❹ Press the 🔍 TEST Key to start printing.

5.3.5 Print Last Label

Print Last Label reprints the last label format printed. The format can be any of the Test Labels, a label from the host, or one recalled from memory.

☑ *Note:* *If a job was cancelled prior to its completion, or if power has been removed since the last print job and the request for this label, this selection will print a 'VOID' message.*

5.3.6 User Defined Label

The User Defined Label reprints from a list of previously printed label formats. Use the FWD⊕ Key to scroll through the listing, then use the ⊕ TEST Key to select and print the label.

☑ *Note:* *If a job was cancelled prior to its completion or if power has been removed since the last print job and the request for this label, 'NO FILES AVAILABLE' will be displayed and no printing will occur.*

5.4   Media Sensor Calibration

In addition to the Sensor Type selection, Media Sensor calibration ensures that each label is detected correctly and reliably. Perform calibration when the 'Uncalibrated' message is displayed. Three different methods are available to calibrate the printer: Quick, Standard, and Advanced Entry.

5.4.1   Quick Calibration

At the factory, the printer is calibrated to sense a wide range of media types. Quick Media Calibration fine-tunes the media sensor for your gap, notch or reflective media application, and is not required if you are using continuous media. Perform this calibration during initial set-up or after changing your media type.

> ☑ *Notes: If 'Uncalibrated' is displayed, follow the Media Sensor Calibration procedure in Section 5.4.2. Also, media containing large gaps may first require a change in the 'Paper Out Distance' setting; see Section 5.1.2.*

To calibrate:

❶ Ensure that media is loaded (see Section 3.2), that the Media Sensor is adjusted (see Section 3.3), and that the printer is idle.

❷ Press and hold the ⬦ᗷ FEED Key. The printer will begin advancing media; allow at least one label gap (or mark) to advance under the sensor before releasing the button.

Upon successful completion, the 'Calibration Completed' message will flash; the printer will feed to the next label TOF and 'Ready' will be displayed. (A 'Warning Low Backing' message may appear if using notched media or media on a transparent liner; however, the calibration was successful).

Calibration Hint:

In certain cases, the printer may have trouble differentiating between the label and liner. If the printer stops feeding in the middle of a label or if 'Cannot Calibrate' is displayed, try calibrating over a longer distance:

• Press and hold the ⬦ᗷ FEED Key to allow two or more gaps (or marks) to advance under the sensor. If this fails, see Standard Calibration (Section 5.4.2).

5.4.2 Standard Calibration

Standard Calibration is appropriate for most media types. During the process, the printhead assembly can be raised for visual access to the media and media sensor. In addition, displayed sensor readings can be used to indicate the best position over the media, which is helpful when using small, position-critical TOF notches or marks. Three readings are required:

Empty:	No media in the sensor.
Gap (or Mark):	Only the backing, notch, or reflective mark in the sensor.
Paper:	The label (with the liner attached) in the sensor.

To perform a Standard Calibration:

Step	Operator Action	Displayed Message	Comment
1	(Media should be loaded and the appropriate Sensor Type selected.) Turn 'On' the printer.	```UNCALIBRATED```	Wait until the printer initializes (about six seconds).
2	Press the ⦂≡ MENU Key. Raise the printhead assembly.	```MENU MODE``` ```MEDIA SETTINGS```	You are entering Menu Mode.
3	Press the ENT⏎ Key to enter the Media Settings menu.	```MEDIA SETTINGS``` ```MEDIA TYPE```	See Section 5.1.2 for menu layout.
4	Press the FWD⟳ Key and scroll to 'Sensor Calibration'.	```MEDIA SETTINGS``` ```SENSOR CALIBRATION```	Press the ESC⏎ Key to abort this procedure.
5	Press the ENT⏎ Key.	```SENSOR CALIBRATION``` ```PERFORM CALIBRATION```	You are beginning the standard calibration procedure.
6	Press the ENT⏎ Key. Remove the media from the Media Sensor then the ESC⏎ key.	```REMOVE LABEL STOCK``` ```PRESS ESC KEY <yyy>```	This sets the parameter for the 'empty' value. Where 'yyy' is a numerical value representing the current sensor reading.

Standard Calibration (continued)

Step	Operator Action	Displayed Message	Comment

7	Proceed according to your media type:
	
	Die-cut stock: strip the media from the backing and then reinsert it into the sensor; adjust the Sensor Eye Mark over the center of the backing.
	
	Notched stock: adjust the Sensor Eye Mark over the center of the notch.
	
	Reflective stock: Adjust the Sensor Eye Mark over the center of the facedown black mark.
	
	Continuous stock: go to Step 8.
	
	Press the ᴇꜱᴄ▪⏎ key to continue.
		`SCAN BACKING`
		`PRESS ESC KEY   <yyy>`
		
		Or, for reflective media:
		
		`SCAN MARK`
		`PRESS ESC KEY   <yyy>`
			This sets the parameter for the 'gap' or 'mark' value.
			
			Where 'yyy' is a numerical value representing the current sensor reading: useful in locating the best sensor position.
			
			☑ **Note:** *Never position the sensor over a perforation when recording a sensor reading.*

☑ **Note:** Do NOT move the position of the Media Sensor after it has been adjusted.

Step	Operator Action	Displayed Message	Comment
8	Position the label (and backing, if any) under the Sensor Eye Mark. ☑ **Note:** *If using preprinted media, ensure the label area under the sensor is free of preprinted text, graphics or borders.* Press the ᴇꜱᴄ▪⏎ key to continue.	`SCAN PAPER` `PRESS ESC KEY   <yyy>`	This sets the parameter for the 'paper' value. Where 'yyy' is a numerical value representing the current sensor reading.

Standard Calibration (continued)

Step	Operator Action	Displayed Message	Comment
9	Observe the display.	GAP MODE CALIBRATION COMPLETE *Or, for reflective media:* REFLECTIVE MODE CALIBRATION COMPLETE *Or, for continuous media:* CONTINUOUS MODE CALIBRATION COMPLETE	The calibration was successful. See note below if another message was displayed.
10	Exit upon successful calibration: Back out of the menu tree by repeatedly pressing the ESC•⤶ Key. If using gap or reflective media, press and hold the ⬩ FEED Key. The printer will begin advancing media; allow at least one label gap (or mark) to advance under the sensor.	THU 11:31A 25MAR2004 READY	The printer is now ready to begin printing. If this calibration was unsuccessful, go to Section 5.4.3.

☑ *Note: A 'Warning Low Backing' message indicates that the calibration was successful with notched media or media on a transparent liner; see Section 7.1 for details on this and other possible messages.*

5.4.3 Advanced Entry Calibration

> ☑ **Note:** *Advanced Entry Calibration will override all previous calibration settings; this method should be used only when Standard Calibration has failed.*

Advanced Entry Calibration is the alternate method for special-case media types. The procedure has two parts:

1) You must list the sensor readings for the label and TOF values using different algorithms.

2) From your list the best algorithm is chosen, new readings taken and those values entered.

To perform an Advanced Entry Calibration:

Step	Operator Action	Displayed Message	Comment
1	(Media should be loaded and the appropriate Sensor Type selected.) Turn 'On' the printer.	`UNCALIBRATED`	Wait until the printer initializes (about six seconds).
2	Press the ☰ **MENU** Key. Raise the printhead assembly.	`MENU MODE` `MEDIA SETTINGS`	You are entering Menu Mode.
3	Press the ENT↵ Key to enter the Media Settings menu.	`MEDIA SETTINGS` `MEDIA TYPE`	See Section 5.1.2 for menu layout.
4	Press the FWD→ Key and scroll to 'Sensor Calibration'.	`MEDIA SETTINGS` `SENSOR CALIBRATION`	Press the ESC•⤺ Key to abort this procedure.
5	Press the ENT↵ Key.	`SENSOR CALIBRATION` `PERFORM CALIBRATION`	You are entering the calibration submenu.

Advanced Entry Calibration (continued)

Step	Operator Action	Displayed Message	Comment
6	Press the FWD➡ Key to scroll to 'Advanced Entry'.	SENSOR CALIBRATION ADVANCED ENTRY	You are entering Advanced Entry Calibration.
7	Press the ENT⏎ Key.	ADVANCED ENTRY SENSOR LEVELS	Press the ESC•↰ Key to abort this procedure.
8	Press the FWD➡ Key.	ADVANCED ENTRY SENSOR GAIN	You are beginning the Advanced Entry Calibration.
9	Press the ENT⏎ Key. Place the label under the Sensor Eye Mark and lower the printhead assembly.	GAIN TRAN <yyy> *00 <0 – 31> *-OR-* GAIN REFL <yyy> *00 (0 – 31)	If using preprinted media, ensure the label area under the sensor is free of preprinted text, graphics or borders.
10	Press the ENT⏎ Key to select the setting (denoted by an '*') and then record the sensor reading (the 'yyy' value) in a table similar to the one shown after Step 12, as a **Label Value**. Next, press the FWD➡ Key to increment the Gain Number. Repeat this step for each of the Gain Numbers (00-32).	GAIN TRAN <yyy> *00 <0 – 31> *-OR-* GAIN REFL <yyy> *00 (0 – 31)	Where 'yyy' is a numerical value representing the current sensor reading: useful in locating the best sensor position. ☑ **Note:** *Never position the sensor over a perforation when recording a sensor reading.*

Advanced Entry Calibration (continued)

Step	Operator Action	Displayed Message	Comment

11	Proceed according to your media type:
	
	Die-cut stock: strip the media from the backing and then reinsert it into the sensor; adjust the Sensor Eye Mark over the center of the backing.
	
	Notched stock: adjust the Sensor Eye Mark over the center of the notch.
	
	Reflective stock: Adjust the Sensor Eye Mark over the center of the facedown black mark.
	
	Press the ENT⏎ Key to select the setting and then record the sensor reading in a table similar to the one shown after Step 12, as a **TOF Value.**
	
	Next, press the FWD➔ Key to increment the Gain Number.
	
	Repeat for each of the Gain Numbers (00-32).
		```GAIN TRAN <yyy>```
		```*00 (0 - 31)```
		
		Or, for reflective media:
		
		```GAIN REFL <yyy>```
		```*00 (0 - 31)```
			Where 'yyy' is a numerical value representing the current sensor reading: useful in locating the best sensor position.
			
			☑ **Note:** *Never position the sensor over a perforation when recording a sensor reading.*

☑ **Note:** *Do NOT move the position of the Media Sensor after it has been adjusted.*

Step	Operator Action	Displayed Message	Comment

12	From the data collected in Steps 10 and 11, where both the sensor readings are above 20, subtract each Label Value from the corresponding TOF Value. These are the **Difference Values**.
	
	From the resulting list, find the largest Difference Value (see example below). Its associated Gain Number will provide the best algorithm for your media.
		```GAIN TRAN <yyy>*0```
		```0 (0 - 31)```
		
		Or, for reflective media:
		
		```GAIN REFL <yyy>*0```
		```0 (0 - 31)```
			Both sensor readings must be <u>above 20</u>.

For example, if your compiled data had the values shown in this table, Gain Number 8 would be chosen because it has the highest Difference Value (146) where both the Label Value and the TOF Value are above 20.

Gain Number	Label Value	TOF Value	Difference Value
00	255	254	1
01	251	240	11
02	241	213	28
03	231	182	49
04	219	150	69
05	212	119	93
06	200	88	112
07	189	58	131
08	178	32	146
09	167	19	N/A
10	156	17	N/A
11	146	16	N/A
12	136	15	N/A
…	…	…	…
31	116	14	N/A
32	112	14	N/A

Advanced Entry Calibration (continued)

Step	Operator Action	Displayed Message	Comment
13	Using the FWD⊕ Key, select the Gain Number determined in Step 12. Press the ENT⏎ Key to select the setting.	GAIN TRAN　　(yyy)*0 8　　　　(0 - 31) *Or, for reflective media:* GAIN REFL　　(yyy)*0 8　　　　(0 - 31)	Selection is denoted with an '*'.
14	❶ Place the media in the Media Sensor. Record the sensor reading and label it 'P' (paper). ❷ Place the backing, mark, or notch in the Media Sensor. Record the sensor reading and label it 'G' or 'M' (Gap or Mark). ❸ Remove all media. Record the sensor reading and label it 'E' (Empty).	GAIN TRAN　　(yyy)*0 8　　　　(0 - 31) *Or, for reflective media:* GAIN REFL　　(yyy)*0 8　　　　(0 - 31)	Where 'yyy' is a numerical value representing the current sensor reading.
15	Press the ESC•⤺ Key. Then press the FWD⊕ Key.	ADVANCED ENTRY SENSOR LEVELS	The sensor readings must be manually entered into the printer now.

Advanced Entry Calibration (continued)

Step	Operator Action	Displayed Message	Comment
16	Press the ENT⏎ Key. Using the FWD➔ or the REV⬅ Key, set the 'Paper' level to the value determined in the previous step. Press the ENT⏎ Key to set the entry (indicated by the '*') and advance the menu. Repeat for the 'Gap' (or 'Mark') and 'Empty' levels.	PAPER SENSOR LEVEL P*198 G*084 E*014 ↓ GAP SENSOR LEVEL P*198 G*084 E*014 ↓ EMPTY SENSOR LEVEL P*198 G*084 E*014 *Or, for reflective media:* PAPER SENSOR LEVEL P*015 M*181 E*213 ↓ MARK SENSOR LEVEL P*015 M*181 E*213 ↓ EMPTY SENSOR LEVEL P*015 M*181 E*213	The selection will flash and the display heading will change to indicate the item for entry.
17	After all entries have been made, press the ESC•↰ Key to back out of the menu and then press the ENT⏎ Key to save the settings and return to the Ready Mode.	SAVE CHANGES? ENTER KEY = YES	From 'Ready', press the FEED Key to advance to the next label TOF.

☑ **Note:** *If the Advanced Entry Calibration fails, try the following procedure.*

Re-enter Media Settings / Calibration / Advanced Entry / Sensor Gain and lower the selected Gain Setting number by one (to make the sensor less sensitive). Select the new Gain Setting, save the changes, exit the menu, and then test your media. Repeat the procedure until a usable media setting is obtained.

Maintenance and Adjustments

6.0   Introduction

This Section details the cleaning, adjusting, and troubleshooting tips for the printer. The following table outlines the recommended maintenance schedule for the various printer parts.

Area	Method	Interval
Printhead	Turn off the printer before cleaning the printhead. Use solvent* on a cotton swab to clean the printhead from end to end.	After every roll of media.
Platen Roller	Turn the power off. Rotate the platen roller and clean it thoroughly with solvent* and a cotton swab.	After every roll of media.
Peel-Off Roller	Rotate the peel-off roller and clean it thoroughly with solvent* and a cotton swab.	After every roll of media.
Media Path	Solvent*	After every roll of media.
Peel/Tear Bar	Solvent*	As needed
Media Sensor	Air blow	Monthly
Exterior	Mild detergent or desktop cleaner.	As needed
Interior	Brush or vacuum cleaner	As needed.

* It is recommended that a solvent containing isopropyl alcohol be used.

⚠️ **WARNING**	Isopropyl alcohol is a flammable solvent; always take the proper precautions when using this substance.

6.1   Cleaning the Printhead

If print quality declines (symptoms include non-compliant bar codes, print dropouts, and streaks; see sample label below), the typical cause is debris build-up on the printhead. Furthermore, when the build-up is not removed it may lead to element failure, greatly reducing the service life of the printhead.
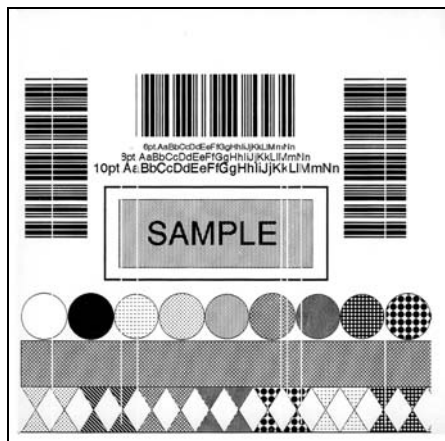
Faulty Print Quality Label:

Streaks indicate a dirty or faulty printhead.

To clean the printhead:

1. Turn 'Off' and unplug the printer.

2. Open the cover. Unlock the Printhead Latch and raise the Printhead Assembly. **Allow the printhead to cool before proceeding.**

3. Move media and ribbon away from the printhead as necessary.

4. Using a Cotton Swab moistened, not soaked, with isopropyl alcohol gently wipe away any build-up on the printhead surface, paying close attention to the Burn Line. Allow the printhead to dry.

5. Replace the ribbon and media. Lower the Printhead Assembly back to the locked position.

6. Close the cover. Plug in and turn 'On' the printer. Feed several labels to normalize tracking.
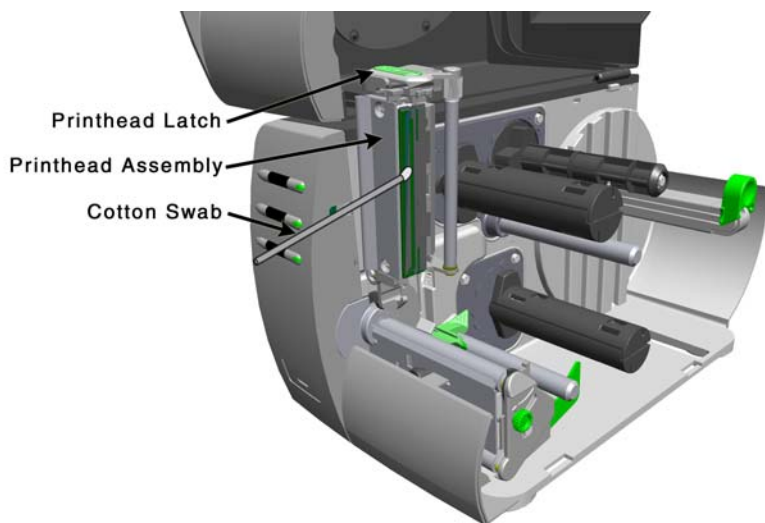
6.1.1 **Automated Printhead Cleaning** *(printers with display, only)*

1. Remove media and ribbon.

2. Place a Datamax Cleaning Card, part number 70-2013-01 under the printhead. Lower and lock the printhead. Ensure that the Leveling Cam is <u>not</u> engaged (positioned in its left most position).

3. Press and hold the TEST Key for approximately four seconds.

    The printer will begin the cleaning routine.

4. In cases of heavy build-up, or if high heat values are typically used for printing, flip the card over and repeat Step 3.

5. Reinstall your ribbon and media (if necessary, readjust the Leveling Cam, see Section 6.2). Lower and lock the printhead. Close the cover.

6.2   Media Width Adjustment

When printing on less than full width media, adjust the printhead-leveling cam for even pressure distribution, as follows:

1. With media loaded in the printer, print a label and examine it.

    Non-display printers:
    Simultaneously press the ⊘ PAUSE + ⊰⊖ FEED buttons

    Display printers:
    See Section 5.3.1

2. While observing the printed labels, loosen the Thumbscrew and move it to the left most position. (see Example 1, below).

3. Next, move the Thumbscrew to the right until the printed labels contain a complete, even image (see Example 2). Tighten the Thumbscrew.

Example 1 – Over adjustment:

Too much adjustment produces an image that fades across the label. To correct this, move the Thumbscrew to the right.

Example 2 – Correct adjustment:

The proper adjustment produces a complete image with even print contrast across the label (see note below).
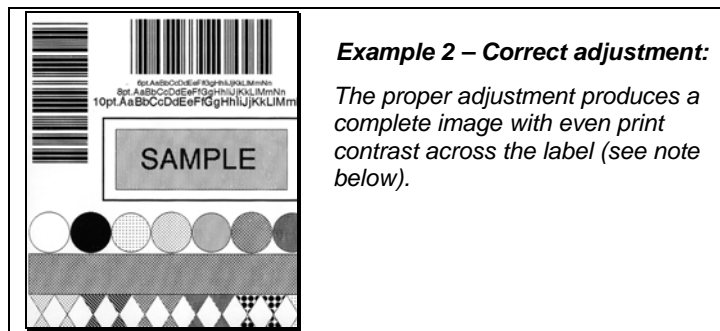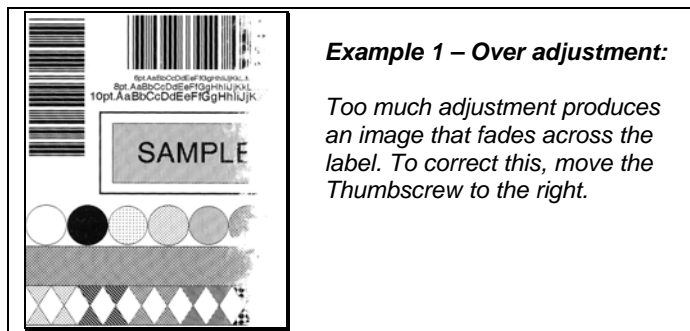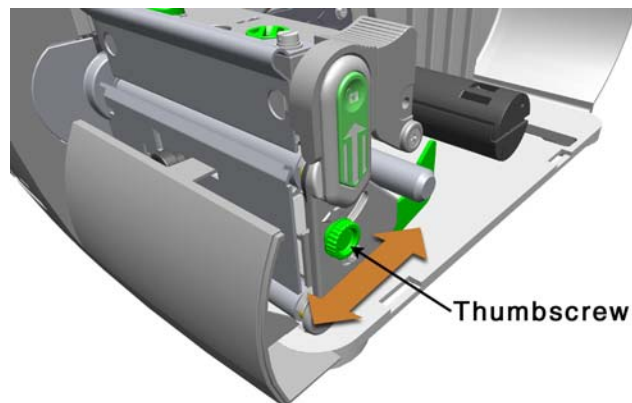
☑ ***Note:*** *Under-adjustment of the Leveling Cam can also cause problems including ribbon wrinkling, label tracking, and platen roller and printhead wear. When changing to a different width of label, always adjust the Leveling Cam.*

6.3   Printhead Burn Line Adjustment

The Burn Line has been adjusted for strict compliance using 6.5-mil (.0065 inch) media, ensuring print quality across a majority of media types. In extreme cases, however, if media of a different thickness or rigidity is used (for example, heavy tag stock), print quality can change.

☑ **Note:** *If you have questions, contact a qualified technician or Datamax Technical Support before proceeding.*

To adjust the Burn Line:

1. Load the printer with your media (and ribbon, if required).

2. Loosen the two Locking Screws approximately ¼ turn counter-clockwise.

3. Turn the Adjustment Screws counter-clockwise until the burn line is past the platen roller vertex. Print a test label; the label should look light and uneven.

   Non-display printers:
   Simultaneously press the ⊘ PAUSE + ⊟ FEED buttons

   Display printers:
   See Section 5.3.1

4. Tighten the Locking Screws just until they are 'snug' (tight enough to remove any play in the printhead assembly, yet loose enough to allow the Adjustment Screws to move the printhead).

5. Turn <u>each</u> Adjustment Screw clockwise about a ¼ turn (or an 1/8 turn for finer adjustments, see note below). Print another test label and examine the print quality. Repeat this step until labels are produced with even print contrast and acceptable print quality.
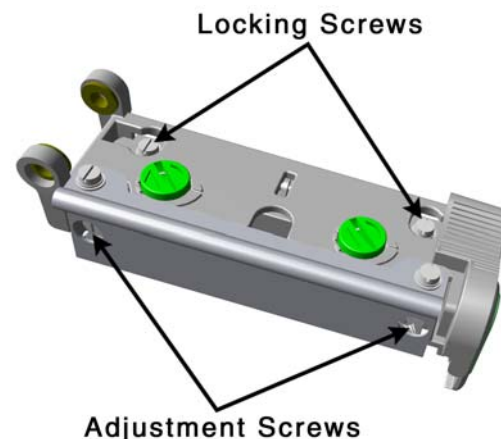
☑ **Note:** *When the Locking Screws are 'snug', turning the Adjustment Screws counter-clockwise will NOT move the printhead <u>outward</u>; if you have adjusted the printhead too far inward, restart the entire procedure.*

6. Tighten the Locking Screws then print a final test label to verify the adjustment.

6.4 Printhead Pressure Adjustment

To accommodate a variety of media types, printhead pressure is adjustable. This pressure is factory set to work with most media types, so this adjustment should only be performed after attempting to improve print quality through the use of the (1) heat and/or (2) print speed. When adjusting, use only the minimum pressure necessary for better imaging. To adjust:

1. Load at least 4" (102mm) wide media and ribbon, see Section 3.2.

2. Ensure the Media Width Adjustment is set to its "left most" position, see Section 6.2.

3. Print a test label.

    Non-display printers:
    Simultaneously press the ⊘ PAUSE + ⊕ FEED buttons

    Display printers:
    See Section 5.3.1

4. Turn the Printhead Pressure Adjustment Screws counterclockwise to increase the applied pressure or clockwise to decrease it. Make <u>equal</u> adjustments to each screw to achieve even print contrast across the media.

Printhead Pressure Adjustment Screws
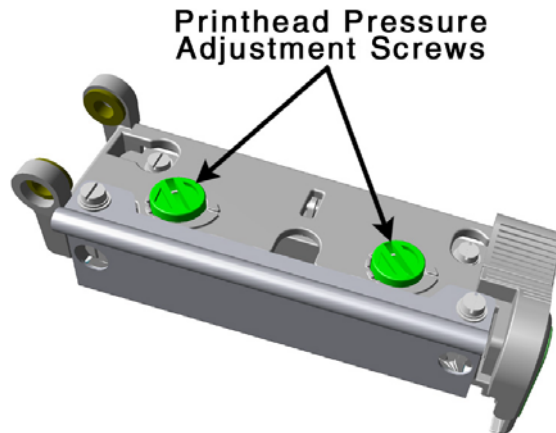
☑**Notes:**   *When using narrow media it is sometimes necessary to increase the pressure on the inner (closest to centerplate) Printhead Pressure Adjustment Screw to prevent ribbon smudging.*

Excessive pressure can reduce the service life of the printhead and platen roller, while unequal pressure may cause ribbon and label tracking problems.

6.5 Printhead Replacement

To replace a damaged printhead, follow the procedure below.

> ☑ **Note:** *Printheads are fragile; use extreme care when handling and never use a sharp object on the surface. If you have questions, contact a qualified technician or Datamax Technical Support before proceeding.*

1. Touch a bare metal part of the printer's frame to discharge any static electricity that may be present on your body.

2. Turn 'Off' and unplug the printer. Open the cover; if ribbon is installed, remove it.

3. With the printhead locked in the down position, loosen the Printhead Mounting Screw (it will remain in the assembly).

4. Unlatch the Printhead Assembly. While holding the Printhead, raise the assembly. Disconnect the two cables and then remove the old Printhead.

5. While carefully holding the new Printhead, connect both cables.

6. Position the Printhead onto the Locating Pins in the Printhead Assembly and secure in place with the Printhead Mounting Screw (do not over-tighten).

7. Clean the Printhead (see Section 6.1).

8. Reload ribbon (if removed), lower the printhead assembly, and rotate the printhead latch back, into the locked position.

9. Use the Darkness Adjustment to match the print contrast of the new printhead to that of the old printhead (for non-display printers see Section 6.6 for display printers see Section 5.1.3).

Printhead Mounting Screw
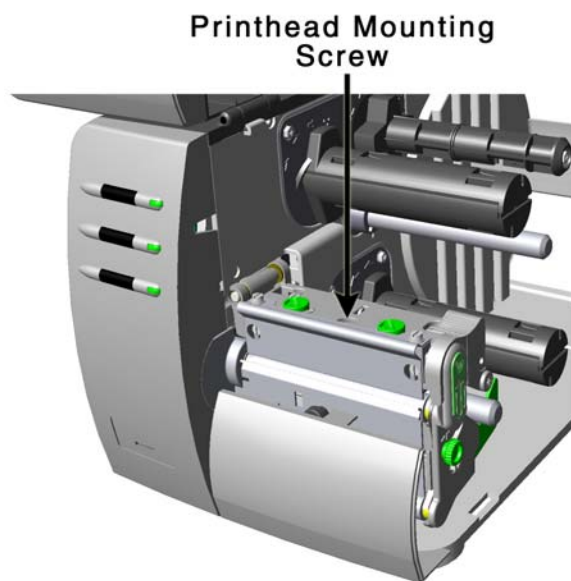
6.6   Darkness Adjustment

Non-display printers: The Darkness Adjustment allows the operator to match the print contrast following a printhead replacement. Turning the Darkness Adjustment clockwise will darken the print, while turning it counterclockwise will lighten the print. Compare a label printed with the old printhead and make this adjustment so that the new printhead matches the darkest portion of that label.

Darkness Adjustmnet

Display-equipped printers: Use the menu to adjust Darkness; see Section 5.1.3, Print Control / Custom Adjustments.

> ☑ **Note:**   *Large increases in the 'Darkness Adjustment' can shorten printhead life. If you need to increase the darkness of the printed labels, try increasing the Heat value and/or slow the Print Speed using your software program or via DPL commands.*
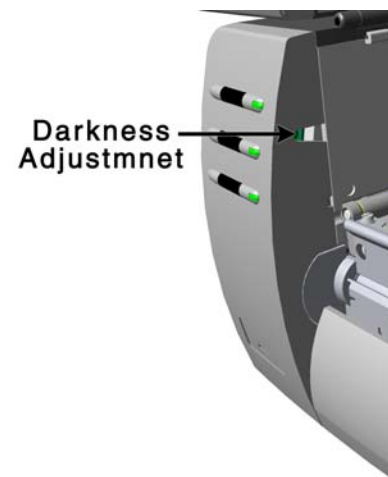
6.7   Resetting the Printer

Non-Display Printers:

With the printer power 'Off,' press and hold all three buttons while turning 'On' the printer. Continue to hold the buttons down until the ⦵ STOP light turns off (approximately 17 seconds). The printer will now be set to the 'Factory Defaults.' See Section 4.5.1 for a listing of the factory default settings.

Display Printers:

Depending upon the method used, there are three reset levels possible:

Soft Reset

To reset the printer and clear any temporary host settings:

With the printer 'On', press and hold the CANCEL Key for approximately four seconds.

Level One Reset

To return the printer to the factory default settings or, if saved, to restore the Factory Setting File:

❶ Turn 'Off' the printer.

❷ Press and hold the PAUSE and CANCEL Keys while turning 'On' the printer; continue to depress the keys until the 'READY' message appears.

> ☑ **Note:** *This reset has the same effect as the System Settings / Set Factory Defaults selection in the menu system. (See Section 5.1 for a listing of the factory default settings and Section 5.1.5 for information about the Factory Setting File.)*

Level Two Reset

To return the printer to the factory default settings, and clear all the calibration and adjustment parameters:

❶ Turn 'Off' the printer.

❷ Press and hold the PAUSE, FEED, and CANCEL Keys while turning 'On' the printer; continue to depress the keys until the 'READY' message appears.

> ☑ **Note:** *After executing a Level 2 Reset, the media calibration must be performed; see Section 5.4. A listing of the factory default settings can be found in Section 5.1.*

6.8   Downloading Firmware and Fonts

The operating programs and fonts for the printer are stored in Flash memory on the Main PCB. When program updates and/or new features are added, they can be downloaded to the printer as follows:

1. Identify the new version for your model of printer from the Datamax Web site at www.datamaxcorp.com and download it onto your computer's hard drive or a floppy disk.

2. Ensure that the printer is connected to the host, (via parallel port only) and that the power is 'On.' Using the DOS copy command enter:

> `copy filename.dlf lpt1/b`   *(non-display printer firmware is .dlf extension)*
>
> `copy filename.zs lpt1/b`   *(display printer firmware is .zs extension)*

> ☑ **Note:** *Other programs (e.g., hyper-terminal and certain Windows® Driver programs) may also be used to download this file.*

3. The READY ↻ light will flash during the download.

4. **Following a successful download**, the ⊘ STOP Light will illuminate then the printer will perform a 'cold reset.' The previous printer setup will not be affected unless substantial firmware data structure changes have occurred. Print a Database Configuration Label to verify your new firmware version.

> ➢ **Following an unsuccessful download**, the ⊘ ERROR Light will illuminate then the printer will perform a 'warm reset' (both the READY ↻ and ⊘ STOP lights will be on during power-up initialization). The original firmware will remain operational. If the printer fails to reset, toggle the power 'Off' and 'On.'
>
> Try re-sending the file to the printer. If the failure continues, check the following possible causes:
>
> - An invalid or corrupted file is being downloaded - Ensure the file being downloaded is correct and applicable for your printer model.
>
> - Possible communications error - Check the cable connection between the host and printer and ensure that a quality, shielded cable is used.
>
> - Possible Flash memory problem - Call for service.

Troubleshooting

7.0   Problem Resolution

Should a problem arise, the information in this section will help you resolve it. The following table lists problems that may not necessarily generate an error condition. Items denoted with an asterisk (*) are only for printers with displays.

> ☑ **Note:**   If you have questions, contact a qualified technician or Datamax Technical Support.

If experiencing this problem…	*Try this solution…*
Can not communicate through the parallel port:	Observe the Ready Indicator as the format is sent to the printer. If it does not flash, check the parallel cable type. Also, check the protocol and port settings between the printer and host.
Can not load media through the optional cutter:	**WARNING!** Use extreme care. Turn 'Off' and unplug the printer before proceeding. Ensure that the cutter is properly installed. Plug in and turn 'On' the printer. You should hear the cutter blade rotate and position itself properly. However, if the problem continues call for service.
* The LCD is blank, but the Ready Indicator is 'On':	The display contrast may set too low. Press and hold the MENU Key for 10 seconds or until the display reappears.
Erratic feeding:	The printer may require Calibration; *Printers without front display:* Perform calibration, see section 4.7.1. *Printers with front display:* Press and hold the ⊗ FEED button until at least one label gap or mark is advanced.
Erratic printing (instead of the label format, strange characters are printed):	• The printer may be in Hex Dump Mode; see Section 7.2. • If using the serial port for communicating, check both the host and printer port settings; the printer may be set to eight data bits while the host is set to 7 (or vice versa).

If experiencing this problem…	*Try this solution…*
Intellifont™ will not print:	Intellifont™ format is Little/Big Endian specific. The printer uses Big Endian. Refer to your font supplier for information.
Light print on the right side (facing the printer) of the label:	• The Printhead Leveling Cam may be incorrectly adjusted; see Section 6.2. • The Printhead or Platen Roller may be dirty or worn; clean or call for service.
Missing information in the printed label:	• Check the label format for character placement outside the dimensions of the label; all row/column values must allow enough space for the height/length of the characters and bar codes to be printed within the format size. • The available memory may have been exceeded by the memory requirement of the label format. Try reducing the memory allocated to either the internal module or scaleable font caches; *non-display printers* see Section 4.5.2, *display printers* see Section 5.1.5 • If using serial communications, ensure that the interface cable meets the requirements found in Section 3.1.2.
Missing print on left or right side of the label:	Information may be formatted outside the label dimensions. Check your software program label size. For display printers also check the values in the menu for Print Control / Column Offset and Print Control / Custom Adjustments / Column Offset; see Section 5.1.3.
No power (all indicator lights are 'Off'):	• Verify that the AC power cord connection has been made at both the outlet and the printer; also, ensure the power switch is 'On'. • Verify that the AC outlet is functioning, or try moving the printer to another AC circuit. • The AC cord may be damaged; replace it. • The line fuse may be blown; call for service.

If experiencing this problem…	*Try this solution…*
Nothing is printing (labels advance normally, but no image is printed):	Examine the used ribbon for an image: **If there is an image on the used ribbon:** • Verify that the ribbon was properly loaded per Section 3.4. • If properly loaded, the wrong coating configuration was used. (To verify the inked side, press the adhesive backing of a label against the ribbon surface. Ink will only lift from the coated side of the ribbon.) Clean the printhead (see Section 6.1); then replace the ribbon with the correct type for the printer, Section 3.4. **If there is no image on the used ribbon:** • Print any Internal Test Label; *non-display printers* see Section 4.8, *display printers* see Section 5.3. If an image printed, then check the protocol and port settings for both the printer and host. These must match. • The heat setting may be too low. Make an adjustment in the software program or through the Front Panel. • The media/ribbon combination may be incorrect. Contact a Media Representative. • The printhead or printhead cable(s) may be loose; power 'Off' the printer then reconnect.
Nothing happens when trying to print using a software program:	• Ensure that the printer is at READY. • Observe the Front Panel, if the READY light does not flash as you send the format check the protocol and port settings between the printer and host. • Ensure the interface cable meets the requirements found in Section 3.1.2.

If experiencing this problem…	*Try this solution…*
Poor print quality:	• The printhead may need cleaning; see Section 6.1. • Adjust the Heat and Print Speed settings through the Front Panel or by host commands; *non-display printers* see Section 4.5.2, *display printers* see Section 5.1.3. • The media/ribbon combination may not be compatible; contact a Media Representative. • The Printhead Leveling Cam may be incorrectly adjusted; see Section 6.2. • The Platen Roller may be dirty or worn; clean or call for service. • The Printhead Burn Line may need adjusting; see Section 6.3.
Skips labels when printing:	• Media Calibration may be needed; *non-display printers* see Section 4.7, *display printers* see Section 5.4. • The Media Sensor may be out of position; readjust the position; see Section 3.3. • The format may be within 1/8 inch of the label's trailing edge. Try reducing or moving the format slightly.
Unable to print rotated text:	The characters may be formatted outside the label dimensions. Ensure the row/column values provide enough room for the height of the characters or bar code to be printed. See the *Class Series Programmer's Manual* for details.

7.1 Fault and Warning Messages *(Display Printers Only)*

All printer functions are internally monitored. If a problem (Fault) or a potential problem (Warning) is detected, the Error Indicator will be illuminated. A corresponding message will be displayed. These messages, along with possible solutions, are described below.

Fault Messages: Fault Messages receive the highest display priority. If more than one fault is detected, the display will toggle between messages.

☑ **Note:** *To return to normal operation after the printer enters a fault condition, the fault must be corrected and then the FEED Key must be pressed to clear the condition.*

<table>
<tr><th colspan="3">Printer Fault Messages</th></tr>
<tr><th>Displayed Message</th><th>Description</th><th>Possible Solution(s)</th></tr>
<tr>
<td>24V OUT OF TOLERANCE</td>
<td>The printer has detected a drop in the 24-volt power supply.</td>
<td>Try cycling the printer power 'Off' and 'On'. If the fault does not clear, call for service.</td>
</tr>
<tr>
<td>ADC FAULT</td>
<td>The printer has detected an analog to digital circuit converter failure.</td>
<td>Try cycling the printer power 'Off' and 'On'. If the fault does not clear, call for service.</td>
</tr>
<tr>
<td>CUTTER FAULT</td>
<td>The printer has detected a cutter mechanism fault.</td>
<td>**WARNING!** Use extreme care. Turn 'Off' and unplug the printer before proceeding.

Examine the cutter for obstructions and ensure that the cutter cable is properly installed. Plug in and turn 'On' the printer. Press the FEED Key. If the fault does not clear, call for service.</td>
</tr>
<tr>
<td>DMA FAULT</td>
<td>The printer has detected a Direct Memory Access failure.</td>
<td>Try cycling the printer power 'Off' and 'On'. If the fault does not clear, call for service.</td>
</tr>
<tr>
<td>GAP MODE
CANNOT CALIBRATE</td>
<td>Consistently low sensor readings were detected.</td>
<td>Press any key to continue. Ensure that media was inserted in the media sensor during the appropriate calibration step; also ensure that the sensor is free of debris. Retry the calibration. If the problem persists, try the 'Advanced Entry Calibration'; see Section 5.4.3.</td>
</tr>
</table>

Printer Fault Messages (continued)		
Displayed Message	**Description**	**Possible Solution(s)**
`GAP MODE` `FAULTY SENSOR`	Consistently high sensor readings were detected.	Press any key to continue. Ensure that media was removed from the media sensor during the appropriate calibration steps; also ensure that no labels are stuck in the media sensor. Retry the calibration. If the problem persists, call for service.
`OUT OF STOCK`	The printer can not detect media.	Try the following: 1) Load media. 2) Ensure that the labels are passing through the Media Sensor. 3) Readjust the Media Sensor over the TOF mark; see Section 3.3. 4) If using media with large gaps, adjust the Paper Out Distance; see Section 5.1.2. 5) Calibrate the printer; see Section 5.4.
`POSITION FAULT`	Two possible causes: (1) The printer was powered-off or reset during a ribbon, out of stock or TOF fault; or (2) the printer was unable to complete the Media Calibration.	Depending upon the cause: (1) Press the FEED Key in an attempt to identify and then clear the related fault condition; or (2) if necessary, calibrate the printer; see Section 5.4.
`PRINT ENGINE FAULT`	The printer has detected a problem within the print logic.	Try cycling the printer power 'Off' and 'On'. If the fault does not clear, call for service.
`RAM FAULT`	The system has detected a RAM failure.	Try cycling the printer power 'Off' and 'On'. If the fault does not clear, call for service.

Printer Fault Messages (continued)		
Displayed Message	**Description**	**Possible Solution(s)**
`REFLECTIVE MODE` `CANNOT CALIBRATE`	Consistently low sensor readings were detected.	Press any key to continue. Ensure that the reflective mark was inserted facedown in the media sensor during the appropriate calibration step; also, ensure that the reflective mark is made of carbon based ink, and that the sensor is free of debris. Retry calibration. If the problem persists, try an 'Advanced Entry Calibration'; see Section 5.4.3.
`REFLECTIVE MODE` `FAULTY SENSOR`	Consistently high sensor readings were detected.	Press any key to continue. Ensure that media was removed from the media sensor during the appropriate calibration steps; also ensure that no labels are stuck in the media sensor. Retry the calibration. If the problem persists, call for service.
`RIBBON FAULT`	The ribbon sensor values have changed, or the printer detects no or only sporadic ribbon supply hub movement.	Try the following: 1) Ensure that ribbon is correctly loaded and that the printhead assembly is latched. 2) Check the ribbon supply and ribbon take up hubs for obstructions that may be stopping movement. 3) Ensure that the ribbon core fits snugly on the ribbon supply hub. 4) Ensure that the media and paper combination is not slipping (usually caused by an incorrect match).
`TEMPERATURE FAULT`	The printer has shutdown to allow the printhead temperature to cool.	Turn 'Off' the printer until cool to prevent permanent damage due to an excessive printhead temperature.

Printer Fault Messages (continued)		
Displayed Message	**Description**	**Possible Solution(s)**
TOP OF FORM FAULT	The printer could not find the TOF mark within the maximum label length setting or it found a TOF in an unexpected place. ☑ **Note:** *When the printer is set for reflective media, this fault is given for an out of stock condition.*	**If media is moving:** 1) Press the FEED Key. It may be necessary to re-calibrate the printer; see Section 5.4. 2) The Media Sensor may be out of position. Readjust it; see Section 3.3. 3) The media may not be properly loaded. Reload media, also ensure that the Media Guide is positioned properly; see Section 3.2. 4) The Leveling Cam may be improperly adjusted; see Section 6.2. 5) The label may be longer than the default value for maximum length. Check the Media Settings / Maximum Label Length; see Section 5.1.2. 6) The Media Sensor may be obstructed. Check and carefully remove any obstruction (labels, paper dust, adhesive, etc). **If media is not moving:** The printhead assembly may not be latched; close it.

Warning Messages:

Warning Messages are displayed for a period of five seconds. If multiple warnings are detected, the display will reflect the highest priority message.

Printer Warning Messages		
Displayed Message	**Description**	**Action(s)**
`DOT FAILURE`	The printer has detected defective printhead elements.	Replace the printhead if the print quality becomes unacceptable.
`GAP MODE` `WARNING LOW BACKING`	The printer measured only a small difference between the 'empty' and 'gap' sensor readings.	Transparent backing or notched media typically gives this indication. In this case, there may be a slight delay in the 'Out of Stock' indication, after the media supply is emptied; no action is required.
`GOODBYE`	Power has been removed and shutdown is in progress.	The printer power switch was turned 'Off', the line fuse has blown, or AC line voltage has been lost.
`HOST CHANGES PENDING`	The host has pending configuration changes that will not take effect until a 'host reset command' is issued.	To save changes, send a host reset command (in DPL); or to discard changes, perform a Soft Reset (see Section 6.7).
`LOW VOLTAGE`	The printer has detected a low operating voltage.	Possible low or fluctuating line voltage level. Try moving the printer to another outlet. When more than 50% black is being printed, try reducing the Heat Value or the size of the black image. If the condition persists, call for service.
`RTC RAM FAILURE`	The printer was unable to save settings in permanent memory.	Possible faulty Main PCB. If the condition persists, call for service.
`IP DISCOVER FAILED`	The printer was unable to find a DHCP server.	This message does not effect the operation of the printer and can be cleared from the display by pressing the ⇐ FEED button. To stop this from reoccurring be sure the menu item 'IP DISCOVERY' is set to 'DISABLED', see Section 5.1.6.
`TEMPERATURE PAUSE`	A high printhead temperature has been detected.	No action required. Printing will resume after the printhead cools.

7.2   Hex Dump Mode

The Hex Dump Mode is a useful tool for diagnosing problems, including communication and DPL™ syntax errors, allowing a comparison of input strings (sent by host) to output data (received by printer). To decode this information, the *Class Series Programmer's Manual* is an essential reference. This output can be used for debugging the label format. In addition, by repeatedly sending a format, this mode can uncover handshaking problems (if they exist). Handshaking problems are identified by sections of missing data in the character string.

To print the Hex Dump Label:

Non-display printers: With the printer on, loaded with media (at least 4 inches wide) and ribbon (if printing with thermal transfer media), press and hold the ⬋ FEED button while turning the printer on. Continue holding the ⬋ FEED button until the ⊘ STOP light turns off. Now, all data received by the printer will be output in hexadecimal code, along with the printable ASCII equivalents, as shown below. To exit Hex Dump Mode, simply turn the printer off and then back on.

Display printers: To begin, go to the Diagnostics menu and enable Hex Dump Mode; see Section 5.1.7. Exit the menu and save the changes. Now, 'HEX DUMP MODE' will be indicated by the display and all data sent to the printer will now be output in hexadecimal code, along with the printable ASCII equivalents, as shown below. To exit Hex Dump Mode, re-enter the Diagnostics Menu and disable the Hex Dump Mode, exit the menu, then save the changes.

The figure below is a sample Hex Dump Label. After sending a label format to the printer, the hex code output will be immediate. As a final note, many software programs use bit mapping to construct the label, making diagnosis difficult. Contact Datamax Technical Support with any questions.

```
0000    02 4C 0D 44 31 31 0D 31    ^L.D11.1
0008    36 31 31 30 30 30 30 33    61100003
0010    32 30 30 30 31 30 46 4F    200010FO
0018    4E 54 20 36 3A 20 41 4C    NT 6: AL
0020    4C 20 56 41 4C 49 44 20    L VALID
0028    20 20 20 20 20 20 20 20
0030    20 20 20 0D 31 36 31 31       .1611
0038    30 30 30 30 32 38 30 30    00002800
0040    30 31 30 20 20 20 20 20    010
0048    20 20 20 43 48 41 52 41       CHARA
0050    43 54 45 52 53 3A 0D 31    CTERS:.1
0058    36 31 31 30 30 30 30 32    61100002
0060    34 30 30 30 31 30 23 24    400010#$
0068    25 26 28 29 2A 2B 2E 20    %&()*+.-
```

8 Specifications

Mechanical

Width	9.8" (24.9 cm)
Depth	18.06" (45.9 cm)
Height	10.3" (26.2 cm)
Weight	21.5 lbs. (9.77 kg)
Operating Temperature	40° F to 95° F (4° C to 35° C)
Humidity	10% − 95% non-condensing
AC Input Voltage	90 – 132 or 180 – 264 VAC @ 47–63 Hz, auto-ranging.

Printing

Print Method	Direct Thermal; Thermal Transfer (optional)
Print Speed	2 - 6 IPS (50 - 152 mm/s) *M-4206 and M-4306* 2 - 8 IPS (50 - 203 mm/s) *M-4208*
Resolution	203 dpi (8 dots/mm) *M-4206 and M-4208* 300 dpi (11.8 dots/mm) *M-4306*
Tear Bar	Tear Down
DRAM Memory	4MB *M-4206* 8MB *M-4208 and M-4306*
FLASH Memory	2MB

Media/Ribbon

Media Types	Roll-Fed, Die-Cut, Continuous, Fan-Fold
Max. Media Width	4.65" (118 mm)
Min. Media Width	.75" (19 mm)
Max. Print Width	4.25" (108 mm) *M-4206 & M-4208* 4.16" (106 mm) *M-4306*
Print Length Range	.25 - 99" (6 - 2475 mm)
Media Thickness Range	.0025 - .01" (.064 mm - .254 mm)
Media Supply Roll Capacity	8" (203 mm) O.D. on a 3.0" (76.2 mm) core; 7" (178mm) O.D. on a 1.5" (38mm) core
Ribbon Width Range	1.0 - 4.5" (25 - 114 mm)
Ribbon Roll Capacity	Matched to media: approx. 1476' (450 m) long
Ribbon Core:	1.010" ± .006" (25.6 mm ± .2 mm) inner diameter.

Communications

Interface	USB, RS-232 (DB-9), and IEEE 1284 Compliant Centronics Parallel
Baud Speed	600 to 38,400 bits per second (BPS)
Handshaking	Xon/Xoff, CTS, DTR
Parity	Even, Odd, or None
Stop Bits	1 or 2
Data Bits	7 or 8

Fonts

Non-display Printers	*Display Printers*
➢ 9 Bit Map Fonts; rotated 0, 90, 180, 270 degrees. ➢ 10 smooth bitmap fonts 6pt – 48pt	➢ 9 Bit Map Fonts; rotated 0, 90, 180, 270 degrees. ➢ 10 smooth bitmap fonts 6pt – 48pt ➢ AGFA Scalable Font Engine featuring CG Triumvirate™ regular and bold-condensed scalable fonts with dynamic font attributes.

Embedded Bar Codes

The printer is equipped with the most popular industry bar codes; see Appendix B for a full listing and detailed information.

Approved Media

To achieve optimum print quality and maximum printhead life, Datamax specifies the use of *DATAMAX*® brand media and ribbons. These supplies are specially formulated for use in our printers; use of non-Datamax supplies may affect the print quality, performance, and life of the printer or its components.

For a current list of approved media and ribbons for use in direct thermal and thermal transfer applications, please contact a Media Representative at (407) 523-5650.
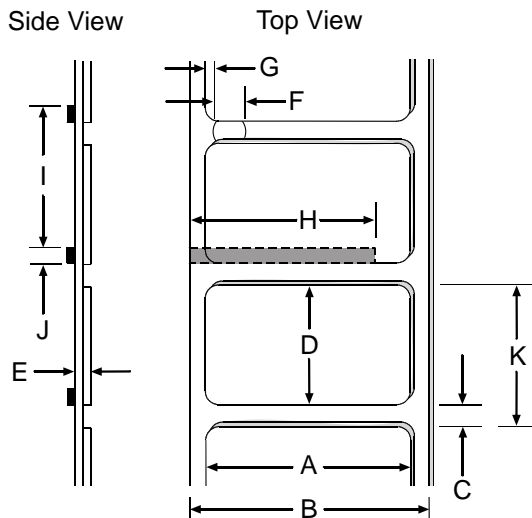
Media Dimensions			
Designator	**Description**	**Maximum** [1]	**Minimum** [1]
A	label width	4.65	.75
B	liner width	4.65	.75
C	gap (or notch) between labels[3]	.25	.100
D	label length[3]	–	.250
E	media thickness	.0100	.0025
F	notch opening width	.500	.200
G	distance from the media's edge to the media sensor aperture (left justified)	2.250	.200
H	reflective (black) mark width[2]	4.65	.500
I	distance between reflective marks[3]	–	.500
J	reflective mark length[3]	–	.100
K	label repeat distance[3]	–	.350

[1] Units of measure given in inches.

[2] The reflective (black) mark must be carbon based, placed on the backside of the stock, and the reflectance shall be less than 10% at wavelengths of 950 and 640 nm.

[3] The maximum allowable length of the combined label and gap (or mark) measurement cannot exceed 99.99 inches.

Appendix A

ASCII Control Code Chart

	Char	Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char	Dec	Hex
Ctrl @	NUL	0	00		32	20	@	64	40	`	96	60
Ctrl A	SOH	1	01	!	33	21	A	65	41	a	97	61
Ctrl B	STX	2	02	"	34	22	B	66	42	b	98	62
Ctrl C	EXT	3	03	#	35	23	C	67	43	c	99	63
Ctrl D	EOT	4	04	$	36	24	D	68	44	d	100	64
Ctrl E	ENQ	5	05	%	37	25	E	69	45	e	101	65
Ctrl F	ACK	6	06	&	38	26	F	70	46	f	102	66
Ctrl G	BEL	7	07	'	39	27	G	71	47	g	103	67
Ctrl H	BS	8	08	(	40	28	H	72	48	h	104	68
Ctrl I	HT	9	09	)	41	29	I	73	49	i	105	69
Ctrl J	LF	10	0A	*	42	2A	J	74	4A	j	106	6A
Ctrl K	VT	11	0B	+	43	2B	K	75	4B	k	107	6B
Ctrl L	FF	12	0C	,	44	2C	L	76	4C	l	108	6C
Ctrl M	CR	13	0D	-	45	2D	M	77	4D	m	109	6D
Ctrl N	SO	14	0E	.	46	2E	N	78	4E	n	110	6E
Ctrl O	SI	15	0F	/	47	2F	O	79	4F	o	111	6F
Ctrl P	DLE	16	10	0	48	30	P	80	50	p	112	70
Ctrl Q	DC1	17	11	1	49	31	Q	81	51	q	113	71
Ctrl R	DC2	18	12	2	50	32	R	82	52	r	114	72
Ctrl S	DC3	19	13	3	51	33	S	83	53	s	115	73
Ctrl T	DC4	20	14	4	52	34	T	84	54	t	116	74
Ctrl U	NAK	21	15	5	53	35	U	85	55	u	117	75
Ctrl V	SYN	22	16	6	54	36	V	86	56	v	118	76
Ctrl W	ETB	23	17	7	55	37	W	87	57	w	119	77
Ctrl X	CAN	24	18	8	56	38	X	88	58	x	120	78
Ctrl Y	EM	25	19	9	57	39	Y	89	59	y	121	79
Ctrl Z	SUB	26	1A	:	58	3A	Z	90	5A	z	122	7A
Ctrl [	Esc	27	1B	;	59	3B	[	91	5B	{	123	7B
Ctrl \	FS	28	1C	<	60	3C	\	92	5C	|	124	7C
Ctrl]	GS	29	1D	=	61	3D	]	93	5D	}	125	7D
Ctrl ^	RS	30	1E	>	62	3E	^	94	5E	~	126	7E
Ctrl _	US	31	1F	?	63	3F	_	95	5F		127	7F

Char	Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char	Dec	Hex
Ç	128	80	á	160	A0		192	C0	Ó	224	E0
ü	129	81	í	161	A1		193	C1	ß	225	E1
é	130	82	ó	162	A2		194	C2	Ô	226	E2
â	131	83	ú	163	A3		195	C3	Ò	227	E3
ä	132	84	ñ	164	A4		196	C4	õ	228	E4
à	133	85	Ñ	165	A5		197	C5	Õ	229	E5
å	134	86	a	166	A6	ã	198	C6	µ	230	E6
ç	135	87	°	167	A7	Ã	199	C7	p	231	E7
ê	136	88	¿	168	A8		200	C8	p	232	E8
è	137	89	®	169	A9		201	C9	Ú	233	E9
è	138	8A		170	AA		202	CA	Û	234	EA
ï	139	8B	1/2	171	AB		203	CB	Ù	235	EB
î	140	8C	1/4	172	AC		204	CC	´y	236	EC
ì	141	8D	¡	173	AD		205	CD	´Y	237	ED
Ä	142	8E		174	AE		206	CE		238	EE
Å	143	8F	−	175	AF		207	CF		239	EF
É	144	90		176	B0	Ò	208	D0		240	F0
Æ	145	91		177	B1	D	209	D1	±	241	F1
Æ	146	92	2	178	B2	Ê	210	D2		242	F2
ô	147	93	3	179	B3	Ë	211	D3	3/4	243	F3
ö	148	94	´	180	B4	È	212	D4		244	F4
ò	149	95	Á	181	B5		213	D5		245	F5
û	150	96	Â	182	B6	Í	214	D6	÷	246	F6
ù	151	97	À	183	B7	Î	215	D7	,	247	F7
ÿ	152	98	©	184	B8	Ï	216	D8	°	248	F8
Ö	153	99	1	185	B9		217	D9	¨	249	F9
Ü	154	9A		186	BA		218	DA	·	250	FA
Ø	155	9B	»	187	BB		219	DB		251	FB
£	156	9C		188	BC		220	DC		252	FC
Ø	157	9D	¢	189	BD		221	DD		253	FD
x	158	9E	¥	190	BE	Ì	222	DE		254	FE
ƒ	159	9F		191	BF		223	DF	€	255	FF

☑ **Notes:** *For the hardware handshake XON/XOFF commands:*

    XON   =   Ctrl Q (DC1)
    XOFF   =   Ctrl S (DC3)

The Euro € character has been added to the table above at 255 (FF) as a Datamax standard for resident bit-mapped fonts 0,1,2,3,4,5,6, and 9 (CG Triumvirate).

Appendix B

Embedded Fonts and Barcodes

All character fonts and barcodes available with the printer are described in this section. Each font and barcode has a name associated with it for use in programming. Human-readable fonts have numeric names while barcode fonts have alpha names.

Fonts

Fonts 0 through 8 use the slash zero (Ø) conventions for distinguishing between the zero and the alphabetic O. The slash can be removed with the label formatting command z. These fonts are non-proportional (monospaced): all of the characters take up the same amount of space when printed.

The Triumvirate font number 9 is a proportional font; each character will take up a different amount of space when printed.

Font	Valid ASCII Characters (decimal)	Use with Record Structure Type
0	32-127,255	Internal Bit-Mapped Fonts
1	32-168, 171, 172, 225,255	
2	32-168, 171, 172, 225,255	
3	32, 35-38, 40-58, 65-90, 128, 142-144, 146, 153, 154, 156, 157, 165, 168, 225,255	
4	32, 35-38, 40-58, 65-90, 128, 142-144, 146, 153, 154, 156, 157, 165, 168, 225,255	
5	32, 35-38, 40-58, 65-90, 128, 142-144, 146, 153, 154, 156, 157, 165, 168, 225,255	
6	32, 35-38, 40-58, 65-90, 128, 142-144, 146, 153, 154, 156, 157, 165, 168, 225,255	
7	32-126	
8	32, 48-57, 60, 62, 67, 69, 78, 83, 84, 88, 90	
9	32-126, 128-169, 171-173, 181-184, 189, 190, 198, 199, 208-216, 222, 224-237, 241, 243, 246-250,255	Smooth Font
*9	Dependent upon selected symbol set; see the Programmers Manual.	Downloadable Scalable Font

Not available on non-display printers

The table below lists the font sizes. The numbers indicate the number of dots.

FONT	HEIGHT	WIDTH	SPACING
Font 0	7	5	1
Font 1	13	7	2
Font 2	18	10	2
Font 3	27	14	2
Font 4	36	18	3
Font 5	52	18	3
Font 6	64	32	4
Font 7	32	15	5
Font 8	28	15	5

Font 0 96-character alphanumeric, upper and lower case.

Font 1 145-character upper and lower case alphanumeric w/ descenders and ascenders.

Font 2 138-character alphanumeric, upper and lower case.

Font 3 62-character alphanumeric, uppercase.

Font 4 62-character alphanumeric, uppercase.

```
FONT 4:
#$%&()*+.-./0123456789:
ABCDEFGHIJKLMNOPQRSTUVWXYZ
ÇÄÅÉÖÜ£ØÑ¿ß
```

Font 5 62-character alphanumeric, uppercase.

```
FONT 5:
#$%&()*+.-./0123456769:
ABCDEFGHIJKLMNOPQRSTUVWXYZ
ÇÄÅÉÖÜ£ØÑ¿ß
```

Font 6 62-character alphanumeric, uppercase.

```
FONT 6:
#$%&()*+.-./
0123456789:
ABCDEFGHIJKL
MNOPQRSTUVWXYZ
ÇÄÅÉÖÜ£ØÑ¿ß
```

Font 7 OCR-A, size I.

Font 8 OCR-B, size III.

```
Font 7:
!"#$%&'()*+,-./
0123456789:;<=>?@
ABCDEFGHIJKLMNO
PQRSTUVWXYZ[\]^Y
abcdefghijklmno
pqrstuvwxyz{|}♪
```

```
Font 8:
0123456789
<>CENSTXZI
```

Font 9 Internal Triumvirate font.
Point sizes are selected by the number in the barcode height.
Larger point sizes can be obtained by increasing the height and width
multipliers, 48pt and 72pt fonts are generated by doubling the 24pt and 36pt
fonts, respectively (see the *Programmer's Manual* for more information).

6 pt ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz0123456789

8 pt ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz

10 pt ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklm

12 pt ABCDEFGHIJKLMNOPQRSTUVWXYZabc

14 pt ABCDEFGHIJKLMNOPQRSTUVWX

18 pt ABCDEFGHIJKLMNOPQR

24 pt ABCDEFGHIJKLM

30 pt ABCDEFGHIJ

36 pt ABCDEFG

48 pt ABCD

Barcodes

Bar Code fonts have alpha names (left column in the table below). Uppercase alpha names will print barcodes with human-readable interpretations. Lowercase alpha names will print barcodes only. The table is followed by visual samples.

Barcode ID	Type	Length	Check-sum	Valid ASCII Characters, decimal value representation
A / a	Code 39	Varies	No	32, 36, 37, 42, 43, 45-57, 65-90
B / b	UPC-A (regular)	11	Yes	48-57 Numeric only Option V used in the 6th & 7th position
C / c	UPC-E (zero suppression)	6	Yes	48-57 Numeric only
D / d	Interleaved 2 of 5 (I 2 of 5)	Varies	No	48-57 Numeric only
E / e	Code 128	Varies	M-103	32-127
F / f	EAN-13	12	Yes	48-57 Numeric only. Option V used in the 7th & 8th position
G / g	EAN-8	7	Yes	48-57 Numeric only
H / h	Health Industry Bar Code (Code 39 Mod and 43 checksum)	Varies	M-43	32, 36-39, 42, 43, 45-57, 65-90
I / i	Codabar	Varies	No	36, 43, 45-58, 65-68
J / j	I 2 of 5 with modulo 10 checksum	Varies	M-10	48-57 Numeric only
K / k	Plessey	Up to 14	M-10	48-57 Numeric only. Option + is Last Character for Second M-11 checksum
L / l	ITF SCC-14/ I 2 of 5 Shipping Container Code	13	M-10	48-57 Numeric only
M / m	2 digit UPC addendum	2	Yes	48-57 Numeric only
N / n	5 digit UPC addendum	5	Yes	48-57 Numeric only
O / o	Code 93	Varies	No	35-38, 42-58, 65-90, 97-122
p	Postnet	Varies	Yes	48-57 Numeric only
Q / q	SSCC-18/Serial Shipping Container Code	19	Yes	48-57 Numeric only
R / r	UCC/EAN Code 128 K-Mart NON EDI bar code	18	Yes	48-57 Numeric only
S / s	UCC/EAN 128 Random Weight	34 +	Yes	48-57 Numeric only
T / t	Telepen	Varies	Yes	Alphanumeric
U	UPS MaxiCode	84	Yes	Alphanumeric
u	UPS MaxiCode with Byte Count	Specified	Yes	Alphanumeric
v	FIM	1	No	A, B, C, D
z	PDF417	Varies	Yes	All
Z	PDF417 with Byte Count	Specified	Yes	All
W1c	DataMatrix	Varies	Yes	All 8-bit values
W1C	DataMatrix with Byte Count	Specified	Yes	All 8-bit values
W1d	QR Code – Auto format	Varies	Yes	Alphanumeric
W1D	QR Code – Manual format	Varies	Yes	Single-byte or Kanji double-byte
W1f	Aztec	Varies	Yes	All 8-bit values
W1F	Aztec with Byte Count	Specified	Yes	All 8-bit values
*W1g	USD-8 (Code 11) – Non-Human Readable	Varies	Yes, C&K	0 through 9 and "-"
*W1G	USD-8 (Code 11) - Human Readable	Varies	Yes, C&K	0 through 9 and "-"
*WI	EAN128 (Code 128 with Auto Subset Switching between B/C)	Varies	Yes	Alphanumeric

Continued...

Barcode ID	Type	Length	Check-sum	Valid ASCII Characters, decimal value representation
*WJ	Code 128 Auto	Varies	Yes	Alphanumeric
*W1k	Reduced Space Symbology (RSS); (*RSS-14, Truncated, Stacked, Stacked Omni-directional, and Limited*)	13	Yes	0 through 9
	RSS Expanded	Varies	Yes	Subset of ISO646 including Alphanumeric
W1T	TCIF Linked Barcode 3 of 9 (TLC39)	Varies	No	Alphanumeric
W1z	MicroPDF417	Varies	Yes	All 8-bit values
W1Z	MicroPDF417 with Byte Count	Specified	Yes	All 8-bit values

* Not available on non-display printers

Barcode A Code 39

Barcode B UPC-A (regular)

Barcode C UPC-E (zero suppression)

Barcode D Interleaved 2 of 5

Barcode E Code 128

Barcode F EAN-13

Barcode G EAN-8

01234565

Barcode H Health Industry Bar Code (Code 39 Mod and 43 checksum)

+012345678900

Barcode I Codabar

A012345678900

Barcode J Interleaved 2 of 5 w/module 10 checksum

012345678905

Barcode K Plessey

01234567890

Barcode L ITF SCC-14/ I 2 of 5 Shipping Container Code

0 12 34567 89012 8

Barcode M 2 Digit UPC addendum

42

Barcode N 5 Digit UPC addendum

01234
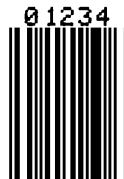
Barcode O Code 93

Barcode p Postnet

Barcode Q SSCC-18/Serial Shipping
Container Code

(01) 2 3456789 012345678 9
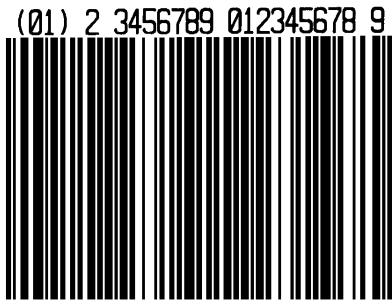
Barcode R UCC/EAN Code 128
KMART NON EDI

34 567890 123 4567
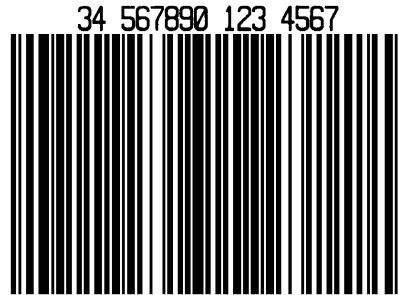
Barcode S UCC/EAN 128 Random Weight

01 10073675029260 11 930420 3202 001800 21 10123456

Barcode T Telepen

ABCDEF
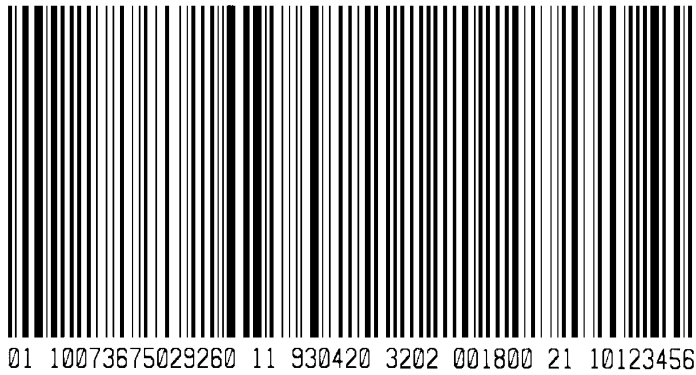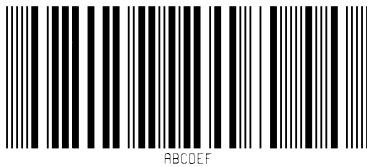
Barcode u UPS MaxiCode
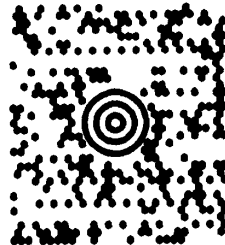
Barcode v FIM

Barcode z PDF417

Bar Code W1c: DataMatrix

Bar Code W1d: QR Code

Bar Code W1f: Aztec

Bar Code W1g: USD-8 (Code 11)

Bar Code WI: EAN128
(Code 128 with Auto Subset Switching
between B/C)

Bar Code WJ: Code 128 Auto

Bar Code W1k: RSS
(Reduced Space Symbology)

Bar Code W1z: MicroPDF417

Bar Code W1T: TCIF Linked
Barcode 3 of 9 (TLC39)

A1B2C3DAAA

Appendix C

Optional Internal Ethernet Printer Server *(printers with display only)*

Indicators and Connector

10 Meg. Ethernet
Connection Indicator
100 Meg. Ethernet
Connection Indicator
Data Received Indicator
Data Transmit Indicator

DMXCONNECT
M-Class Ethernet
Print Server

10M
100M
RX
TX

10M/100M Ethernet Connector
RJ-45 Connector

10M   Indicates a valid 10-megabit Ethernet connection is present when lit.

100M Indicates a valid 100-megabit Ethernet connection is present when lit.

RX   Flashes when data is being received by the printserver.

TX   Flashes when data is being transmitted by the printserver.
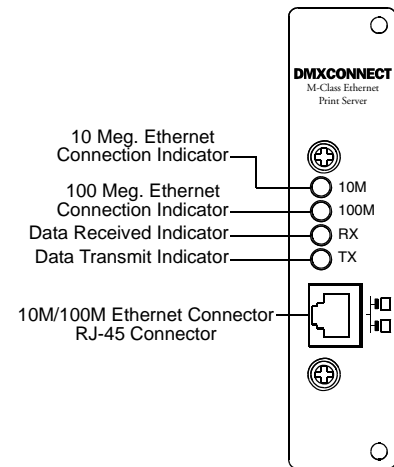
Setup and Configuration

The Internal Ethernet Print Server can be configured in one of two ways:

> Using 'IP Discovery' (DHCP); or,

> Using a static IP set using the printer's front panel.

> ☑ **Note:**   *The factory default has IP Discovery 'Enabled'. If you do not wish to use the IP Discovery function be sure to set it to 'Disable' using the printers front panel before connecting and powering on the printer.*

Configuration Using IP Discovery (DHCP, BootP, and RARP)

Once the Ethernet Print Sever has been installed and connected, plug in the power cord and Ethernet cable then turn the printer's power switch 'On'.

DHCP, BootP, and RARP are server services that provide a method for assigning and maintaining IP addresses. The Print Server obtains IP information from this service.

The factory default has IP Discovery enabled. The Print Server makes IP requests at power-up. If using this method of discovery, after the connection is established print a Configuration Label (see below) from the printer to obtain the IP Address and then use it to install your printer port and driver to complete your setup.

> ☑ **Note:** *Depending upon your server, you may have to wait a minute or two for the assigned IP Address to appear on the Configuration Label.*

To print a configuration label:
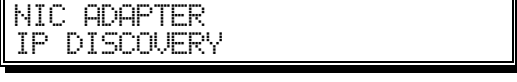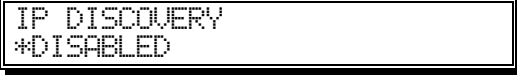
With the printer on, loaded with media (at least 4 inches wide) and ribbon (if printing with thermal transfer media). Press the ⬛ **TEST** button once, then use the FWD➡ button scroll to 'PRINT CONFIGURATION' and press the ⬛ **TEST** button again to print.

```
PRINT CONTROL              COMMUNICATIONS
  HEAT                       SERIAL PORT A:
   10                          BAUD RATE
  PRINT SPEED                    9600
   8.0 in/sec                  PROTOCOL
  FEED SPEED                     BOTH
   8.0 in/sec                  PARITY
  REVERSE SPEED                  NONE
   4.0 in/sec                  DATA BITS
  ROW OFFSET                     8
   00.00 inches               STOP BITS
  COLUMN OFFSET                  1
   00.00 inches              SERIAL PORT B:
  PRESENT DISTANCE             NOT INSTALLED
   0.00 inches
CUSTOM ADJUSTMENTS:          PARALLEL PORT A:
  DARKNESS                     PORT DIRECTION
   32                            UNI-DIRECTIONAL
  CONTRAST                   USB PORT
   32                           INSTALLED
  ROW ADJUST
   0 DOTS                    NIC ADAPTER:
  COLUMN ADJUST                MAC:00-0d-70-00-00-09
   0 DOTS                     IP ADDRESS
  PRESENT ADJUST                168.24.12.192          ⬅ Assigned IP
   64 DOTS                    SUBNET MASK                   Address
                                255.255.255.255
PRINTER OPTIONS              GATEWAY
  MODULES                      168.24.254.254
   A: NOT INSTALLED          SNMPTRAP DESTINATION
   B: NOT INSTALLED            000.000.000.000
   D: NOT INSTALLED          IP DISCOVERY
   F: NOT INSTALLED            ENABLED
   G: NOT INSTALLED
   X: NOT INSTALLED          HOST SETTINGS:
   Y: NOT INSTALLED            HOST TIMEOUT
   Z: NOT INSTALLED             10 sec
  PRESENT SENSOR:             CONTROL CODES
                                STANDARD CODES
                             FEEDBACK CHAR
                                ENABLED
```

Once you have obtained the assigned IP from the configuration label you can then install the port and printer driver using the Windows® 'Add a Printer Wizard'. See section, *Installing the Printer Driver and Port* in this document.

Configuration Using a Static IP Address

Once the Ethernet Print Sever has been installed, plug in the power cord, but <u>do not</u> connect the Ethernet cable, then turn the printer's power switch 'On'.

1. Verify the printer is in the 'Ready Mode'	`WED 10:16A 02JUL2003` `READY`
2. Press the ☰ **MENU** button to enter the printer's menu.	`MENU MODE` `MEDIA SETTINGS`
3. Using the FWD➔ button scroll to 'COMMUNICATIONS' and press the ENT↵ button.	`MENU MODE` `COMMUNICATIONS`
4. Using the FWD➔ button scroll to 'NIC ADAPTER' and press the ENT↵ button.	`COMMUNICATIONS` `NIC ADAPTER`
5. Using the FWD➔ button scroll to 'IP DISCOVERY' and press the ENT↵ button.	`NIC ADAPTER` ` IP DISCOVERY`
6. Using the FWD➔ button scroll to 'DISABLED' and press the ENT↵ button.	`IP DISCOVERY` `*DISABLED`
7. Press the ESC•↰ button once to return to the 'NIC ADAPTER' menu level. Then use the FWD➔ button scroll to 'IP ADDRESS' and press the ENT↵ button.	`NIC ADAPTER` `IP ADDRESS`

8. Use the FWD→ and REV← buttons to increment/decremnt the flashing value. Press the ENT↵ button to move to the next field. Once all fields are correct press the ESC↰ button once. The value will automatically be saved.

   You can then use the FWD→ to scroll to the 'SUBNET MASK and 'GATEWAY' menu items and set those values in the same manner as the 'IP ADDRESS' was set.

```
IP ADDRESS
*192.000.000.192

SUBNET MASK
*000.000.000.000

GATEWAY
*000.000.000.000
```

> ☑ **Note:** *When the menu item 'IP DISCOVERY' is set to enabled you will not be able to change the values for the "IP ADDRESS', 'SUBNET MASK', or 'GATEWAY' menu items. The values displayed are for reference only and will become active once 'IP DISCOVERY' set to disabled.*

9. Once you have the proper addresses set, press the ESC↰ button repeatily until you have exited the printer's menu. Turn OFF the printer and then back ON.

```
WED 10:16A 02JUL2003
READY
```

Once you have entered your IP settings into the printer you can then install the port and printer driver using the Windows® 'Add a Printer Wizard'. See section, *Installing the Printer Driver and Port* in this document.
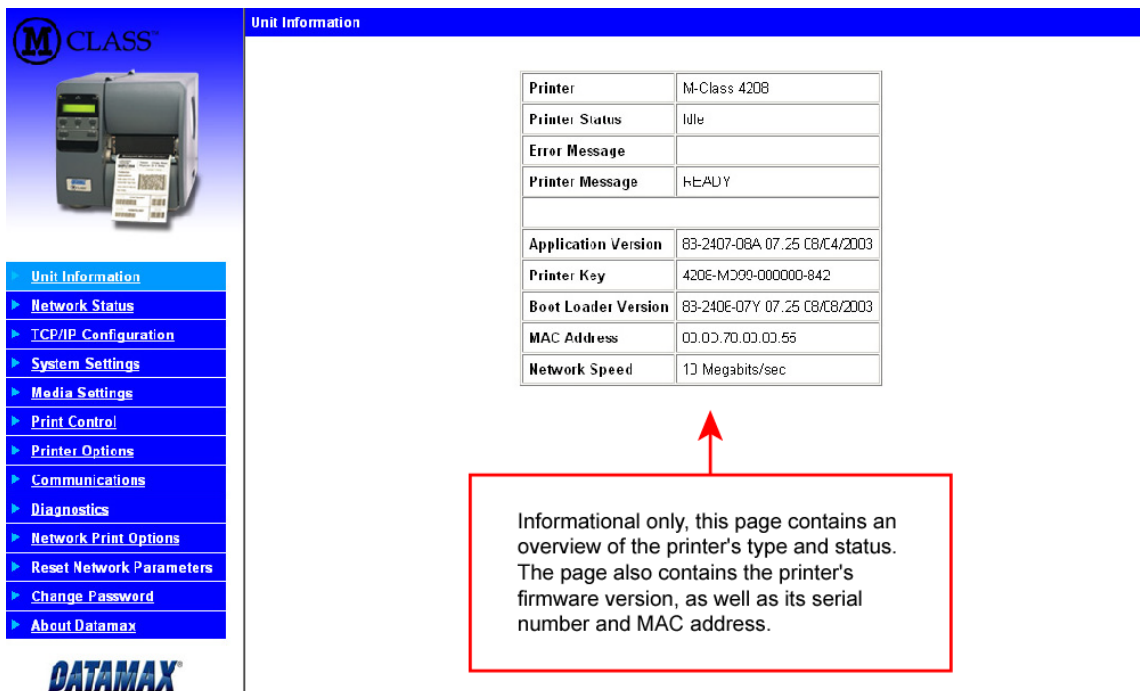
The printer has resident HTML (Web) pages that allow configuration of network and printer settings as well as performing status queries and diagnostic tests. To configure the Print Server and other internal printer settings you can access the printer via HTML pages using any Web browser.

1. In your Web browser, choose **File –> Open**.

2. Enter the IP address of the Print Server and press Enter. (The default IP Address is: 192.0.0.192)

> ☑ *Note:* Consult with your system administrator for all necessary address, printer, and protocol information. To change these settings you will be asked for an authentication password. Type `sysadm` and click "Apply".

Next you should see the Print Server's **Unit Information** page:

Network Status

Network Information

MAC Address	00:0D:70:00:30:02
Network Topology	Ethernet
Network Speed	100 Megabits/sec

Navigation menu:
- Unit Information
- Network Status
- TCP/IP Configuration
- System Settings
- Media Settings
- Print Control
- Printer Options
- Communications
- Diagnostics
- Network Print Options
- Reset Network Parameters
- Change Password
- About Datamax

TCP/IP Status

Frame Type	Ethernet II
IP Address	10.12.0.201
Subnet Mask	255.255.0.0
Default Gateway	10.12.254.254
Destination Port	9100
SNMP Trap Destination	0.0.0.0
IP Discovery	Disabled
Primary Server Logged in	0.0.0.0
Secondary Server Logged in	0.0.0.0

Informational only, this page contains an overview of the current network settings including discovery methods, address settings, network topology and speed.

TCP/IP Configuration

*Fixed IP Address users define the address here. (Usually, printers in a network get a fixed IP Address because they are referred to by address rather than by name.)

*Enter a subnet mask. Printer responses can only get across address ranges (subnet mask) if the Print Server sends them to the network's gateway server, which transfers messages from one address range to another.

*Enter the address of the system's gateway. Networked printers are addressed from other points in the network as well, which means that the Print Server needs to know a gateway address. Most print protocols (like lpr) establish a point to point connection to get responses from the printer. Without a gateway address the printer doesn't seem to respond and is 'not there.'

Enable IP DISCOVERY if you want to use a boot-protocol (DHCP, BootP, or RARP) and not a fixed IP Address.

To use Windows Internet Name Service (WINS) instead of an IP Address, specify a NetBIOS Name (such as the Print Server serial number with a three-letter prefix of 'DMX') assign its Primary WINS Server address (for example, 199.92.187.171). Optionally, assign the IP address of a Secondary WINS Server.

* These items will be greyed-out when IP Discovery is enabled. The values listed are stored in the printer's memory.

System Settings, Media Settings, and Print Control

Many of the printer's internal menu settings can be controlled from the following next six screens. This allows the user to adjust many of the printer's settings remotely without using the printer's front panel. For more information on the function of these settings see the M-Class Operator's Manual.

System Settings, Media Settings, and Print Control *(continued)*

Printer Options, Communications, and Diagnostics

Printer Options, Communications, and Diagnostics *(continued)*

Network Print Options

Reset Network Parameters

Change Password

To change the default password of the Print Server (sysadm), enter the old password, the new password and confirmation here.
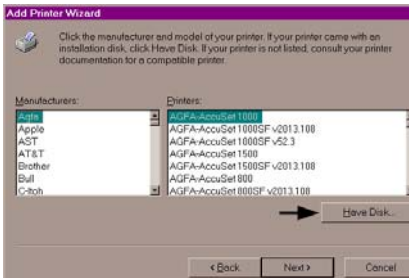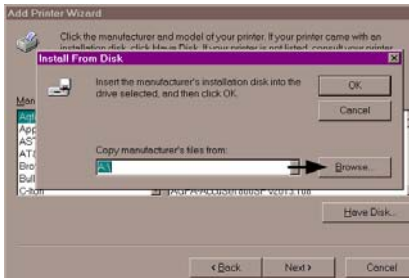
Windows 95/98 Driver and Port Installation

Insert the M-Class CD-ROM into your computer's drive.

The M-Class CD-ROM should start automatically, if it does not Click 'Start' and then select 'Run' from the window's menu. Then type d:\datamax.exe

(where "d:" is the location of the CD-ROM)

1 At the main screen click on your printer model.	**2** Now click "Install Windows Driver".
3 The following screen should appear, click 'Next>'.	**4** Make sure that 'Local Printer' is selected and then click 'Next'.
5 Click on 'Have Disk'.	**6** Click 'Browse'.

7

Browse to the "Drivers" folder on the CD-ROM, make sure the file "Datamax for 95, 98, me, 2000, and xp.inf" is selected and click 'OK'.
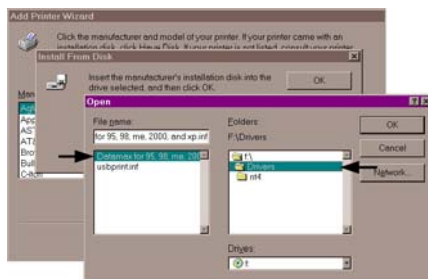
8

Click 'OK'.
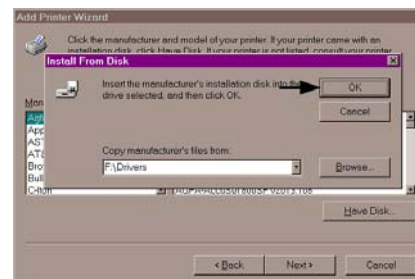
9

Select the 'M-4208' printer from the list and then click 'Next'.
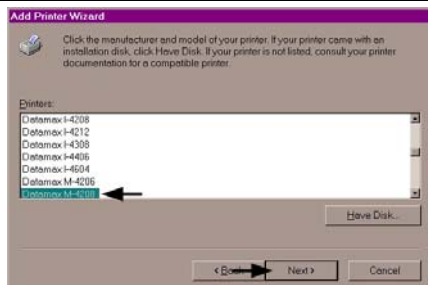
10

Your computer will now copy the necessary files from the CD-ROM.
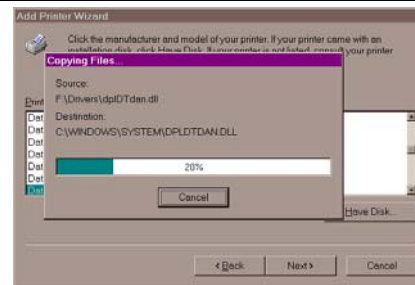
11

When prompted to choose a port, select 'FILE' for now and click 'Next'. *You will set up the network port from the printer properties later.*
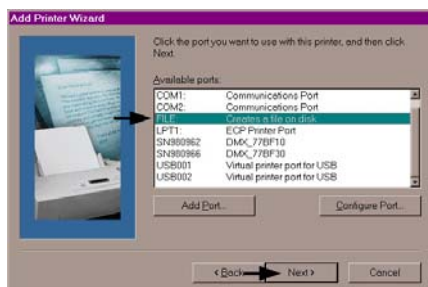
12

Name your printer in the 'Printer name:' field. Next select whether or not to set this printer as your default printer. Then Click 'Finish'.
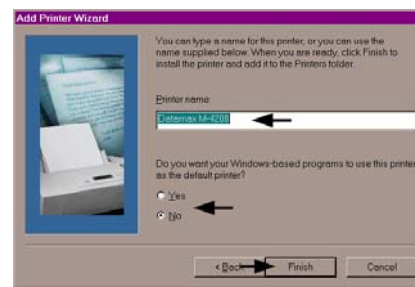
13

From the Windows desktop click 'Start' / 'Settings' / 'Printers'.
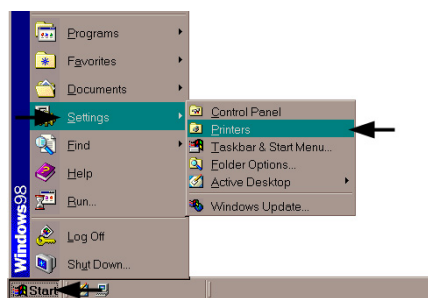
14

Once the Printers window opens, right-click on the printer icon and select 'Properties' from the drop down menu.
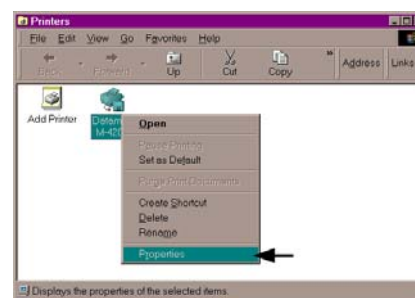
15

Click on the 'Details' tab and then click 'Add Port'.
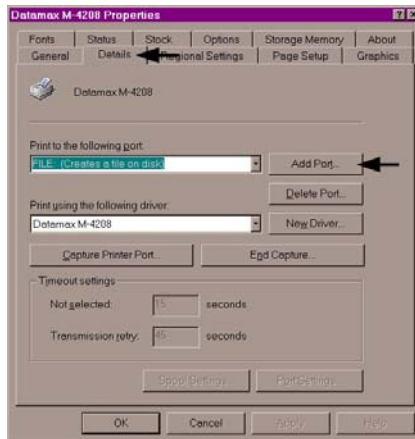
16

In the 'Add Port' window, Select 'Other' and "Seagull Scientific Port" and then click 'OK'.
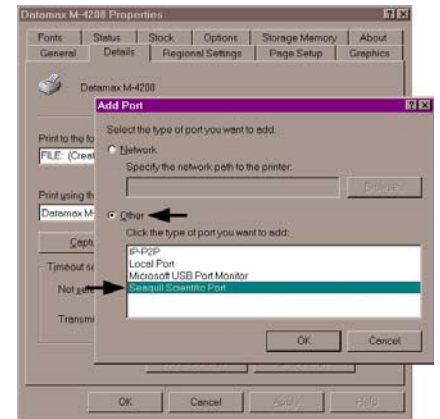
17

In the 'Name or IP Address:' field enter the IP address of your printer. The 'Port Number' and 'Port Name' fields do not need to be changed. When finished click "OK"
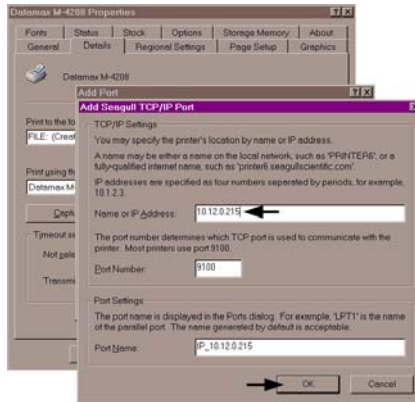
18

Click 'Apply' and then click 'OK'.

The driver and port installation is now complete. The printer can be selected through any window's application.
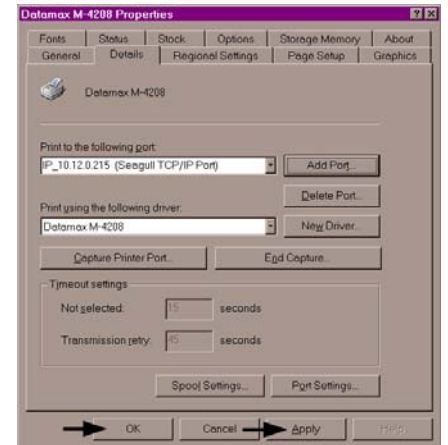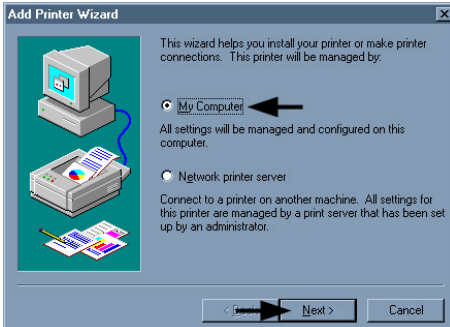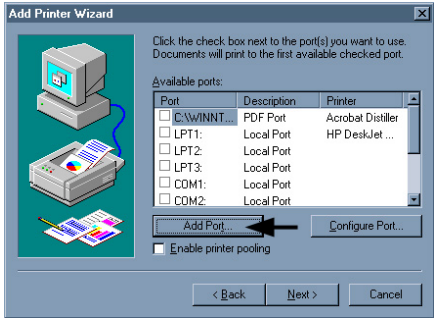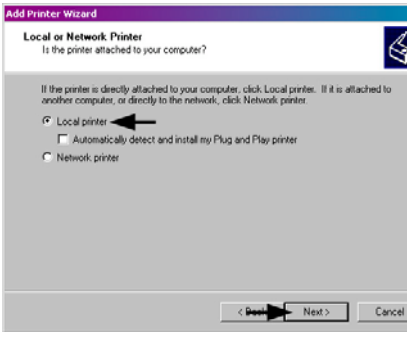
Windows NT 4.0 Driver and Port Installation

Insert the M-Class CD-ROM into your computer's drive.

The M-Class CD-ROM should start automatically, if it does not Click 'Start' and then select 'Run' from the window's menu. Then type d:\datamax.exe
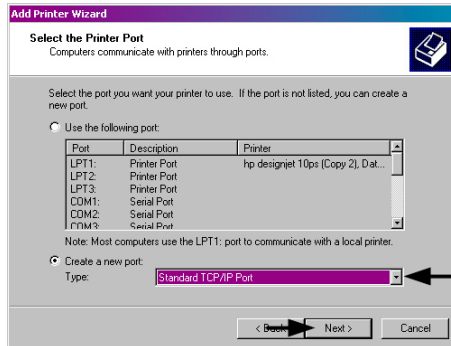
(where "d:" is the location of the CD-ROM)

1 At the main screen click on your printer model.		**2** Now click "Install Windows Driver".	
3 Make sure that 'My Computer' is selected and then click 'Next'.		**4** Click 'Add Port'.	

5

Double-click 'LPR Port'.

6

In the top field enter the IP address of your printer. In the bottom field enter PORT1. When finished click "OK'.
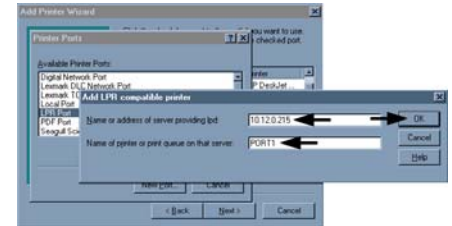
7

Click 'Close'
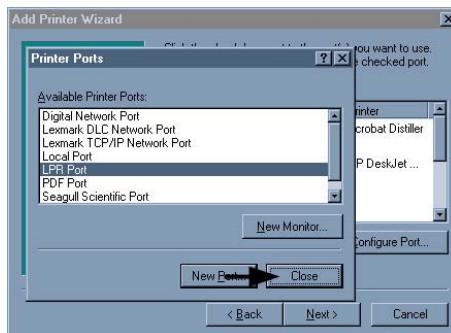
8

Click 'Next'.
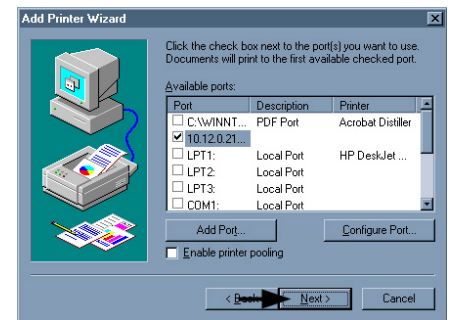
9

Click on 'Have Disk'.
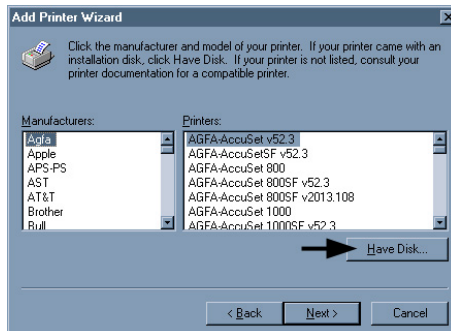
10

Click 'Browse'.
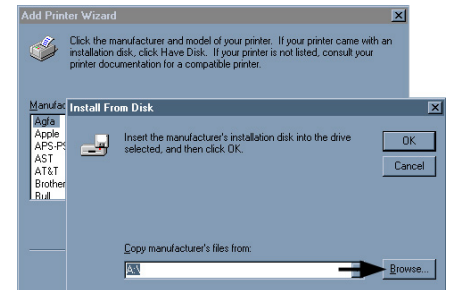
11

Browse to the "Drivers\Nt4\" folder on the CD-ROM, make sure the file "Datamax for nt 4.0 only" is selected and click 'Open'.
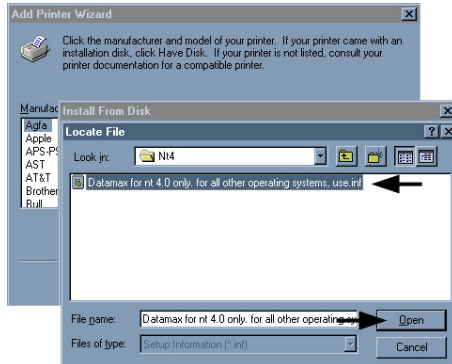
12

Click 'OK'.
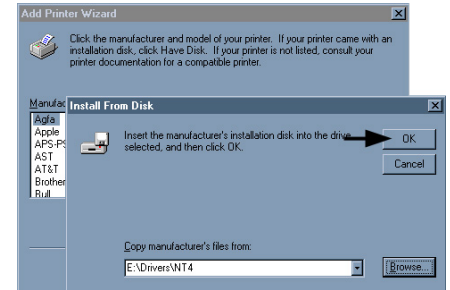
13

Select the 'M-4208' printer from the list and then click 'Next'.
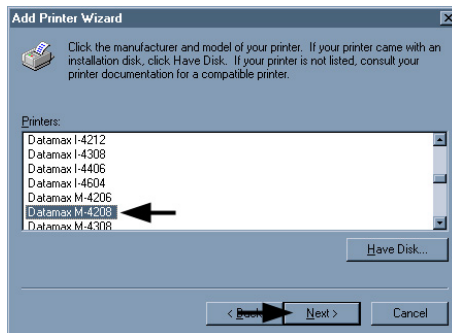
14

Name your printer in the 'Printer name:' field. Next select whether or not to set this printer as your default printer. Then Click 'Next'.
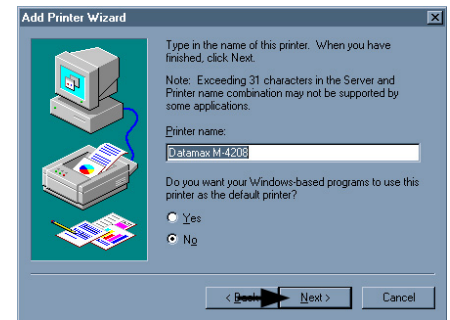
15

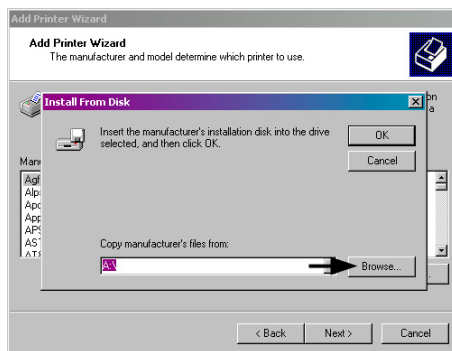Select whether or not to share this printer on your network. Then Click 'Next'.
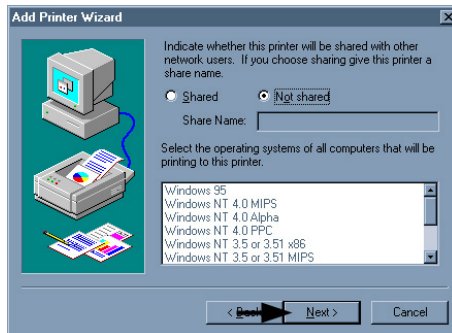
16

Select 'No' then Click 'Finish'.
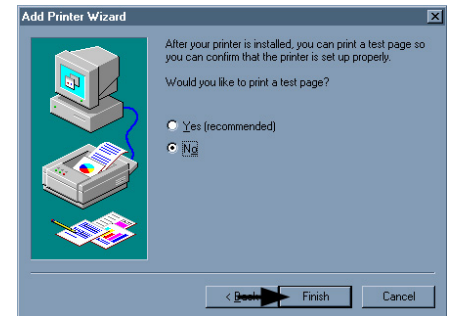
17

Your computer will now copy the necessary files from the CD-ROM.

The driver and port installation is now complete. The printer can be selected through any window's application.
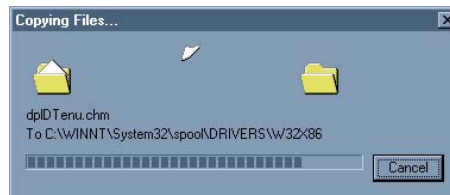
Windows 2000 Driver and Port Installation

Insert the M-Class CD-ROM into your computer's drive.

The M-Class CD-ROM should start automatically, if it does not Click 'Start' and then select 'Run' from the window's menu. Then type d:\datamax.exe

(where "d:" is the location of the CD-ROM)

1 At the main screen click on your printer model.		**2** Now click "Install Windows Driver".	
3 The following screen should appear, click 'Next>'.		**4** Make sure that 'Local Printer' is selected and then click 'Next'.	

5 Select on 'Create a new port:' and then select 'Standard TCP/IP Port' from the drop down menu. Click 'Next'	**6** Click 'Next'.
7 In the 'Printer Name or IP Address:' field enter the IP address of your printer. The 'Port Name' field <u>does not</u> need to be changed. When finished click 'Next'.	**8** Make sure 'Standard' is selected and then click 'Next'.
9 Confirm your settings and then click 'Finish'.	**10** Click on 'Have Disk'.

11

Click 'Browse'.

12

Browse to the "Drivers" folder on the CD-ROM, make sure the file "Datamax for 95, 98, me, 2000, and xp.inf" is selected and click 'OK'.

13

Click 'OK'.

14

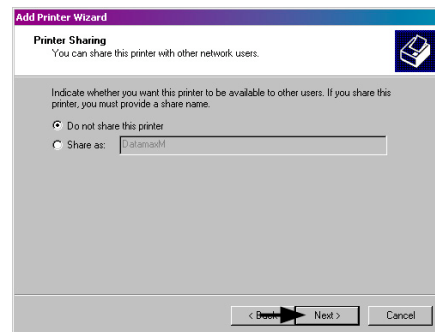Select the 'M-4208' printer from the list and then click 'Next'.

15

Name your printer in the 'Printer name:' field. Next select whether or not to set this printer as your default printer. Then Click 'Next'.
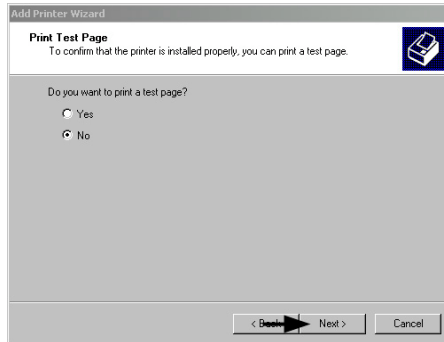
16

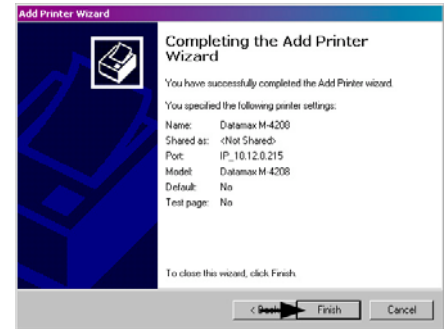Select whether or not to share this printer on your network. Then Click 'Next'

17
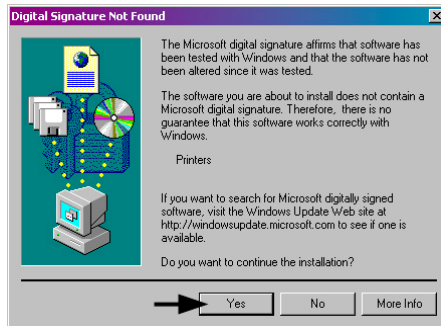
Select 'No' then Click 'Next'.

18

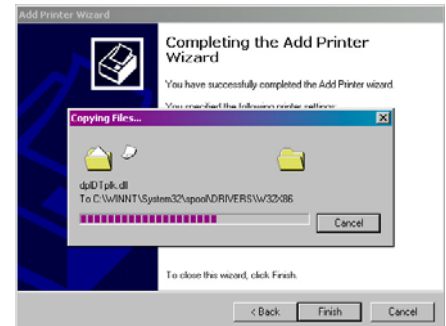Confirm your settings and then click 'Finish'.

19

If prompted with the "Digital Signature Not Found" window, click 'Yes' to continue installation.

20

Your computer will now copy the necessary files from the CD-ROM.

The driver and port installation is now complete. The printer can be selected through any window's application.

Windows XP Driver and Port Installation

Insert the M-Class CD-ROM into your computer's drive.

The M-Class CD-ROM should start automatically, if it does not Click 'Start' and then select 'Run' from the window's menu. Then type d:\datamax.exe

(where "d:" is the location of the CD-ROM)

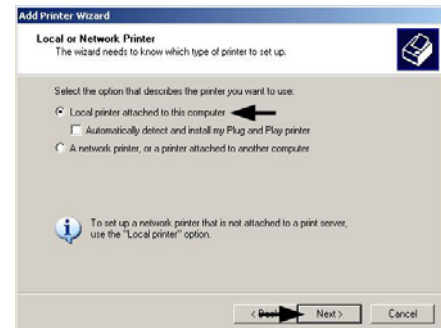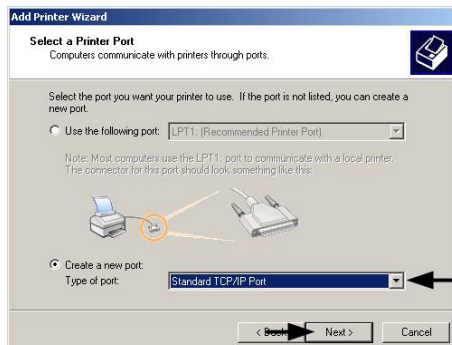|	
1 At the main screen click on your printer model..	
2 Now click "Install Windows Driver".	
3 The following screen should appear, click 'Next>'.	
4 Make sure that 'Local Printer' is selected and then click 'Next'.	

5

Select on 'Create a new port:' and then select 'Standard TCP/IP Port' from the drop down menu. Click 'Next'
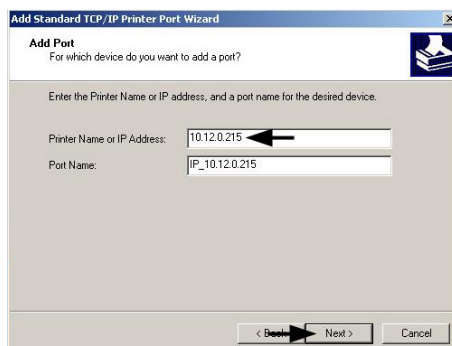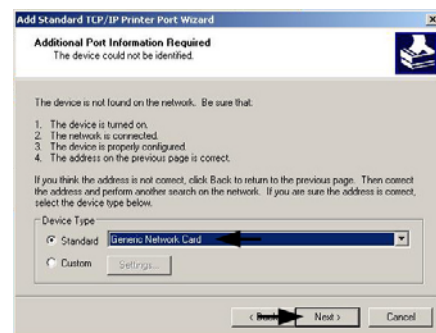
6

Click 'Next'.

7

In the 'Printer Name or IP Address:' field enter the IP address of your printer. The 'Port Name' field <u>does not</u> need to be changed. When finished click "Next'.

8

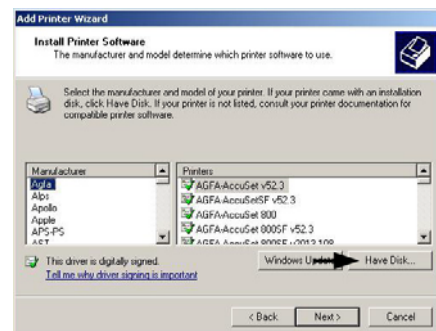Make sure 'Standard' is selected and then click 'Next'.

9

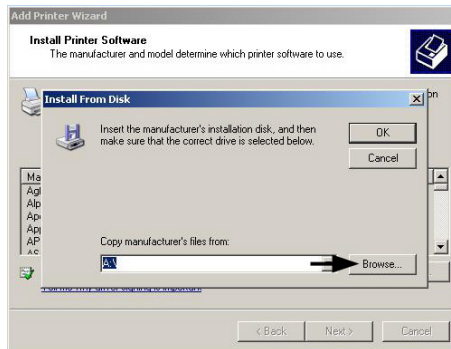Confirm your settings and then click 'Finish'.

10

Click on 'Have Disk'.
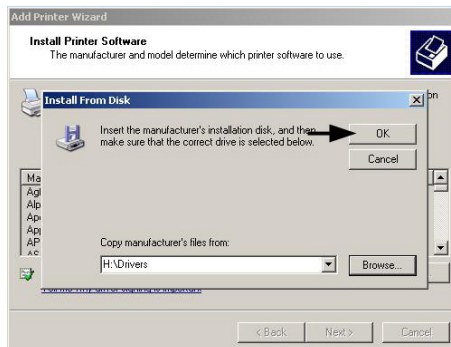
11

Click 'Browse'.

12

Browse to the "Drivers" folder on the CD-ROM, make sure the file "Datamax for 95, 98, me, 2000, and xp.inf" is selected and click 'OK'.
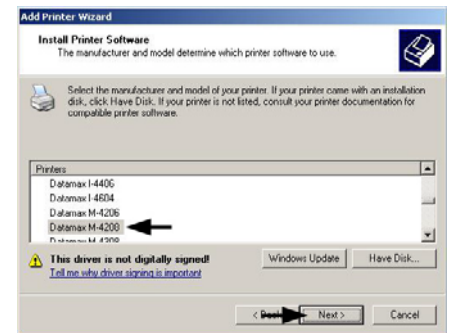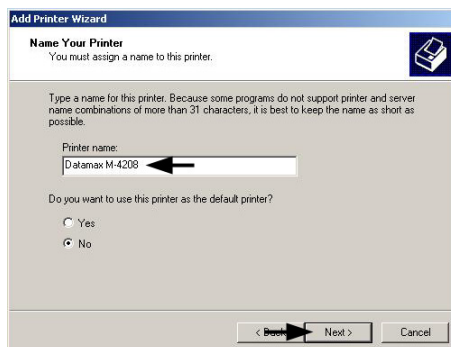
13

Click 'OK'.

14

Select the 'M-4208' printer from the list and then click 'Next'.

15

Name your printer in the 'Printer name:' field. Next select whether or not to set this printer as your default printer. Then Click 'Next'.

16

Select whether or not to share this printer on your network. Then Click 'Next'

17

Select 'No' then Click 'Next'.

18

Confirm your settings and then click 'Finish'.

19

If prompted with the "Digital Signature Not Found" window, click 'Yes' to continue installation.

20

Your computer will now copy the necessary files from the CD-ROM.

The driver and port installation is now complete. The printer can be selected through any window's application.

Appendix D

Menu System Multi-Language Support *(display-equipped printers only)*

This printer provides the user with the ability to download new menu system languages and/or replace the Datamax provided translations. A Microsoft® Excel Spreadsheet defines the menu dictionary – the user adds a new language column or modifies an existing column in the spreadsheet, clicks on the 'Generate DPL file(s)' radio button and sends the generated DPL file(s) to the printer.

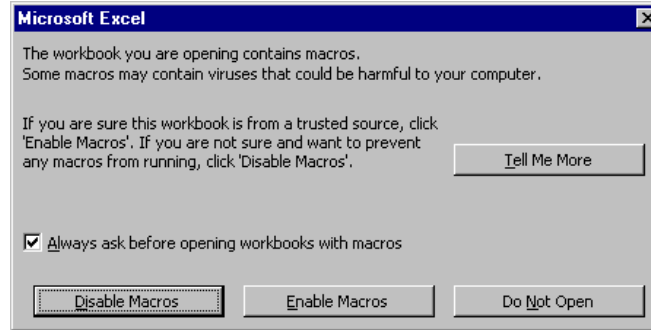Here are the highlights and restrictions of the feature:

- The printer can register up to 10 different display languages, including EFIGS.

- The EFIGS languages and any additional languages are stored on Module Y: a 64KB Flash Module located on the Main PCB.

- It is okay to download menu files generated for a lesser firmware revision to new firmware – any messages that are not defined are displayed in English.

- For the procedures below, the printer will accept the menu downloads from any available port.

- The language creation programs support Windows® 95, Windows® 98, Windows® NT, and Windows® 2000.

Required Software	*Comment*
Microsoft® Excel 97	Must be purchased by user.
Img2dl.exe**	Program used during the process to create DPL file.
Gemmsgxls.xls**	Menu Dictionary

**Datamax recommends that the Img2dl.exe and Gemmsgxls.xls files reside in the same directory.

Creating a Menu Language:

❶ Invoke Excel and open the gemmsglst.xls file. Excel opens the file and the following screen appears.


❷ Click the "Enable Macro" box and the following appears:

❸ Click On Column J and enter your new language, or modify an existing one.

   Tips:

   A) Message Size – When entering new messages, reference the 'MAX' column: this is the maximum number of characters allowed for this field. Warnings are displayed when the number of characters is exceeded or when trying to modify the MAX value. Beware that "cutting" and "pasting" fields could defeat this warning system.

   B) Two Line Messages – Some of the message are displayed as two lines. These are indicated in the comment fields.

   C) Comments – This field can be modified with no effect.
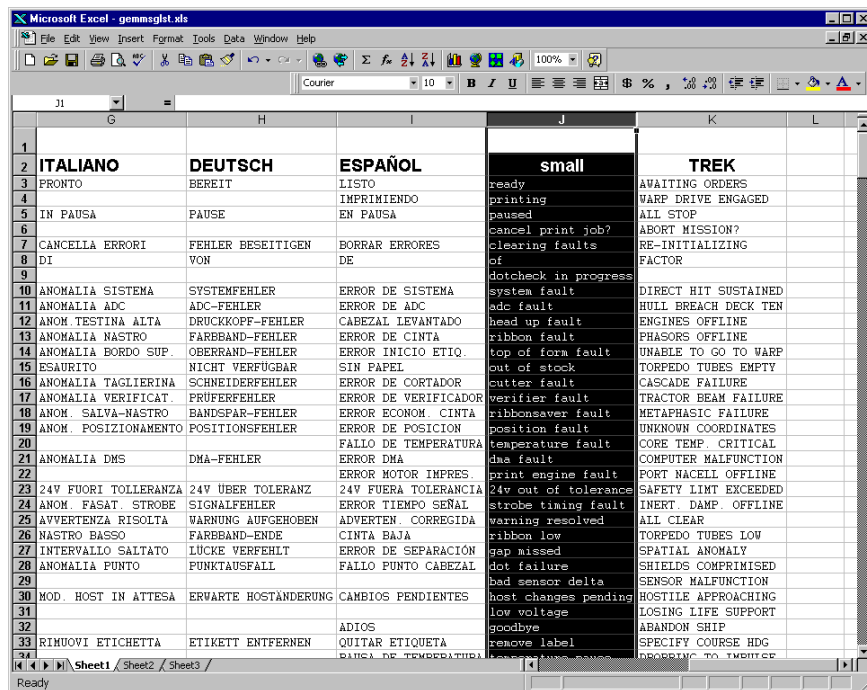
❹ When editing has been completed, highlight all of the columns you desire to create (more than one language may be selected) by pressing the letter above the column.

❺ Press the Generate DPL File(s) radio button. selected columns and Excel will provide A file will be generated for each of the confirmation. (Example: small.ls)

➏ Download the generated files to the printer – one method is the DOS copy command:

```
copy small.ls lpt1: /b
```

➐ Reset the printer by pressing and holding the CANCEL Key for approximately four seconds.

➑ Verify the operation by printing a Configuration Label (see Section 5.3.2) The new font selection will be printed on the label under SYSTEM INFORMATION / OPTIONAL LANGUAGES or select the new language in the SYSTEM SETTINGS / MENU LANGUAGE in the printer's menu.

This is the only method to determine whether the download was successful. If the menu system displays the new language selection, but all displayed messages remain in English an error has occurred. Re-check the process. Contact Datamax Technical Support if problems continue (be prepared to provide the Gemmsglst.xls and the DPL download file that you have created). Other possible error messages are as follows:

Menu Language Error Message	Description
Please select the entire column(s) or the desired language(s), by clicking on the column letter(s)	After pressing the Generate DPL File(s) radio button, the languages to convert were not correctly selected.
Message text may not exceed MAX = xx designated characters for this MID	The entered message exceeds the number of characters specified in column C. You may not modify this number.

Advanced File Handling Information

- The Standard Datamax Printer leaves the factory with EFIGS loaded into module Y. At this point, Module Y is LOCKED and will only accept additional Language Downloads.

- After downloading a language update, Module Y is left UNLOCKED until the printer is reset or power is cycled. In this state, Module Y will accept font, image and label format downloads. The module will also honor the Clear Module request. Therefore, following an update it is recommended that a reset be performed to lock the module; otherwise, a software package may 'Clear All Modules' thus destroying the new menu language(s).

- Module Y can be UNLOCKED by sending this DPL string: <STX>KpY0.

- To restore the factory generated EFIGS image, download the file 832296.08A to the printer. This file is located on the Datamax FTP site. The letter at the end of the file name (e.g., A) specifies the revision. The latest revision will be available on the FTP site.

- Downloading the same language twice will automatically delete the first occurrence, but will not free the memory space. Use the Pack Module feature (see Section 5.1.4) or reload the FIGS file to free the space.

- Deletion of the selected language will set the printer to English.

- The total number of languages that the printer can now accept is limited to 10, but this number is dependent upon the size of each language translation. The translation size will vary with the number of messages that are translated for that particular language. Current complete language files are about 7,000 bytes each but with product growth, the total number of languages is expected to drop to seven.

Appendix E

Saving a Configuration File *(display-equipped printers only)*

The printer can save and restore complete printer settings, including media calibration parameters, as internal Configuration Files. Here are the highlights and restrictions of this feature:

- Configuration files eliminate the need to repeat the manual steps of a special printer setup, making future changeovers faster and easier.

- Configuration files can be setup, saved, and restored either from the host or via the front panel as 'C-type' files on Module Y under unique filenames that can be up to nineteen characters in length.

- Configuration files enable the host, via special DPL commands, to control parameters previously accessible only from the front panel (consult the *Class Series Programmers Manual* for details).

- Regular host settings can not be saved using the front panel menu.

☑ **Note:** *Configuration files will typically correspond to a particular printer and media application. If a file will be shared among printers, do NOT include unique parameters (such as calibrations and adjustments) because those settings will vary from one unit to another.*

When using the front panel to save a configuration file the keypad functions within the 'Save Setting As' submenu are as follows:
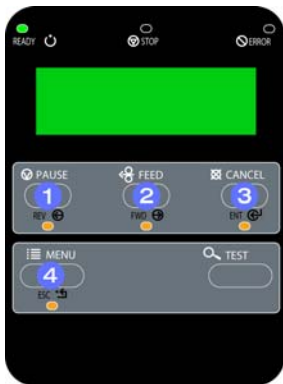
❶ REV ⇐

The DOWN ARROW Key scrolls down through the alphanumeric, underscore, and delete character.

❷ FWD ⇒

The UP ARROW Key scrolls up through the alphanumeric and underscore characters, and the delete function.
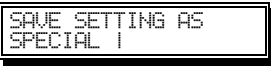
❸ ENT ⏎

The ENTER Key accepts the displayed character and advances the cursor.

❹ ESC ⏎

Saves the displayed file.

To save a manually entered setup (for example, an application that required an Advanced Entry Calibration before beginning) as a configuration file using the front panel:

Step	Displayed Message	Operator Action	Comment(s)
1	READY	Press the ☰ MENU Key.	You are entering 'Menu Mode'.
2	MENU MODE MEDIA SETTING	Use the FWD➔ Key to scroll to 'System Settings'.	The REV⬅ Key can also be used.
3	MENU MODE SYSTEM SETTINGS	Press the ENT⏎ Key to select 'System Settings'.	You are entering the 'System Settings' menu.
4	SYSTEM SETTINGS CONFIGURATION FILE	Press the ENT⏎ Key to select 'Configuration File'.	You are entering the 'Configuration File' submenu.
5	CONFIGURATION FILE RESTORE AS CURRENT	Press the FWD➔ Key to scroll to 'Save Setting As'.	The REV⬅ Key can also be used.
6	CONFIGURATION FILE SAVE SETTING AS	Press the ENT⏎ Key.	Press the ESC•⬑ Key to exit this selection.
7	SAVE SETTING AS |	Enter a file name using the REV⬅ Key to scroll through the characters.	The FWD➔ Key can also be used.
	☑ Note: To change an accepted character, select the delete function (solid flashing block) and press the ENTER Key.		
8	SAVE SETTING AS SPECIAL |	Use the ENT⏎ Key to accept the character.	Continue entering the file name in this manner ("SPECIAL STOCK" has been used as an example).
	☑ Note: To abort the "save setting" function, delete all entered characters in the file name and press the ESCAPE Key.		
9	SPECIAL STOCK SUCCESSFUL	Press the ESC•⬑ Key repeatedly to save the file name and return to 'Ready'.	Save complete. (To restore a saved file using the front panel see Section 5.1.5.)

Appendix F

GPIO Port Description

The printer can easily be programmed to interface with most applicator devices. The GPIO functions can be enabled and configured via the menu system of the printer (for non-display printers, see Section 4; or for display-equipped printers, see Section 5). Configured parameters are stored in non-volatile memory and saved for subsequent power-ups.

Printing with GPIO: When the GPIO functions are enabled, the printer will not print a label until the "Start of Print" signal goes active.

> ☑ *Note:* *When a label is ready to print but awaiting a Start of Print signal, the prompting operation differs slightly depending upon equipment:*
>
> *Non-Display Models – The STOP LED will flash.*
>
> *Display-Equipped Models – The display will indicate "WAITING FOR SIGNAL."*

GPIO Port Configuration

The connection to the GPIO signals can be accessed via the Option Port connector (an 8-pin Molex Microfit 3, P/N 44300-800) on the front of the printer, or via the J6 connector (an AMP, P/N 640456-8) on the Main PCB. The pin-outs for the respective connectors (as viewed when facing the printer) are as follows:

Option Port Connector	**Main PCB – Connector J6**
8 6 4 2 / 7 5 3 1	1 2 3 4 5 6 7 8

Each GPIO pin function is detailed in the table below:

M-Class GPIO Port Connections and Functions				
Pin Number(s)	**Signal Name**	**Signal State**	**Signal Direction**[1]	**Signal Description** [2]
1	Vcc	+5 VDC 2.5 Amp (fused)	Output	Printer +5 VDC
2	Printer Fault	Low	Output	Goes low upon printer detection of a fault condition.
3	Spare	Reserved	Input	Must be pulled high (see sample SOP circuit, below).
4	Start of Print (SOP)	Programmable	Input	When active, will begin print. Recommend only setting this signal to ACTIVE LOW. When ready to print a label, the applicator should hold this signal low for at least 50ms – or until EOP goes not active. See sample SOP circuit, below.
5	End of Print (EOP)	Programmable	Output	Signifies the end of the print process. Can be monitored to initiate next Start of Print sequence. Minimum signal time 30ms.
6 & 8	Signal Ground	Ground	N/A	Ground
7	+24 VDC	1.6 Amp (fused)	Output	Printer +24 VDC

[1] Given relative to the printer.

[2] The operation of this multi-function port is configuration dependent. For GPIO operation, disable all optional functions not used (i.e., Present Sensor and Cutter) and set GPIO to "YES" (or on display-equipped models set GPIO Device to "APPLICATOR"). Use the Configuration Set command (<STX>Kc), or program the selections on non-display models via the "Printer Setup Menu List" or on display-equipped models via the "Menu System."

M-Class Sample SOP Circuit
Pin 3 should be pulled to +5VDC. In additional, connections for the external Start of Print control can either be directly made to Pin 4 of the Option Port (or Main PCB connector) using a TTL-level input, or via an interface circuit (similar to the one shown). For more information, see the table below.
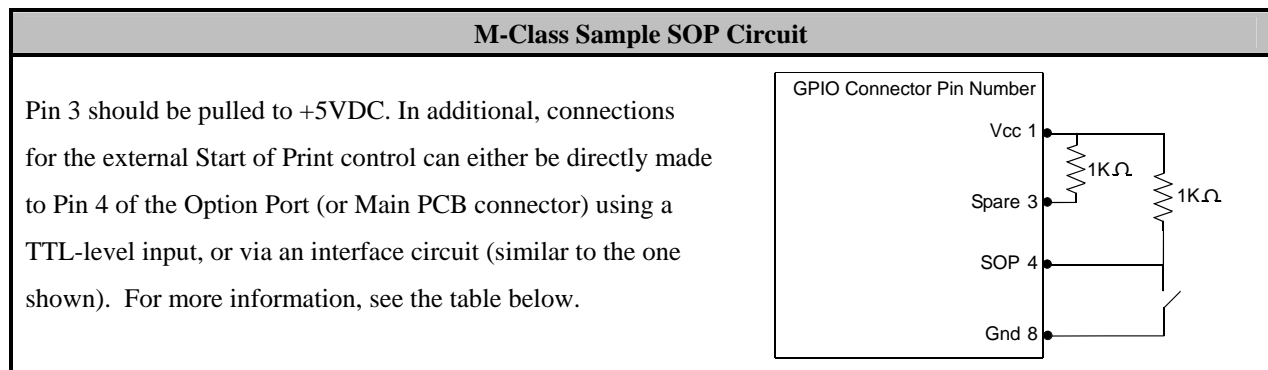
GPIO Port Specifications	
V_{in} max	5.5 VDC maximum input into any pin
V_{IH}	3.8 VDC minimum (high level input voltage)
V_{IL}	1.65 VDC maximum (low level input voltage)
I_{OH}	-8 mA typical, - 25 mA maximum (high level output current)
I_{OL}	8 mA typical 25 mA maximum (low level output current)
V_{OH}	I_{OH} = -8 mA, minimum 3.8 VDC
V_{OL}	I_{OL} = 8 mA, maximum .44 VDC

Warranty

Datamax Barcode Products
Limited Warranty Statement

M-Class™ Printer

Printer

Datamax warrants to Purchaser that under normal use and service, the M-Class™ Printer, (with the exception of the thermal printhead) purchased hereunder shall be free from defects in material and workmanship for a period of (365) days from the date of shipment by Datamax.

Expendable and/or consumable items or parts such as lamps, fuses, labels and ribbons are not covered under this warranty. This warranty does not cover equipment or parts which have been misused, altered, neglected, handled carelessly, or used for purposes other than those for which they were manufactured. This warranty also does not cover loss, damages resulting from accident, or damages resulting from unauthorized service.

Thermal Printhead

This warranty is limited to a period of one year, (365 days), or 1,000,000 linear inches of use, whichever comes first, for the M-Class™ thermal printhead. This one year (365 days) warranty is valid only if a Datamax - approved thermal label media is used, as defined in the then current Datamax list of approved thermal/thermal transfer media, a copy of which is available from Datamax. Failure to use Datamax-approved media is justification for invalidation of this thermal printhead warranty. This warranty does not cover printheads which have been misused, altered, neglected, handled carelessly, or damaged due to improper cleaning or unauthorized repairs.

Warranty Service Procedures

If a defect should occur during the warranty period, the defective unit shall be returned, freight and insurance prepaid, in the original shipping containers, to Datamax at: 4501 Parkway Commerce Blvd., Orlando, Florida, 32808. A Return Material Authorization (RMA) number must be issued before the product can be returned. To open an RMA please call the Datamax Customer Service Department at (407) 523-5550. Please include your RMA number on the outside of the box and on the shipping document. Include a contact name, action desired, a detailed description of the problem(s), and examples when possible with the defective unit. Datamax shall not be responsible for any loss or damages incurred in shipping. Any warranty work to be performed by Datamax shall be subject to Datamax's confirmation that such product meets Datamax warranty. In the event of a defect covered by its warranty, Datamax will return the repaired or replaced product to the Purchaser at Datamax's cost.

With respect to a defect in hardware covered by the warranty, the warranty shall continue in effect until the end of the original warranty period, or for sixty (60) days after the repair or replacement, whichever is later.

General Warranty Provisions

Datamax makes no warranty as to the design, capability, capacity or suitability of any of its hardware, supplies, or software.

Software is licensed on an "as is" basis without warranty. Except and to the extent expressly provided in this warranty and in lieu of all other warranties, there are no warranties, expressed or implied, including, but not limited to, any warranties of merchantability or fitness for a particular purpose.

Purchaser shall be solely responsible for the selection, use, efficiency and suitability of Datamax's products.

Limitation of Liability

In no event shall Datamax be liable to the purchaser for any indirect, special or consequential damages or lost profits arising out of or relating to Datamax's products, or the performance or a breach thereof, even if Datamax has been advised of the possibility thereof. Datamax's liability, if any, to the purchaser or to the customer of the purchaser hereunder shall in no event exceed the total amounts paid to Datamax hereunder by the purchaser for a defective product.

In no event shall Datamax be liable to the purchaser for any damages resulting from or related to any failure or delay of Datamax in the delivery or installation of the computer hardware, supplies or software or in the performance of any services.

Some states do not permit the exclusion of incidental or consequential damages, and in those states the foregoing limitations may not apply. The warranties here give you specific legal rights, and you may have other legal rights which vary from state to state.

Glossary

alphanumeric Consisting of alphabetic, numeric, punctuation and other symbols.

backing material The silicon-coated paper carrier material to which labels with adhesive backing are affixed. Also referred to as "liner".

bar code A representation of alphanumeric information in a pattern of machine-readable marks. The basic categories are divided into one-dimensional (UPC, Code 39, Postnet, etc.) and two-dimensional barcodes (DataMatrix, MaxiCode, PDF417, etc.).

burn line The row of thermal elements in the printhead that create the images on the media.

calibration The process through which sensor readings are entered into the printer for correct sensor function (for example, detection of a given media type) and TOF positioning.

character set The entire complement of alphanumeric symbols contained in a given font.

checksum An alphanumeric error detection method used in many bar code symbologies for informational security.

continuous media An uninterrupted roll or box of label or tag media that contains no gap, notch, or mark to separate individual labels or tags.

core diameter The inside diameter measurement of the cardboard core at the center of a ribbon or media roll.

cutter A mechanical device with a rotary or guillotine type blade used to cut labels or tags following printing.

defaults The functional setting values returned following a factory reset of the printer.

diagnostics Programs used to locate and diagnose hardware problems.

die-cut media Media that has been cut into a pattern using a press, where the excess paper is removed leaving individual labels, with gaps between them, attached to a backing material.

direct thermal The printing method that uses a heat sensitive media and only the heat of the thermal printhead to create an image on the label.

direct thermal media Media coated with special chemicals that react and darken with the application of heat.

DPI (dots per inch) A measurement of print resolution, rated in the number of thermal elements contained in one inch of the printhead. Also referred to as "resolution".

DPL (Datamax Programming Language) programming commands used specifically for control of and label production in Datamax printers. A complete listing of commands can be found in the *Programmer's Manual.*

fan-fold Media that is folded and stacked.

feed speed The speed at which the media moves under the printhead in non-printed areas and between labels.

Flash memory Non-volatile memory (does not require printer power to maintain data) that can be erased and reprogrammed, used to hold the printer's operating programs.

font A set of alphanumeric characters that share a particular typeface.

gap A space between die-cut or notched labels used to sense the top of form.

IPS (inches per second) Imperial measurement of printer speeds.

label A paper or synthetic printing material, typically with a pressure sensitive adhesive backing.

label length The distance from the top of the label to the bottom of the label as it exits the printer.

label repeat The distance from the top of one label to the top of the next label.

label tracking Excessive lateral (side to side) movement of the media as it travels under the printhead.

label width The left to right measurement of the label as it exits the printer.

mark Generalized term to indicate the label top of form light.

media Generalized term for all types of printing stocks, including: roll fed, continuous, die-cut, reflective, and fanfold.

media hub Device in the printer used to support roll media.

media sensor An electronic device equipped with photosensors to detect media and the top of form on die-cut, notched or reflective media.

notched stock Media, typically tag stock, with holes or notches in the material that is used to signal the top of form. The printer must be set to 'gap' to use this media type.

preprinted media Label stock that contains borders, text, or graphics, floodcoating, etc.

perforation Small cuts extending through the backing and/or label material to facilitate their separation. Also referred to as "perf".

print speed The speed at which the media moves under the printhead during the printing process.

reflective media Media imprinted with carbon-based black marks on the underside of the material, which is used to signal the top of form when the 'reflective' sensor is enabled.

registration Repeatable top to bottom alignment of printed labels.

reverse speed The backward rate of media motion into the printer during tear-off, peel and present and cutting operations for positioning the label at the start of print position.

ribbon An extruded polyester tape with several layers of material, one of which is ink-like, used to produce an image on the label. Also referred to as "foil".

ribbon wrinkle An undesirable overlapping of the ribbon during the printing process that leads to voids on the printed label, typically caused by an improper ribbon width adjustment.

roll media A form of media that is wound upon a cardboard core.

start of print The position on the label where the printing actually begins.

tag stock A heavy paper or synthetic printing material, typically featuring a notch or black mark for TOF and no adhesive backing.

thermal transfer The printing method that creates an image by transferring ink from a ribbon onto the media using the heat from the thermal printhead.

TOF (top of form) The start of a new label as indicated by a label gap, notch, mark or programming.

void An undesirable blank space in a printed image.