

I-Class™

Operator's Manual ■ ■ ■



right by our customers. ■ ■ ■



datamax·oneil

Important Safety Instructions

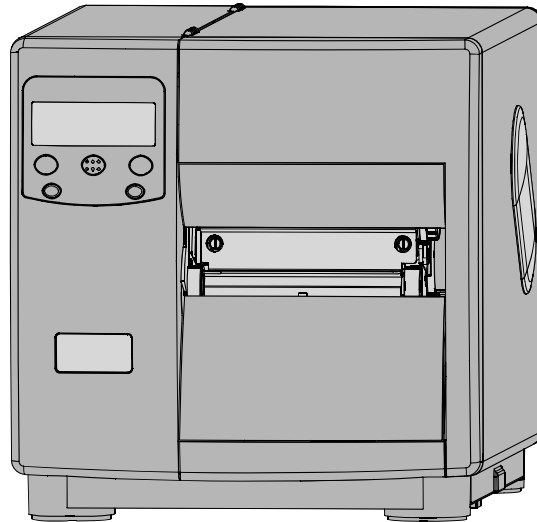


The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance instructions in the literature accompanying this unit.

This unit has been carefully designed to provide years of safe, reliable performance. As with all electrical equipment, however, there are some basic precautions that you should follow to avoid personal injury or [printer](#) damage:

- Before using the printer, carefully read all the installation and operating instructions.
- Observe all warning instruction labels on the printer.
- Install the printer on a flat, firm surface.
- Do not place the printer on or near a heat source.
- To protect your printer from overheating, make sure no openings on the printer are blocked.
- Never insert anything into the ventilation slots and openings of the printer.
- Do not use the printer near water or spill liquid into it.
- Ensure that the AC power source matches the ratings listed for the printer. (If unsure, check with your dealer or local utility provider.)
- Do not walk on the AC power cord. If the AC power cord becomes damaged or frayed, replace it immediately.
- If the printer ever needs repair, consult only qualified, trained service personnel. No user-serviceable parts are inside; do not remove the cover.

1 *Overview*



1.1 *About the Printer*

Congratulations on your purchase of an I-Class printer (hereafter referred to as “the printer”). This manual provides information regarding printer setup, operation, and care.

To print label formats, refer to the instructions provided with your labeling software; or if you wish to write custom programs, a copy of the *Class Series 2 Programmer's Manual* can be found on the Accessories CD.

As detailed below, each model offers many standard and optional features to meet all your label generation needs.

1.1.1 *Standard Features*

The model number, located on the back of the unit, defines many of the printer's standard features:

Standard Features						
Feature	I-Class Model					
	4206	4208	4212	4308	4406	4604
Direct Thermal Printing	X	X	X	X	X	X
Fan-Fold Media Handling	X	X	X	X	X	X
Flash Memory	1MB	1MB	2MB	2MB	2MB	2MB
Liquid Crystal Display	X	X	X	X	X	X
Media Tear Bar	X	X	X	X	X	X
Multi-Language Support	X	X	X	X	X	X
On-Demand and Batch Printing	X	X	X	X	X	X
Resolution (Dots Per Inch)	203	203	203	300	406	600
Rotating Media Hub	X	X	X	X	X	X
SDRAM	8MB	8MB	16MB	16MB	16MB	16MB
Scalable Font Engine	X	X	X	X	X	X
Serial & Parallel Ports	X	X	X	X	X	X

1.1.2 *Optional Features* (available except as noted)

The following optional features are offered for the printer:

Cutter, Light Duty

A rotary mechanism that cuts material with a maximum thickness of .005 inches (.127 mm) in lengths as small as 1.25 inches (31.8 mm). An adjustable collection tray (200 label capacity) can also be added.

Cutter, Standard Duty

A rotary mechanism that cuts material with a maximum thickness of .010 inches (.254 mm) in lengths as small as 1.25 inches (31.8 mm). An adjustable collection tray (200 label capacity) can also be added.

DMXNetII and DMXrfNetII

An internal wired or wireless Network Interface Controller for Ethernet connectivity with multiple operating system and protocol support, including trap functions.

External Keyboard (specify voltage & country requirement when ordering)

A portable terminal for stand-alone printing.

External Media Rewinder (specify voltage requirement when ordering)

A feature-dependant bidirectional label rewinding device:

- DMXREW1 – rewinds widths up to 4.5 inches (114 mm) into eight-inch (203 mm) outer diameter rolls on one to four inch (25 to 101 mm) diameter cores at up to ten inches per second.
- DMXREW2 – rewinds widths up to 9.5 inches (241 mm) into twelve-inch (304 mm) outer diameter rolls on a three-inch (76 mm) diameter core at up to thirty inches per second.

GPI/O Multi-Expansion Card

A slide-in multi-feature circuit card:

- Flash Memory Expansion – stores up to 8 MB of label formats, fonts, and graphics.
- Real Time Clock – keeps the time and date for labeling functions.
- GPIO Port – controls print functions via an external device (e.g., a label applicator).
- ILPC Fonts (optional) – extends printing capabilities with CG-Times, Kanji Gothic B, Simplified Chinese GB, Korean Hangul scalable fonts.
- MCL Serial Port (optional) – allows use with MCL application programs and firmware.

Internal Rewinder

An internal device capable of rewinding six-inch (152 mm) outer diameter rolls of labels or backing material.

Linear Scanner (unavailable for I-4206; cannot be used with a cutter option)

A CCD device that ensures the readability of bar codes.

Peel and Present Mechanism (requires the Internal Rewinder option)

A device that peels labels from the backing material for immediate application, regulated by previous label removal [minimum label length is 1.5 inches (38 mm)].

Present Sensor

A device that regulates output to the removal of a previously printed label.

RFID

An integrated Radio Frequency Identification tag encoding and reading device with data capture capabilities, available for immediate or future use:

- Factory Installed – complete, ready to use.
- Ready – factory installed antenna, requiring installation of additional hardware.

RS-422 Serial Interface (unavailable for I-4206 and I-4208 models)

Single-drop interface hardware for greater printer to host serial communication distances (at up to 38,400 baud).

Thermal Transfer (specify ribbon configuration at time of order)

A device that allows the use of ribbon to produce exceptional image clarity (as compared to most direct thermal media).

Twinax/Coax Interface

A slide-in circuit card that provides connectivity to AS/400 and System/3X Twinax host systems or 3270-type host systems (cabling included).

USB Port

A slide-in circuit card that provides a Universal Serial Bus (Version 1.1) interface for Windows printing environments.

Option Installation

Experience levels for option installations are detailed below. (Contact your dealer or Datamax-O'Neil Technical Support for more information.)

Option Installations	
Option	Recommended Installer
Cutters / Trays – Light or Standard Duty	Operator
DMXNetII or DMXrfNetII	DMX Certified Technician
External Keyboard	Operator
External Media Rewinder	Operator
GPI/O Multi-Expansion Card	DMX Certified Technician
Internal Rewinder	Operator
Linear Scanner	DMX Certified Technician

Option Installations <i>(continued)</i>	
Option	Recommended Installer
Peel and Present Mechanism	Operator
Present Sensor	Operator
RFID-Ready	DMX Certified Technician
RS-422 Serial Interface	DMX Certified Technician
Thermal Transfer	Operator
Twinax/Coax Interface	DMX Certified Technician
USB Port	DMX Certified Technician

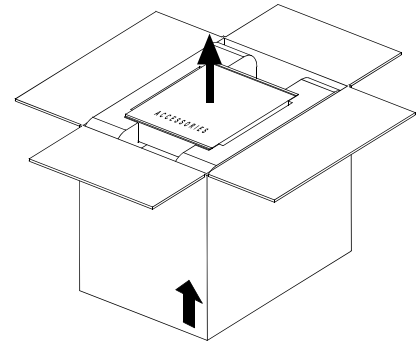
2 Getting Started

2.1 Unpacking the Printer

The printer has been carefully packaged to prevent transit damage. (Inspect the container for damage; if evident, notify the shipping company before acceptance.)

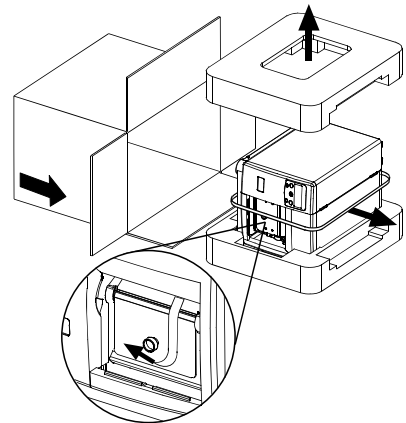
Complete the steps below to ready the printer for use:

A. With the arrow pointing upward, open the box.



B. Remove Accessories Box.

C. Tilt the box sideways and then slide out the printer.



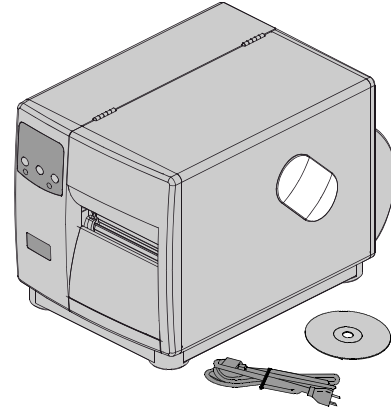
D. Place the printer in an upright position and remove the packing foam, bag, and tape.

Note: Save the carton and packaging materials for future use.

2.1.1 Inspection

After removing the packaging, check the contents of the shipment. The following items should be included:

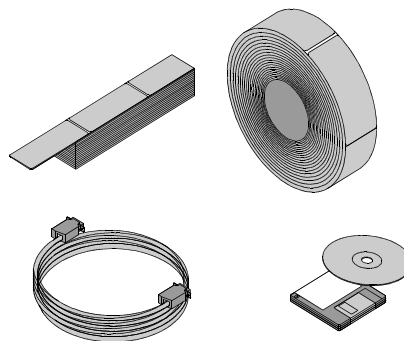
- Printer
- Power Cord
- Accessories CD
- Any special or additionally purchased items.



2.1.2 Additional Requirements

Other items can also be needed for operation:

- An interface cable; see Section 3.1.1.
- Applicable media; see Section 7.3.
- Applicable software; consult the Accessories CD-ROM and see Appendix E for details, or refer to your dealer or Datamax-O'Neil for information.

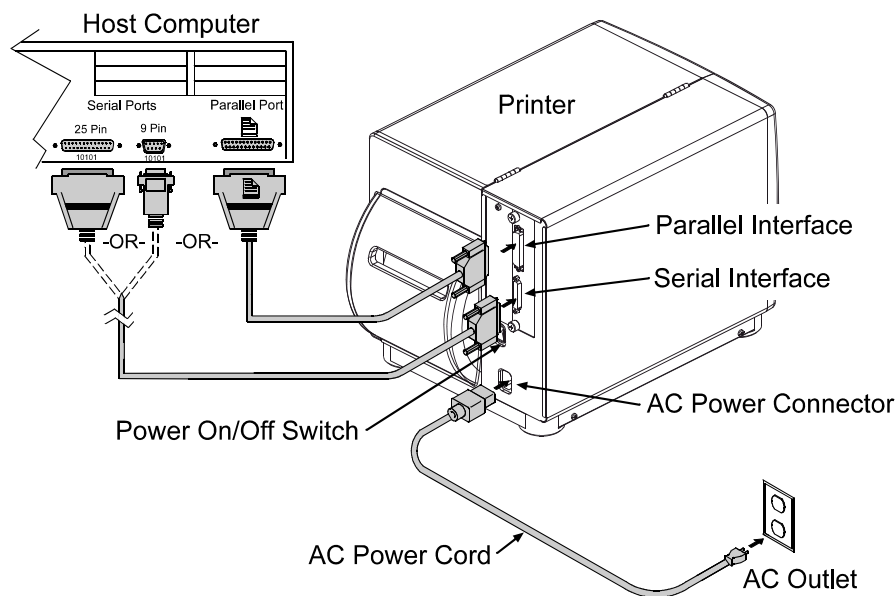


3 Setting up the Printer

3.1 Installation

Interface and connect power to the printer:

- A. Place the printer on a firm, level surface.
- B. Turn OFF the Host Computer then, depending upon your system, connect an appropriate interface cable from the host to the printer; see Section 3.1.1.
- C. Turn ON the Host Computer.
- D. Ensure that the printer's Power On/Off Switch is in the OFF position. Connect the AC Power Cord to the AC Power Connector, and then plug the AC Power Cord into a properly grounded AC Outlet.



Note: When interfacing, ensure AC power has been turned OFF, and always apply power to the Host before the Printer.

3.1.1 Communications

Following power-up (or after a period of inactivity), interface port selection occurs automatically upon detection of valid data. If the incoming (received) data flow stops and the Host Timeout Value (see Section 4.2.6) is exceeded, partially received formats will be ignored and the port detection process repeated.

Notes: 1) To change an active port immediately, cycle the power OFF and ON.
2) For alternate data processing options, see SYSTEM SETTINGS / INPUT MODE - Section 4.2.5.

DMXNetII Network Interface Card / DMXrfNetII Wireless Network Interface Card

The optional network interface has several menu-selectable modes; see Section 4.2.6 or refer to the manual provided with the option.

Parallel Port

The parallel interface has two menu-selectable modes of operation:

- Unidirectional mode is forward channel communication and requires a Centronics cable with a 36 pin male connector.
- Bidirectional mode is IEEE 1284 Compliant, using forward and reverse channel communications and requires an IEEE 1284 cable with a Centronics 36 pin male connector.

Serial Port

The serial interface supports RS-232C, and if equipped optional RS-422 communications. The serial interface has menu-selectable settings that must match the host computer's settings; see Section 4.2.6. In addition to the port settings, **serial cable wiring must have specific pin connections for proper data flow**; see Section 7.3.

USB Interface Card

The optional USB Port is plug and play interface, operating transparently and without menu-selectable settings or modes.

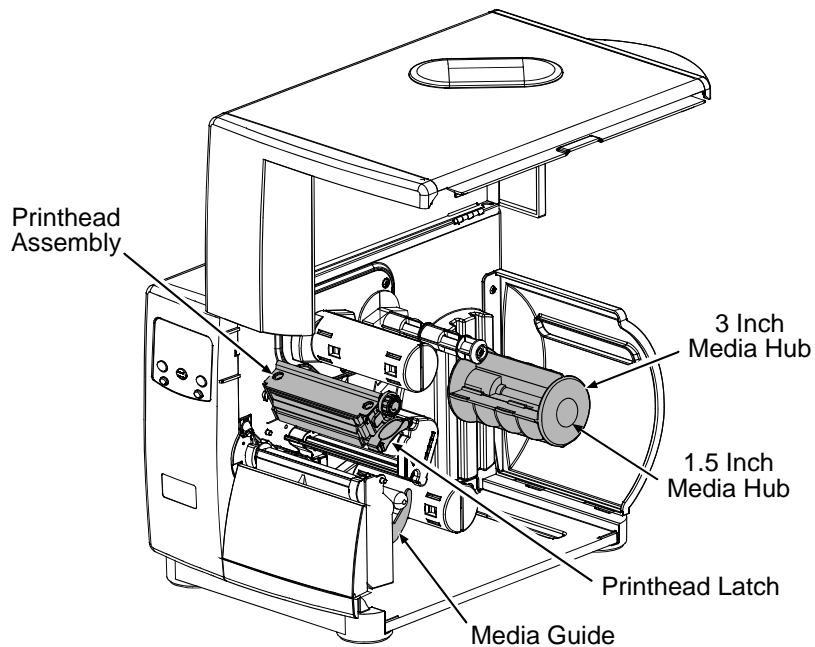


The USB Port is a device-end only connection. Never connect a keyboard, mouse, modem, etc. to this port; damage can result.

3.2 Media Loading

Load media according to its type:

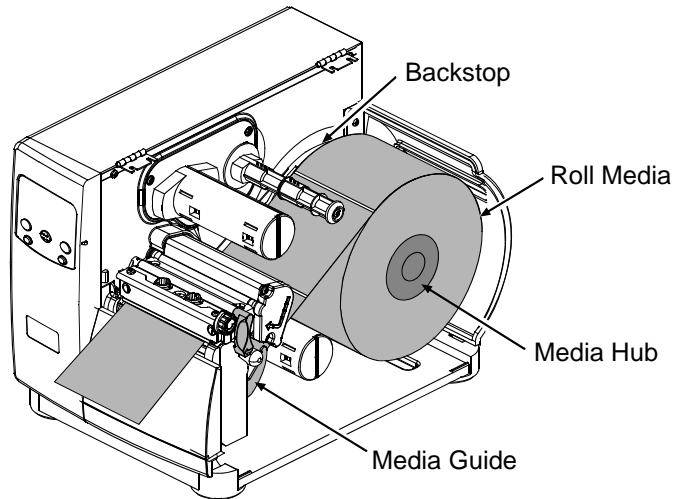
- A. Raise the cover.
- B. Rotate the Printhead Latch then raise the Printhead Assembly.
- C. Slide the Media Guide outward and then rotate it downward.
- D. If using roll media on a 1.5-inch (38mm) core, grasp then pull firmly outward to remove the 3-Inch Media Hub; otherwise, go to Step E.



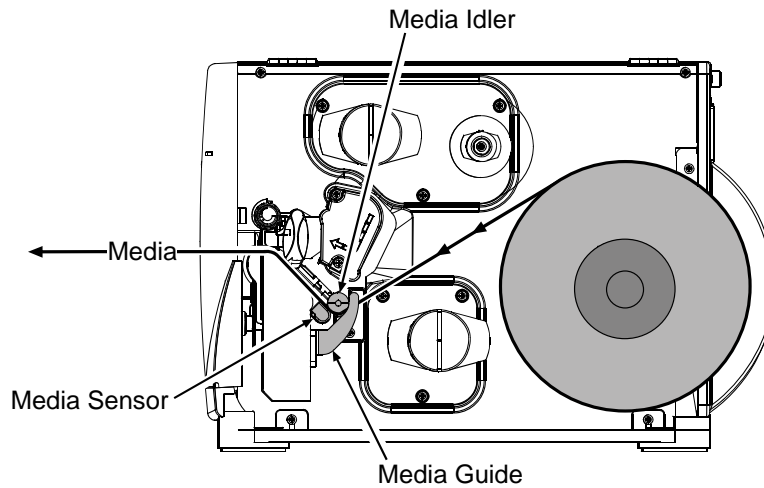
- E. Proceed according to the media type:
 - For Roll Media, see Section 3.2.1; or,
 - For Fan-Fold Media, see Section 3.2.2.

3.2.1 Loading Roll Media

- A. Slide the Roll Media onto the Media Hub until it reaches the Backstop.

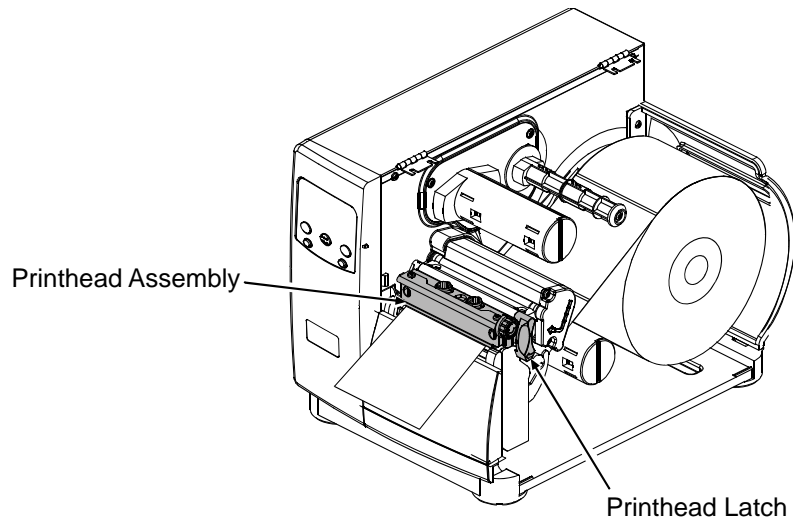


- B. Route the Media under the Media Idler, through the Media Sensor, and then straight out the front of printer.



- C. Raise then slide the Media Guide over so that it rests lightly against the edge of the media.
- D. Position the Media Sensor; see Section 3.3.

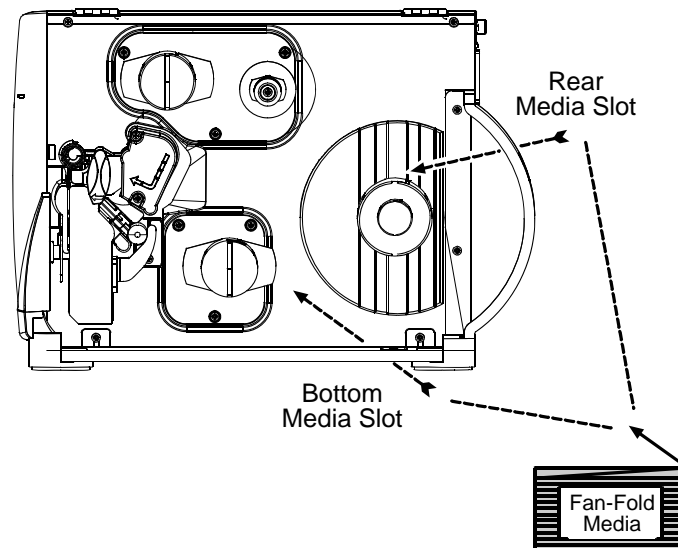
- E. If using thermal transfer media, load ribbon (see Section 3.4); otherwise, go to Step F.
- F. Lower the Printhead Assembly and rotate the Printhead Latch into the locked position. Close the cover then turn ON the printer. After READY is displayed, press and hold the FEED Key until at least one label gap (or mark) is advanced; see Section 3.5.



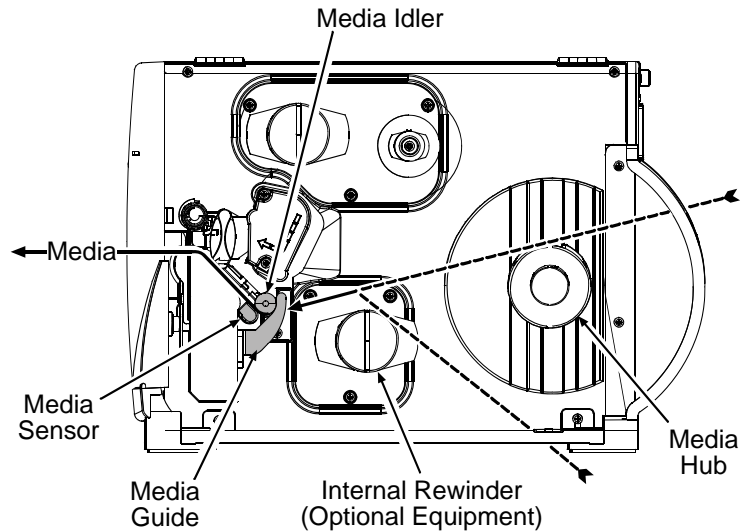
Note: Adjust the Leveling Cam if using narrow media; see Section 5.4.1.

3.2.2 Loading Fan-Fold Media

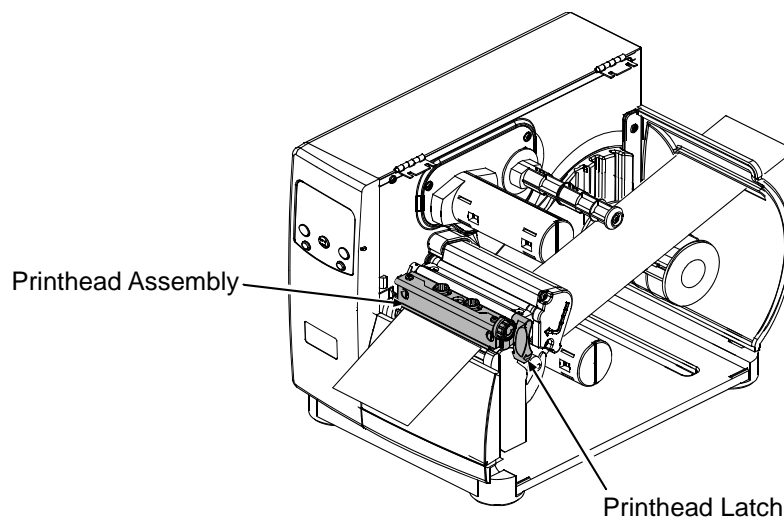
- A. With the Fan Fold Media source aligned to the Bottom or the Rear Media Slot, insert the media. (If using reflective media, be sure that the black mark is facedown.)



- B. Route the Media under the Media Idler (also, if equipped over the Internal Rewinder; and, if through the Rear Media Slot, over the Media Hub).



- C. Pass the media through the Media Sensor then straight out the front of the printer.
- D. Raise then slide the Media Guide over so that it rests lightly against the edge of the media.
- E. Position the Media Sensor; see Section 3.3.
- F. If using thermal transfer media, load ribbon (see Section 3.3); otherwise, go to Step G.
- G. Lower the Printhead Assembly and rotate the Printhead Latch into the locked position. Close the cover then turn ON the printer. After READY is displayed, press and hold the FEED Key until at least one label gap (or mark) is advanced; see Section 3.5.



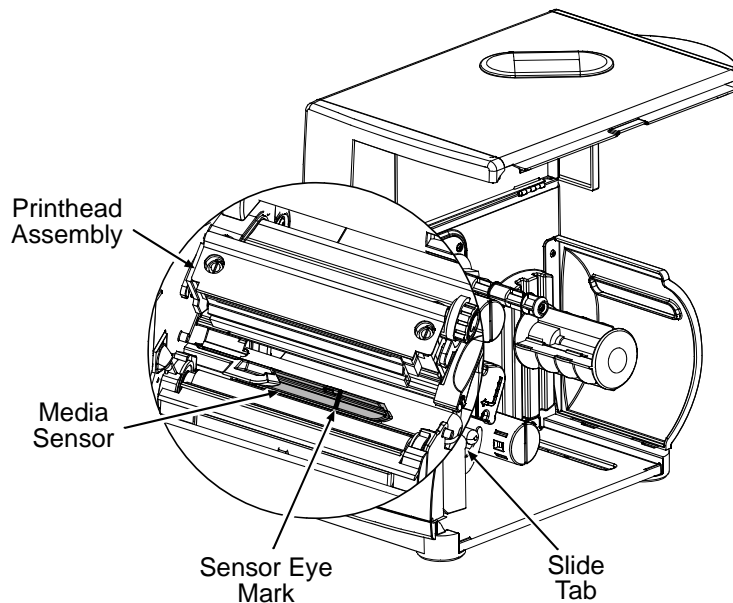
Note: Adjust the Leveling Cam if using narrow media; see Section 5.4.1.

3.3 Media Sensor Adjustment

The Media Sensor detects media presence, and top-of-form (except when using continuous stock). Adjust the Media Sensor as follows:

- A. With media loaded and the Printhead Assembly raised for visual access, grasp the Slide Tab of the Media Sensor.
- B. According to your Media Type, use the Slide Tab to position the Sensor Eye Mark as described in the table below. (Afterward, if necessary, return to the previous section to complete the setup.)

Media Type	Sensor Eye Mark Position
Die-cut	Near the middle of the label
Notched	Centered over the notch
Reflective	Centered over the black mark
Continuous	Near the middle of the media



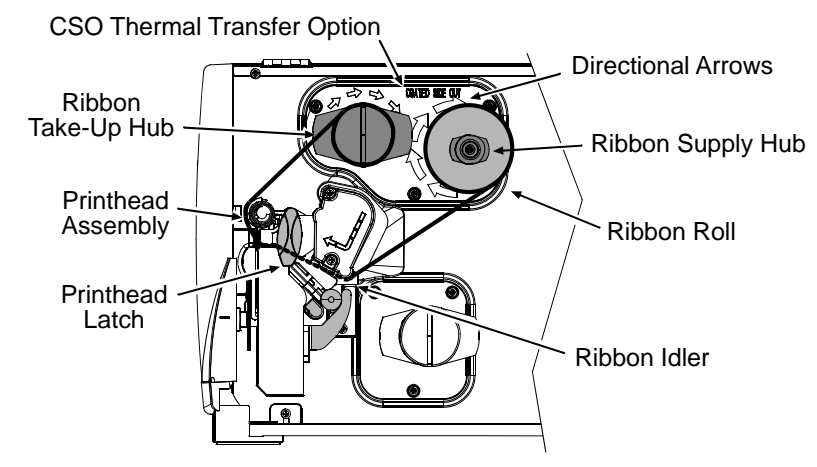
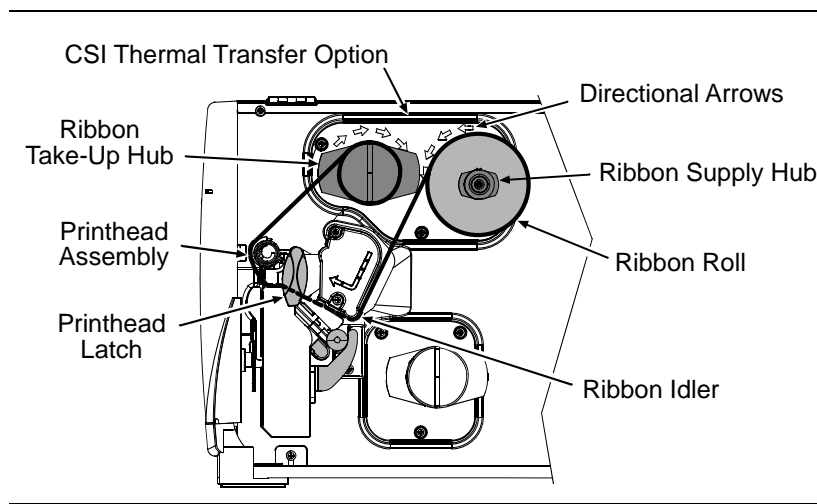
Notes: (1) For *SENSOR TYPE* selection, see Section 4.2.2 (and if using *CONTINUOUS* also set *LABEL LENGTH*).

(2) For *SOP* adjustments, see Section 4.2.3.

3.4 Ribbon Loading

The Thermal Transfer Option type determines the applicable ribbon type [Coating Side In (CSI) or Coating Side Out (CSO)]. Depending upon the option type, load ribbon as follows:

- A. Unlock the Printhead Latch and raise the Printhead Assembly. Following the Directional Arrows on the Thermal Transfer Option, orient the Ribbon Roll accordingly and then slide it completely onto the Ribbon Supply Hub.
- B. Route the ribbon under the Ribbon Idler and Printhead Assembly then up and around the Ribbon Take-Up Hub. Wind the ribbon several times (in a clockwise direction) around the Ribbon Take-Up Hub to secure it.
- C. If loading media, return to the media loading instructions; otherwise, lower the Printhead Assembly and rotate the Printhead Latch into the locked position.



Note: Coating Side In and Coating Side Out ribbons are NOT interchangeable.

Removing Used Ribbon

When the Ribbon Roll is depleted, pull the empty core from the Ribbon Supply Hub. Grasp the used roll on Ribbon Take-Up Hub then pull and squeeze to remove the spent ribbon. (To remove partially depleted rolls, cut the ribbon then remove the roll and discard any used ribbon as described above.)

3.5 Quick Calibration

The printer is calibrated to sense a wide range of media. Calibration fine-tunes these settings for your die-cut, notched, or reflective application. (Not required for continuous media.)

Perform this calibration during initial setup or after changing your media type:

- Ensure that media is loaded and that the Media Sensor is adjusted. Then, with the printer idle, press and hold the FEED Key. Allow at least one complete label to advance then release the key.

Upon successful completion, CALIBRATION COMPLETED and then READY will be displayed.

Notes:

- *If UNCALIBRATED is displayed, see Section 5.2.*
 - *If the printer displays CANNOT CALIBRATE or stops feeding mid-label, press and hold the FEED Key until two (or more) labels are advanced before releasing the key. If this method also fails, see Section 5.2.*
 - *WARNING LOW BACKING may appear if using notched media, or media with a transparent liner; however, calibration was successful.*
 - *Media containing large gaps may require a change in the PAPER OUT DISTANCE; see Section 4.2.2.*
-

4 Using the Control Panel

4.1 Operation

The Control Panel is composed of a display, indicators, and mode-dependant keys for easy access to printer functions.

4.1.1 Display and Indicator Lights

1 Liquid Crystal Display (LCD)

The LCD provides textual information:

- Following initialization, the READY message;
- The time and date;
- Label counts during batch jobs;
- When in Menu Mode, the System Menu; and,
- Displayed Messages.

2 READY

The Ready Light provides operational state information:

- ON indicates Ready Mode;
- SLOW FLASHING indicates Menu Mode; and,
- FAST FLASHING indicates data reception.

3 STOP

The Stop Light indicates a paused condition.

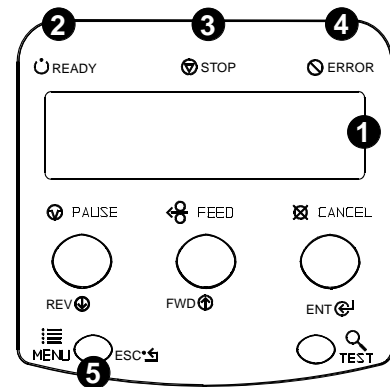
4 ERROR

The Error Light indicates the following conditions (see Section 6.1.2):

- SLOW FLASHING indicates a Warning; and,
- FAST FLASHING indicates a Fault.

5 MENU

The MENU Key, when pressed and held, adjusts the LCD Contrast.



4.1.2 Ready Mode: Normal Operation (Ready Light ON)

1 PAUSE

The PAUSE Key temporarily suspends printing, and pressing it again returns normal operation.

2 FEED

The FEED Key advances labels, and clears any corrected faults. Pressing and holding it initiates calibration; see Section 3.5.

3 CANCEL

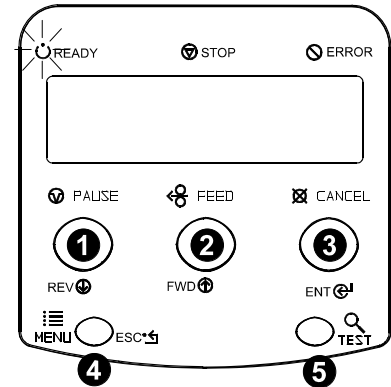
The CANCEL Key cancels the current print job and then pauses the printer. Pressing and holding it four seconds initiates a soft reset; see Section 5.3.1.

4 MENU

The MENU Key toggles the Ready and Menu Modes (and while in Ready Mode, pressing and holding it adjusts the LCD Contrast.)

5 TEST

The TEST Key enters and exits the Test Mode.



4.1.3 Menu Mode: Configuration (Ready Light "Flashing")

1 REV

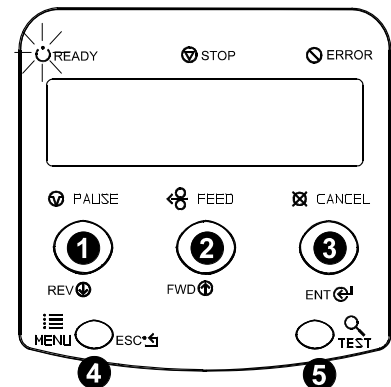
The DOWN ARROW Key scrolls to a previous menu item, and also decrements numerical values for most menu selections.

2 FWD

The UP ARROW Key scrolls to the next menu item, and also increments numerical values in most menu selections.

3 ENT

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



4 ESC

The ESCAPE Key moves through previous menu levels to Ready Mode.

5 TEST

The TEST Key terminates printing then restores Menu Mode.

4.1.4 Test Mode: Printing Test Labels

1 REV

The DOWN ARROW Key scrolls to the previous test function.

2 FWD

The UP ARROW Key scrolls to the next test function.

3 ENT

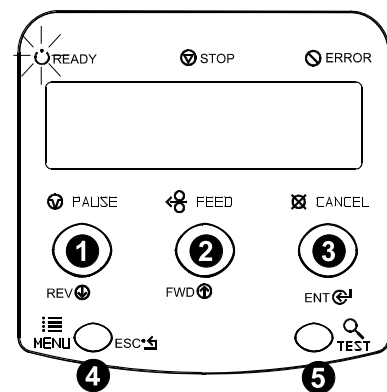
The ENTER Key changes the selected test label quantity (except the Configuration Label, always one), and holding down the key scrolls the quantities.

4 ESC

The ESCAPE Key exits the Test Mode.

5 TEST

The TEST Key prints the selected label at the selected quantity. During printing, this key also cancels the test. Pressing and holding it for four seconds initiates printhead cleaning; see Section 4.2.2.



Note: Test Mode functions are disabled while processing data from communications interfaces, and printing can be time delayed using the PRINT TEST RATE; see Section 4.2.7.

4.2 The System Menu

The MENU Key accesses seven system branches:

- MEDIA SETTINGS
- PRINT CONTROL
- PRINTER OPTIONS
- SYSTEM SETTINGS
- COMMUNICATIONS
- DIAGNOSTICS
- MCL OPTIONS

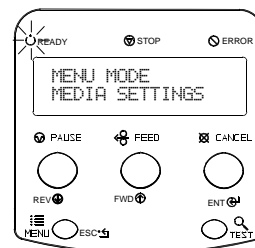
-
- Notes:**
- (1) Entering the menu takes the printer offline and halts the processing of new data.
 - (2) Selected Menu items are indicated with an asterisk (*) next to the displayed setting, while items designated with a section symbol (§) require a reset to become effective.
 - (3) Password protection can prevent accidental or unauthorized Menu System changes; see Section 4.2.5.
 - (4) The commands from your host computer may, in some cases, override the menu settings; see Section 4.2.6 for setting controls.
 - (5) Depending upon the installed firmware, some of the menu selections represented below may not appear in your printer.
 - (6) Options or items not detected by the printer may indicate NOT INSTALLED when accessed in the menu.
-

4.2.1 Entrance and Exit Prompts

Depending upon the security setting and printer configuration, the following Entrance and Exit Prompts may appear when accessing or exiting the menu (see Section 5.1.1 for other prompts).



- Press the MENU Key to enter Menu Mode.



Displayed Message	Details
MENU MODE	The Menu Key has been pressed, where:
ENTER PASSWORD 0 0 0 0	Requires entry of the correct security password for menu access.
KEEP HOST CHANGES? ENTER=YES	Requires a decision regarding existing host commands that have affected the configuration of the printer, where pressing ENTER will save these changes or pressing ESC will discard them.
SAVE CHANGES? ENTER = YES	Requires a decision regarding changes that have been made to the printer's settings, where pressing ENTER will save these changes or pressing ESC will discard them. <i>Note: If required, a reset will automatically occur.</i>

The following designations are used throughout the menu listings below:

Symbol	Definition
✧	Denotes a firmware default setting or value.
	Denotes a setting can only be changed via the menu.

4.2.2 Media Settings

The Media Settings menu contains label and ribbon settings, and printhead maintenance selections.

Menu Item	Details
MEDIA TYPE	Selects the method used to print labels and should be set according to the type of media being used, where:
✧THERMAL TRANSFER	Sets printing for media that requires a ribbon to produce an image.
DIRECT THERMAL	Sets printing for media that is reactive to heat to produce an image.

Media Settings (continued)

Menu Item	Details
SENSOR TYPE	Selects the Top Of Form (TOF) sensing method used to determine the leading edge of the label, where:
◇GAP	Senses the gaps or notches in the media.
CONTINUOUS	TOF sensing is not used; see LABEL LENGTH.
REFLECTIVE	Senses the reflective (black) marks on the underside of the media.
LABEL LENGTH	Determines the length of the label when the SENSOR TYPE is set to CONTINUOUS, where:
◇04.00in (0-99.99)	Is the desired length of the format.
MAXIMUM LABEL LENGTH	Sets the distance that the printer will feed GAP or REFLECTIVE media before declaring a TOF fault, where:
◇16.00in (0-99.99)	Is the length of travel to detect a TOF gap or mark. Note: This distance should be 2.5 to 3 times the length of the label.
PAPER OUT DISTANCE	Sets the Out Of Stock fault (empty) distance, where:
◇00.25in (0-99.99)	Is the attempted length of feed before empty is declared. Note: If using clear or translucent media, this setting should be longer than the length of the label.
LABEL WIDTH	Sets the maximum printable width. Objects extending beyond this limit will NOT print, where:
◇XX (X-XX)	Is the maximum width; see Appendix A for the model dependant default and range.
RIBBON LOW OPTIONS	Defines the response when THERMAL TRANSFER is selected and the ribbon supply diminishes, where:
RIBBON LOW DIAMETER	Sets the threshold that will trigger a Low Ribbon Warning prompt, where:
◇1.40in (1.00 – 2.00)	Is the outer diameter size of the ribbon roll.

Media Settings (continued)

Menu Item	Details
PAUSE ON RIBBON LOW	Sets the printer to pause when the RIBBON LOW DIAMETER setting is met, where:
ENABLED	Forces the user to press the PAUSE Key to proceed with the print job.
✧DISABLED	Allows printing to continue until ribbon empty is declared.
SENSOR CALIBRATION	Selects the method used to calibrate the media sensor (see Section 5.2), where:
PERFORM CALIBRATION	Sets the values via printer calculations.
ADVANCED ENTRY	Sets the values via manual entry, where:
SENSOR LEVELS	Allows manual entry of paper, gap (or mark), and empty threshold values.
SENSOR GAIN	Adjusts the sensor sensitivity.
PRINTHEAD CLEANING	Controls the automatic cleaning alert and function, where:
CLEAN HEAD SCHEDULE ✧000 in. (* 1000)	<p>Specifies the amount of media (times one thousand) that can be used before a print head cleaning warning will be issued (If exceeded three times, however, a fault will be declared.)</p> <hr/> <p>Note: Zero (000) disables this function.</p>
CLEAN HEAD COUNTER	Indicates the number of inches (or cm) since cleaning was last initiated.
RESET COUNTER	Resets the Clean Head Counter to zero to restart the Clean Head Schedule.
CLEAN HEAD NOW	Initiates the cleaning process then resets the Clean Head Counter. Remove ribbon. Also see Section 5.6.1.

4.2.3 Print Control

The Print Control menu contains print quality, throughput, formatting, and custom setup functions:

Menu Item	Details
HEAT	Controls the burn-time of the printhead (selectable as "Heat" in most labeling programs), where:
✧10 (0 - 30)	Is the number based on duration, corresponding to print darkness.
PRINT SPEED	Controls the rate of label movement during printing, where:
✧XXin/sec (X - XX)	Is the speed setting; see Appendix A for the model dependant default and range. <i>☑ Note: Detailed image printing may require slower speeds; alternately, faster printing may require an increased HEAT setting for sufficient energy transfer.</i>
FEED SPEED	Controls the rate of label movement between printing areas, where:
✧XXin/sec (X - XX)	Is the speed setting; see Appendix A for the model dependant default and range.
REVERSE SPEED	Controls the rate of label movement during backup positioning, where:
✧XXin/sec (X - XX)	Is the speed setting; see Appendix A for the default and range.
SLEW SPEED	Controls the rate of label movement between printing areas when using the GPIO option, where:
✧XXin/sec (X - XX)	Is the speed setting; see Appendix A for the default and range.
ROW OFFSET	Shifts the vertical SOP position on the label, where:
✧00.00in (0 - 99.99)	Is the offset distance; see Section 7.2.2 for label details.
COLUMN OFFSET	Shifts the horizontal, left-justified SOP position to the right without shifting the Label Width termination point to the right, where:
✧00.00 in (0 - 99.99)	Is the offset distance; see Section 7.2.2 for label details.

Print Control (continued)

Menu Item	Details
PRESENT DISTANCE	Sets the label stop position, where:
✧0.00in (0 - 4.00)	Is the label travel distance at output.
MOTOR THROTTLING	Controls the current to the stepper motor, where:
✧ENABLED	Counts labels versus time and, if needed, pauses printing to maintain a cooler motor temperature.
DISABLED	Applies motor current normally.
TOF PRECEDENCE	Allows an override of label format data when the form length is exceeded, where:
✧DISABLED	Prints labels formats without TOF truncating.
ENABLED	Ends the label at the next TOF, truncating any print data that extends past this mark.
CUSTOM ADJUSTMENTS	These selections independently change the listed parameters, allowing slight mechanical compensations sometimes evident when multiple printers share label formats or for special printer-specific formatting adjustments, where:
DARKNESS ✧32 (1 - 64)	Controls the printhead strobe time (see HEAT, above) to fine-tune the solid areas of the image.
CONTRAST ✧32 (1 - 64)	Fine-tunes the gray areas of an image.
ROW ADJUST ✧000 DOTS (-XXX → XXXX)	Shifts the vertical SOP position to fine-tune the ROW OFFSET setting; see Appendix B for range and Section 7.1 for dot size. Note: If shifting negative, modify PRESENT ADJUST (see below) by the same amount.
COLUMN ADJUST ✧000 DOTS (-XXX → XXX)	Shifts both the horizontal SOP position and the LABEL WIDTH termination point to the right to fine-tune the COLUMN OFFSET setting; see Appendix B for range and Section 7.1 for dot size.
PRESENT ADJUST ✧000 DOTS (-XXX → XXX)	Adjusts the label stopping position to fine-tune the PRESENT DISTANCE setting; see Appendix B for range and Section 7.1 for dot size.

4.2.4 Printer Options

The Printer Options menu contains module, file-handling, and option functions:

Menu Item	Details
MODULES	Controls memory handling functions, where:
PRINT DIRECTORY	Prints a listing of available space, files, and types; see Appendix A.
PRINT FILE	Prints from a list of available files.
FORMAT MODULE	Formats the selected module, erasing all data.
DELETE FILE	Removes selected files from the module directory. <i>☑ Note: Protected modules will not be displayed, and space will not be recovered until packed.</i>
PACK MODULE	Removes deleted files and defrags the module to recover memory space.
PRESENT SENSOR	Controls the Present Sensor, and the Peel and Present options, where:
MODE	Sets the detection method and response of the printer, where:
↯AUTO	Checks for the presence of the sensor and if found, the sensor is enabled; otherwise, the function is ignored.
ENABLED	Enables the sensor. If not detected, a fault is generated.
DISABLED	Disables the sensor.
RETRACT DELAY	Programs a time delay for retraction of the next label in the print job, where:
↯070 x 10mS (1 - 255)	Is the range, times 10 milliseconds.
CUTTER	Controls the Cutter option, where:
MODE	Sets the detection method and response of the printer, where:
↯AUTO	Detects, enables, and sets the label stop location for the cutter; if not detected, the option will be ignored.
ENABLED	Enables and sets the label stop location for the cutter; if not detected, a fault will be generated.
DISABLED	Disables the option.

Printer Options (continued)

Menu Item	Details
CUT BEHIND	<p>Allows a number of small labels to queue before a cut is performed, increasing throughput, where:</p> <hr/> <p>Note: This mode can be used without a cutter to allow the presentation of an extra label, with retraction occurring upon the next job or feed operation.</p> <hr/>
✧0 (0 – 2)	<p>Is the queue number.</p> <hr/> <p>Note: After a fault or unknown label position, the leading edge will be cut to ensure no extra material exists at the beginning of the first label; otherwise, cutting will occur only as specified.</p> <hr/>
SCANNER	Controls the Linear Scanner option, where:
MODE	Sets the detection method and response of the printer, where:
✧AUTO	Checks for the presence of the scanner: If found, the scanner is enabled; otherwise, it will be ignored.
ENABLED	Enables the scanner. If not detected, a fault will be generated.
DISABLED	Disables the scanner.
BARCODES	<p>Specifies the bar code type(s) for scanning, where:</p> <hr/> <p>Note: Enabling only the bar code types that will be checked can help maximize throughput.</p> <hr/>
✧CODE 39	<p>Is / are the bar code type(s) to be checked; see the <i>Class Series 2 Programmer's Manual</i> for symbology details.</p>
✧IATA	
✧CODABAR	
✧INTERLEAVED 2 OF 5	
✧INDUSTRIAL 2 OF 5	
✧CODE 93	
✧CODE 128	
✧MSI/PLESSEY	
✧EAN(13/8)	
✧EAN(13/8)+2	
✧EAN(13/8)+5	
✧UPC(A/E)	
✧UPC(A/E)+2	
✧UPC(A/E)+5	

Printer Options (continued)

Menu Item	Details
BARCODE COUNT	Specifies a number of bar codes per label and generates a fault when the number present is incorrect, where:
✧00 (0 - 99)	Sets the number of bar codes to count, where 00 (Auto Mode) allows a variable number. Note: <i>If bar codes are bitmaps, enter the minimum number to be read on each label (check your software application if questioning the bar code generation method).</i>
MIN READABLE HEIGHT	Ensures bar code integrity by setting a minimum distance for identical decodes, where:
✧DISABLED	Uses REDUNDANCY LEVEL to ensure bar code integrity.
1/16 – 1/2 in (1.5–12.5mm)	Sets a read distance requirement to pass the bar code (e.g., 1/4 requires .25 inches to be readable). Note: <i>This distance should not exceed 50% of the measured bar code height.</i>
REDUNDANCY LEVEL	Ensures bar code integrity by specifying a consecutive number of identical decodes, where:
✧READ BARCODE 3X	Sets a valid read count requirement (1X – 6X) to pass the bar code (e.g., 3X must return three identical decodes). Note: <i>High redundancy rates and fast print speeds may cause erroneous read failures when scanning small or multiple bar codes.</i>
AUTO	Uses MIN READABLE HEIGHT to ensure bar code integrity.
IGNORE NO DATA	Allows an override of data verification, where:
✧DISABLED	Checks for correct bar code data in the bar code(s).
ENABLED	Ignores the data present in the bar code(s).
SET DEFAULTS	Restores the scanner settings to the default values, where:
SET FACTORY DEFAULT? CANCEL KEY = YES	Restores the defaults, or press the ESC Key to keep the current configuration.

Printer Options (continued)

Menu Item	Details
RFID	Controls the RFID operation, where:
RFID MODULE	Sets the mode of RFID operation, where:
✧DISABLED	Disables RFID.
HF	Selects the Securakey option.
UHF CLASS 1	Selects the Alien option.
UHF MULTI-PROTOCOL	Selects the UHF cross-platform option.
RFID POSITION	Sets the RFID encoding position, where:
✧1.10in (110 - 4.00)	Is the inlay location, as referenced from the leading edge of the tag moving in the direction of print.
HF SETTINGS	Sets the HF RFID encoding settings, where:
TAG TYPE	Selects the tag type, where:
✧ISO 15693	Is the type to be encoded.
TI	
PHILIPS	
ST LRI512	
ST LRI64	
AFI VALUE	Sets the Application Family Identifier value, where:
✧00 (HEX)	Is the value (00 - FF).
AFI LOCK	Locks the AFI value, where:
✧DISABLED	Is not protected.
ENABLED	Is write-protected.
DSFID VALUE	Sets the Data Storage Format Identifier value, where:
✧00 (HEX)	Is the value (00 - FF).

Printer Options (continued)

Menu Item	Details
DSFID LOCK	Locks the DSFID value, where:
✧DISABLED	Is not protected.
ENABLED	Is write-protected.
EAS VALUE	Selects the Electronic Article Surveillance value, where:
✧00 (HEX)	Is the value (00 - FF).
AUDIO INDICATOR	N/A
ERASE ON FAULT	Allows tag data erasure when errors are detected, where:
✧DISABLED	Keeps data.
ENABLED	Erases bad data.
UHF SETTINGS	Sets the UHF RFID encoding settings, where:
TAG TYPE	Selects the tag type, where:
✧GEN 2	Is the type to be encoded.
EPC 0	
EPC 0+ MATRICS	
EPC 0+ IMPINJ	
EPC 1	
UCODE EPC 1.19	
EM 4022/4222	
TAG DATA SIZE	Sets the tag data size, where:
✧96-BIT	Selects 96 bits.
64-BIT	Selects 64 bits.
POWER ADJUST (dBMs)	Adjusts the applied power, where:
✧000 (-04 → 004)	Is the power level, in decibels.

Printer Options (continued)

Menu Item	Details
KILL CODE	Code to permanently deactivate the tag, where:
00 00 00 00	Is the code, in the form B3, B2, B1, B0.
ACCESS CODE	Code to protect tag memory contents, where:
00 00 00 00	Is the code, in the form B3, B2, B1, B0.
GEN 2 LOCK ACTION	Sets the lock for Gen 2 tags, where:
✧NONE	Does not lock the tag.
PERMALOCK	Locks data permanently.
PWD-READ/WRITE	Locks data with password-protection for writing data.
BOTH	Allows both Permalock and PWD-Lock to be used.
PAD/TRUNC. EPC DATA	Allows padding or truncating of data with nulls (represented as "00") in order to fit the selected EPC Tag Data Size, where:
✧DISABLED	Does not pad or truncate data.
LEADING	Adds nulls to the front (left) of the data if less than the size, or cuts the data if greater.
TRAILING	Adds nulls to the end (right) of the data if less than the size, or cuts the data if greater.
LOCK CODE (ALIEN HW)	Sets the lock code for Alien Gen 2 tags, where:
✧00 (HEX)	Is the code (00 - FF).
LOCK AFTER WRITE	Locks the tag after programming, where:
✧DISABLED	No lock occurs.
ENABLED	Locks the tag.

Printer Options (continued)

Menu Item	Details
RETRY ATTEMPTS	Sets the number of retry attempts, where:
✧3 (0 - 9)	Is the retry count before a fault is declared.
AUTO DETECT TAG	Allows the printer to establish the tag to transducer distance setting. CALIBRATING RFID will appear as media is scanned for the tag location. Upon completion, the media will be retracted to the TOF position with the positioning results (along with a brief SUCCESS or FAILURE message).
SET DEFAULTS	Allows the RFID default values to be restored, where:
YES	Restores the default settings.
NO	Exits the menu item without changing the current settings.
GPIO PORT	Controls the GPIO operation, where:
GPIO DEVICE	Sets the GPIO option to work with a specific device type, where:
✧APPLICATOR	Enables parameters for related label applicator functions: <ul style="list-style-type: none"> • Completion upon last SOP, de-asserts Data Ready (DRDY); • FEED allowed at any time; and, • DRDY upon PAUSE.
APPLICATOR2	Enables parameters for alternate label applicator functions: <ul style="list-style-type: none"> • Completion upon 1 msec. overlap of Data Ready (DRDY) and End of Print (EOP); • DRDY signal end inhibits FEED; and, • De-asserts DRDY upon PAUSE or FAULT.
BARCODE VERIFIER	Enables the GPIO Port to work with a bar code verifier.
DISABLED	Disables the option.

Printer Options (continued)

Menu Item	Details
START OF PRINT	Selects the type of input signal required to initiate printing, where:
✧ACTIVE HIGH	Triggers printing with a high signal.
EDGE	Triggers printing with a signal edge transition.
LOW PULSE	Triggers printing with a low pulse.
HIGH PULSE	Triggers printing with a high pulse.
ACTIVE LOW	Triggers printing with a low signal.
END OF PRINT	Sets the type of output signal generated to indicate End of Print (EOP), where:
✧LOW PULSE	Outputs a low pulse upon completion.
HIGH PULSE	Outputs a high pulse upon completion.
ACTIVE LOW	Outputs a logic low upon completion.
ACTIVE HIGH	Outputs a logic high upon completion.
RIBBON LOW	Sets the low ribbon signal (as determined by RIBBON LOW OPTIONS; see Section 4.2.2), where:
✧ACTIVE LOW	Outputs a logic low when the roll reaches the setting.
ACTIVE HIGH	Outputs a logic high when the roll reaches the setting.
SLEW ENABLE	Selects the type of input signal required to initiate label slew, where:
✧STANDARD	Triggers slew with a low signal.
LOW PULSE	Triggers slew with a low pulse.
HIGH PULSE	Triggers slew with a high pulse.
ACTIVE LOW	Triggers slew with a low signal.
ACTIVE HIGH	Triggers slew with a high signal.

Printer Options (continued)

Menu Item	Details
BACKUP LABEL	Positions a presented label for printing (provided the PRESENT DISTANCE setting is greater than zero), where:
✧DISABLED	Disables backup positioning.
ACTIVE LOW	Positions the label when a logic low is received.
ACTIVE HIGH	Positions the label when a logic high is received.
ERR ON PAUSE (APP2)	Sets the output when a service required fault occurs, where:
✧ENABLED	Enables the output signal.
DISABLED	Disables the output signal.

4.2.5 System Settings

The System Settings menu contains operating, control, and formatting functions:

Menu Item	Details
CONFIGURATION FILE	Controls the creation, storage, and recall of printer configuration files (see Appendix D), where:
RESTORE AS CURRENT	Lists the files available, and then after selection reconfigures the printer according to that file.
SAVE SETTING AS	Saves the effective configuration of the printer to a named file of up to nineteen characters.
DELETE FILE	Lists the files available, and then after selection, removes that file from memory. Note: A currently activated file cannot be deleted.
FACTORY SETTING FILE	Lists the files available and then after selection that file will be restored whenever a Level One reset is performed; see Section 5.3.2.
✧NONE	Is the currently selected file.




System Settings (continued)

Menu Item	Details
INTERNAL MODULE D	Allocates a number of 1KB memory blocks for internal Memory Module D; where:
✧1024 K (XXX - XXXX)	Is the memory allocation; see Appendix A for the memory ranges, types, and availability.
DEFAULT MODULE	Designates the memory module for storage when no other location is specified; where:
✧D	Is the module; see Appendix A for availability.
SCALEABLE FONT CACHE	Configures the number of 1KB memory blocks for the scaleable font engine; where:
✧0312 K (100 - 5120)	Is the memory allocation; see Appendix A for availability.
SINGLE BYTE SYMBOLS	Selects from the 66 available code pages used for single byte fonts (unless otherwise specified in DPL); where:
✧PC-850 MULTILINGUAL	Is the selected code page; for details see the <i>Class Series 2 Programmer's Manual</i> .
DOUBLE BYTE SYMBOLS	Selects the code page (see the <i>Class Series 2 Programmer's Manual</i>) used for the ILPC option (unless otherwise specified), where:
✧UNICODE	Selects Unicode (including Korean).
GB	Selects Government Bureau Industry Standard, Chinese (PRC).
BIG 5	Selects Taiwan encoded.
JIS	Selects Japanese Industry Standard.
SHIFT JIS	Selects Shift Japanese Industry Standard.
EUC	Selects Extended UNIX Code.
TIME AND DATE	Allows the user to set the time and date; where:
SET HOUR 06:30AM 01JAN2000	Enters the information for the time and date fields. Note: <i>Time and date retention (after power removal) requires the Real Time Clock function; see GPI/O Multi-Expansion CCA, Section 1.1.2.</i>

System Settings (continued)

Menu Item	Details
MEDIA COUNTERS	Provides a recorded count of inches printed and time; where:
ABSOLUTE COUNTER	Shows the total number of inches printed and the set date. (Non-resettable)
RESETTABLE COUNTER	Shows the number of inches printed and the last reset date.
RESET COUNTER	Returns the RESETTABLE COUNTER to zero.
PRINT CONFIGURATION	Prints a Configuration Label of current database information where items denoted with the section (\$) and bullet () symbol indicate changes not yet saved.
CONFIGURATION LEVEL	Displays the hardware and software feature level of the printer, where:
PRINTER KEY	<p>Identifies the unique key number of the printer, in the form</p> <p style="text-align: center;">vvvv-wwxx-yyyyyy-zzz</p> <p>Where:</p> <ul style="list-style-type: none"> vvvv – Represents the printer model number. wwxx – Represents the hardware and software levels, where: <ul style="list-style-type: none"> ww – Represents the main logic card type: <ul style="list-style-type: none"> PA = CCA 51-2178-XX; or TB = CCA 51-2301-XX xx – Represents the software feature level: <ul style="list-style-type: none"> 10 = Standard DPL 11 = 4208 20 = Internal CG Times Font yyyyyy – Is a manufacturing date code. zzz – Is a unique time stamp.
APPLICATION VERSION	Displays the level, version number, and date of the application firmware.
BOOT LOADER	Displays the Boot Loader version level and date.
UPGRADE PRINTER CODE 0 0 0 0 0 0	Upgrades the printer to the corresponding feature level. (Authorization required.)

System Settings (continued)

Menu Item	Details
UNLOCK FEATURE 0 0 0 0 0	Unlocks a corresponding feature with the entry of the correct code.
SET FACTORY DEFAULTS	Returns the printer settings to the factory-programmed values or the Factory Setting File values, where:
SET FACTORY DEFAULT? CANCEL KEY = YES	Overwrites the current configuration and restores the default configuration (✧), or if selected the Factory Setting File. Otherwise, press the ESC Key to keep the current configuration. Note: A reset will occur and, if no Factory Setting File is used, all settings returned except CUSTOM ADJUSTMENTS and calibrations.
FORMAT ATTRIBUTES	Defines the way overlapping text, bar codes, and graphics are printed, where:
✧XOR	Does not print intersecting areas, for example: 
OPAQUE	Overwrites intersecting areas with those last formatted, for example: 
TRANSPARENT	Prints intersecting areas, for example: 
LABEL ROTATION	Allows the label format to be rotated 180 degrees, where:
✧DISABLED	Prints formats without rotation.
ENABLED	Prints flipped formats.
IMAGING MODE	Determines the process used to format labels, where:
✧MULTIPLE LABEL	Formats multiple images, as memory permits, to achieve the fastest throughput. Note: Time stamps will indicate the moment of imaging rather than printing.
SINGLE LABEL	Formats an image only after a previous format has been printed to achieve the most accurate time stamps.
PAUSE MODE	Allows controlled interactive printing, where:
✧DISABLED	Prints labels without pausing.
ENABLED	Requires the user to press the PAUSE Key to print each label.

System Settings (continued)

Menu Item	Details
PEEL MODE	Allows the SOP signal to initiate (via GPIO option) the feeding of the labels, where:
✧DISABLED	Feeds regardless of SOP.
ENABLED	Feeds only when SOP is received.
SECURITY	Allows menu password protection, where:
SELECT SECURITY	Enables or disables the security feature, where: <hr/> Note: <i>The default password must be changed to activate.</i> <hr/>
✧DISABLED	Allows entry.
SECURE MENU	Sets a password requirement for menu entry.
MENU AND TEST	Sets a password requirement for menu and test entries.
MODIFY PASSWORD	Modifies the four-digit password required when security is enabled, where:
MODIFY PASSWORD? CANCEL KEY = YES	Enters the password (after confirmation); otherwise, press the ESC Key to keep the current password. <hr/> Note: <i>The default password is 0000.</i> <hr/>
UNITS OF MEASURE	Sets the measurement standard for the printer, where:
✧IMPERIAL	Uses inches.
METRIC	Uses millimeters and centimeters.
INPUT MODE	Defines the type of processing that occurs when data is received, where:
✧DPL	Processes data for standard DPL printing; see the <i>Class Series 2 Programmer's Manual</i> .
LINE	Processes data for template (Line Mode) printing; see the <i>Class Series 2 Programmer's Manual</i> .

System Settings (continued)

Menu Item	Details
<p>AUTO</p>	<p>Identifies then activates the appropriate emulation parser for the data.</p> <hr/> <p>Note: <i>Correct identification can be dependant upon the HOST SETTINGS / HOST TIMEOUT (see Section 4.2.6). Also, extraneous characters may, in some cases, render the data unrecognizable, thus requiring manual selection of the mode.</i></p>
<p>COLUMN EMULATION</p>	<p>Allows the column dot count to be adjusted, where:</p>
<p>✧XXX DOTS (XXX - XXX)</p>	<p>Selects the number of dots per inch (or mm) in which to print the format, reducing it from right to left; see Appendix B for range and Section 7.1 for dot size.</p> <hr/> <p>Note: <i>No adjustment occurs at the default setting.</i></p>
<p>ROW EMULATION</p>	<p>Allows the row dot count to be adjusted, where:</p>
<p>✧XXX DOTS (XXX - XXX)</p>	<p>Selects the number of dots per inch (or mm) in which to print the format, reducing or enlarging it from top to bottom; see Appendix B for range and Section 7.1 for dot size.</p> <hr/> <p>Note: <i>No adjustment occurs at the default setting.</i></p>
<p>SOP EMULATION</p>	<p>Allows SOP functions with backward compatibility when printing legacy model label formats, where:</p> <hr/> <p>Note: <i>The printer may automatically feed labels to setup the print position.</i></p>
<p>✧DISABLED</p>	<p>Uses the normal position.</p>
<p>110 (PRODPLUS)</p>	<p>Emulates the Prodigy Plus[®] position.</p>
<p>220 (ALLEGRO)</p>	<p>Emulates the Allegro[®] position.</p>
<p>250 (PRODIGY)</p>	<p>Emulates the Prodigy[™] position.</p>
<p>BACK AFTER PRINT</p>	<p>Determines label movement timing when a cutter, present sensor, peel and present, or GPIO option is enabled, where:</p>

System Settings (continued)

Menu Item	Details
MODE	Repositions media, where:
✧DISABLED	Moves media only when the next label is ready to print, minimizing edge curling.
ENABLED	Moves media according to BACKUP DELAY timing after a cut, cleared sensor, or SOP signal to allow fastest throughput.
BACKUP DELAY (1/50s)	Determines repositioning timing, where:
✧000 (0 – 255)	Is the specified lapse (in fiftieths of a second) between new format processing and label retraction.
FONT EMULATION	Allows font substitution of internal fonts, where:
✧STANDARD FONTS	Prints using a standard (internal) font; see the <i>Class Series 2 Programmer's Manual</i> .
CGTIMES	Prints using the CG Times font.
USER ID S50	Prints using a downloaded font.
LABEL STORE	Determines the data content when retrieving stored label formats, where:
✧STATE & FIELDS	Recalls the printer state (i.e., heat, speeds, etc.) and the formatting commands for the stored label.
FIELDS ONLY	Recalls the formatting commands for the stored label.
MENU LANGUAGE	Selects the display language for the menu and Configuration Label, where: <i>✧ Note: Only resident languages will be selectable; see Appendix C.</i>
✧ENGLISH	Enables English.
FRANCAIS	Enables French.
ITALIANO	Enables Italian.
DEUTSCH	Enables German.
ESPANOL	Enables Spanish.

System Settings (continued)

Menu Item	Details
FAULT HANDLING	Determines the label disposition and user action if a fault occurs, where:
LEVEL	Sets the printer response upon declaration of a fault, where:
✧STANDARD	Stops printing and declares a fault. Then, following correction of the problem, the FEED Key must be pressed to clear the fault and reprint the label in process.
VOID AND RETRY	<p>Actions depend upon the RETRY COUNT:</p> <ul style="list-style-type: none"> • If the count has not been exceeded, VOID is printed on the failed label and reprinting automatically occurs; • If the count has been exceeded, printing stops and a fault message is displayed. Then, following correction of the problem, the FEED Key must be pressed to clear the fault and reprint the label in process; or, • If the CANCEL Key is pressed, reprinting is optional: press NO to reprint; or, press YES to cancel the reprint (and press YES again to cancel the batch.) <hr/> <p>Note: <i>Linear Scanner or RFID required.</i></p>
DELAYED SCAN FAULT	<p>Increases throughput when bar codes reside near the trailing edge of the label (in the direction of FEED).</p> <hr/> <p>Notes: (1) <i>Linear Scanner or RFID required.</i></p> <p>(2) <i>If unreadable, the fault will occur after the next label prints;</i></p> <p>(3) <i>The label immediately following a faulted label is not scanned for errors; and,</i></p> <p>(4) <i>VOID AND RETRY and REPRINT are automatically disabled; the job can only be cancelled.</i></p>
VOID RETRY & CONT.	<p>VOID is printed on a faulted label, with reprint attempts occurring automatically, until the RETRY COUNT has been exceeded and then that label will be skipped (discarded) and printing will continue to the next label in queue.</p> <hr/> <p>Note: <i>Linear Scanner or RFID required.</i></p>
NO REPRINT	<p>Printing stops and a fault message is displayed. Following correction of the problem, the FEED Key must be pressed to clear the fault.</p>

System Settings (continued)

Menu Item	Details
VOID DISTANCE	Sets the distance to print VOID on a faulted label, where:
◇0.50in (10 – 2.00)	Is the distance, measured from the trailing edge, which establishes the text size. Note: VOID will not be printed if insufficient text space exists or if the fault occurred after printing completed. Also, the text can be customized; see the Class Series 2 Programmer's Manual.
RETRY COUNT	Sets the number of printing attempts before declaring a fault, where:
◇1 (0 - 3)	Is the count. Note: Greater than 1 (one) counts are valid only when Linear Scanner or RFID equipped.
BACKFEED ON CLEAR	Determines positioning after a fault is cleared, where:
◇DISABLED	No label positioning occurs, as the location is assumed correct. Note: If reloading, the user must place media at the SOP position.
ENABLED	Automatically positions the label.
SCL FONT BOLD FACTOR	Sets a scalable font boldfacing amount, where:
◇01 (1 – 36)	Is the setting, based on an incrementing scale where one (01) is minimum.

4.2.6 Communications

The Communications menu contains interface port and host control functions:

Menu Item	Details
SERIAL PORT A	Controls the RS-232 communications settings for Serial Port A, where:
BAUD RATE	Sets the serial communication rate, where:

Communications (continued)

Menu Item	Details
✧9600 BPS	Is the speed in Bits Per Second.
19200 BPS	
28800 BPS	
38400 BPS	
57600 BPS	
115000 BPS	
1200 BPS	
2400 BPS 4800 BPS	
PROTOCOL	Sets the data flow control (handshaking) method.
✧BOTH	Uses XON/XOFF and CTS/DTR flow control.
SOFTWARE	XON/XOFF
HARDWARE	CTS/DTR
NONE	Flow control is not used.
PARITY	Sets word parity, where:
✧NONE	Uses parity.
ODD	Uses odd parity.
EVEN	Uses even parity.
DATA BITS	Sets Word length, where:
✧8 (7 - 8)	Is the number of bits in the word.
STOP BITS	Sets the number of stop bits, where:
✧1 (1 - 2)	Is the stop bit count.
SERIAL PORT B	Controls the RS-232 communications settings for optional Serial Port B; see SERIAL PORT A. <hr/> Note: The maximum baud is 38.4K BPS.
SERIAL PORT C	Controls the RS-232 communications settings for optional Serial Port C; see SERIAL PORT A. <hr/> Note: The maximum baud is 38.4K BPS.


Communications (continued)

Menu Item	Details
SERIAL PORT D	Controls the RS-232 communications settings for optional Serial Port D; see SERIAL PORT A. <hr/> Note: The maximum baud is 38.4K BPS.
PARALLEL PORT A	Controls the communications settings for Parallel Port A, where:
PORT DIRECTION	Allows data return from the printer, where:
✧UNIDIRECTIONAL	Returns no data; communication is one-way.
BIDIRECTIONAL	Returns data (compliant back-channel operation).
PARALLEL PORT B	Controls the communications settings for optional Parallel Port B; see PARALLEL PORT A. <hr/> Note: The default setting is BIDIRECTIONAL.
NIC ADAPTER	Controls the communications settings for the network interface, where:
QUICK SETUP	<hr/> Note: Only when equipped with DMXNetII or DMXrfNetII. <hr/> Selects settings to configure basic Wired or WiFi operations, where:
WIRED DHCP	Selects Wired operation, where:
WIRED DHCP? CANCEL KEY = YES	Returns the NIC Adapter to defaults then sets Wired Discovery to "Enable" and Wireless to "Disable."
WLAN UNSECURED	Selects WiFi operation, where:
WLAN UNSECURED? CANCEL KEY = YES	Returns the NIC Adapter default values then sets Discovery to "Enable," SSID to "Any," and WLAN network type to "Infrastructure."
WLAN ADHOC	Selects the DMXrfNetII default parameters, where:

Communications (continued)

Menu Item	Details
WLAN ADHOC? CANCEL KEY = YES	Restores the WiFi defaults and initiates infrastructure mode with an SSID of "Any." All existing access point associations will be deleted then established with the closest available. (Useful when moving the printer to a geographically distant location.) <hr/> Note: Press the ESC Key to exit the menu item without changing the current settings.
SET FACTORY DEFAULTS	Returns the factory-programmed values, where:
SET DEFAULTS? CANCEL KEY = YES	Restores the default settings. <hr/> Note: Press the ESC Key to exit the menu item without changing the current settings.
WLAN	Controls the communications settings for the optional DMXrfNetII Card, where:
MODE	Selects between Wired or WiFi operation, where:
✧ENABLED	Enables the WiFi interface.
DISABLED	Enables the Wired interface.
BSS ADDRESS	Specifies the WiFi bridge module's static IP address. <hr/> Note: If DHCP is ENABLED, this parameter will be ignored.
✧ 192.168.010.001	Is the address in standard octet format.
SIGNAL READINGS	Displays the signal and noise ratios for the WLAN.
IP ADDRESS	Specifies the static IP Address; where:
✧192.168.010.026	Is the address in standard octet format.
SUBNET MASK	Specifies the static Subnet Mask Address, where:
✧255.255.255.000	Is the address in standard octet format.
GATEWAY	Specifies the network Gateway Address, where:
✧192.168.010.026	Is the address in standard octet format.

Communications (continued)

Menu Item	Details
SNMPTRAP DESTINATION	Specifies the SNMP Trap Address, where:
◇000.000.000.000	Is the address in standard octet format where SNMP traps will be sent when SNMP service is installed on your receiver. <hr/> Note: When zeroed, no traps are sent.
IP DISCOVERY	Controls IP Address discovery, where:
◇ENABLED	Broadcasts over the network at startup to receive addresses from the responsible server. Manual modifications to IP Address, Subnet Mask, or Gateway are not allowed; and, if no server is found, the specified static value will be used.
	 WARNING A server assigned IP address takes precedence over any static address stored in the interface.
DISABLED	Uses the stored static IP, Subnet Mask, and / or Gateway Address.
SNMP	Allows management protocols, where:
◇ENABLED	Sends messages to SNMP-compliant devices.
DISABLED	Sends no messages.
ADVANCED	Sets advanced networking functions and parameters, where:
TELNET	Sets Telnet protocol to transfer data, where:
◇ENABLED	Allows Telnet.
DISABLED	Disables Telnet.
FTP	Sets File Transfer Protocol to transfer data, where:
◇ENABLED	Allows FTP.
DISABLED	Disables FTP.

Communications (continued)

Menu Item	Details
MTU	Sets the Maximum Transmission Unit packet size, where:
✧01500 (512 - 65515)	Is the packet size, in bytes.
GRATUITOUS ARP	Sets the Address Resolution Protocol notification rate, where:
✧0000 (0 - 2048)	Is the time, in minutes.
PORT NUMBER	Sets the network communications port, where:
✧09100 (1 - 65535)	Is the Port Number.
DUPLEX CAPABILITY	Sets the communication capability for the Wired network, where:
✧AUTO-NEGOTIATE	Automatically selects the best type.
100BASET HALF	Selects 100 Mb half duplex (in both directions, one way at a time) operation.
100BASET FULL	Selects 100 Mb full duplex (in both directions, simultaneously) operation.
10BASET HALF	Selects 10 Mb half duplex (in both directions, one way at a time) operation.
10BASET FULL	Selects 10 Mb full duplex (in both directions, simultaneously) operation.
ADVERTISE CAPABILITY	Transmits the printer's communication capability for the Wired network, where:
✧AUTOMATIC	Advertises the DUPLEX CAPABILITY set value.
ALL CAPABILITIES	Advertises all possible values for DUPLEX CAPABILITY.
NETWORK REPORT	Prints a network status report (see example below): <div data-bbox="862 1503 1230 1839" style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <pre> NETWORK REPORT CURRENT PRINTER INFO MACO: 00:0D:70:0B:8B B9 IP ADDRESS: 192.168.10.26 SUBNET MASK: 255.255.255.0 GATEWAY: 192.168.10.26 DHCP: ENABLED SNMP: ENABLED PORT NUMBER: 9100 NETBIOS NAME: DMX_000000 WLAN MODULE MODULE FW VERSION: 4.3.0.24 RADIO FW VERSION: 1.1.1.111.8.4.0.145 PORT STATUS: CONNECTED: ADHOC SSID: any MACR: 00 90:C9:01:D0 64 BSS ADDRESS: PROVIDED BY DHCP </pre> </div>

Communications (continued)

Menu Item	Details
SET FACTORY DEFAULTS	Returns the NIC to factory-programmed values, where:
SET FACTORY DEFAULTS? CANCEL KEY = YES	Restores the default settings. Note: Press the ESC Key to exit the menu item without changing the current settings.
HOST SETTINGS	Sets host communication parameters; where:
HOST TIMEOUT	Sets the period that an interface port can be idle before timeout occurs, where:
✧10 SEC (1 - 60)	Is the time (in seconds) when downloads timeout, and that must elapse before alternate port or alternate parser processing can occur.
CONTROL CODES	Allows changes to the software command interpretation controls, where:
✧STANDARD CODES	Sets the following command interpretation codes: Hex 01 = SOH command; Hex 02 = STX command; count-by = ^; Hex 1B = ESC; Hex 0x0D = Carriage Return
ALTERNATE CODES	Sets the following command interpretation codes: Hex 5E = SOH command; Hex 7E = STX command; count-by = @; Hex 1B = ESC; Hex 0x0D = Carriage Return
ALTERNATE CODES 2	Sets the following command interpretation codes: Hex 5E = SOH command; Hex 7E = STX command; count-by = @; Hex 1B = ESC; Hex 0x7C = Carriage Return
CUSTOM CODES	Sets the command interpretation codes as needed, where:
SOH STX CR CNTBY ✧5E ✧7E ✧0D ✧40	Are the codes according to your definitions.
FEEDBACK CHARACTERS	Allows the return of printer codes, where:
✧DISABLED	Does not send feedback characters.
ENABLED	Sends the host a Hex 1E (RS) after each label and a Hex 1F (US) after each label batch successfully prints.
ESC SEQUENCES	Allows data containing invalid ESC control code sequences to be processed, where:
✧ENABLED	Processes commands normally.
DISABLED	Ignores ESC sequences during processing (since some systems send a "banner" to the printer). Note: Bitmapped font downloads are disabled.

Communications (continued)

Menu Item	Details
HEAT COMMAND	Determines how a host software Heat command is handled, where:
✧ENABLED	Processes commands normally.
DISABLED	Ignores commands; instead, Heat is controlled via the menu setting; see Section 4.2.3.
SPEED COMMANDS	Determines how host software Print, Feed, Reverse, and Slew commands are handled, where:
✧ENABLED	Processes commands normally.
DISABLED	Ignores commands; instead, the speeds are controlled via the menu setting; see Section 4.2.3.
TOF SENSING COMMANDS	Determines how host software Gap, Continuous, and Reflective commands are handled, where:
✧ENABLED	Processes commands normally.
DISABLED	Ignores commands; instead, Sensor Type is controlled via the menu setting; see Section 4.2.3.
SYMBOL SET COMMAND	Determines how host Single and Double Symbol Set commands are handled, where:
✧ENABLED	Processes commands normally.
DISABLED	Ignores commands; instead, the Symbol Set selection is controlled via the menu setting; see Section 4.2.5.
CNTRL-CODES (DATA)	Determines how host software Control Codes are handled, where:
✧ENABLED	Processes commands normally.
DISABLED	Controls the setting via the menu; see CONTROL CODES, above.
STX-V SW SETTINGS	Determines how a host software option enable command is handled, where:
✧ENABLED	Processes commands normally.
DISABLED	Controls the settings via the menu; see Section 4.2.4.

Communications (continued)

Menu Item	Details
MAX LENGTH COMMAND	Determines how a host software Maximum Label Length (<STX>M) command is handled, where:
✧ENABLED	Processes commands normally.
DISABLED	Controls the setting via the menu; see Section 4.2.2.
OPTION FEEDBACK	<p>Allows feedback characters from an optional device to be returned to the host device, in the format of <A;B;C;D;E;F>[CR], where:</p> <p>A - Is the device type: R = RFID; and, S = Linear Scanner</p> <p>B - Is the status: C = entire label complete; F = faulted (failed) label; and, U = unknown</p> <p>C - Is the number of expected reads, given in two characters.</p> <p>D - Is the number of good reads, given in two characters.</p> <p>E - Is the internal Job and Sub Job Identifier, given in four characters each.</p> <p>F - Is the data read, delimited with semicolons (;) if multiple reads.</p>
✧DISABLED	Reports no data.
SCANNER	Reports Linear Scanner data.
RFID HEX	Reports RFID data in hexadecimal format.
RFID ASCII	Reports RFID data in an ASCII format.
PROCESS SOH (DATA)	Determines the response to an Immediate Command (e.g., Get Status, Module Storage, etc.), where:
✧DISABLED	Processes commands normally.
ENABLED	Interrupts operations upon SOH receipt to process the command.

4.2.7 Diagnostics

The Diagnostics menu contains testing functions:

Menu Item	Details														
HEX DUMP MODE	Allows raw code received from the host to print, where:														
✧DISABLED	Executes commands and prints label formats normally.														
ENABLED	Prints received data without processing; see Section 6.2.														
OPTIONS TESTING	Allows testing of printer options, where:														
TEST PRESENT SENSOR	Tests the Present Sensor (and Peel & Present Mechanism) on demand function, where:														
PERFORM TEST 1 TIME	Selects the number of LABEL PRESENTED tests (1, 10, or 100) to perform, and then displays the results.														
TEST CUTTER	Tests the Cutter, where:														
PERFORM TEST 1 TIME	Selects the number of cuts (1, 10, or 100) to perform, and then displays the results.														
TEST GPIO	Tests the General Purpose Input Output interface, where:														
MONITOR GPIO INPUT	<p>Displays the logic values for Start of Print (SOP), Feed, Pause, and Reprint (REPR) signal inputs. (The values given below are examples only.)</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td>SOP</td> <td>FEED</td> <td>PAUSE</td> <td>REPR</td> </tr> <tr> <td>0</td> <td>0</td> <td>0</td> <td>0</td> </tr> </table> <p>Note: Unconnected lines may assume a zero or one.</p>	SOP	FEED	PAUSE	REPR	0	0	0	0						
SOP	FEED	PAUSE	REPR												
0	0	0	0												
MONITOR GPIO OUTPUT	<p>Allows toggling and displays the logic values for End of Print (EP), Ribbon Low (RL), Service Required (SR), Media Out (MO), Ribbon Out (RO), Data Ready (DR), and Output Fault (OF) signal outputs. (The values given below are examples only.)</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td>EP</td> <td>RL</td> <td>SR</td> <td>MO</td> <td>RO</td> <td>DR</td> <td>OF</td> </tr> <tr> <td>1</td> <td>1</td> <td>0</td> <td>1</td> <td>1</td> <td>0</td> <td>0</td> </tr> </table> <p>Note: To change an output signal, cursor over the displayed state to select and then toggle it, except Data Ready which cannot be toggled.</p>	EP	RL	SR	MO	RO	DR	OF	1	1	0	1	1	0	0
EP	RL	SR	MO	RO	DR	OF									
1	1	0	1	1	0	0									

Diagnostics (continued)

Menu Item	Details		
LOOPBACK	Not Supported		
PRINT SIGNAL INFO	<p>Prints signal names, pin assignments, settings, and current states for reference.</p> <div style="border: 1px solid black; padding: 5px;"> <p>GPIO SIGNAL INFO WED 11:04AM 24MAR2003 CARD ID#1</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>OUTPUT SIGNALS</p> <p>END OF PRINT PIN# 6 LOW PULSE CURRENT LEVEL 1</p> <p>RIBBON LOW PIN# 5 ACTIVE LOW CURRENT LEVEL 1</p> <p>SERVICE REQUIRED PIN# 4 ACTIVE LOW CURRENT LEVEL 0</p> <p>MEDIA OUT PIN# 3 ACTIVE LOW CURRENT LEVEL 1</p> <p>RIBBON OUT PIN# 2 ACTIVE LOW CURRENT LEVEL 1</p> </td> <td style="width: 50%; vertical-align: top;"> <p>INPUT SIGNALS</p> <p>START OF PRINT PIN# 8 ACTIVE HIGH CURRENT LEVEL 0</p> <p>BACKUP LABEL PIN# 7 DISABLED CURRENT LEVEL 0</p> </td> </tr> </table> </div>	<p>OUTPUT SIGNALS</p> <p>END OF PRINT PIN# 6 LOW PULSE CURRENT LEVEL 1</p> <p>RIBBON LOW PIN# 5 ACTIVE LOW CURRENT LEVEL 1</p> <p>SERVICE REQUIRED PIN# 4 ACTIVE LOW CURRENT LEVEL 0</p> <p>MEDIA OUT PIN# 3 ACTIVE LOW CURRENT LEVEL 1</p> <p>RIBBON OUT PIN# 2 ACTIVE LOW CURRENT LEVEL 1</p>	<p>INPUT SIGNALS</p> <p>START OF PRINT PIN# 8 ACTIVE HIGH CURRENT LEVEL 0</p> <p>BACKUP LABEL PIN# 7 DISABLED CURRENT LEVEL 0</p>
<p>OUTPUT SIGNALS</p> <p>END OF PRINT PIN# 6 LOW PULSE CURRENT LEVEL 1</p> <p>RIBBON LOW PIN# 5 ACTIVE LOW CURRENT LEVEL 1</p> <p>SERVICE REQUIRED PIN# 4 ACTIVE LOW CURRENT LEVEL 0</p> <p>MEDIA OUT PIN# 3 ACTIVE LOW CURRENT LEVEL 1</p> <p>RIBBON OUT PIN# 2 ACTIVE LOW CURRENT LEVEL 1</p>	<p>INPUT SIGNALS</p> <p>START OF PRINT PIN# 8 ACTIVE HIGH CURRENT LEVEL 0</p> <p>BACKUP LABEL PIN# 7 DISABLED CURRENT LEVEL 0</p>		
TEST SCANNER	Tests the Linear Scanner, where:		
ALIGNMENT TEST	Reads a bar code then displays the decoded data, the code type and scan count, repeating.		
SCAN TEST	Reads a bar code then displays the decoded data, the code type and scan count, non-repeating.		
TEST RFID	Tests RFID, where:		
TAG DATA	Reads the data encoded on the RFID chip.		
DEVICE VERSION	Displays the type and version of the encoding device.		
TAG ID – HF ONLY	Reads and displays the High Frequency Tag ID number.		
PRINT TEST RATE (min)	Allows a label-to-label delay (0 - 120 minutes) when printing test label batches, where:		
◇000 (0 - 120)	Is the selected delay interval, in minutes.		

Diagnostics (continued)

Menu Item	Details
SENSOR READINGS	Displays A-D sensor values (0 – 255), where:
THR TRAN RIBM 24V → 127 159 093 175 ← PS HD RANK 000 254 000	Are the sensor readings, where: <ul style="list-style-type: none"> • THR = Printhead thermistor sensor; • TRAN = Media sensor when set to Gap or Continuous, or REFL when to Reflective; • RIBM = Ribbon sensor; • 24V = 24 VDC sensor; • PS = Present sensor; • HD = Printhead position sensor; and, • RANK = Printhead ranking resistor. <hr/> Note: Readings provided here are examples only.
RIBBON SENSOR LIMITS	Displays the values from the ribbon sensor (when equipped with the thermal transfer option), where:
RIBBON ADC LOW HIGH 070 104	Are the sensor readings (actual values will vary).

4.2.8 MCL Options



The MCL Options menu contains alternate operating selections:

Menu Item	Details
MCL OPTIONS	Allows the optional MCL (Macro Command Language) tool suite to accept peripheral input data, where:
MCL AT POWER-UP	Allows MCL operation to begin when the printer is turned ON, where:
◇DISABLED	No MCL operation.
MCL LINK MODE	Starts MCL in Link Mode.
MCL PROGRAM MODE	Starts MCL in Program Mode.
START MCL	Starts MCL after exiting the menu.

Note: Consult your MCL provider for details regarding operation and support.

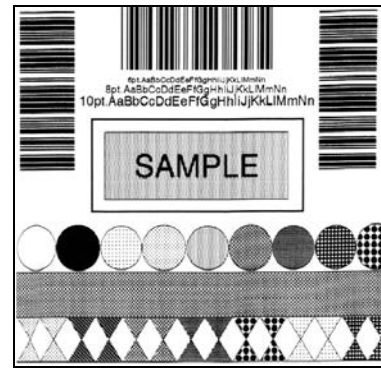
4.3 The Test Menu

The TEST Key accesses six resident format selections that are printed at selected heat and speed settings (see Section 4.1.4 for printing details).

-
- Notes:** (1) *With the exception of the Configuration Label, all test labels require full width media to capture the entire format.*
- (2) *During a test, press the ESC  Key or the  TEST Key to stop printing.*
- (3) *Use PRINT TEST RATE (Section 4.2.7) to delay printing.*
-

4.3.1 Print Quality Label

The Print Quality Label can be used to ensure conformance and visual aesthetics.



4.3.2 Configuration Label

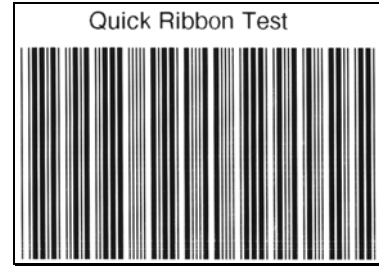
The Configuration Label provides database information, as detailed in Section 4.2.

-
- Notes:** (1) *Label contents vary with application version, model, and options.*
- (2) *Use at least 2 inch (51mm) wide media and set the Label Width accordingly (see Section 4.2.2).*
- (3) *Bulleted items indicate host changes not yet saved.*
-

CONFIGURATION	COMMUNICATIONS
TUE 09 09 AM 29JUL2008	SERIAL PORT A
PRINTER KEY	BAUD RATE
308-TB10-020312-001	9600 BPS
APPLICATION VERSION	PROTOCOL
83-228-11E 11.05 07072008	BOTH
MCL Version 1.20.02-126	PARITY
BOOT LOADER	NONE
83-2289-11A 11.01 10/02/2007	DATA BITS
UNLOCKED	8
NONE	STOP BITS
FPGA	1
MACO	SERIAL PORT B
NOT SET	NOT INSTALLED
MACR	SERIAL PORT C
00-90-09-01-00-8	NOT INSTALLED
	SERIAL PORT D
	NOT INSTALLED
SYSTEM INFORMATION	USB PORT
PRINT BUFFER SIZE	NOT INSTALLED
100 #	PARALLEL PORT A
FLASH SIZE	PORT DIRECTION
2 MB	UNI-DIRECTIONAL
RAM TEST	PARALLEL PORT A
PASS	NOT INSTALLED
OPTIONAL LANGUAGES	
FRANCAIS.DLN	
ITALIANO.DLN	
DEUTSCH.DLN	
ESPAÑOL.DLN	
CHINA	

4.3.3 Ribbon Test Label

The Quick Ribbon Test Label can be used to verify thermal transfer functions.



4.3.4 Validation Label

The Validation Label can be used to verify print quality.



4.3.5 Print Last Label

The Print Last Label function reprints the most recent test label, format received from the host, or format recalled from a memory module.

Note: *If a job was cancelled or if power was removed since the last job and the request for this label, no reprint will occur.*

4.3.6 User Defined Label

The User-Defined Label allows a template to be populated by variable data (via the printer's control panel or a USB QWERTY keyboard). The template is a stored label format, where fields delimited by the "&" become variable. The printer will prompt the user to enter these variable field data. (For example, the stored label format could contain the data 19131423443&ENTER NAME. Afterward, when recalled from memory, the printer's display will indicate the variable field: ENTER NAME.)

Notes: (1) Variable data can be any part of the DPL format - font ID, rotation, etc.
(2) No error checking will be performed.

5 *Operating, Adjusting and Maintaining the Printer*

5.1 *Displayed Messages*

During operation the printer (when not in Menu or Test Mode) displays several types of information:

- Prompts and Condition Messages (see Section 5.1.1); and,
- Fault and Warning Messages (see Section 6.1.2).

5.1.1 *Prompts and Condition Messages*

Prompts are alerts to required actions, while Condition Messages are indicators of an operational state.

Prompts and Condition Messages		
Displayed Message	Description	Action
ACCESS DENIED	The password used to access the secured menu was incorrect.	Enter the correct password.
CALIBRATION COMPLETE	The FEED Key was pressed and held.	Allow the calibration to complete.
CANCEL BATCH ENTER KEY = YES	The CANCEL or TEST Key was pressed during a multiple label job.	Press ENTER to cancel all remaining labels in the job.
CANCEL REPRINT? ENTER KEY = YES	The CANCEL or TEST Key was pressed during a fault. (See FAULT HANDLING / VOID AND RETRY, Section 4.2.5.)	Press ENTER to cancel the reprint.
CLEARING FAULTS	The FEED Key was pressed following a fault and now the printer is attempting to clear the condition.	No action is required.

Prompts and Condition Messages <i>(continued)</i>		
Displayed Message	Description	Action
DISPLAY CONTRAST	The MENU Key is being pressed and held, and now the LCD contrast is being adjusted.	Release the MENU Key when the desired contrast is achieved.
DMXNET INITIALIZING	The network card is initializing, a normal condition following power-up or a reset.	No action is required. Depending upon the settings, it may take a few minutes.
NOT INSTALLED	The selected option or feature cannot be found.	Verify that the option or feature is correctly installed. If so, call for service.
PAUSED	The PAUSE Key was pressed (or PAUSE MODE is enabled, see Section 4.2.5) and now the printer is in a paused condition.	Press PAUSE.
PRINthead CLEANING	The TEST Key was pressed and held, or CLEAN HEAD NOW was selected, and now printhead cleaning is in progress.	No action is required.
READY	The printer is waiting to receive label formats, downloads, etc.	Send a label format, download, etc.
REMOVE LABEL	The Present Sensor (or Peel and Present Mechanism) is enabled and a label awaits removal.	Remove the label.
REMOVE RIBBON PRESS ANY KEY	The TEST Key was pressed and held, or CLEAN HEAD NOW was selected, but ribbon is installed.	Remove ribbon and press any key to proceed.
SUCCESSFUL PRESS ANY KEY	The selected operation was successfully completed.	Press any key to continue.

Prompts and Condition Messages <i>(continued)</i>		
Displayed Message	Description	Action
SYSTEM INITIALIZING	The power switch has been turned ON or a reset has occurred.	No action is required. Wait briefly while the process completes.
SYSTEM RESET IN PROGRESS	A reset has occurred.	No action is required. Wait briefly while the process completes.
UNCALIBRATED	The Media Sensor is not calibrated.	Perform calibration; see Section 5.2.
WAITING FOR DATA	The SOP signal has been received, but the printer awaits label data.	Send data from the host.
WAITING FOR SIGNAL	The printer awaits a SOP signal.	Send the SOP signal from the applicator to the GPIO port.
XXXX OF XXXX PRINTING	A print job is in process, as indicated by the batch total and remaining label count.	No action is required.

5.2 Calibration

Calibration ensures label detection. Perform calibration when the UNCALIBRATED is displayed. Two different methods, Standard and Advanced Entry, are available to calibrate the printer.







5.2.1 Standard Calibration

Standard Calibration, appropriate for most media types, is a method that allows visual access to the media sensor for positioning. Displayed sensor readings can also be used to indicate the best position over the media – helpful when using small, position-critical TOF notches or marks.

Three samples are required:

- Empty: Nothing in the sensor.
- Gap (or Mark): The media liner, notch, or reflective mark in the sensor.
- Paper: The label (and liner, if any) in the sensor.

With the correct SENSOR TYPE selected (see Section 4.2.2), perform a Standard Calibration as follows:

Step	Action	Displayed Message	Comment
1	Turn ON the printer.	UNCALIBRATED	Wait briefly, about six seconds, for the printer to initialize.
2	Press the  MENU Key, and then raise the printhead assembly.	MENU MODE MEDIA SETTINGS	You are in MENU MODE.
3	Press the ENT  Key.	MEDIA SETTINGS MEDIA TYPE	You are in MEDIA SETTINGS.
4	Press the FWD  Key then scroll to SENSOR CALIBRATION.	MEDIA SETTINGS SENSOR CALIBRATION	Press the ESC  Key to cancel this procedure.
5	Press the ENT  Key.	SENSOR CALIBRATION PERFORM CALIBRATION	You are beginning the procedure.
6	Press the ENT  Key, and then press any key.	REMOVE LABEL STOCK PRESS ANY KEY <yyy>	No media should be in the sensor. This sets the Empty value, where "yyy" is the current sensor reading.


Standard Calibration (continued)

Step	Action	Displayed Message	Comment
7	<p>Proceed according to your media:</p> <p>Die-cut – remove a label from the backing material then place the backing in the sensor. Adjust the Sensor Eye Mark over the center of the backing.</p> <p>Notched – load media in the printer then adjust the Sensor Eye Mark over the center of the notch.</p> <p>Reflective – load media in the printer (black mark facedown) then adjust the Sensor Eye Mark over the center of the black mark.</p> <p>Continuous – go to Step 8.</p> <p>Press any key to continue.</p>	<p>SCAN BACKING PRESS ANY KEY <yyy></p> <p><i>Or, for reflective media:</i></p> <p>SCAN MARK PRESS ANY KEY <yyy></p>	<p>See Section 3.3 for sensor positioning details.</p> <p>This sets the backing, gap, or mark value where "yyy" is the current sensor reading.</p> <hr/> <p>Note: Never position the sensor over a perforation when sampling.</p>

Note: Do not move the Media Sensor after it has been positioned.

Step	Action	Displayed Message	Comment
8	<p>Position the media (and backing, if any) under the sensor then press any key to continue.</p>	<p>SCAN PAPER PRESS ANY KEY <yyy></p>	<p>This sets the paper value, where "yyy" is the current sensor reading.</p> <hr/> <p>Note: If using preprinted media, ensure the label area under the Sensor Eye Mark is free of text, graphics, or borders.</p>

Standard Calibration (continued)










Step	Action	Displayed Message	Comment
9	Observe the LCD.	<p>GAP MODE CALIBRATION COMPLETE</p> <p><i>Or, for reflective media:</i></p> <p>REFLECTIVE MODE CALIBRATION COMPLETE</p> <p><i>Or, for continuous media:</i></p> <p>CONTINUOUS MODE CALIBRATION COMPLETE</p>	<p>The calibration was successful if CALIBRATION COMPLETE appears.</p> <p>(If, however, another message was displayed see Note 1, below.)</p>
10	<p>Press the ESC  Key three times to exit the menu.</p> <p>Users of circular or irregularly shaped die-cut media see Note 2 before proceeding.</p> <p>If using gap, notch or reflective media, press and hold the FEED Key. Allow at least one label to advance from the printer before releasing the key.</p>	READY	<p>The printer is ready.</p> <p>If this calibration was unsuccessful, go to Section 5.2.2.</p> <hr/> <p>Notes:</p> <p>(1) <i>WARNING LOW BACKING is a normal message when calibrating notched media or media with transparent backing; see Section 6.1.2 for other possible messages.</i></p> <p>(2) <i>If using circular or irregularly shaped die-cut labels, reposition the Sensor Eye Mark over the widest part of a label.</i></p>

5.2.2 Advanced Entry Calibration




Advanced Entry is the alternate calibration method for special-case media types. In the procedure, sensor readings for the label and TOF values are taken using different sampling algorithms. From this compiled list of values the best algorithm is selected and then used to generate new readings for manual entry into memory.

Note: Use this method only when Standard Calibration has proven unsuccessful.



With the correct SENSOR TYPE selected (see Section 4.2.2), perform an Advanced Entry Calibration as follows:

Step	Action	Displayed Message	Comment
1	Turn ON the printer.	UNCALIBRATED	Wait briefly, about six seconds, for the printer to initialize.
2	Press the  MENU Key, and then raise the printhead assembly.	MENU MODE MEDIA SETTINGS	You are in MENU MODE.
3	Press the ENT  Key.	MEDIA SETTINGS MEDIA TYPE	You are in MEDIA SETTINGS.
4	Press the FWD  Key then scroll to SENSOR CALIBRATION.	MEDIA SETTINGS SENSOR CALIBRATION	Press the ESC  Key to cancel this procedure.
5	Press the ENT  Key, and then the FWD  Key.	SENSOR CALIBRATION ADVANCED ENTRY	Press the ESC  Key to cancel this procedure.
6	Press the ENT  Key, and then the FWD  Key.	ADVANCED ENTRY SENSOR GAIN	You are beginning the procedure.




Advanced Entry Calibration (continued)


Step	Action	Displayed Message	Comment
7	<p>Press the ENT  Key.</p> <p>Place the label under the Sensor Eye Mark, and then lower the printhead assembly.</p>	<p>GAIN TRAN <yyy> *00 <0 - 31></p> <p><i>Or, for reflective media:</i></p> <p>GAIN REFL <yyy> *00 <0 - 31></p>	<p>See Section 3.3 for sensor positioning details.</p> <p>If using preprinted media, ensure the label area under the Sensor Eye Mark is free of text, graphics, or borders.</p>
8	<p>Use the FWD  Key to scroll to the 00 GAIN setting and then press the ENT  Key.</p> <p>Record the sensor reading as a Label Value in a table similar to the one shown below.</p>	<p>GAIN TRAN <yyy> *00 <0 - 31></p> <p><i>Or, for reflective media:</i></p> <p>GAIN REFL <yyy> *00 <0 - 31></p>	<p>Selection is denoted by an asterisk (*).</p> <p>The sensor reading equals the "yyy" value.</p> <hr/> <p>Note: Never position the sensor over a perforation when sampling.</p>

Gain Number	Label Value	TOF Value	Difference Value
00	255		
01			
02			
...			
31			

Step	Action	Displayed Message	Comment
9	<p>Press the FWD  Key to increment the Gain Number then press the ENT  Key and record the resulting Label Value.</p> <p>Repeat this step for each of the remaining Gain Numbers (01-31).</p>	<p>GAIN TRAN <yyy> *31 <0 - 31></p> <p><i>Or, for reflective media:</i></p> <p>GAIN REFL <yyy> *31 <0 - 31></p>	



Advanced Entry Calibration (continued)

Step	Action	Displayed Message	Comment
10	<p>Proceed according to your media type:</p> <p>Die-cut – remove a label from the backing material then place the backing into the sensor. Adjust the Sensor Eye Mark over the center of the backing.</p> <p>Notched – adjust the Sensor Eye Mark over the center of the notch.</p> <p>Reflective – adjust the Sensor Eye Mark over the center of the facedown black mark.</p> <p>Use the FWD  Key to scroll to the 00 GAIN setting and then press the ENT  Key. Record the sensor reading as a TOF Value.</p>	<p>GAIN TRAN <yyy> *00 <0 - 31></p> <p><i>Or, for reflective media:</i></p> <p>GAIN REFL <yyy> *00 <0 - 31></p>	<p> Note: Never position the sensor over a perforation when sampling.</p>

 Note: Do NOT move the Media Sensor after it has been positioned.



Gain Number	Label Value	TOF Value	Difference Value
00	255	254	
01	251		
02	241		
...	...		
31	112		

Advanced Entry Calibration (continued)







Step	Action	Displayed Message	Comment
11	Press the FWD  Key to increment the Gain Number then press the ENT  Key and record the resulting TOF Value. Repeat this step for each of the remaining Gain Numbers (01-31).	GAIN TRAN <yyy> *31 <0 - 31> <i>Or, for reflective media:</i> GAIN REFL <yyy> *31 <0 - 31>	
12	From the collected data, where both the values are above 20, subtract the Label Value from the corresponding TOF Value to find the Difference Value . Note the Gain Number of the largest Difference Value.	GAIN TRAN <yyy> *31 <0 - 31> <i>Or, for reflective media:</i> GAIN REFL <yyy> *31 <0 - 31>	For example in the table below, Gain Number 08 is chosen because it has the highest Difference Value (146) where both the Label and the TOF Values are above 20.

Sampling Table



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
...
31	116	14	N/A

Step	Action	Displayed Message	Comment
13	Using the FWD  Key, scroll to the Gain Number determined in Step 12, and then press the ENT  Key.	GAIN TRAN <yyy> *08 <0 - 31> <i>Or, for reflective media:</i> GAIN REFL <yyy> *08 <0 - 31>	

Advanced Entry Calibration (continued)

Step	Action	Displayed Message	Comment
14	<p>a) Place the media in the sensor. Record the reading and label it "P" (paper).</p> <p>b) Place the backing, notch, or mark in the sensor. Record the reading and label it "G" or "M" (Gap or Mark).</p> <p>c) Remove media. Record the reading and label it "E" (Empty).</p>	<p>GAIN TRAN <yyy> *08 <0 - 31></p> <p><i>Or, for reflective media:</i></p> <p>GAIN REFL <yyy> *08 <0 - 31></p>	<p>The samplings using the selected Gain Number are taken.</p>
15	<p>Press the ESC  Key, and then press the FWD  Key.</p>	<p>ADVANCED ENTRY SENSOR LEVELS</p>	<p>The sensor readings must be entered into the printer.</p>
16	<p>Press the ENT  Key.</p> <p>Using the FWD  Key or the REV  Key, set the Paper Sensor Level to the value determined in the previous step.</p> <p>Press the ENT  Key to select the entry and advance the menu. Repeat for the Gap Sensor Level (or Mark Sensor Level) and the Empty Sensor Level entries.</p>	<p>PAPER SENSOR LEVEL P*198 G*084 E*014</p> <p style="text-align: center;">↓</p> <p>GAP SENSOR LEVEL P*198 G*084 E*014</p> <p style="text-align: center;">↓</p> <p>EMPTY SENSOR LEVEL P*198 G*084 E*014</p> <p><i>Or, for reflective media:</i></p> <p>PAPER SENSOR LEVEL P*015 M*181 E*213</p> <p style="text-align: center;">↓</p> <p>MARK SENSOR LEVEL P*015 M*181 E*213</p> <p style="text-align: center;">↓</p> <p>EMPTY SENSOR LEVEL P*015 M*181 E*213</p>	<p>Selection is denoted by an asterisk (*).</p> <p>The displayed message will change and the selection will flash to indicate the next entry.</p>

Advanced Entry Calibration (continued)

Step	Action	Displayed Message	Comment
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, enter MEDIA SETTINGS / CALIBRATION / ADVANCED ENTRY / SENSOR GAIN and lower the selected Gain Number by one. Select the new Gain Number then save the changes and exit the menu. Retest your media. If unsuccessful, repeat the procedure until a usable gain is obtained.

5.3 Reset Methods

There are three reset methods, each with a different affectivity. Proceed according to the desired result:

5.3.1 Soft Reset

To clear any temporary host settings, press and hold the CANCEL Key for approximately four seconds.

5.3.2 Level One Reset

To return the factory default settings or (if saved) a Factory Setting File, turn OFF the printer. Press and hold the PAUSE and CANCEL Keys while turning ON the printer and until the SYSTEM RESET message flashes.

Note: The same as selecting SET FACTORY DEFAULTS; see Section 4.2.5.

5.3.3 Level Two Reset

To return the firmware default settings and clear all parameters, turn OFF the printer. Press and hold the PAUSE, FEED, and CANCEL Keys while turning ON the printer and until the SYSTEM RESET message flashes.

Note: Calibration is required; see Section 5.2.

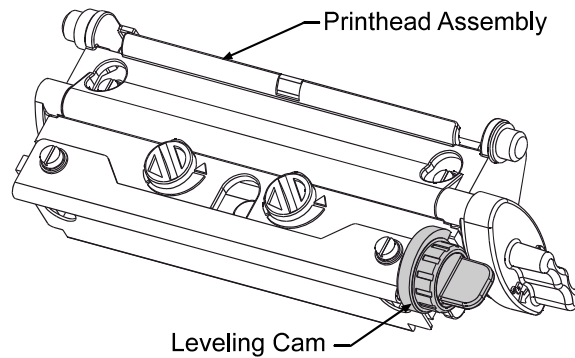
5.4 Printhead Assembly Adjustments

Mechanical adjustments ensure consistent print quality across a wide range of media types and sizes.

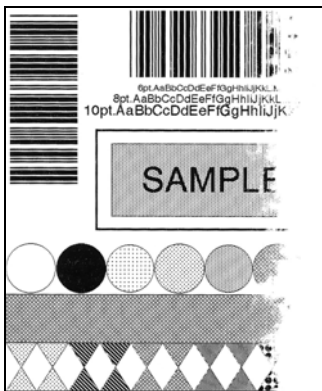
5.4.1 Leveling Cam Adjustment

Adjust the Leveling Cam for even pressure distribution when using less than full width media [4 inches (102mm)]; in addition, perform the adjustment when changing to a different width of media:

- A. With media loaded, download a batch of labels (or use a test format) and begin printing.
- B. While observing the printed labels, rotate the Leveling Cam counter-clockwise to an over-adjusted position (see Example 1).

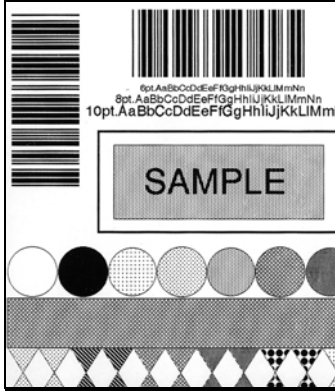


- C. Rotate the Leveling Cam clockwise, one click at a time, until the printed labels contain a complete, even image (see Example 2).



Example 1 –

Too much adjustment produces an image that fades across the label.



Example 2 –

Correct adjustment produces a complete image, with even print contrast across the label.

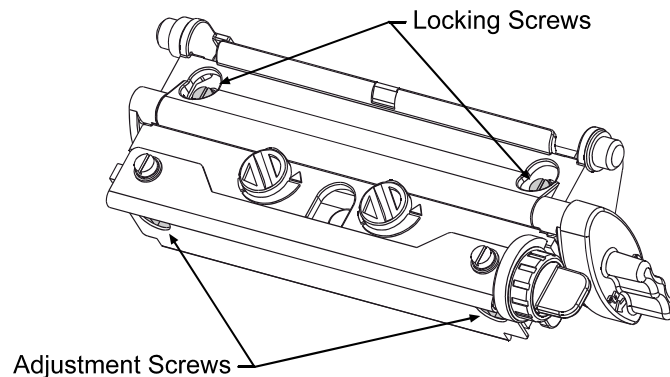
Note: Under-adjustment can cause ribbon wrinkling, lateral label movement, and excessive wear on printer components.

5.4.2 Burn Line Adjustment

Adjust the Burn Line only after trying the print quality improvement suggestions in Section 5.4.1 and 7.2.1. If print quality remains unacceptable, a Burn Line Adjustment may be necessary:

Note: If you have questions regarding this procedure, contact a qualified technician or Datamax-O'Neil Technical Support for answers.

- A. Load the printer with your media (and ribbon, if required) then lower the printhead assembly and rotate the printhead latch into the locked position.
- B. Loosen the two Locking Screws approximately $\frac{1}{4}$ turn counter-clockwise.



- C. Equally turn each Adjustment Screw counter-clockwise until the burn line is positioned past the platen roller apex. Print a Validation Label; see Section 4.3.4. (The print on the label should have a light, uneven appearance.)
- D. Tighten the Locking Screws just enough to remove any play in the printhead assembly, while leaving them loose enough to allow for adjustment.
- E. Equally turn each Adjustment Screw clockwise about ¼ turn (or 1/8 turn for finer adjustments as print quality becomes maximized – see note below) then print a Validation Label and examine the print quality for improvement. Repeat this step until the labels are produced with even print contrast and acceptable print quality.

Note: *Turning the Adjustment Screws counter-clockwise will NOT move the printhead outward; if the printhead was adjusted too far inward, restart the entire procedure.*

- F. Tighten the Locking Screws. Print a final test label to verify the adjustment.

5.5 Printhead Replacement

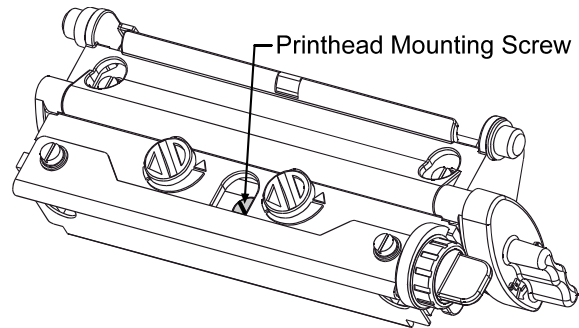


- Use extreme care when handling the printhead and follow standard ESD prevention procedures.
- Never use sharp objects on the printhead surface.
- If 24V OUT OF TOLERANCE is displayed (see Section 6.1.2), or if you have any questions regarding this procedure, contact a qualified technician or Datamax-O'Neil Technical Support for answers.

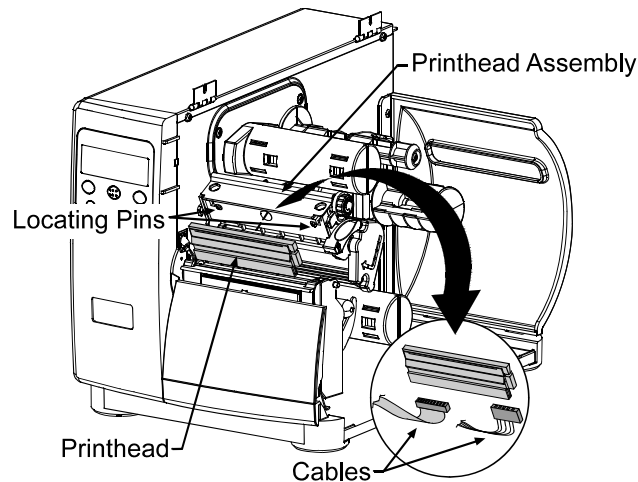
Follow the procedure below to replace the printhead:

- A. Touch a bare metal area of the printer's frame to discharge any static electricity present on your body.
- B. Turn OFF and unplug the printer. Open the access cover. If ribbon is installed, remove it.

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



- D. Rotate the printhead latch forward and, while supporting the Printhead, raise the Printhead Assembly. Disconnect the Cables and then remove the Printhead.



- E. Install the Printhead by securely connecting both Cables.
- F. Position the Printhead onto the Locating Pins in the Printhead Assembly and secure it with the Printhead Mounting Screw. (Do not over-tighten the screw.)


Note: *Printhead alignment is normally not required.*

- G. Clean the Printhead; see Section 5.6.1.
- H. If removed, load ribbon. Lower the printhead assembly, and rotate the printhead latch into the locked position. Plug in and turn ON the printer. Print a Validation Label (see Section 4.3.4). If necessary, adjust the PRINT CONTROL / CUSTOM ADJUSTMENTS / DARKNESS setting (see Section 4.2.3) so that the print contrast matches previous levels.

5.6 Maintenance

The following list and table detail the recommended items, techniques, and schedules to help you safely and effectively maintain the printer:

- Isopropyl alcohol
- Cotton swabs
- A clean, lint-free cloth
- Soft-bristle brush
- Soapy water/mild detergent
- Compressed air
- Printhead Cleaning Cards or Printhead Cleaning Film

 CAUTION	<p>For your safety and to avoid damage, always turn OFF and unplug the printer before cleaning. Also, take proper precautions when using isopropyl alcohol – a flammable liquid.</p>
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Recommended Cleaning Schedule*		
Area / Item(s)	Interval**	Method / Supplies
Printhead	Thermal transfer media – after each roll of ribbon; and, Direct thermal media – after each roll of media, or as needed.	Isopropyl alcohol; and, if necessary, Printhead Cleaning Cards or Printhead Cleaning Film (see Section 5.6.1).
Rollers	After each roll of labels, after each roll of ribbon, or as needed.	Cotton swab dampened with isopropyl alcohol (see Section 5.6.2).
Media Path & Media Sensor	As needed, based on a weekly visual inspection.	Compressed air or a soft brush. Isopropyl alcohol, as needed.
Exterior Surfaces	As needed.	Mild detergent (see Section 5.6.3).
Interior Surfaces	As needed.	Soft-brush or compressed air. Remove all buildup. See Section 5.6.3.

*For optional equipment, refer to the documentation that accompanied the item(s).

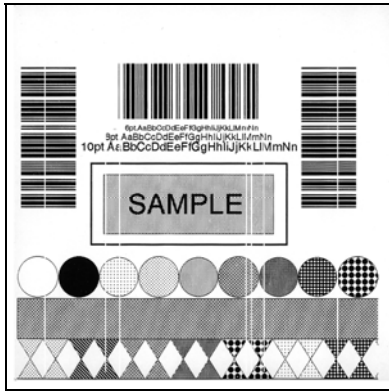
**Whichever interval comes first.

5.6.1 Cleaning the Printhead



NEVER use a sharp, hard or abrasive object on the printhead.

If print quality declines the typical cause can be traced to debris buildup on the printhead; left unattended, the printhead service life can be reduced. The printer can be programmed to remind you to perform cleaning (see Section 4.2.2.) Depending upon the media and printing parameters used, different cleaning methods are recommended.

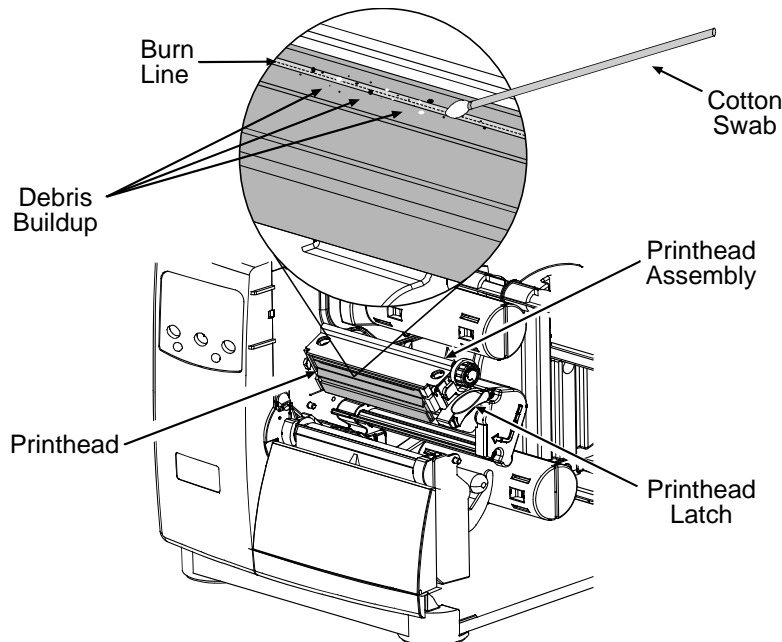


Note: Streaks can indicate a dirty or faulty printhead.

Proper cleaning is critical. To maintain peak performance of the printer, Datamax O'Neil offers a complete line of cleaning products including pens, cards, films and swabs.

Cotton Swab Procedure (for users of direct thermal media, or thermal transfer media with wax ribbon):

- A. Turn OFF and unplug the printer. Open the cover. Raise the Printhead Assembly. **Allow the printhead to cool before proceeding.**



- B. Move media (and ribbon, if present) away from the printhead, as necessary. Using a cotton swab moistened (not soaked) with isopropyl alcohol, gently wipe away buildup on the Printhead while paying special attention to cleaning the Burn Line. **Allow the printhead to dry.**
- C. Reposition media (and ribbon, if present). Lower and lock the Printhead Assembly.
- D. Plug in and turn ON the printer. Close the cover then run a few sample labels and examine them. If streaking is still present, use the Cleaning Card Procedure, below; otherwise, this completes cleaning. If the CLEAN HEAD SCHEDULE has been set, enter the menu and select RESET COUNTER; see Section 4.2.2.

Cleaning Card Procedure (for users of direct thermal media, or thermal transfer media with wax/resin ribbon combinations; also for unsuccessful Cotton Swab cleaning attempts):

- A. Open the cover. Unlock the Printhead Latch and raise the Printhead Assembly. **Allow the printhead to cool before proceeding.**
- B. Remove media (and ribbon, if present) then place a Cleaning Card (part number 70-2013-01) under the printhead.
- C. Lower and lock the Printhead Assembly. Disengage the Leveling Cam.
- D. Close the cover then enter the menu and select CLEAN HEAD NOW; see Section 4.2.2.
- E. After the cleaning card has been run through the printer, reinstall media (and ribbon, if needed). Run a few sample labels and examine them. If streaking is still present, use the Cleaning Film Procedure, below; otherwise, this completes cleaning.

Cleaning Film Procedure (for users of thermal transfer media and resin ribbon, when printing with a Heat Value of 22 or higher, or when other methods prove unsuccessful):

- A. Open the cover. Unlock the Printhead Latch and raise the Printhead Assembly. **Allow the printhead to cool before proceeding.**
- B. Remove media (and ribbon, if present) then place a sheet of Cleaning Film (part number 70-2087-01) under the printhead.
- C. Lower and lock the Printhead Assembly. Disengage the Leveling Cam.
- D. Close the cover then enter the menu and select CLEAN HEAD NOW; see Section 4.2.2.
- E. After the cleaning film has been run through the printer, turn OFF and unplug the printer. Open the cover then raise the Printhead Assembly and **wait briefly for the printhead to cool.** Using a cotton swab moistened (not soaked) with isopropyl alcohol, clean the printhead then allow it to dry.
- F. Reinstall media (and ribbon, if needed). Plug in and turn ON the printer. Run a few sample labels and examine them. If streaking is still present the printhead may need to be replaced.

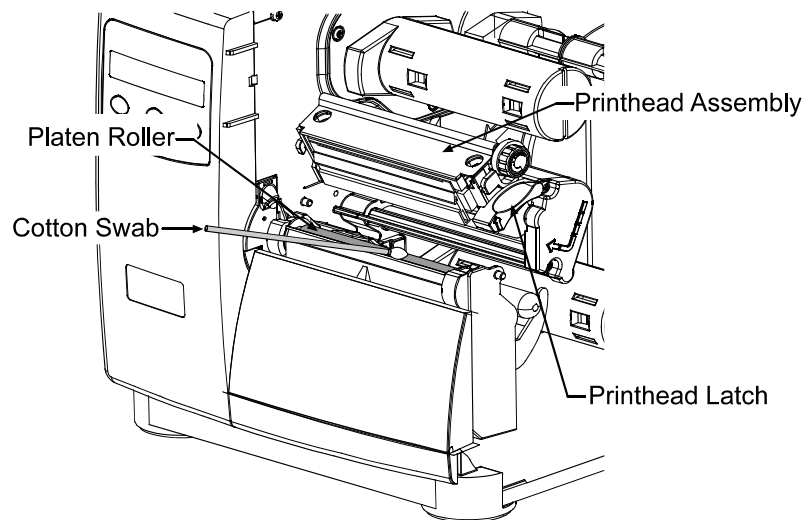
5.6.2 Cleaning the Platen Roller



NEVER use a sharp object to clean the Platen.

Grit, adhesive, and ink buildup can cause a decline in print quality and, in extreme cases, cause labels to stick and wrap around the roller. Clean the platen roller as follows:

- A. Turn OFF and unplug the printer.
- B. Open the access cover. Unlock the Printhead Latch and raise the Printhead Assembly. Remove media and ribbon.
- C. Using a Cotton Swab dampened with isopropyl alcohol clean the accessible portion of the roller, and then manually rotate the roller to clean the remaining area. Allow the roller to dry.



- D. Replace ribbon and media.
- E. Lower the Printhead Assembly and rotate the Printhead Latch completely back, to the locked position.
- F. Close the access cover. Plug in and turn ON the printer. Feed several labels to normalize tracking.

5.6.3 Cleaning Interior and Exterior Surfaces

Interior Surfaces – Turn OFF and unplug the printer. Remove all media. Then, using a soft bristle brush or compressed air, remove all dust particle buildup inside the printer.

Exterior Surfaces – Turn OFF and unplug the printer. Remove all media. Then, using a soft cloth or sponge dampened with general-purpose cleanser (never abrasive cleansers or solvents) wipe the exterior surfaces until clean.

5.7 Application Updates

The update can be performed in Ready Mode or in Download Mode. Before updating, identify the current program version by printing a Configuration Label (see Section 4.2.2). Compare that version string to those available from our web site then download the desired file onto your computer's hard drive. Proceed according to the currently installed version:

- If 2.091 or greater, see Section 5.7.1 or 5.7.2.
- If 2.08 or less, see Section 5.7.2.

Notes: *If updating to version 11.021 or greater, the Boot Loader must be updated before proceeding; see Section 5.8.*

Also, those desiring an alternate menu language must also download the EFIGS menu language file. Go to the EFIGS directory and copy 832296.01C (or most current version) to lpt1: /b (where the DOS Copy command requires the /b parameter because this file contains binary code).



If an error occurs during downloading, the update will be terminated. If the process did not reach ERASING FLASH or UPDATING SOFTWARE, the previous program will remain intact; otherwise, a successful download must be completed to make the printer operable.

5.7.1 Updating from Ready Mode

Application Version 2.091 (or greater) Update Procedure			
Step	Displayed Message	Action	Comment(s)
1	READY	Using the DOS copy command (where "filename" is the program to be loaded and "lpt1" is the selected interface port), enter the following: copy filename lpt1:	As an example, this would be entered as: copy i4212_1105.zg lpt1 (Where "lpt1" can differ to include another port, as equipped.) The Ready Indicator will flash as data is received.
2	UPGRADING SOFTWARE	No action required.	The new application is being stored and verified.
3	4214 11.05 03/26/2008	No action required.	The printer has reset and is displaying the new firmware version.
4	READY	No action required.	The new application is running. <hr/> Note: If <i>UNCALIBRATED</i> is displayed, see Section 5.2. <hr/>

5.7.2 Updating from Download Mode

Application Version 2.08 (or less) Update Procedure*			
Step	Displayed Message	Action	Comment(s)
1	BOOT-PA10 02.08 2/11/00	Turn OFF the printer. Press and hold the PAUSE Key and TEST Key while turning ON the printer.	The Boot Loader version is displayed. Note: This information will vary with the printer model and Boot Loader version.
2	UPDATE SOFTWARE SEND SOFTWARE	Using the DOS copy command, copy the filename to the printer (see Section 5.7.1 for an example).	The printer is ready to accept the new application version. Note: The parallel port (LPT1) must be used to write to the printer.
3	UPDATE SOFTWARE READING IMAGE	No action required.	The printer is receiving the new program.
4	ERASING FLASH SOFTWARE IMAGE	No action required.	Received and verified, memory is now being cleared of the previous program.
5	WRITING FLASH SOFTWARE IMAGE	No action required.	The new program is being written into Flash memory. Upon completion and after a printer invoked reset, the new application will run. Note: If UNCALIBRATED is displayed, see Section 5.2.

*This can also be used as an alternate method to download all other versions.

5.7.3 Possible Problems

The following is list of possible error messages when downloading updates:


Application Update Error Messages	
Displayed Message	Descriptions / Causes / Solutions
DECOMPRESSION ERROR	The printer detected an error during the decompression and transfer of file data from cache storage into the Flash memory. Confirm the version and retry in Download Mode; however, if the problem continues call for service.
ERROR ERASING FLASH	The printer could not successfully erase Flash memory. The possible cause is defective Flash memory. Try the download again; however, if the problem continues call for service.
ERROR WRITING FLASH	The printer could not successfully write the program into Flash memory. A possible cause is defective Flash memory. Try the download again; however, if the problem continues call for service.
HARDWARE MISMATCH DATA REJECTED	Application downloaded was not compatible with the main logic card. The firmware used was for a different class model and not supported by this Boot Loader version (see CONFIGURATION LEVEL / PRINTER KEY, Section 4.2.5).
INVALID SOFTWARE DATA REJECTED	The printer detected an error. The possible causes include: <ul style="list-style-type: none"> • An invalid or corrupted file was downloading – try saving the file to the host and then download again. • A communications error occurred – recheck cabling and port setting.
SOFTWARE MISMATCH DATA REJECTED	Software level not authorized for this printer (see CONFIGURATION LEVEL / PRINTER KEY, Section 4.2.5).

Notes: *If experiencing trouble when attempting to download the file to the printer, try the following alternate methods:*

- 1) Use the Download Mode (see Section 5.7.2).
- 2) Windows users – try restarting the computer in MS-DOS mode.
- 3) Use the Datamax-O'Neil Driver by Seagull Scientific™ – Device Setting / Send File to Printer function.

5.8 Boot Loader Updates

The printer stores its Boot Loader program in Flash memory on the main logic card.

 <p>WARNING</p>	<p>If power is lost while UPGRADING SOFTWARE is displayed, the printer will become non-functional and will require factory programming or a main logic card.</p>
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Before updating, identify the current program version by printing a Configuration Label (see Section 4.3.2). Compare that version string to those available from our web site then download the desired file onto your computer's hard drive. Follow the steps below to update the version:

Boot Loader Update Procedure			
Step	Displayed Message	Action	Comment(s)
1	READY	<p>Using the DOS copy command (where "filename" is the program to be loaded and "lpt1" is the selected interface port), enter the following:</p> <pre>copy filename lpt1:</pre>	<p>As an example, this would be entered as:</p> <pre>copy boottb99_1101.bs lpt1</pre> <p>(Where "lpt1" can differ to include another port, as equipped.)</p> <p>The Ready Indicator will flash as data is received.</p>
2	UPGRADING SOFTWARE	No action required.	The new program is being stored and verified.
3	4212 11.05 03/26/2008	No action required.	The printer has reset automatically.
4	READY	No action required.	<p>The new application is now running.</p> <hr/> <p>Note: If UNCALIBRATED is displayed, see Section 5.2.</p>

Note: If the update failed, press and hold the PAUSE and TEST Keys (see Section 4.1) while turning ON the printer. After SEND SOFTWARE is displayed, release the keys then re-send the file as described above.

6 Troubleshooting

6.1 Problem Resolution

When a problem is encountered, the information in this section will help resolve it. Locate the description of the problem to find an appropriate solution. For problems that are accompanied by a displayed message, see Section 6.1.2.

Note: *If you have questions, or if problems persist, contact a qualified technician or Datamax-O'Neil Technical Support.*

6.1.1 General Resolutions

The following table lists problems that may not be accompanied by a displayed message:

If experiencing this problem...	Try this solution...
Cannot communicate through the parallel port:	Send a format to the printer then observe the Ready Indicator – If the indicator does not flash, check the parallel cable type; also check the protocol and port settings of the printer and host.
Cannot load media through the cutter:	<div data-bbox="553 1398 1422 1482" style="border: 1px solid black; padding: 5px;">⚠ WARNING! Use extreme care. Turn OFF and unplug the printer before proceeding.</div> Ensure the cutter and its cable are properly installed and connected to the printer – Plug in and turn ON the printer. You should hear the blade cycle; otherwise, call for service.

General Resolutions (continued)

If experiencing this problem...	Try this solution...
Erratic media movement:	The printer may require a calibration – See Section 3.5.
Erratic printing (instead of the label format, strange characters are printed):	<ul style="list-style-type: none"> • The printer may be in Hex Dump Mode – See Section 6.2. • If using the serial communication the port settings may be incorrect – Check both the host and printer port data bit settings.
Intellifont will not print:	You may be using an incorrect type – Intellifont format is Little/Big Endian specific and the printer uses Big Endian; refer to your font supplier for information.
Light print on the right side of the label (as it exits the printer):	<ul style="list-style-type: none"> • The Leveling Cam may be incorrectly adjusted – See Section 5.4.1 for adjustment details. • The platen may be dirty (or worn) – See Section 5.6.2 for cleaning details, and check wear by visual inspection.
Missing printed information:	<ul style="list-style-type: none"> • Check the label format for character placement outside the dimensions of the label – All row / column values must allow enough space for the height and length of the information to be printed. • The available memory may have been exceeded by the format size – Try reducing the memory allocated to either the internal module or scaleable font cache; see Section 4.2.5. • If using serial communication, ensure that the interface cable meets the pin out requirements – See Section 7.3.
Missing print on left or right side of the label:	Information may be formatted outside the label dimensions – Check your software program label size or check the values in PRINT CONTROL / COLUMN OFFSET and / CUSTOM ADJUSTMENTS / COLUMN ADJUST; Section 4.2.3.

General Resolutions (continued)

If experiencing this problem...	Try this solution...
The LCD is off, but indicator lights are illuminated:	The Display Contrast may set too low – Press and hold the MENU Key; see Section 4.1.1.
The LCD is off and no indicator lights are illuminated:	<ul style="list-style-type: none"> • Verify that the AC power cord is connected to the outlet and the printer, and that the power switch is ON. • Verify that the AC outlet is functioning, or try moving the printer to another location with a different AC circuit. • The AC cord may be damaged, if so replace it. • The line fuse may be blown, if so call for service.
No print (labels advance normally but are blank):	<p>Examine the used ribbon for an image –</p> <p><i>If an image is present, then:</i></p> <ul style="list-style-type: none"> • Verify that the ribbon was properly loaded per Section 3.4. • If properly loaded – then the wrong coating configuration is being used. (To verify the inked (coated) side of a ribbon, press the sticky side of a label against the surface – ink will only lift from the coated side.) Clean the printhead (see Section 5.6.1) and replace the ribbon with a correct type; see Section 3.4. <p><i>If no image is present, then:</i></p> <ul style="list-style-type: none"> • Print any test label (see Section 4.3) – 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 menu. (Same function commands from the host computer can override the menu settings; see Section 4.2.6.) • The media/ribbon combination may be incorrect – See Section 7.2.2. • The printhead or printhead cable(s) may be loose – Power OFF the printer before reconnection – see Section 5.5 for locations.

General Resolutions (continued)

If experiencing this problem...	Try this solution...
Nothing happens when printing from your software program:	<ul style="list-style-type: none"> • Ensure that the printer is at READY. • Send the job again while observing the Ready Indicator (see Section 4.1.1.) – If the indicator does not flash, check the printer and host for protocol and port settings. • Ensure the interface cable meets the requirements found in Section 3.1.1.
Poor print quality:	<ul style="list-style-type: none"> • The printhead may need cleaning – See Section 5.6.1. • Adjust the Heat and Print Speed settings via the menu or by host commands – See Section 4.2.3. • The media/ribbon combination may not be compatible – See Section 7.2.2. • The Leveling Cam may be incorrectly adjusted – See Section 5.4.1. • The Platen may be dirty or worn – See Section 5.6.2. • The Printhead Burn Line may need adjusting – See Section 5.4.2.
Skips labels when printing:	<ul style="list-style-type: none"> • Calibration may be needed – See Section 3.5. • The Media Sensor may be out of position – Readjust the position; see Section 3.3. • The format may be within 1/8 inch (3 mm) of the label's edge – Try reducing or moving the format slightly.
Unable to print rotated text:	<p>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 <i>Class Series 2 Programmer's Manual</i>.</p>

6.1.2 Warning and Fault Messages

The printer displays messages when the possibility of a problem or an actual fault occurs. Depending upon the displayed message, find the possible action or solution in the tables below.

Note: *Warning and Fault Messages do not appear in Menu or Test Mode.*

Warning Messages:

Displayed for about three seconds, Warning Messages assume a low priority and indicate a pending change in printer configuration, or an operating condition that could lead to a fault.

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, and a slight delay may occur for the "Out of Stock" indication; no action is required.
GOODBYE	Power has been removed and shutdown is in progress.	The power switch was turned OFF; a line fuse was blown; or, the line voltage was lost.
HEAD NEEDS CLEANING	The scheduled printhead cleaning distance has been reached.	Press and hold the TEST Key or select CLEAN HEAD NOW; see Section 5.6.1.
HOST CHANGES PENDING	The host has pending configuration changes that require a "host reset command."	To save the changes send a host reset command (in DPL), or discard changes by performing a soft reset; see Section 5.3.1.

Warning Messages (continued)

Warning Messages		
Displayed Message	Description	Action(s)
LOW VOLTAGE	The printer has detected a low operating voltage.	<ul style="list-style-type: none"> • Possible low or fluctuating line voltage level – Try moving the printer to another AC outlet; if the condition persists, call for service. • If printing black over more than 50% of the total label area, try reducing the HEAT setting or the size of the black area.
RTC RAM FAILURE	The printer was unable to save settings in permanent memory.	Possible faulty main logic card. If the condition persists, call for service.
TEMPERATURE PAUSE	A high printhead temperature has been detected.	No action required. Printing will resume after the printhead cools.


Fault Messages:

Fault Messages indicate a problem and appear on the LCD with the highest priority. If more than one fault is detected, messages cycle. (Alternate messages may occur when downloading font, firmware, or Boot Loader files.)

Note: *To return operation after a fault occurs, the fault must be corrected and the FEED Key pressed.*

Fault Messages		
Displayed Message	Description	Action(s)
24V OUT OF TOLERANCE	The printer has detected a drop in the 24-volt power supply.	Try cycling the printer power OFF and ON. If the fault does not clear, call for service.
ADC FAULT	The printer has detected an analog to digital circuit converter failure.	Try cycling the printer power OFF and ON. If the fault does not clear, call for service.

Fault Messages (continued)

Fault Messages		
Displayed Message	Description	Action(s)
CUTTER FAULT	The printer has detected a cutter mechanism fault.	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">  WARNING! Use extreme care. Turn OFF and unplug the printer before proceeding. </div> Examine the cutter for obstructions and ensure its cable is properly connected. Plug in and turn ON the printer. Press the FEED Key. If the fault does not clear, call for service.
DMA FAULT	The printer has detected a Direct Memory Access failure.	Try cycling the printer power OFF and ON. If the fault does not clear, call for service.
GAP MODE CANNOT CALIBRATE	Consistently low sensor readings were detected.	Press any key to continue. Ensure that media was inserted in the sensor during the appropriate calibration step; also ensure that the sensor is clean. Retry the calibration. If the problem persists, try Advanced Entry Calibration; see Section 5.2.2.
GAP MODE FAULTY SENSOR	Consistently high sensor readings were detected.	Press any key to continue. Ensure that media was removed from the sensor during the appropriate calibration step; also ensure that the sensor is clean. Retry the calibration. If the problem persists, call for service.

Fault Messages (continued)

Fault Messages		
Displayed Message	Description	Action(s)
OUT OF STOCK	The printer cannot detect media.	<p>Try the following procedures:</p> <ul style="list-style-type: none"> • Load media. Ensure that the labels are passing through the Media Sensor and, if necessary, readjust the Media Sensor over the TOF mark; see Section 3.3. Also, if using media with large gaps, adjust the PAPER OUT DISTANCE (see Section 4.2.2); or, • Calibrate the printer; see Section 5.2.
POSITION FAULT	<p>One of the following has occurred:</p> <ul style="list-style-type: none"> • An update was made to the application version; • The printer was powered-off or reset during a ribbon, out of stock or TOF fault; or, • The printer was unable to complete the calibration. 	<p>Try one of the following procedures:</p> <ul style="list-style-type: none"> • Press the FEED Key then clear any related fault condition; or, • Calibrate the printer; see Section 5.2.
PRESENT SENSOR FAULT	The printer cannot detect the Present Sensor.	Ensure that the option is installed properly. Try cycling the power OFF and ON. If the fault does not clear, call for service.
PRINT ENGINE FAULT	The printer has detected a problem within the print logic.	Try cycling the power OFF and ON. If the fault does not clear, call for service.
RAM FAULT	The system has detected a memory failure.	Try cycling the power OFF and ON. If the fault does not clear, call for service.

Fault Messages (continued)

Fault Messages		
Displayed Message	Description	Action(s)
REFLECTIVE MODE CANNOT CALIBRATE	Consistently low sensor readings were detected.	<p>Press any key to continue.</p> <p>Ensure that the reflective mark is inserted facedown in the media sensor during calibration; 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 Advanced Entry Calibration; see Section 5.2.2.</p>
REFLECTIVE MODE FAULTY SENSOR	Consistently high sensor readings were detected.	<p>Press any key to continue.</p> <p>Ensure that media was removed from the media sensor during the appropriate calibration step; also ensure that no labels are stuck in the media sensor. Retry the calibration. If the problem persists, call for service.</p>
RIBBON FAULT	<p>One of the following has occurred:</p> <ul style="list-style-type: none"> • The ribbon sensor values have changed; or, • No ribbon supply hub rotation or only intermittent movement has been detected. 	<p>Try the following procedures:</p> <ul style="list-style-type: none"> • Ensure that ribbon is correctly loaded and that the printhead assembly is locked; • Remove any obstruction that may inhibit ribbon hub movement; • Ensure that the ribbon core fits snugly on the ribbon supply hub; and, • Ensure that the ribbon and label combination is not slipping; see Section 7.2.2 for recommended combinations.

Fault Messages (continued)

Fault Messages		
Displayed Message	Description	Action(s)
SCANNER FAULT	<p>The Scanner could not pass a bar code.</p> <hr/> <p>Note: <i>This is normal when a bar code is unreadable.</i></p> <hr/>	<p>Press the FEED Key to clear. If the bar code is free from anomalies (e.g., voids, insufficient quiet zones, etc.) yet the fault continues, try the following:</p> <ol style="list-style-type: none"> 1) Ensure that the bar code is capable of being read by the scanner; see the option's documentation or the <i>Class Series 2 Programmer's Manual</i>. 2) Adjust the Heat value. 3) Enable only those bar codes to be decoded. 4) Decrease the Print Speed or increase the height of the bar code. 5) Decrease the Verification Level. 6) Ensure the ribbon used contains carbon-based inks. 7) Ensure that the label stock has a matte finish. <p>If the fault does not clear, and the bar code is readable on other equipment, the scanner may need alignment; consult the option's instructions, or call for service.</p>
TEMPERATURE FAULT	<p>The printer has shutdown to allow the printhead temperature to cool.</p>	<p>Turn OFF the printer until cool to prevent permanent damage. See Section 7.1 for environmental specifications.</p>

Fault Messages (continued)

Fault Messages		
Displayed Message	Description	Action(s)
TOP OF FORM FAULT	<p>The printer could not find the TOF within the maximum label length setting, or TOF occurred in an unexpected place.</p> <hr/> <p>Note: When using reflective media, this fault is given for an Out of Stock condition.</p> <hr/>	<p><i>If media is moving:</i></p> <ol style="list-style-type: none"> 1) Press the FEED Key. It may be necessary to re-calibrate the printer; see Section 5.2. 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, ensuring that the Media Guide is properly positioned; see Section 3.2. 4) The Leveling Cam may be improperly adjusted; see Section 5.4.1. 5) The label may be longer than the value entered. Check the Media Settings / Maximum Label Length; see Section 4.2.2. 6) The Media Sensor may be obstructed. Check and carefully remove any obstruction (labels, paper dust, adhesive, etc). <p><i>If media is not moving:</i></p> <p>The printhead assembly may not be locked.</p>
VERIFIER FAULT	<p>The Verifier could not pass a bar code.</p> <hr/> <p>Note: This is normal when a bar code is unreadable.</p> <hr/>	<p>Simultaneously press the ENTER and F1 Keys on the Verifier to clear the fault. If the fault persists, consult the option's instructions.</p>

6.2 Hex Dump Mode

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 2 Programmer's Manual* is an essential reference.

To begin, go to DIAGNOSTICS and enable HEX DUMP MODE; see Section 4.2.7. Exit the menu and save your changes. Afterward, HEX DUMP MODE will be indicated by the LCD and all data sent to the printer will be output in hexadecimal code along with the ASCII equivalents.

After sending a label format to the printer, the output will be immediate (see sample below). As a final note, many software programs use bit mapping to construct the format, making diagnosis difficult. Contact Datamax-O'Neil Technical Support with any questions.

```
0000 02 4C 0D 44 31 31 0D 31 ^L 011.1
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 2D %&()*+.-
```

Note: To return to Ready Mode, re-enter the DIAGNOSTICS and disable HEX DUMP MODE. Exit the menu and save the changes.

7 Specifications

7.1 General

Bar Codes

Code 39, Interleaved 2 of 5, Code 128 (subsets A, B and C), Codabar, LOGMARS, UPC-A, UPC-E, UPC 2 & 5 digit addendums, EAN-8, EAN-13, EAN 2 & 5 digit addendums, UPC Random Weight, Code 93, Plessey, Universal Shipping Container Symbology, Code 128 MOD 43, Postnet, USS/EAN-128 Random Weight, Telepen, USD-8 (Code 11), UPS MaxiCode (modes 2 & 3), PDF417, Data Matrix, QR Code, Aztec, and MicroPDF417. (See the *Class Series 2 Programmer's Manual* for details.)

Fonts

9 Bit-Mapped Fonts; CG Triumvirate Scalable Font; and, CG Triumvirate Condensed Bold Scalable Font. (See the *Class Series 2 Programmer's Manual* for details.)

Communications

Interfaces:	EIA RS-232/DB-25 Serial & IEEE 1284 Compliant Parallel
Serial Data Rates:	1200, 2400, 4800, 9600, 19.2K, and 38.4K baud.
Handshaking:	Xon / Xoff & CTS / DTR
Parity:	Even, Odd, or None
Stop Bits:	1 or 2
Data Bits:	7 or 8

Electrical

Input Voltage:	90 – 132 or 180 – 264 VAC @ 47–63 Hz, auto-ranging.
Power Consumption:	Typical Operating: 90 Watts; Standby: 10 Watts
Grounding:	Unit must connect to a properly grounded receptacle.

Environmental

Operating Temperature:	32 F – 100 F (0 C to 38 C)
Storage Temperature:	0° F – 140° F (-17° C to 60° C)
Humidity:	10% – 95% non-condensing
Dust:	Non-conducting, non-corrosive
Electromagnetic Radiation:	Moderate RF fields can be tolerated

Mechanical

Height:	12.70 inches (322.6 mm)
Width:	12.62 inches (320.6 mm)
Depth:	18.60 inches (472.5 mm)
Weight:	45 pounds (20.5 kg)

Printing

Type:	Direct Thermal or optional Thermal Transfer
Speed:	2 – 6 IPS (51 – 152 MMPS): <i>I-4206</i> 2 – 8 IPS (51 – 203 MMPS): <i>I-4208</i> 2 – 12 IPS (51 – 305 MMPS): <i>I-4212</i> 2 – 8 IPS (51 – 203 MMPS): <i>I-4308</i> 2 – 6 IPS (51 – 152 MMPS): <i>I-4406</i> 2 – 4 IPS (51 – 102 MMPS): <i>I-4604</i>
Printhead Resolution:	203 DPI (8.0 dots/mm): <i>I-4206, I-4208, I-4212</i> 300 DPI (11.8 dots/mm): <i>I-4308</i> 406 DPI (16.0 dots/mm): <i>I-4406</i> 600 DPI (23.6 dots/mm): <i>I-4604</i>
Nominal Dot Size:	.0043" X .0052" (.11 mm X .13 mm): <i>I-4206, I-4208, I-4212</i> .0027" X .0043" (.07 mm X .11 mm): <i>I-4308</i> .0013" X .0018" (.05 mm X .07 mm): <i>I-4406</i> .0008" X .0015" (.03 mm X .06 mm): <i>I-4604</i>
Printhead Protection:	Thermistor pauses operation upon over-temperature detection then resumes printing after cool-down.

Printing (continued)

Maximum Print Width:	4.10" (104.0 mm): <i>I-4206, I-4208, I-4212</i> 4.16" (105.7 mm): <i>I-4308</i> 4.10" (104.0 mm): <i>I-4406</i> 4.16" (105.7 mm): <i>I-4604</i>
Print Length Range:	.25" - 99" (6.4 - 2514.6 mm): <i>I-4206, I-4208, I-4212, I-4308</i> .25" - 84" (6.4 - 2133.6 mm): <i>I-4406</i> .25" - 55" (6.4 - 1397 mm): <i>I-4604</i>
with cutter:	1.25" - 99" (31.8 - 2514.6 mm): <i>I-4206, I-4208, I-4212, I-4308</i> 1.25" - 84" (31.8 - 2133.6 mm): <i>I-4406</i> 1.25" - 55" (31.8 - 1397 mm): <i>I-4604</i>
with peel & present:	1.50" - 99" (38 - 2514.6 mm): <i>I-4206, I-4208, I-4212, I-4308</i> 1.50" - 84" (38 - 2133.6 mm): <i>I-4406</i> 1.50" - 55" (38 - 1397 mm): <i>I-4604</i>
Print Justification:	Left
Flash Memory:	1 MB: <i>I-4206, I-4208</i> 2 MB: <i>I-4212, I-4308, I-4406, I-4604</i>
SDRAM Memory:	8 MB: <i>I-4206, I-4208</i> 16 MB: <i>I-4212, I-4308, I-4406, I-4604</i>
Media Types:	Roll-Fed, Die-Cut, Continuous, and Fan-Fold. Flat on the printable side with no more than .0007" (.018 mm) protrusions on the opposite side.
Media Roll Capacity:	8" (203 mm) outer diameter, wound out labels only
Media Core:	1.5" or 3.0" (38 mm or 76.2 mm) inner diameter
Ribbon Core:	1.010" .006" (25.6 mm .2 mm) inner diameter. Core not to protrude beyond ribbon edge.
Ribbon Width Range:	1.0" - 4.5" (25.4 mm - 114.3 mm), where Coated Side In and Coated Side Out ribbon is NOT interchangeable and is specified by the Thermal Transfer option type; also, width should slightly exceed that of the media and backing, if any, to protect the printhead.
Ribbon Length:	1968 feet (600 meters) maximum

7.2 Approved Media and Ribbon

To achieve optimum print quality and maximum printhead life, *DATAMAX-O'NEIL* brand media and ribbons must be used. These supplies are specially formulated for use in this printer. The use of non-Datamax-O'Neil supplies may affect the print quality, performance, and life of the printer or its components (see the Warranty Statement).

Media selection is an important determinant in the throughput, quality, and performance of the printed product. General factors to consider are listed below:

Direct Thermal –

- The abrasiveness of the material covering the reactive layer of the media.
- The amount of heat required to start the chemical reaction.
- The ability of the media to control the chemical reaction.

Thermal Transfer –

- The combination of top coatings and ribbons may affect image quality.
- The ribbon back coating can provide printhead protection and, depending upon the formula, help reduce static buildup.
- The ribbon width, when slightly wider than the media, can also guard against abrasion.

7.2.1 Controlling Print Quality

The printer provides flexible print controls. Of these, the amount of heat applied and the rate of media movement will have the most effect on the printed output. Four settings are available via PRINT CONTROL (see Section 4.2.3):

- HEAT sets the printing energy level, where lower amounts lighten the image and higher amounts darken it;
- PRINT SPEED adjusts throughput, where slow speeds allow more time for energy transfer and fast speeds may require more HEAT to achieve the desired contrast;
- CONTRAST fine-tunes the gray (shaded) areas of the image; and,
- DARKNESS fine-tunes the black areas of the image.

Note: Depending on *HOST SETTINGS*, some print quality settings can be overridden by the host; see Section 4.2.6.

7.2.2 Media and Ribbon Requirements

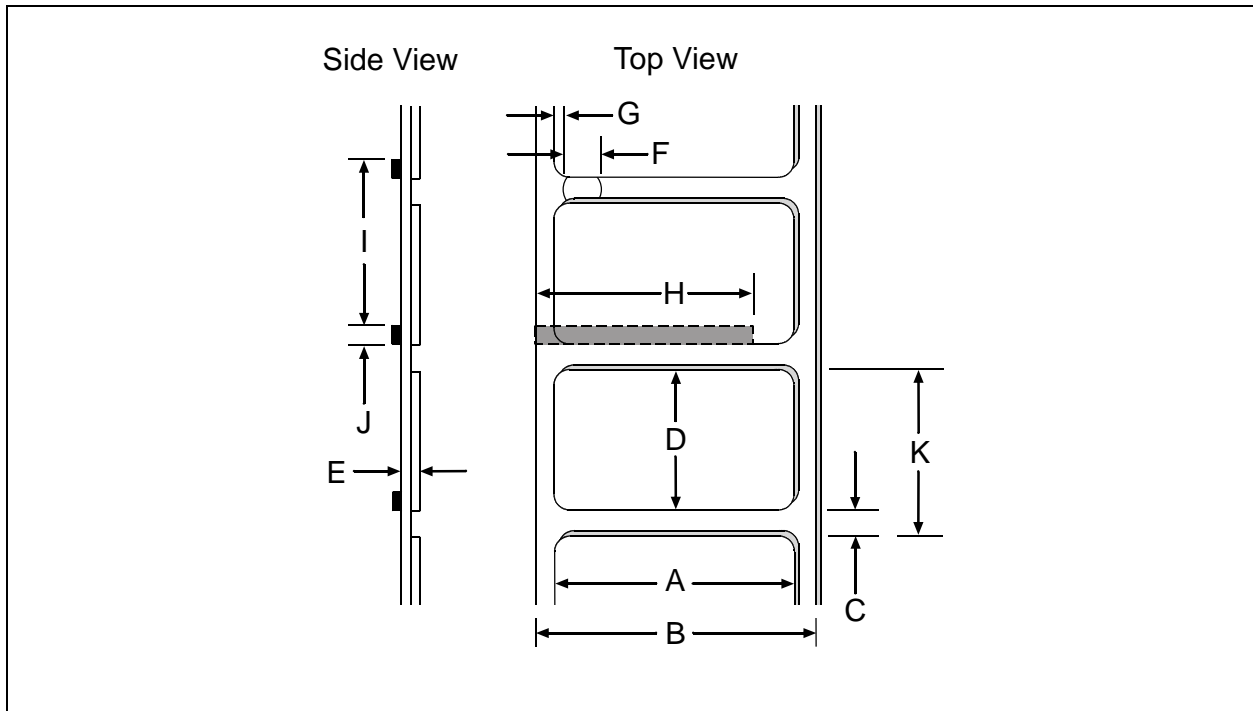
Suggested applications are listed in the following table (and for specific information consult a Datamax-O'Neil Media Representative or other qualified specialist):

Media and Ribbon Overview				
Thermal Transfer	Ribbon Type	Print Speed*	Print Energy	Image Durability
Great Label TTL	GPR Plus	10 – 12**	Medium	Medium
Coated and Uncoated Paper, Tag Stock, Some Films, Some Synthetics	Wax GPRPlus	2 – 10	Low	Low
Coated and Glossy Paper, Tag Stock, Some Synthetics, Films	Wax/Resin PGR+	2 – 8	Medium	High
Synthetics, Films	Resin SDR	4 – 6	High	High
Direct Thermal	Ribbon Type	Print Speed*	Print Energy	Image Durability
Datamax-O'Neil DTL-HSM Thermal Paper	N/A	10 – 12**	Medium	Low
Datamax-O'Neil DTL-HSH Thermal Paper	N/A	10 – 12**	Medium	Low

* Given in inches per second.

** Highly recommended for optimum quality at speeds above 10 IPS.

Dimensional Requirements are listed in the following table:



Media Dimensional Requirements			
Designator	Description	Minimum ^[1]	Maximum ^[1]
A	Label width	1.00	4.65
B	Liner width	1.00	4.65
C	Gap (or notch) between labels ^[3]	.10	–
D	Label length ^[3]	.25	–
E	Media thickness	.0025	.010
F	Notch opening width	.20	.500
G	Media edge to sensor aperture distance	.20	2.25
H	Reflective (black) mark width ^[2]	.50	4.65
I	Distance between reflective marks ^[3]	.50	–
J	Reflective mark length ^[3]	.10	–
K	Label repeat distance ^[3]	.35	–

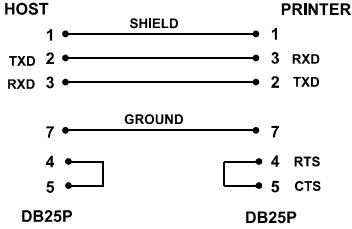
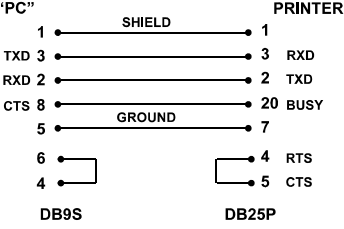
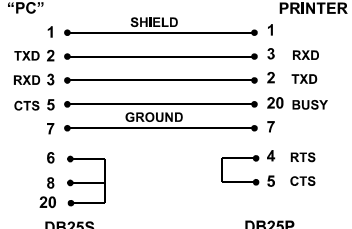
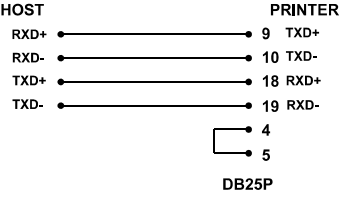
^[1] Units of measure are given in inches and referenced by the direction of label feed.

^[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.

7.3 Serial Cable Requirements

Wiring diagrams, suggested applications, and part numbers for serial interface cables are given in the table below. (Contact a reseller for ordering information.)

Applicable Serial Interface Cables	
Null Modem (MXM)	"PC" (DB9P) to Printer
 <p>HOST DB25P PRINTER DB25P</p>	 <p>"PC" DB9S PRINTER DB25P</p>
Part Number 556000	Part Number 556001
<i>For connection to other DCE equipment. Flow control is only Xon/Xoff.</i>	<i>For connection to a PC compatible with DB9P communication ports. Flow control can be either Xon/Xoff or CTS/DTR.</i>
"PC" (DB25P) to Printer	RS-422 Connection
 <p>"PC" DB25S PRINTER DB25P</p>	 <p>HOST PRINTER DB25P</p>
Part Number 556002	Part Number N/A
<i>For connection to a PC compatible with DB25 communication ports, flow control can be either Xon/Xoff or CTS/DTR.</i>	<i>Optional equipment, diagram only provided for reference.</i>

Appendix A

Module Assignments

Memory Module			
Designator	Module Size	Volatile*	Location / Use
D	1024 KB (default size)	Yes	Main logic card SDRAM – for graphics, fonts, and formats
F	4 MB	No	Optional GPI/O Multi-Expansion Card – for graphics, fonts, and formats
G	256 KB	No	Main logic card Flash – for graphics, fonts, and formats (all models except I-4206 and I-4208).
Y	64 KB	No	Main logic card Flash – reserved for EFIGS
Z	4 MB	No	Optional GPI/O Multi-Expansion Card – reserved for ILPC

*When power is removed, stored data will be lost.

Print Resolutions and Maximum Label Widths

Resolutions and Widths				
Model	Printhead Resolution	Maximum Print Width		Default Setting
		Inches	Millimeters	
I-4206, I-4208, & I-4212	203 dots/inch (8 dots/mm)	4.10	104.0	4.10
I-4308	300 dots/inch (11.8 dots/mm)	4.16	105.7	4.16
I-4406	406 dots/inch (16 dots/mm)	4.10	104.0	4.10
I-4604	600 dots/inch (23.6 dots/mm)	4.16	105.7	4.16

Available Speeds and Default Settings

Printer Speed Ranges and Defaults*					
Model	Function	Speed Range		Default Setting	
		IPS	MMPS	IPS	MMPS
I-4206	Print	2 – 6	51 – 152	6.0	152
	Feed	2 – 8	51 – 203	6.0	152
	Reverse	2 – 4	51 – 102	4.0	102
	Slew	2 – 6	51 – 152	6.0	152
I-4208	Print	2 – 8	51 – 203	8.0	203
	Feed	2 – 8	51 – 203	8.0	203
	Reverse	2 – 4	51 – 102	4.0	102
	Slew	2 – 8	51 – 203	8.0	203
I-4212	Print	2 – 12	51 – 305	8.0	203
	Feed	2 – 12	51 – 305	8.0	203
	Reverse	2 – 4	51 – 102	4.0	102
	Slew	2 – 12	51 – 305	8.0	203
I-4308	Print	2 – 8	51 – 203	6.0	152
	Feed	2 – 8	51 – 203	6.0	152
	Reverse	2 – 4	51 – 102	4.0	102
	Slew	2 – 8	51 – 203	6.0	152
I-4406	Print	2 – 6	51 – 152	5.0	127
	Feed	2 – 6	51 – 152	5.0	127
	Reverse	2 – 4	51 – 102	4.0	102
	Slew	2 – 6	51 – 152	5.0	127
I-4604	Print	2 – 4	51 – 102	3.0	76
	Feed	2 – 4	51 – 102	3.0	76
	Reverse	2 – 4	51 – 102	4.0	102
	Slew	2 – 4	51 – 102	3.0	76

*Consult the Class Series 2 Programmer's Manual.

Appendix B

Custom Adjustment Ranges

Row, Column, and Present Adjust Ranges <i>(in dots)</i>			
Model	Row Adjust	Column Adjust, and Present Adjust	Default Setting
I-4206, I-4208, & I-4212	-100 – 2030	-100 – 100	000
I-4308	-150 – 3000	-150 – 150	
I-4406	-200 – 4060	-200 – 200	
I-4604	-300 – 6000	-300 – 300	

Column & Row Emulation Ranges

Emulation Range <i>(in dots)</i>			
Model	Column	Row	Default Setting
I-4206, I-4208, & I-4212	153 – 203	103 – 303	203
I-4308	250 – 300	200 – 400	300
I-4406	356 – 406	306 – 506	406
I-4604	550 – 600	500 – 700	600

Appendix C

Menu Multi-Language Support

The printer allows new menu languages and / or replacement of the Datamax-O'Neil provided translations. A Microsoft Excel Spreadsheet defines the menu dictionary and a new language column is added or an existing column modified. Then, by clicking on the "Generate DPL file(s)" radio button, the generated DPL file(s) is sent to the printer.

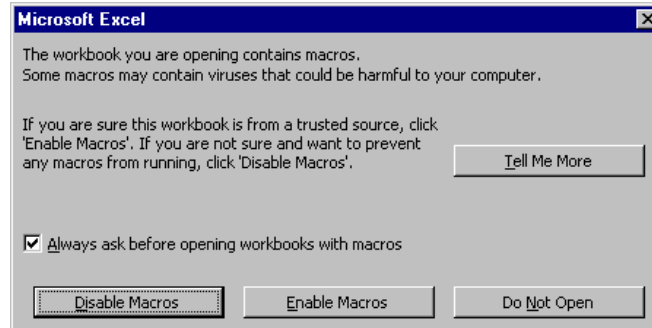
Here are the highlights and restrictions of the feature:

- 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 logic card.
- 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
I-Class Application Version 3.0 or greater ^[1]	Must reside in the target printer. (See Section 5.7)
Microsoft Excel 97	Must be purchased by user.
Img2dl.exe ^{[1] [2]}	Program used during the process to create DPL file.
Gemmsgxls.xls ^{[1] [2]}	Menu Dictionary

Creating a Menu Language:

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



- 2 Click the “Enable Macro” box and the following appears:

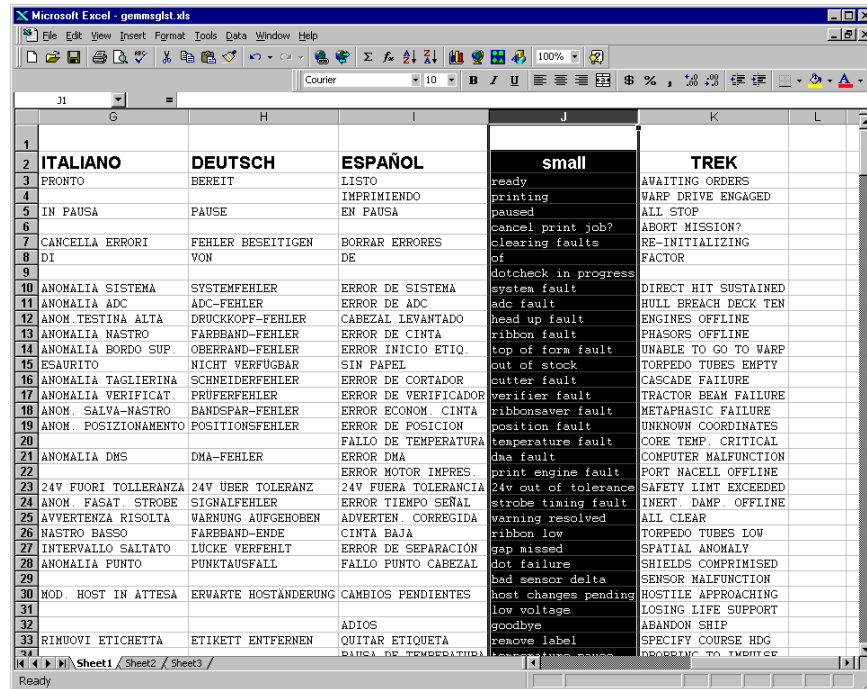
	A	B	C	D	E	F	G
1				Generate Source Files	Generate DPL File(s)		
2	NID	COMMENTS	MAX	MESSAGE ID	ENGLISH	FRANCAIS	ITALIANO
3	0000	System Messages		20 MID_READY	READY	PRÊT	PRONTO
4	0001			20 MID_PRINTING	PRINTING		
5	0002			20 MID_PAUSED	PAUSED	PAUSE	IN PAUSA
6	0003 1Aa			20 MID_CANCEL_PRINT_JOB	CANCEL PRINT JOB?		
7	0004			20 MID_CLEARING_FAULTS	CLEARING FAULTS		CANCELLA ERRORI
8	0005			10 MID_OF	OF	DE	DI
9	0006			20 MID_DOTCHECK_IN_PROGRESS	DOTCHECK IN PROGRESS		
10	0007	Faults		20 MID_SYSTEM_FAULT	SYSTEM FAULT	DEFAILLANCE SYSTEME	ANOMALIA SISTEMA
11	0008			20 MID_ADC_FAULT	ADC FAULT	DEFAILLANCE ADC	ANOMALIA ADC
12	0009			20 MID_HEAD_UP_FAULT	HEAD UP FAULT	TETE NON VEROUILLEE	ANOM TESTINA ALTA
13	0010			20 MID_RIBBON_FAULT	RIBBON FAULT	DEFAILLANCE RUBAN	ANOMALIA NASTRO
14	0011			20 MID_TOP_OF_FORM_FAULT	TOP OF FORM FAULT	DEFAIL. DEBUT D'IMP.	ANOMALIA BORDO SUP
15	0012			20 MID_OUT_OF_STOCK	OUT OF STOCK	RUPTURE PAPIER	ESLAURITO
16	0013			20 MID_CUTTER_FAULT	CUTTER FAULT	DEFAILLANCE COUTEAU	ANOMALIA TAGLIERIN
17	0014			20 MID_VERIFIER_FAULT	VERIFIER FAULT	DEFAILLANCE VERIFIC	ANOMALIA VERIFICAT
18	0015			20 MID_RIBBONSAVER_FAULT	RIBBONSAVER FAULT	DEFAIL. ECONOM. RUBAN	ANOM SALVA-NASTRO
19	0016			20 MID_POSITION_FAULT	POSITION FAULT	DEFAILLANCE POSITION	ANOM. POSIZIONAMEN
20	0017			20 MID_TEMPERATURE_FAULT	TEMPERATURE FAULT		
21	0018			20 MID_DMA_FAULT	DMA FAULT	DEFAILLANCE DMA	ANOMALIA DMS
22	0019			20 MID_PRINT_ENGINE_FAULT	PRINT ENGINE FAULT	DEFAILLANCE MOTEUR	
23	0020			20 MID_24V_OUT_OF_TOLERANCE	24V OUT OF TOLERANCE	DEPASS. TOLERANCE 24V	24V FUORI TOLLERAN
24	0021			20 MID_STROBE_TIMING_FAULT	STROBE TIMING FAULT	DEFAIL. DUREE D'IMP	ANOM. FASAT. STROE
25	0022	Warnings		20 MID_WARNING_RESOLVED	WARNING RESOLVED	AVERTISSEMENT RESOLU	AVVERTENZA RISOLTA
26	0023			20 MID_RIBBON_LOW	RIBBON LOW	RUBAN FAIBLE	NASTRO BASSO
27	0024			20 MID_GAP_MISSED	GAP MISSED	INTERVALLE MANQUANT	INTERVALLO SALTATO
28	0025			20 MID_DOT_FAILURE	DOT FAILURE	DEFAULT IMPRESSION	ANOMALIA PUNTO
29	0026			20 MID_BAD_SENSOR_DELTA	BAD SENSOR DELTA		
30	0027			20 MID_HOST_CHANGES_PENDING	HOST CHANGES PENDING		MOD. HOST IN ATTES
31	0028			20 MID_LOW_VOLTAGE	LOW VOLTAGE		
32	0029			20 MID_GOODBYE	GOODBYE		
33	0030	Conditions		20 MID_REMOVE_LABEL	REMOVE LABEL	ENLEVER ETIQUETTE	RIMUOVI ETICHETTA
34	0031			20 MID_TEMPERATURE_RANGE	TEMPERATURE RANGE		

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

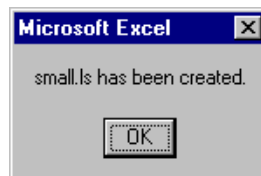
Tips:

- 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.



- 4 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.
- 5 Press the Generate DPL File(s) radio button. A file will be generated for each of the selected columns and Excel will provide confirmation. (Example: small.ls)



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

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

- 7 Reset the printer by pressing and holding the CANCEL Key for approximately four seconds.
- 8 Verify the operation by printing a Configuration Label (see Section 4.3.2). 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 displays the new language selection, but all messages remain in English an error has occurred. Re-check the process.

Contact Datamax-O'Neil 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

- EFIGS is standard, loaded into Module Y. 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 *832296.01A to the printer. This file is located on the Datamax-O'Neil 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 4.2.4) or reload the EFIGS 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 D

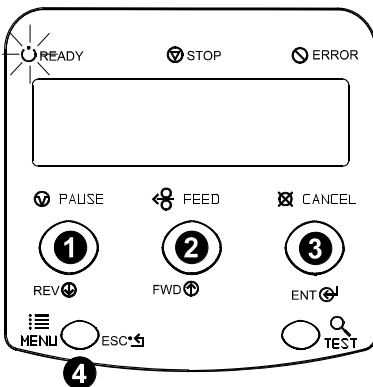
Configuration Files

With application version 5.01 and above, the printer can save and restore complete printer settings, including media calibration parameters, in internal Configuration Files. Here are the highlights and restrictions of the feature:

- Eliminates the need to repeat the manual steps of a special printer setup, making future changeovers faster and easier.
- Can be setup, saved, and restored either from the host or via the menu as “C-type” files on Module Y under unique filenames of up to nineteen characters in length.
- Enables the host, via special DPL commands, to control parameters previously accessible only from the Control Panel.

Note: *If file sharing among printers, do not include unique parameters (such as calibrations and adjustments).*

When using the Control Panel to save a configuration file (see Section 4.2.5), the keypad functions are as follows:



1 REV ⬇

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

2 FWD ⬆

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













3 ENT ➡

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

4 ESC ⬅

The ESCAPE Key saves the displayed file.

Follow the steps below to save a manually entered setup as a configuration file:

Step	Displayed Message	Action	Comment
1	READY	 Press the MENU Key.	You are entering MENU MODE.
2	MENU MODE SYSTEM SETTINGS	Use the FWD  Key to scroll to SYSTEM SETTINGS then press it once again to select it.	The REV  Key can also be used. You are entering SYSTEM SETTINGS.
3	SYSTEM SETTINGS CONFIGURATION FILE	Press the ENT  Key to select CONFIGURATION FILE.	You are entering the CONFIGURATION FILE submenu.
4	CONFIGURATION FILE RESTORE AS CURRENT	Press the FWD  Key to scroll to SAVE SETTING AS.	The REV  Key can also be used.
5	CONFIGURATION FILE SAVE SETTING AS	Press the ENT  Key.	Press the ESC  Key to exit this selection.
6	SAVE SETTING AS :	Enter a file name using the FWD  Key to scroll through the characters.	The REV  Key can also be used.
		Note: To change an accepted character, select the delete function (solid flashing block) then press the ENTER Key.	
7	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 function, delete all entered characters in the file name then press the ESCAPE Key.	
8	SPECIAL STOCK SUCCESSFUL	Press the ESC  Key repeatedly to save the file name and return to Ready.	Save complete. (To restore a saved file, see Section 4.2.5.)

Appendix E

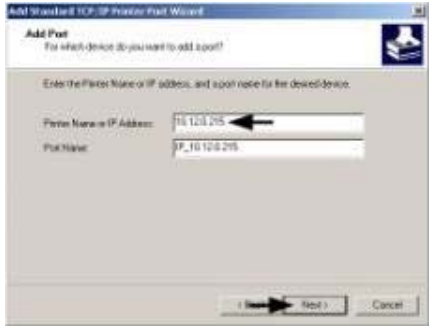





Printer Driver and Port Setup

Install the Printer Driver and Port software according to the host's operating system. The example below highlights the driver installation for Windows XP; other installations will be similar.







Windows XP Driver and Port Installation

<p>1 Start the Windows "Add Printer Wizard." The following screen should appear. Click Next>.</p>		<p>2 Ensure that Local Printer is selected and then click Next.</p>	
<p>3 Select on Create a new port: and then select Standard TCP/IP Port from the drop down menu. Click Next.</p>		<p>4 Click Next.</p>	

Windows XP Driver and Port Installation (*continued*)

<p>5 In the Printer Name or IP Address field enter the IP address of your printer. The Port Name field does not need to be changed. When finished click "Next".</p>		<p>6 Ensure Standard is selected and then click Next.</p>	
<p>7 Confirm your settings and then click Finish.</p>		<p>8 Click on Have Disk.</p>	
<p>9 Insert the Accessories CD-ROM and click Browse.</p>		<p>10 Browse to the "DRIVERS\Seagull" folder on the CD-ROM, ensure the file "for 95, 98, ME, 2000, and xp.inf" is selected and click OK.</p>	

Windows XP Driver and Port Installation (*continued*)

<p>11 Click OK.</p> 	<p>12 Select your printer from the list and then click Next.</p> 
<p>13 Name your printer in the Printer name: field. Next select whether or not to set this printer as your default printer. Then Click Next.</p> 	<p>14 Select whether or not to share this printer on your network. Then Click Next.</p> 
<p>15 Select No then Click Next.</p> 	<p>16 Confirm your settings and then click Finish.</p> 

Windows XP Driver and Port Installation (*continued*)

17 If prompted with the "Digital Signature Not Found" window, click "Continue Anyway" to continue installation.



18 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.



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 bar codes (Data Matrix, MaxiCode, PDF417, etc.).

boot loader The resident program that loads the application from Flash memory, decompresses it into the SRAM, and starts operations.

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 stock 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-O’Neil Programming Language) programming commands used specifically for control of and label production in Datamax-O’Neil printers. A complete listing of commands can be found in the *Class Series 2 Programmer’s Manual*.

EFIGS English, French, Italian, German, Spanish, and other multi-language support as programmed for the menu and configuration label.

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 operating program.

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 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 for the carbon-based black line on the underside of reflective media used to indicate the top-of-form.

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 A photo-sensor device that detects media, and the top-of-form when using die-cut, notched or reflective media.

MMPS (millimeters per second) Metric measurement of printer speeds.

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.

on demand An output regulator (i.e., the Present Sensor) that inhibits printing when a label is already present.

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 leveling cam adjustment.

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

start of print (SOP) The position on the label where printing begins; also, the signal that initiates GPIO-controlled printing.

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.

I-Class™ Mark II

Operator's Manual ■■■



right by our customers. ■■■



datamax·oneil

1 Getting Started

1.1 Introduction

Congratulations on your I-Class Mark II printer purchase. The I-Class Mark II printer 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.

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

CD-ROM for printing from common applications. If you wish to write a custom program, a copy of the Programmer's Manual can also be found on the CD-ROM.



1.2 Unpacking

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.

- Serial, USB or Parallel cable
- Ethernet cable for optional LAN connectivity
- Applicable Media and Ribbon



It is a good idea to save all packaging materials for future use.

2 Printer Setup

2.1 Printer Connections

2.1.1 Power Connection



Before connecting the AC Power Cord or interface cables to the printer, ensure the Power On/Off Switch is in the 'Off' position.

Place the printer on a firm, level surface.

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

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 Appendix A for the acceptable voltage ranges.)



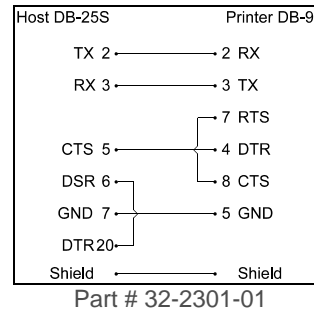
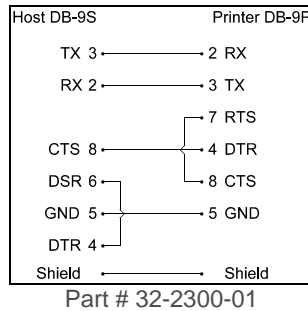
2.1.2 Interface Connection

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.



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.



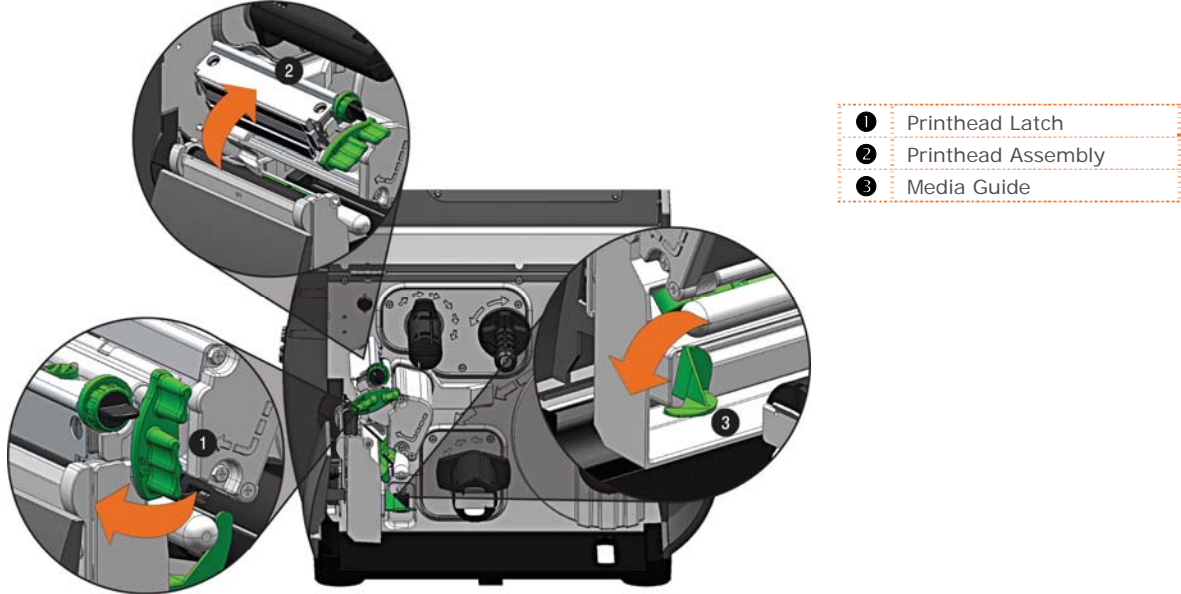
Optional Ethernet Print Servers (wired and wireless) are available. For information on using these interfaces, see Appendix B.

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, see section 2.1.3 for more information

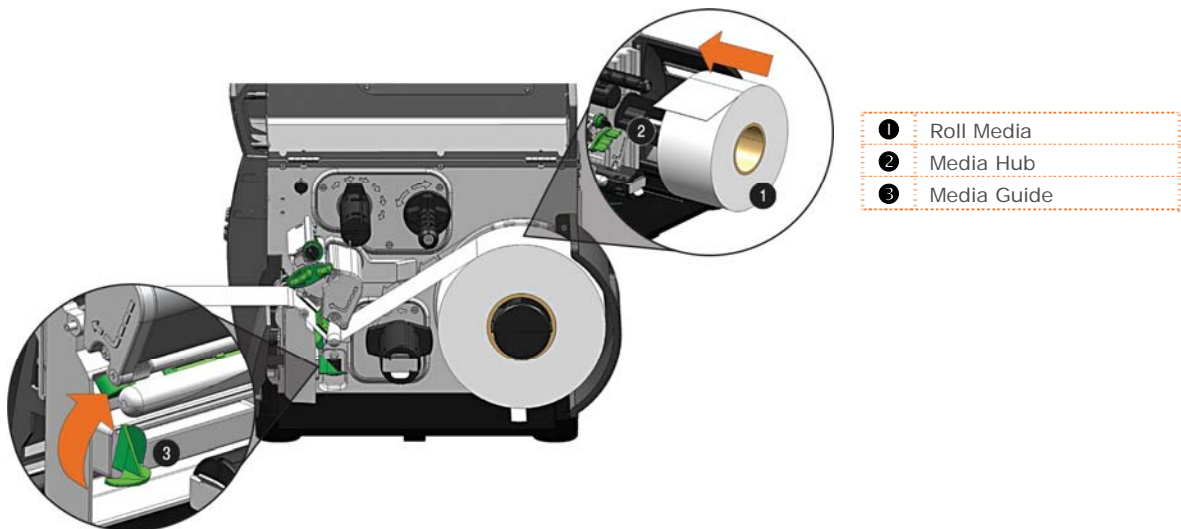
2.2 Loading Media

Load media into the printer as follows:

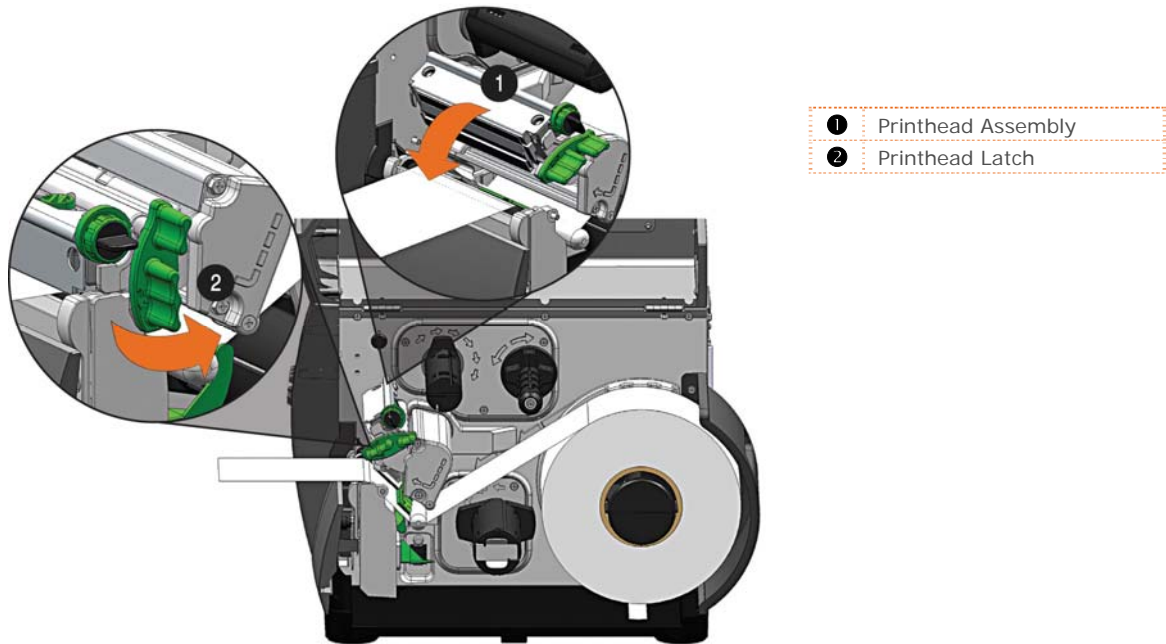
1. Open the media cover. Rotate and unlock the Printhead Latch and raise the Printhead Assembly.
2. Rotate the Media Guide down.



3. Slide the Roll Media onto the Media Hub.
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.



5. Close the Printhead Assembly and rotate the Printhead Latch to the locked position.
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, it may be necessary to calibrate the printer (see Section 3.4 Media Calibration).



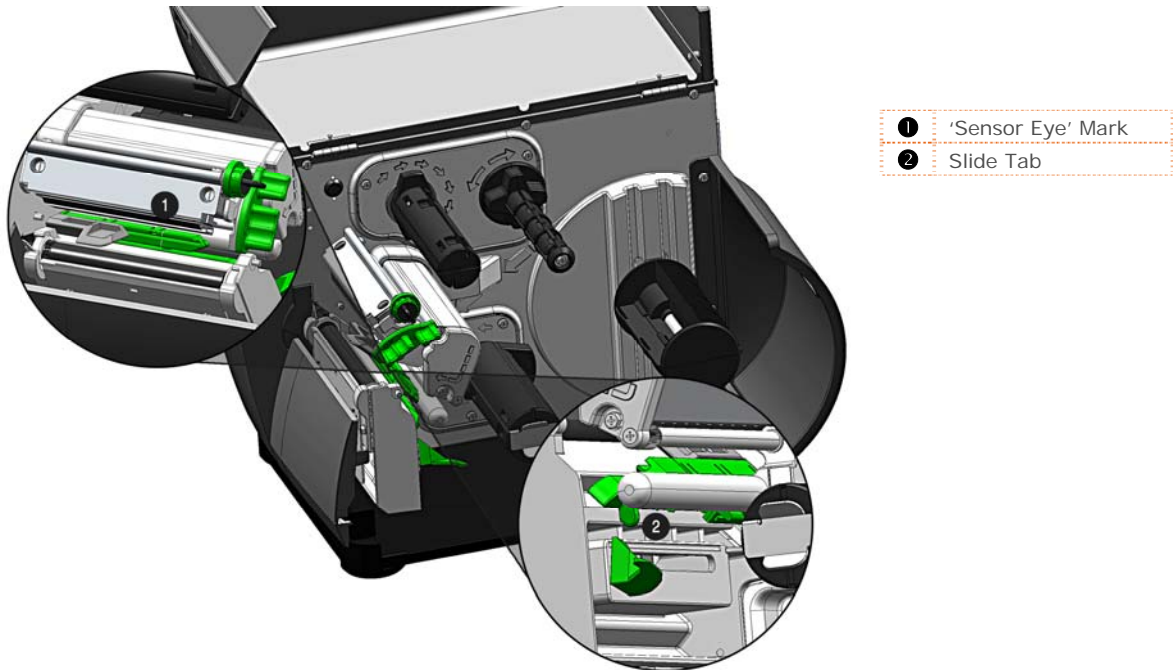
The printer is factory set to use 4-inch media (and ribbon, if thermal transfer equipped). When using a different width of media/ribbon, refer to Section 5.3.

2.3 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:

1. With media loaded, as described in Section 2.2, grasp the Slide Tab and move the Sensor Eye Mark into position over media according to the table below.



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	Notch
Reflective	Centered over the black mark	Black Mark
Continuous	Near the middle of the media	Continuous

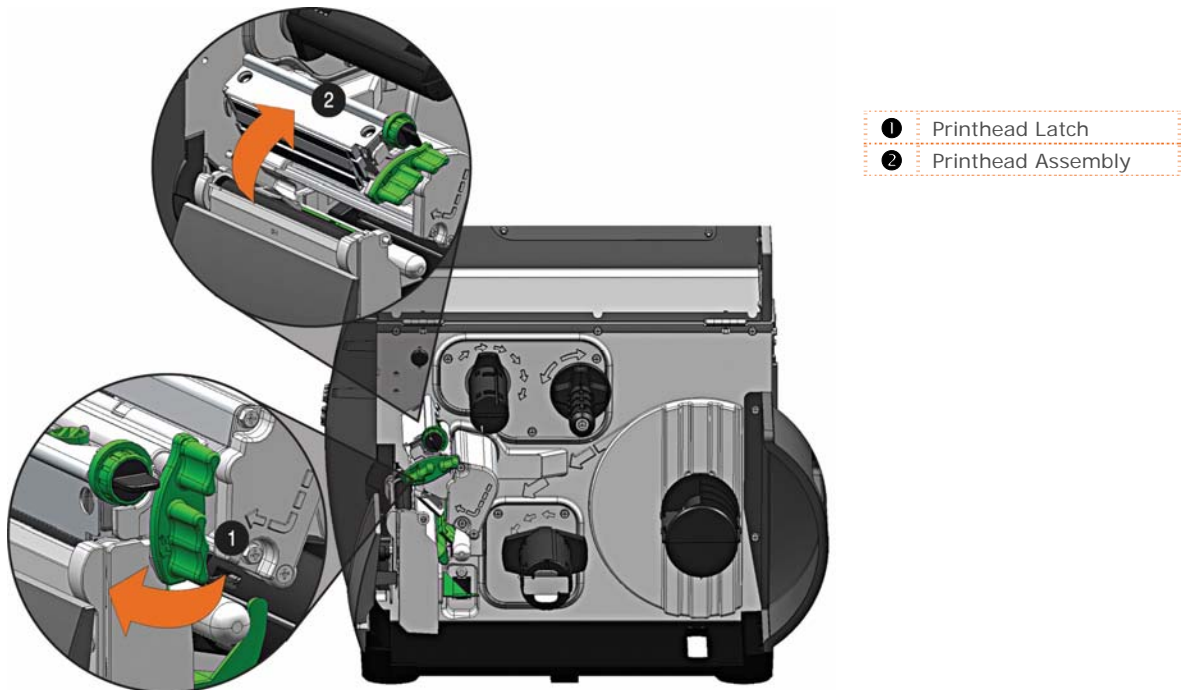
2.4 Loading Ribbon

Ribbon is required with thermal transfer media. It is recommended that the width of the ribbon be slightly wider than the media being used. The printer can use either ribbons with the 'coating side in' or ribbons with the 'coating side out'. To load:

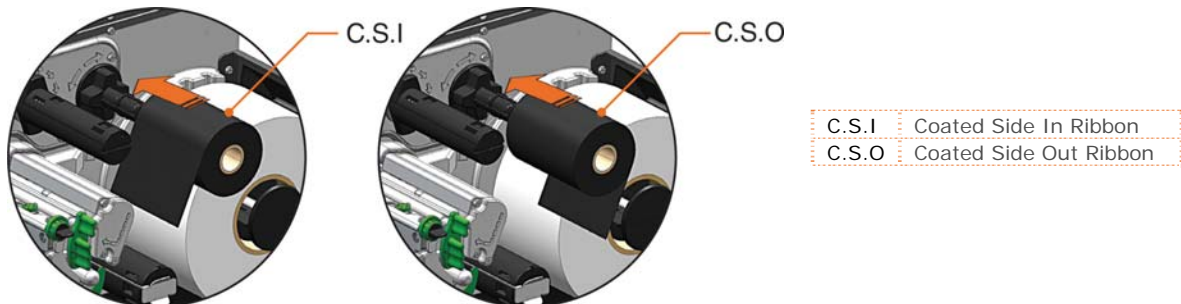


- Using a ribbon that is slightly wider than your media (and liner, if any) will help protect against printhead wear.
- The 'Media Type' setting within the printer's setup must be set to 'Thermal Transfer' to print using ribbon. This can be accomplished via the NETira CT configuration Utility (see section 3.3); or via the printers menu system (see section 4.5).

1. Open the media cover. Rotate and unlock the Printhead Latch and raise the Printhead Assembly.

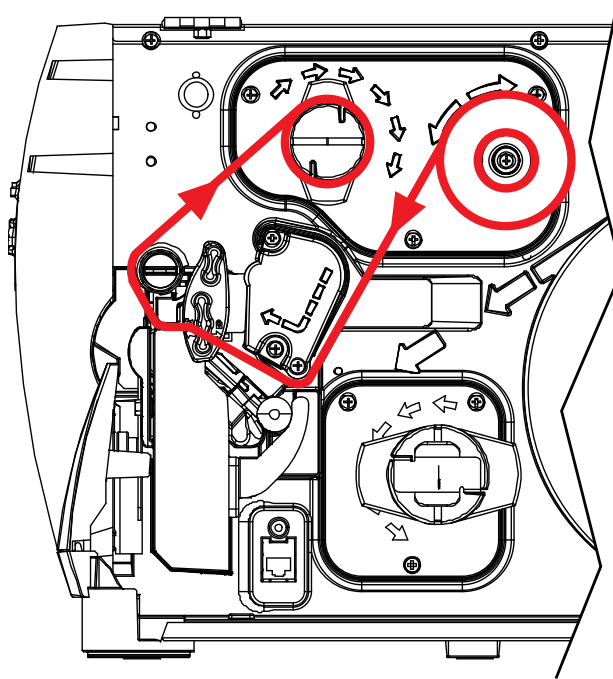


2. Slide the Ribbon Roll onto the Ribbon Supply Hub until it rests against the flange. Ensure the ribbon unwinds in the correct direction (see Ribbon Routing). The illustrations below depict the proper orientation.

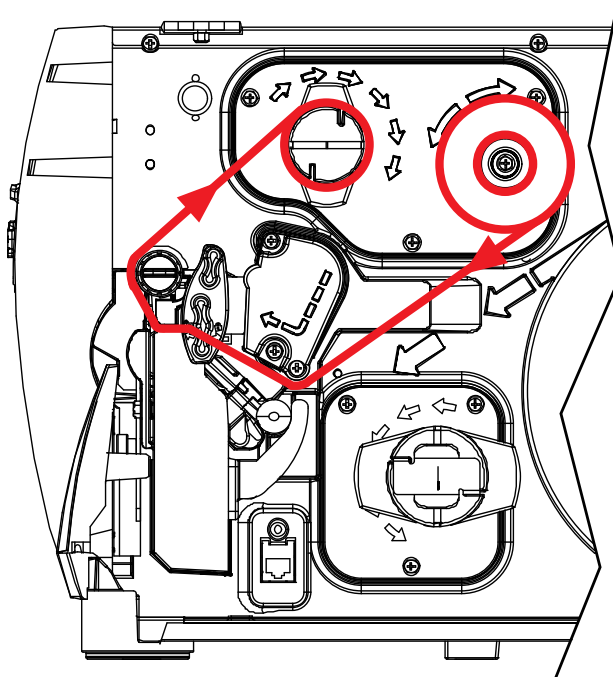


Directional Arrows near the Ribbon Supply Hub indicate the correct ribbon route. Ribbon types are available with the ink (coating) layer wound 'in' or 'out'. Ensure the inked side of the ribbon faces the media and NOT the printhead.

Ribbon Routing Diagrams

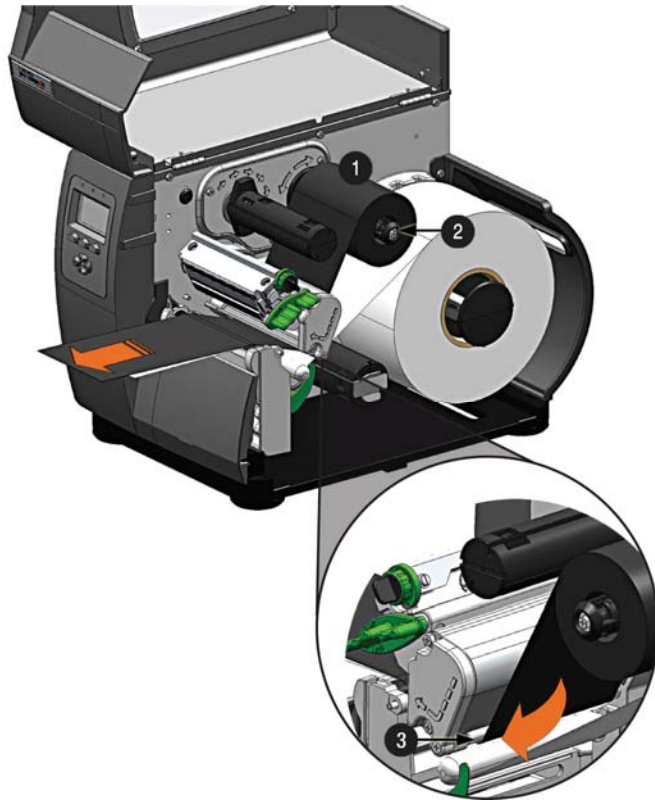


(CSI) 'Coating Side In' Ribbon Routing



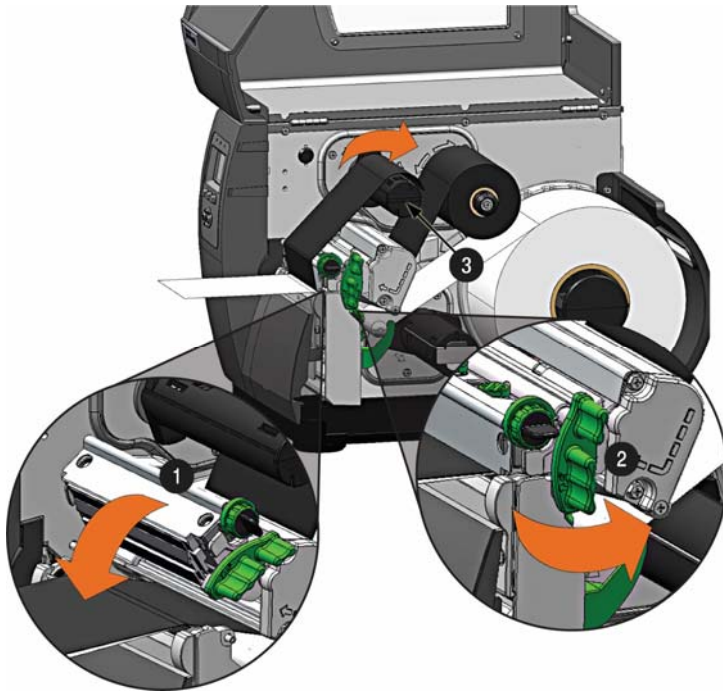
(CSO) 'Coating Side Out' Ribbon Routing

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



- | | |
|---|-------------------|
| 1 | Ribbon Roll |
| 2 | Ribbon Supply Hub |
| 3 | Ribbon Idler |

4. Close the Printhead Assembly and rotate the Printhead Latch to the locked position. 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.



- | | |
|---|--------------------|
| 1 | Printhead Assembly |
| 2 | Printhead Latch |
| 3 | Ribbon Take-up Hub |

5. Close the cover and press the Feed button several times to position the ribbon and ensure proper tracking.

2.5 OPTImedia

The OPTIMedia function is designed to reduce set up time when using Datamax-O'Neil branded media and ribbons. This feature enables the printer to automatically adjust print heat and print speed settings to optimum levels to produce the best possible print quality. By using the model number prefix of the media and ribbon (printed on the shipping box), the printer can be quickly configured to produce optimum print quality for that particular media and ribbon combination.

To make the OPTImedia selection.

1. Press the MENU BUTTON.
2. Make sure MEDIA SETTINGS is highlighted then press the ENTER KEY.
3. Make sure OPTImedia is highlighted then press the ENTER KEY.
4. Using the DOWN BUTTON, Scroll to the model number prefix of the label media being used and then press the ENTER KEY.
5. ***For direct thermal media;*** an 'OK' will be displayed, then press the EXIT KEY to exit the menu system.

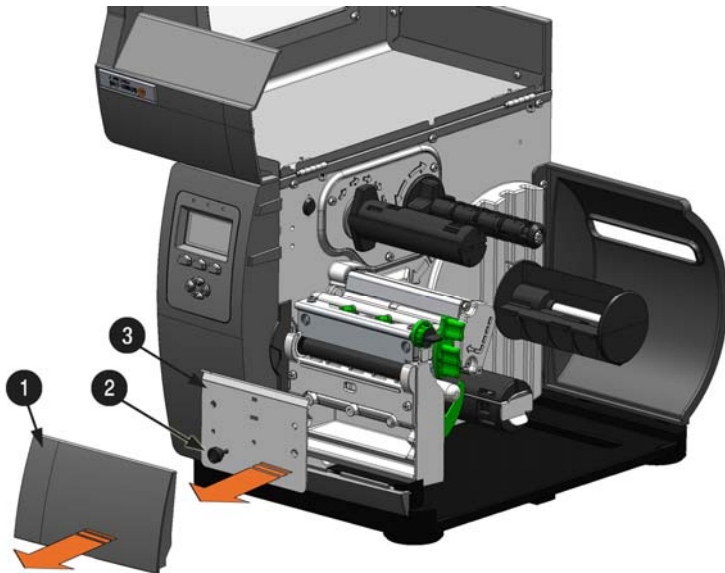
For thermal transfer media; the printer will now prompt for selection of the ribbon being used. Scroll to the model prefix of the ribbon being used and then press the ENTER KEY. An 'OK' will be displayed, then press the EXIT KEY to exit the menu system.

The printer is now ready to print using the media/ribbon selections made.

2.6 Internal Rewinder

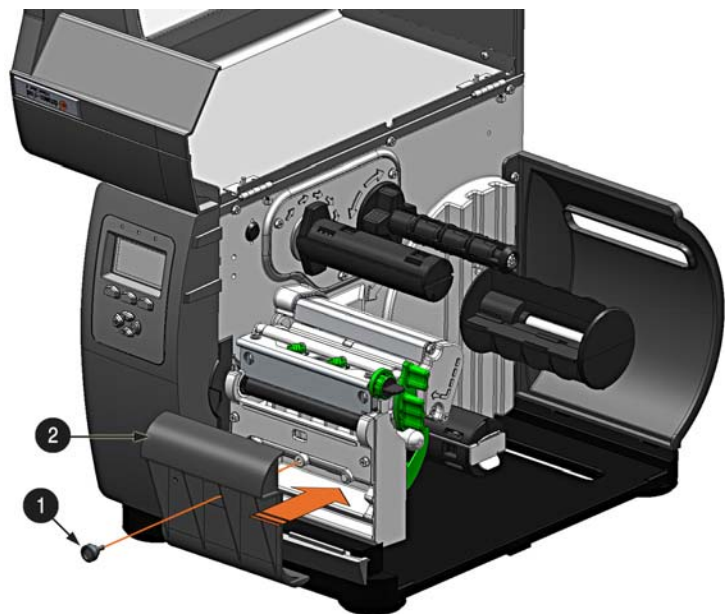
When equipped with the Internal Rewind option, labels can be rewound or, with the addition of a Peel and Present option, dispensed automatically for application. If equipped, follow the instructions below to begin using the Internal Rewinder:

1. Press down then pull outward to remove the Front Fascia.
2. Remove Thumbscrew and Tear Plate.



- | | |
|---|------------|
| 1 | Fascia |
| 2 | Thumbscrew |
| 3 | Tear Plate |

3. Place the Arc Plate on the front of the printer (as shown below) and tighten the Thumbscrew to secure it.



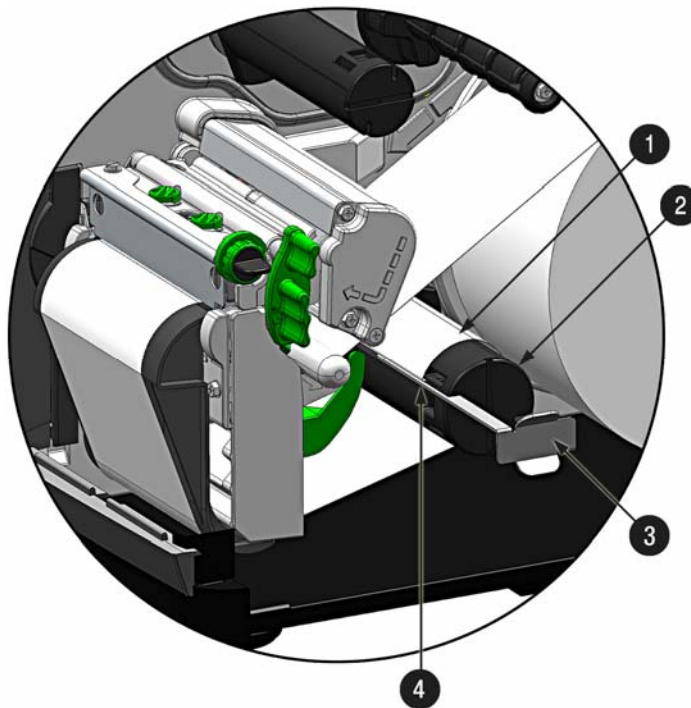
- | | |
|---|------------|
| 1 | Thumbscrew |
| 2 | Arc Plate |

4. Load media as described in section 2.2. Feed approximately 20 inches (50 cm) of media out of the printer. Route the media over the Arc Plate and then back into the printer and around the Rewinder Hub.



- 1 Arc Plate
- 2 Rewinder Hub

5. Wrap the media around the Rewinder Hub. Insert the end of the media into a Slot in the Rewinder Hub. Slide the Media Retainer into the Slot to secure the media.



- 1 Media
- 2 Rewinder Hub
- 3 Media Retainer
- 4 Slot

6. Rotate the Rewinder Hub by hand to take up any slack in the media. There should be at least 2 or 3 full wraps of the media on the Rewinder Hub before starting printing to ensure tight rewinded rolls.

3 Printer Operation














3.1 Front Panel

The Control Panel is an event-driven interface composed of a graphic display and keypad. In addition to providing current printer information, the mode-dependent panel allows the items in the main display area and the key functions to change as operational events require.

- ❶ Ready/Receiving Data
- ❷ Stop/Paused
- ❸ Fault/Error
- ❹ Time and Date
- ❺ Status Line
- ❻ Icon Status Line (see section 3.1.1)
- ❼ Soft Key Labels
- ❽ Soft Keys
- ❾ Menu Navigation and Control Buttons (see chapter 4)



3.1.1 Display Icons

Display Icon	Description
	Initialization, typically brief (but a damaged or invalid printhead can delay the process).
	Display large fonts
	Input Mode – DPL
	Input Mode – LINE
	Input Mode – PL-Z
	Input Mode – AUTO
	SD memory card detected.
	USB memory (or keyboard) detected.
	Wired network - Connected.
	Wired network - Server inaccessible.
	WLAN associated with Access Point.
	WLAN not associated with Access Point.
	WLAN ADHOC Mode.

3.2 Windows Driver

The Windows driver is located on the Accessories CD-Rom included with your printer.



Be sure your printer's firmware version is **10.03_0016B or greater**.



Be sure your printer's USB Mode is set to "Printer". This mode can be viewed/changed via the printer's front panel menu under: Communications > USB Port > USB Device Class.

Installing the Windows Driver:

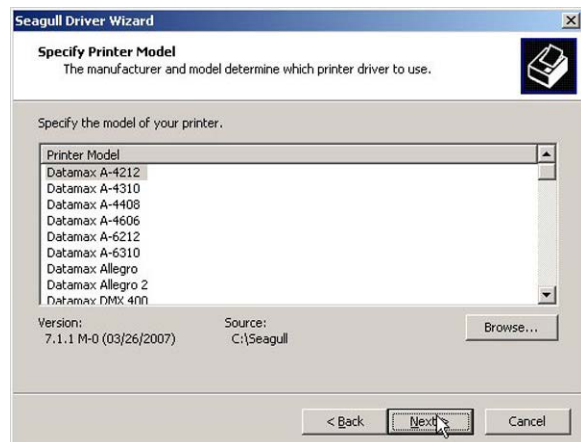
Place the Accessories CD-Rom included with your printer into your computer's CD-Rom drive.



Once the CD-Rom starts select "Install Windows Driver" from the main menu and follow the instructions on the screen to install.



When prompted, select your printer from the list, (i.e. Datamax-O'Neil I-Class MarkII). Continue to follow the on-screen instructions to install the driver.

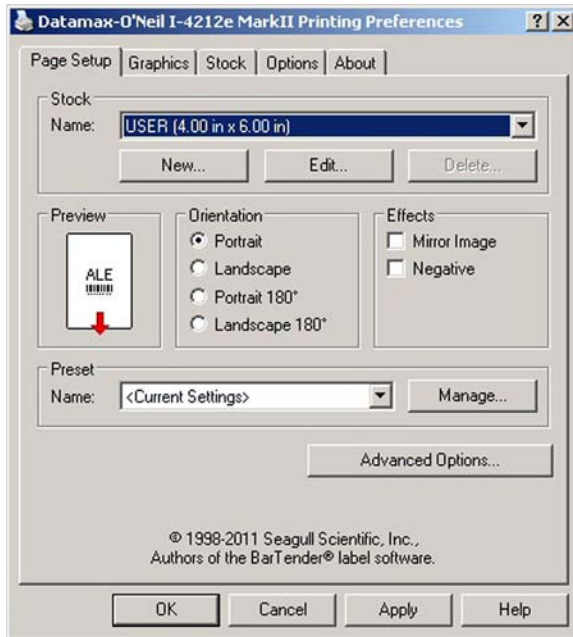


Important Notes:

The Windows driver functions the same as any other Windows printer. A built in help file is available for complete information on all settings; however, there are some important settings that should be observed for trouble free printing.

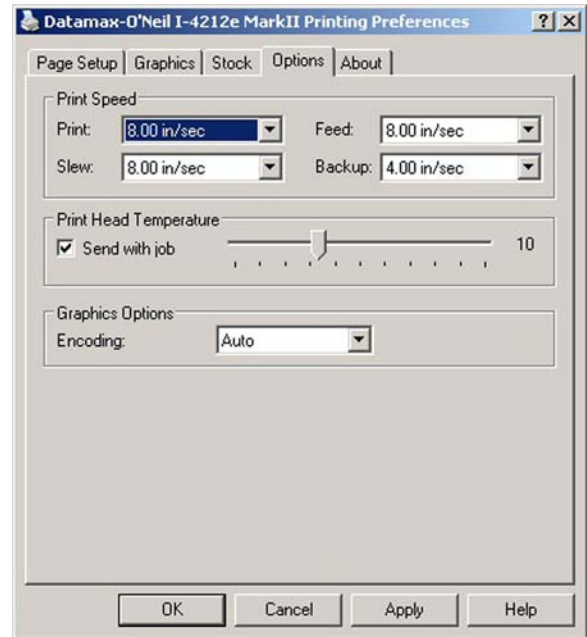
Page Setup Tab: Stock

It is important that the Stock setting matches the size of the label you are using. If you cannot find a match for your label click 'New' and enter the dimensions of your label.



Options Tab: Print Speed & Printhead Temperature

These two settings will have the greatest effect on print quality. Some label stocks will require more heat and slower print speeds to generate a quality image.



The Windows application software used to create the label format will likely have a "Page Setup" screen. This will also need to match the size of the label you are using.

3.3 Printer Configuration Utility (NETira CT)

NETira CT (located on the Accessories CD-ROM) is a Windows-based configuration utility that allows the user to make changes to the existing printer setup via a direct connection to the host computer's serial, USB, Ethernet, or parallel ports.

NETira Features:

- Allows Real-Time Control/Query of Printer Configuration
- Define and Save Optimal Configurations for Applications
- Saved Configurations can be Shared with other Printers and Sent via Email
- Download Files, Formats and Fonts
- Query Memory Modules



Be sure to use the NETira utility located on the Accessories CD-ROM that is included with your printer. Older versions might not operate correctly with some printers.



Be sure your printer's firmware version is **10.03_0016B or greater**.

USB and Parallel Port Connection Requirements

Using Netira CT with an USB or parallel port connection requires a Windows driver to be installed and the driver to be set to "Print directly to the printer". Install the Windows driver as described in section 3.6. Then follow the steps below to set the driver setting:

- 1) Open the list of installed printers on your PC.

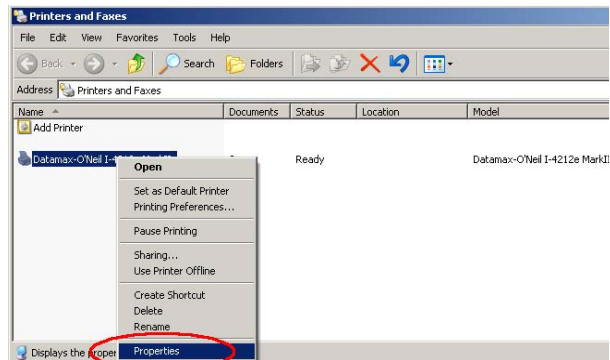
Windows XP

Open Printer and Faxes by clicking the Start button, and then Settings, and then click on Printer and Faxes.

Windows 7

Open Devices and Printers by clicking the Start button, and then click on Devices and Printers.

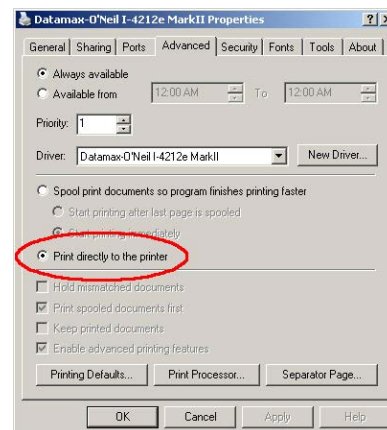
- 2) Right click on the printer and select Properties from the drop down menu.



- 3) In the Driver Properties window, click on the Advanced tab.

- 4) Click the "Print directly to the printer" radio button. Then click OK.

USB and parallel port connections will now be available for use with Netira CT.



NETira CT Usage


- 1) Once installed launch the NETira CT configuration utility:
- 2) Be sure the printer is 'ON'. Connect the host to the printer (see Section 2.1.2).

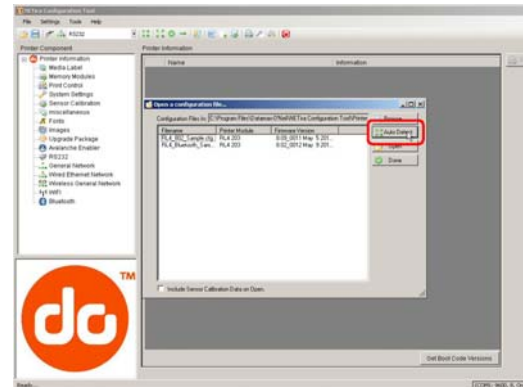
For Serial Connections:

- a) Query the printer by using the 'Auto Detect' button. This will connect to the printer and retrieve the setting currently stored in the printer.

For USB and Parallel Connections:


Close the 'Open a configuration file...' dialogue box.

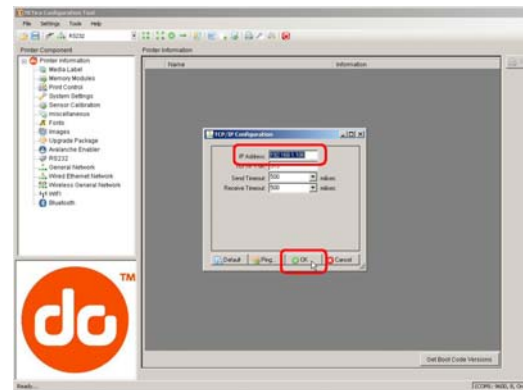
- a) In the toolbar, from the drop down menu box, select the appropriate port. Then click on the Query Printer Icon .




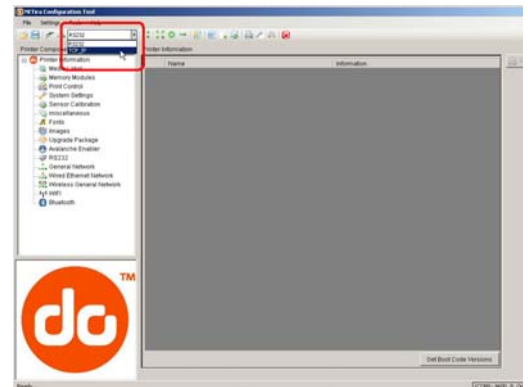
For Ethernet Connections

Close the 'Open a configuration file...' dialogue box.

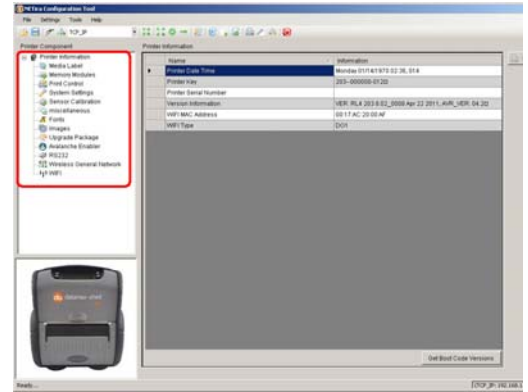
- a) In the toolbar, Click on the 'TCP/IP Configuration' icon .
- b) In the 'TCP/IP Configuration' dialogue box enter the IP address of the printer and click 'OK'. (The IP address should be displayed on the printers LCD).



- c) In the toolbar, from the drop down menu box, select "TCP_IP". Then click on the Query Printer Icon .



- At this point you may browse the Printer Component categories and make any changes necessary to the printer configuration.



- Once complete, send the new settings to the printer using the 'Send' button.

Note: When sending the changes to the printer, only the changes displayed on the current page will be sent. You must click the 'Send' button for each page that has been modified.



3.4 Media Calibration

3.4.1 Quick Calibration

Quick Calibration should be performed as part of the media loading routine to fine-tune the sensing parameters.



(1) This calibration is not necessary when using continuous stock.

(2) Media containing large gaps may require a change in the PAPER EMPTY DISTANCE before proceeding.

Calibrate the printer as follows:

1. Ensure that the printer is ON and in an idle state (i.e., not off-line) with media loaded, the media sensor adjusted, and the sensor type selected.
2. Press and hold the FEED Key until at least one full label has been output then release the key and wait for the printer to process the data. There are two possible outcomes:

CALIBRATION COMPLETE - will be displayed, and the media will be advanced to the next top of form if calibration was successful; or,

CALIBRATION FAILED will be displayed if calibration was not successful. In this case, check the hints listed below to help resolve the problem:

Calibration Hints:

WARNING LOW BACKING is a normal message when calibrating die-cut media mounted on a highly translucent liner or notched tag stocks.

If the initial attempt fails, press and hold the FEED Key until two successive label TOFs have been output. If, however, CALIBRATION FAILED is displayed again, perform the Standard Calibration routine, see Section 3.4.3.

3.4.2 Empty Calibration

Empty Calibration calibrates the printer's media sensor to detect an 'Out of Stock' condition. Calibrate the printer as follows:

1. Ensure that the printer is ON and in an idle state (i.e., not off-line) with media removed.
2. Press and hold the Pause & Feed Keys together. The printer will now be calibrated for the 'Out of Stock' condition.

3.4.3 Standard Calibration

The Standard Calibration can be performed using the NETira CT Utility (see Section 3.3) or using the front panel buttons via the printer's menu, see Section 4.5. Standard Calibration provides dynamic readings, which can be helpful when using media with small position-critical notches or marks. Three calibration samples are required:

Empty – with nothing over the sensor;

Gap, Notch, Hole or Mark – with media liner, a notch, hole, or a mark over the sensor; and,

Paper – with the label (and liner, if any) over the sensor.

Calibrate the Media Sensor using the steps below:



The Sensor Calibration menu item is only accessible in the Advanced Menu mode.

Step	Action	Displayed Message	Comment
A	Turn ON the printer.	READY	Wait briefly for initialization to complete.
B	Press MENU Button. Make sure MEDIA SETTINGS is highlighted and press ENTER. Then using the DOWN Button, scroll to SENSOR CALIBRATION.	(Printer Menu)	
C	Press ENTER to access SENSOR CALIBRATION. Then using the DOWN Button, scroll to PERFORM CALIBRATION. Press ENTER again and then press YES to proceed.	PERFORM CALIBRATION	Press NO to abort this procedure.
D	With no media installed, press ESC.	REMOVE LABEL STOCK PRESS ESC KEY Yyy	This sets the empty value, where "yyy" represents the current sensor reading.
E	Proceed according to the media type: Die-Cut – Remove a label or two from the liner then install the media. Position the Media Sensor under the liner area and press ESC. Notched (or Reflective) – Install media. Position the Media Sensor under a notch (or black mark) and press ESC. Continuous – Press ESC then proceed to Step F.	<i>For die-cut media:</i> SCAN BACKING PRESS ESC KEY yyy <i>For Notched/Reflective media:</i> SCAN MARK PRESS ESC KEY yyy <i>For continuous media:</i> REMOVE LABEL STOCK PRESS ESC KEY Yyy	This sets the gap (or mark) value, where "yyy" represents the current sensor reading. <input checked="" type="checkbox"/> See Section 2.3 for sensor adjustment instructions. <i>Do not position a perforation over the sensor when taking the sample.</i> <i>(3) For small notches or reflective marks, ensure that the labels exit straight from the printer.</i> <i>(4) Unless otherwise noted, do not move the Media Sensor after this step.</i>

Standard Calibration (continued)

Step	Action	Displayed Message	Comment
F	<p>Proceed according to the media type:</p> <p>All media except Continuous – Position label material (and liner, if any) over the sensor then press the ESC Key.</p> <p>Continuous – Install media. Position the Media Sensor under the stock and press ESC.</p>	<p>SCAN PAPER</p> <p>PRESS ESC KEY</p> <p>yyy</p>	<p>This sets the paper value, where “yyy” represents the current sensor reading.</p> <p><i>(1) If using preprinted media, ensure that the area placed over the sensor is free of text, graphics, or borders.</i></p> <p><i>(2) See Section 2.3 for sensor adjustment instructions.</i></p>
G	<p>Observe the calibration result.</p>	<p><i>CALIBRATION COMPLETE</i></p>	<p>Calibration was successful.</p> <p><input checked="" type="checkbox"/> <i>If WARNING LOW BACKING is displayed, calibration was successful.</i></p>
H	<p>Press ESC then EXIT to return to READY.</p> <p>When calibrating gap or reflective media, press and hold the FEED Key until at least one label is output.</p>	<p><i>CALIBRATION COMPLETE</i></p> <p><i>Followed by...</i></p> <p><i>READY</i></p>	<p>The printer is now ready for use.</p>

3.4.4 Advanced Entry Calibration

Advanced Entry is an alternate calibration method for special-case media types, where sensor readings are taken using different sampling algorithms and from a list of these readings the best algorithm is selected for manual entry into the database.



Advanced Entry Calibration should be used only when Standard Calibration proves unsuccessful.

Calibrate the Media Sensor using the steps below:



The Sensor Calibration menu item is only accessible in the Advanced Menu mode.

Step	Action	Displayed Message	Comment
A	Turn ON the printer.	READY	Wait briefly for initialization to complete.
B	Press MENU Button. Make sure MEDIA SETTINGS is highlighted and press ENTER. Then using the DOWN button, scroll to SENSOR CALIBRATION	(Printer Menu)	
C	Using the DOWN Button, highlight ADVANCED ENTRY then press ENTER.	ADVANCED ENTRY	Press EXIT to abort this procedure.
D	Scroll to TRAN SENSOR GAIN (or REFL SENSOR GAIN, if using reflective media) then press ENTER.	TRAN SENSOR GAIN 25 (0 - 31)	The following examples detail die-cut media calibration; however, unless otherwise noted, the reflective media procedure is the same.
E	Install media. Position the Media in the Media Sensor then lower and latch the Printhead Assembly.	TRAN SENSOR GAIN 25 (0 - 31)	See Section 2.3 for sensor adjustment instructions. <input checked="" type="checkbox"/> <i>Do not position the Media Sensor under a perforation; and if using preprinted media, ensure the label area placed over the sensor is free of text, graphics, lines, etc.</i>

Advanced Entry Calibration (continued)

Step	Action	Displayed Message	Comment
F	<p>Use the UP and DOWN Arrow buttons to set the Gain Number to 00.</p> <p>Record the sensor reading as a Label Value for Gain Number 00 in a table (32 rows by four columns, with headings similar to those shown below.)</p>	<p>TRAN SENSOR GAIN 00 (0 - 31)</p>	<p>This is the Label Value for a gain setting of 00.</p>

<i>Sample Calibration Table</i>			
<i>Gain Number</i>	<i>Label Value</i>	<i>TOF Value</i>	<i>Difference Value</i>
00	252		
01			
02			
...			
31			

Step	Action	Displayed Message	Comment
G	<p>Use the UP and DOWN Arrow buttons to increment the Gain Number by one and then Record the Label Value.</p> <p>Repeat this process for each Gain Number.</p>	<p>TRAN SENSOR GAIN 01 (0 - 31)</p>	<p>This is the Label Value for a gain setting of 01.</p>

<i>Sample Calibration Table</i>			
<i>Gain Number</i>	<i>Label Value</i>	<i>TOF Value</i>	<i>Difference Value</i>
00	252		
01	250		
02	248		
...	...		
31	09		

Advanced Entry Calibration (continued)

Step	Action	Displayed Message	Comment
H	<p>Raise the printhead assembly then proceed according to the media type:</p> <p>Die-cut – Remove a label or two from the liner then position the liner in the Media Sensor. Adjust the Media Sensor if necessary.</p> <p>Notched – Position the Media in the Media Sensor under the notch.</p> <p>Reflective – Position the Media in the Media Sensor under the black mark.</p>	<p>TRAN SENSOR GAIN 31 (0 - 31)</p>	<p>(1) Do not position the Media Sensor under a perforation; and if using preprinted media, ensure the label area placed over the sensor is free of text, graphics, lines, etc.</p> <p>(2) Do not move the Media Sensor after this step.</p>
I	<p>Lower and latch the Printhead Assembly.</p> <p>Using the UP and DOWN Arrow buttons set the Gain Number to 00.</p> <p>Record the reading as a TOF Value for Gain Number 00 in the table.</p>	<p>TRAN SENSOR GAIN yyy (0 - 31) 00</p>	<p>This is the TOF Value for a gain setting of 00, where “yyy” represents the current sensor reading.</p>

Sample Calibration Table

Gain Number	Label Value	TOF Value	Difference Value
00	252	248	
01	250		
02	248		
...	...		
31	09		

Advanced Entry Calibration (continued)

Step	Action	Displayed Message	Comment
J	Use the buttons to increment the Gain Number by one. Record the TOF Value. Repeat this process for each Gain Number.	TRAN SENSOR GAIN yyy (0 - 31) 01	These are TOF Values, where "yyy" represents the current sensor reading.

Gain Number	Label Value	TOF Value	Difference Value
00	252	248	
01	250	245	
02	248	234	
...	
31	09	14	

Step	Action	Displayed Message	Comment
K	In your sample calibration table, where both the Label Value and TOF Value are at least 20, subtract the amounts and record the result as a Difference Value (see below). Identify the largest Difference Value and the corresponding Gain Number. This Gain Number will be used to resample the media.	TRAN SENSOR GAIN yyy (0 - 31) 31	In this example, Gain Number 18 is chosen because, where both values are at least twenty, it has the highest Difference Value.

Gain Number	Label Value	TOF Value	Difference Value
00	252	248	4
01	250	245	5
02	248	234	14
...
15	188	63	125
16	184	51	133
17	179	38	141
18	174	25	149
19	170	19	N/A
...
31	132	14	N/A

Advanced Entry Calibration (continued)

Step	Action	Displayed Message	Comment
L	Use the buttons to set the Gain Number determined in the previous step. Press ENTER to enable the setting.	TRAN SENSOR GAIN yyy (0 - 31) 18	This example uses Gain Number 18.
M	<p>Complete a table (see example below) using new measurements, as follows:</p> <p>(A) Raise the Printhead Assembly. Place the label over the Media Sensor then lower and latch the Printhead Assembly. Record the sensor reading as P.</p> <p>(B) Raise the Printhead Assembly. Place the liner, notch, or mark over the Media Sensor then lower and latch the Printhead Assembly. Record the sensor reading as G (or M).</p> <p>(C) Raise the Printhead Assembly. Remove all media from the Media Sensor then lower and latch the Printhead Assembly. Record the sensor reading as E.</p>	<p>TRAN SENSOR GAIN</p> <p>yyy (0 - 31) 18</p>	<p>Where "yyy" is a numerical value representing the current sensor reading.</p> <p><input checked="" type="checkbox"/> <i>The re-sampled values may differ from those previously noted. This is normal; do not readjust the Media Sensor.</i></p>

Selected Gain Table

Gain Number	Paper	Gap (or Mark)	Empty
18	173	42	9

Advanced Entry Calibration (continued)

Step	Action	Displayed Message	Comment
N	<p>Press the ESC Key.</p> <p>Use the buttons to scroll to PAPER SENSOR LEVEL (or if using reflective media, REFL PAPER LEVEL) and then press ENTER.</p> <p>Use the buttons to set the Paper value determined in Step M and then press ENTER.</p>	<p>PAPER SENSOR LEVEL</p> <p>(0 - 255)</p> <p>173</p>	<p>This is the Paper value.</p>
O	<p>Press the ESC Key.</p> <p>Scroll to GAP SENSOR LEVEL (or, if using reflective media, MARK SENSOR LEVEL) and then press ENTER.</p> <p>Set the Gap (or Mark) value determined in Step M and then press ENTER.</p>	<p>GAP SENSOR LEVEL</p> <p>(0 - 255)</p> <p>042</p>	<p>This is the Gap (or Mark) value.</p>
P	<p>Press the ESC Key.</p> <p>Scroll to EMPTY SENSOR LEVEL and then press ENTER.</p> <p>Set the Empty value determined in Step M and then press ENTER.</p>	<p>EMPTY SENSOR LEVEL</p> <p>(0 - 255)</p> <p>009</p>	<p>This is the Empty value.</p>
Q	<p>Press the EXIT Key and, when prompted, press YES at the SAVE CHANGES prompt.</p>	<p>OFFLINE</p>	<p>The procedure is finished, the process almost complete.</p>

Advanced Entry Calibration (continued)

Step	Action	Displayed Message	Comment
R	Press and hold the FEED Key until at least one label has been output.	<p>CALIBRATION COMPLETE</p> <p>Followed by...</p> <p>READY</p>	<p>The printer is ready for use.</p> <p><input checked="" type="checkbox"/> If the calibration attempt fails, try desensitizing the sensor as follows:</p> <p>Re-enter the ADVANCED MENU.</p> <p>Go to MEDIA SETTINGS / SENSOR CALIBRATION / ADVANCED ENTRY / TRAN (or REFL) SENSOR GAIN and lower the corresponding GAIN SETTING by one.</p> <p>Exit the menu and save your changes. Test your media at the new setting. If necessary, repeat until a usable Gain Setting is obtained.</p>

4 Menu System

4.1 Menu System Overview

The Menu System contains three primary branches, each with a differing level of access to secondary menus or functions:

- The User Menu accesses basic printer settings and functions;
- The Advanced Menu accesses all operational settings, functions, and diagnostics; and,
- The Test Menu accesses a menu of test, user-defined, and previous label printing functions.

(1) Prompts may appear before menu access is granted and before changes are enacted; see Security for details.



(2) Display contrast is adjustable: press and hold the MENU BUTTON to cycle through the contrast range (this may take several seconds) then release the button when the desired appearance has been achieved.

The multi-purpose **Menu**, **Test**, and **Navigation Buttons** allow Menu System entry, negotiation, and parameter selection functions:

- 1 Soft Key Labels
- 2 Soft Keys
- 3 MENU Button: Enters the Menu System; returns to the previous menu level. Press and hold to adjust display contrast.
 - To change printer settings or perform diagnostics, press the MENU Button then observe the display for available selections. (When the number of selections present is greater than can be shown, use the UP or DOWN Buttons to view those additional items.) Also, Soft Key Labels are dynamic and change to denote the current associated Soft Key functions.)
- 4 UP Button: Accesses the System Window, or ascends through branches, levels, items, and increments settings in the Menu System. Press and hold to view printer system information.
- 5 DOWN Button: Descends through branches, levels, items, and decrements settings.
- 6 TEST Button: Enters the Test Menu; or, if already in the Menu System, advances to next level or item, and moves cursor position. Press and hold to initiate the printhead cleaning routine.



4.2 The User Menu

The User Menu contains basic selections in these menus:

- Media Settings
- Print Control
- Printer Options
- System Settings



(1) Some setting changes will only become effective (and saved) after selecting YES at the Save Changes prompt.

(2) Labeling software may, in some cases, override the printer menu settings; see Advanced Menu for details.

4.3 The Advanced Menu

The Advanced Menu contains all setting, control, and functional selections in these menus:

- Media Settings
- Print Control
- Printer Options
- System Settings
- Communications
- Diagnostics

After selecting the Advanced Menu, it will be accessed whenever the **MENU BUTTON** is pressed. To enable the Advanced Menu, proceed as follows:

1. Press the MENU BUTTON.
2. Using the UP or the DOWN BUTTON, scroll to SYSTEM SETTINGS then press the ENTER KEY.
3. Scroll to MENU MODE then press the ENTER KEY.
4. Scroll to ADVANCED MENU then press the ENTER KEY. (Upon completion, OK will be displayed and the printer will exit the menu system.)

(1) Some setting changes will only become effective (and saved) after selecting YES at the Save Changes prompt.



(2) Labeling software may, in some cases, override the printer menu settings; see Advanced Menu / Communications / Host Settings to avoid potential conflicts.

(3) To return to the User Menu, re-select it or restore the factory defaults.

4.4 The Test Menu

The Test Menu contains test and informational label selections:

- Print Quality Label
- Print Configuration
- Ribbon Test Label
- Test Label
- Validation Label
- Print Last Label
- User Defined Label

Internally generated, these labels are printed at pre-selected media type, speed, and heat settings. Changes to these print settings can be made via the Menu System or through host commands. When printing, use full width media to capture the entire format; otherwise, adjust the printer and set the Label Width menu setting.



(1) Press the CANCEL KEY to stop printing.

(2) A printing delay can be set; see Print Test Rate (in Diagnostics).

4.4.1 User-Defined Label

The User-Defined Label allows a template to be populated by variable data (via the printer's control panel or a USB QWERTY keyboard). The template is a stored label format, where fields delimited by an ampersand (&) become variable.

The printer will prompt you to enter the variable field data. For example, the stored label format could contain the data 19131423443&ENTER NAME&

Afterward, when recalled from memory, the printer's display will indicate the variable field: ENTER NAME

(1) Variable data can be any part of the DPL format - font ID, positioning, etc.



(2) No error checking will be performed.

(3) Supports .dlb, .dpl, .prn, and .txt file types.

4.5 Menu Details

Media Settings

The Media Settings menu contains label and ribbon sensing and sizing functions, as well as printhead cleaning selections:

- OPTimedia
- Media Type
- Media Index Type
- Label Length
- Maximum Label Length*
- Paper Empty Distance*
- Label Width
- Ribbon Low Options*
- Sensor Calibration*
- Printhead Cleaning*



Items denoted with an asterisk (*) are only accessible through the Advanced Menu.

The menu selections are defined on the following pages:

DISPLAYED ITEM	ITEM DESCRIPTION
OPTimedia	Automatically configures various print settings to the selected media/ribbon combination.
MEDIA TYPE	Selects the method used to print labels and should be set according to the type of media being used, where:
DIRECT THERMAL	Sets use for media that is heat reactive to produce an image.
THERMAL TRANSFER	Sets use for media that requires a ribbon to produce an image.
MEDIA INDEX TYPE	Selects the top-of-form (TOF) sensing method used to determine the leading edge of the label, where:
GAP	TOF will be recognized by sensing the gaps in the media. (Default Setting)
NOTCH	TOF will be recognized by sensing the notches in the media.
HOLE	TOF will be recognized by sensing the holes in the media.
BLACK MARK	TOF will be recognized by sensing the reflective (black) marks on the underside of the media
CONTINUOUS	No TOF sensing will be used; instead, LABEL LENGTH (in Media Settings) is used.
LABEL LENGTH	Determines the length of the label (0 - 99.99 inches) when the SENSOR TYPE is set to CONTINUOUS, where:
04.00	Is the default setting.
MAXIMUM LABEL LENGTH	Sets the distance (0 - 99.99 inches) that the printer will feed media to find TOF (when the Sensor Type is set to GAP or REFLECTIVE) before a TOF Fault is declared, where:
8.00	Is the default setting.



Maximum Label Length should typically be 2.5 to 3 times the physical length of the label.

PAPER EMPTY DISTANCE	Sets the distance (0 - 99.99 inches) the printer will attempt to feed before an Out Of Stock Fault is declared, where:
0.25	Is the default setting.



When using clear or translucent media, this setting should be longer than the actual label size.

LABEL WIDTH	Sets the maximum printable width. Objects extending beyond this setting will NOT print, where:
x.xx	Default setting is dependant on printer model.
RIBBON LOW OPTIONS	Defines the printer response when THERMAL TRANSFER mode is selected and the ribbon supply begins to diminish.
RIBBON LOW DIAMETER	Sets the ribbon supply threshold diameter (1.00 - 2.00 inches) that will trigger a Low Ribbon Warning prompt, where:
0.50	Is the default setting.
PAUSE ON RIBBON LOW	Allows the printer to enter a paused condition when Ribbon Low Diameter is met, where:
ENABLE	Pauses when a Ribbon Low Diameter condition is detected; the PAUSE Key must be pressed to proceed with the print job.
DISABLE	No action is required by the operator; printing can continue until a Ribbon Fault is declared. (Default Setting)

DISPLAYED ITEM	ITEM DESCRIPTION
SENSOR CALIBRATION	Selects the media sensor calibration method, where:
PERFORM CALIBRATION	Sets the values via internal printer calculations, as described in the STANDARD CALIBRATION procedure.
ADVANCED ENTRY	Sets the values via manual entry (typically for hard to calibrate label stocks), as described in the ADVANCED ENTRY CALIBRATION where:
PAPER SENSOR LEVEL	Establishes the threshold for the paper value (0 - 255), where 170 is the default setting.
REFL PAPER LEVEL	Establishes the threshold for the reflective value (0 - 255), where 170 is the default setting.
GAP SENSOR LEVEL	Establishes the threshold for the gap value (0 - 255), where 040 is the default setting.
MARK SENSOR LEVEL	Establishes the threshold for the mark value (0 - 255), where 040 is the default setting.
EMPTY SENSOR LEVEL	Establishes the threshold for the empty value (0 - 255), where 000 is the default setting.
TRAN SENSOR GAIN	Establishes the sensitivity of the transmissive sensor (0 - 31), where 15 is the default setting.
REFL SENSOR GAIN	Establishes the sensitivity of the reflective sensor (0 - 31), where 15 is the default setting.
PRINTHEAD CLEANING	Controls the automatic cleaning alert and function, where:
CLEAN HEAD SCHEDULE	Specifies the inch (or centimeter) count at which to clean the printhead, and if exceeded three times, declare a Head Cleaning Fault. (Note that the specified count [0 - 200 inches] will be multiplied by one thousand, and that zero [the default setting] will disable the function.)
CLEAN HEAD COUNTER	Indicates the number of inches (or centimeters) since a cleaning was last initiated.
RESET COUNTER	Resets the Clean Head Counter to zero to restart the Clean Head Schedule.
CLEAN HEAD NOW	Initiates the cleaning process and resets the Clean Head Counter.

Print Control

The Print Control menu contains printing throughput, offset and custom setup functions:

- Heat
- Print Speed
- Feed Speed
- Reverse Speed*
- Slew Speed*
- Row Offset
- Column Offset
- Present Distance
- TOF Precedence*
- Custom Adjustments*
- Motor Throttling*



Items denoted with an asterisk (*) are only accessible through the Advanced Menu.

The menu selections are defined as follows:

DISPLAYED ITEM	ITEM DESCRIPTION
HEAT	Controls the burn time (0 - 30) of the printhead (and is equivalent to the Heat setting in many software labeling programs), where:
10	Is the default setting.
PRINT SPEED	Controls the rate of label movement during printing, where:
x.x in/sec	
FEED SPEED	Controls the rate of label movement between printing areas, where:
x.x in/sec	
REVERSE SPEED	Controls the rate of label movement (2.0 - 5.0 inches per second) during backup positioning, where:
4.0 in/sec	Is the default setting.
SLEW SPEED	Controls the rate of label movement (2.0 - 16.0 inches per second) between printing areas when using the GPIO function, where:
x.x in/sec	
ROW OFFSET	Shifts the vertical start of print position (0 - 99.99 inches) on the label, where:
00.00 in.	Is the default setting.
COLUMN OFFSET	Shifts the HORIZONTAL, left-justified start of print position to the right (0-99.99 inches), without shifting the LABEL WIDTH termination point to the right, where:
00.00 in.	Is the default setting.

DISPLAYED ITEM	ITEM DESCRIPTION
PRESENT DISTANCE	Sets the label stop position (0 - 4.00 inches) past the start of print position upon output. When subsequent label formats are received, the printer will automatically back up the label to position it at the start of print position, where:
0.00 in.	Is the default setting.



When set to 0.01 in., NONE is assumed and a zero (0) positioning value will be used.

TOF PRECEDENCE	Allows an override of label format data when the form length is exceeded, where:
DISABLE	Prints labels formats without TOF truncating.
ENABLE	Ends the label at the next TOF, truncating any print data that extends past this mark.
CUSTOM ADJUSTMENTS	Changes the factory adjustment parameters to finely and independently compensate for slight mechanical differences sometimes evident when multiple printers share label formats. These settings are also available to make special label formatting adjustments, where:
DARKNESS	Controls the strobe time (1 - 64) to establish the nominal HEAT setting for printhead-specific thermal characteristics, where:
32	Is the default setting.
CONTRAST	Allows fine-tuning (1 - 64) of the gray adjustment for print quality, where:
32	Is the default setting.
ROW ADJUST	Shifts the vertical start of print position (in xxx dots) to fine-tune the ROW OFFSET setting, where:
+0000	If shifting Row Adjust in the negative direction, modify the PRESENT ADJUST setting (see below) by that same amount.
COLUMN ADJUST	Shifts both the horizontal start of print position and the LABEL WIDTH termination point to the right (in xxx dots) to fine-tune the COLUMN OFFSET setting, where:
+000 (-100 – 100 DOTS)	Is the setting.
PRESENT ADJUST	Adjusts the label stopping position (in xxx dots) to fine-tune the PRESENT DISTANCE setting, where:
+000 (-100 – 100 DOTS)	Is the setting.
MOTOR THROTTLING	The printer will throttle the print to a single label with delay mode if printing consecutively for a specified period of time.
ENABLE	Enables Motor Throttling; default setting
DISABLE	Disables Motor Throttling


Printer Options

The Printer Options menu contains file-handling, module, and optional equipment settings:

- Modules
- Present Sensor
- Cutter
- GPIO Port

The menu selections are defined as follows:

DISPLAYED ITEM	ITEM DESCRIPTION																								
MODULES	Controls memory handling functions, where:																								
DIRECTORY	Allows viewing and printing of the available space and file types (including plug-in files) present on a module. Only detected modules will be listed, and selecting ALL will display all results. (See the <i>Programmer's Manual</i> for memory allocation information.)																								
PRINT FILE	Prints selections from stored file types: <table border="1" data-bbox="483 703 1432 1012"> <thead> <tr> <th>File Extension</th> <th>Printed Result</th> </tr> </thead> <tbody> <tr> <td>DBM</td> <td>A font sample.</td> </tr> <tr> <td>DCM</td> <td>The configuration commands contained in the file.</td> </tr> <tr> <td>DIM</td> <td>The image.</td> </tr> <tr> <td>DLB</td> <td>The stored label.</td> </tr> <tr> <td>DLN</td> <td>The name of the language.</td> </tr> <tr> <td>DMS</td> <td>The database contained in the file for RFID.</td> </tr> <tr> <td>DPL</td> <td>A label format, if detected.</td> </tr> <tr> <td>DTT</td> <td>A font sample.</td> </tr> <tr> <td>PLU</td> <td>The names of the files contained in the plug-in directory.</td> </tr> <tr> <td>PRN</td> <td>Is processed as a DPL file.</td> </tr> <tr> <td>TXT</td> <td>Is processed as a DPL file.</td> </tr> </tbody> </table>	File Extension	Printed Result	DBM	A font sample.	DCM	The configuration commands contained in the file.	DIM	The image.	DLB	The stored label.	DLN	The name of the language.	DMS	The database contained in the file for RFID.	DPL	A label format, if detected.	DTT	A font sample.	PLU	The names of the files contained in the plug-in directory.	PRN	Is processed as a DPL file.	TXT	Is processed as a DPL file.
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PRN	Is processed as a DPL file.																								
TXT	Is processed as a DPL file.																								
FORMAT MODULE	Selects from a list of modules available for formatting by the printer. Choosing FORMAT MODULE will erase existing data in the selected module																								
DELETE FILE	Selects from the list of available files for deleting; see Section 6.3, File Handling Messages.																								
COPY FILE	Selects from the list of available files for copying, prompting you for the destination module before execution.																								
UNPROTECT MODULE	Selects from the list of available modules to unprotect, and then prompting you regarding the outcome of the attempt.																								
PRESENT SENSOR	Controls the "on-demand" dispensing of labels , where:																								
MODE	Sets the detection method and response of the printer:																								
AUTO	Is the default setting. Automatically detects, enables the Present Sensor (or Peel and Present mechanism) and sets the label stop location; if not detected, the operation will be ignored.																								
ENABLED	Enables the Present Sensor (or Peel and Present mechanism) and sets the label stop location; if not detected, a fault will be generated.																								
DISABLED	Disables the option.																								
RETRACT DELAY	Programs a time delay for the retraction of the next label in the print process, where:																								
(1 - 255 x 10 mS) 070	Is the range, times 10 milliseconds; and, Seventy (times ten) is the default setting.																								

DISPLAYED ITEM	ITEM DESCRIPTION
CUTTER	Controls the Cutter operation, where:
MODE	Sets the detection method and response of the printer:
AUTO	Is the default setting, where the presence of the cutter option is automatically sensed. If detected, the cutter is enabled; otherwise, it will be ignored.
ENABLED	Enables the cutter. If the cutter is not detected, a fault will be generated.
DISABLED	Disables the cutter.
CUT BEHIND	<p>Allows a queue of small labels to accumulate before cutting is performed to increase throughput.</p> <hr/> <p>(1) This mode can be used without a cutter to allow the presentation of an extra label with retraction upon the next job or feed operation.</p> <p> (2) After a fault or unknown label position, the leading edge will be cut to ensure no extra material exists at the beginning of the first label; otherwise, the cutter will only cut when necessary.</p> <hr/>
(0 – 2) 0	Zero, one, or two are the number of labels to queue before cutting; and Is the default setting.
GPIO PORT	Controls the optional Applicator Interface Card's GPIO function, where:
GPIO DEVICE	Sets the option to work with a specific device type, where:
DISABLED	Disables the option.
APPLICATOR	Enables parameters for related label applicator functions: <ul style="list-style-type: none"> • Completion upon last SOP, de-asserts Data Ready (DRDY); • FEED allowed at any time; and, • DRDY upon PAUSE.
APPLICATOR2	Enables parameters for alternate label applicator functions: <ul style="list-style-type: none"> • Completion upon 1 msec. overlap of Data Ready (DRDY) and End of Print (EOP); • DRDY signal end inhibits FEED; and, • De-asserts DRDY upon PAUSE or FAULT.
BARCODE VERIFIER	Enables the GPIO Port to work with a bar code verifier.
START OF PRINT	Selects the type of input signal required to initiate Start of Print (SOP), where:
LOW PULSE	Triggers printing with a low pulse.
HIGH PULSE	Triggers printing with a high pulse.
ACTIVE LOW	Triggers printing with a low signal.
ACTIVE HIGH	Triggers printing with a high signal.
EDGE	Triggers printing with a signal edge transition.
END OF PRINT	Sets the type of output signal generated to indicate End of Print (EOP), where:
LOW PULSE	Outputs a low pulse upon completion.
HIGH PULSE	Outputs a high pulse upon completion.
ACTIVE LOW	Outputs a logic low upon completion.
ACTIVE HIGH	Outputs a logic high upon completion.

RIBBON LOW	Sets the type of output signal generated to indicate Ribbon Low condition where:
ACTIVE LOW	Outputs a logic low upon condition.
ACTIVE HIGH	Outputs a logic high upon condition..
SLEW ENABLE	Selects the type of input signal required to initiate label slew, where:
STANDARD	Triggers slew with a low signal.
LOW PULSE	Triggers slew with a low pulse.
HIGH PULSE	Triggers slew with a high pulse.
ACTIVE LOW	Triggers slew with a low signal.
ACTIVE HIGH	Triggers slew with a high signal.
Err On Pause (App2)	Sets the output when a service required fault occurs (Applicator Interface Card Type 2 equipped only), where:
ENABLED	Enables the output signal.
DISABLED	Disables the output signal.

System Settings

The System Settings menu contains label formatting, operation, and control functions:

- Menu Mode
- Configuration File
- Internal Module*
- Default Module*
- Scaleable Font Cache*
- Single Byte Symbols*
- Double Byte Symbols*
- Time And Date
- Media Counters*
- Print Configuration*
- Configuration Level*
- Set Factory Defaults*
- Format Attributes*
- Label Rotation
- Imaging Mode*
- Pause Mode*
- Peel Mode*
- Security*
- Units Of Measure*
- Input Mode*
- DPL Emulation*
- Column Emulation*
- Row Emulation*
- SOP Emulation*
- Back After Print*
- Font Emulation*
- Label Store*
- Menu Language
- Display Settings*
- Fault Handling*
- SCL Font Bold Factor*



Items denoted with an asterisk (*) are only accessible through the Advanced Menu.

The menu selections are defined as follows:

DISPLAYED ITEM	ITEM DESCRIPTION
CONFIGURATION FILE	Controls the creation, storage, and recall of printer configuration files, where:
RESTORE AS CURRENT	Returns the printer to a previously saved configuration.
SAVE SETTING AS	Creates a file based on the current printer configuration, as described here.
DELETE FILE	Removes a selected configuration file from memory. (An active file cannot be deleted.)
FACTORY SETTING FILE	Provides a list of available configuration files used to restore the printer's configuration following a Level One Reset or when YES is selected in the SET FACTORY DEFAULTS menu. (NONE is the default file setting.)
INTERNAL MODULE	Sets the number of 1KB blocks (100 - 5120) allocated for the internal DRAM 'D' module, where:
1024	Is the Default Setting.
DEFAULT MODULE	Designates the memory module to be used for file storage when none are specified, where:
D	Is the Default Setting (DRAM module).
G	Flash module.



The available modules may vary depending upon printer model and options.

SCALEABLE FONT CACHE	Configures the number of 1KB blocks (128 - 512) allocated for the scaleable font engine, where:
384 KBytes	Is the Default Setting.
SINGLE BYTE SYMBOLS	Selects the code page used to print single byte fonts, including:

ARABIC-8	ISO 15: ITALIAN	ISO 17: SPANISH
CYRILLIC	LEGAL	ISO 11: SWEDISH
ISO 60: DAN/NOR	HP4000 ZAPF DINGBAT	SYMBOL
DESKTOP	MATH-8	TURKISH-8
ITC ZAPF DINGBAT/100	MACINTOSH	PS TEXT
ITC ZAPF DINGBAT/200	PS-MATH	UTF-8
ITC ZAPF DINGBAT/300	PC-858 MULTILINGUAL	ISO 4: UK
PS ITC ZAPF DINGBAT	MICROSOFT PUBLISHING	ISO 6: ASCII
ISO 8859/1 LATIN 1	PC-8 CODE PAGE 437	VENTURA INTERNATIONAL
ISO 8859/2 LATIN 2	PC-8 D/N, CP 437N	VENTURA US
ISO 8859/5 LATIN 5	PC-852 LATIN 2	VENTURA MATH
ISO 8859/10 LATIN 6	PC-851 LATIN/GREEK	WINDOWS 3.1 LATIN 1
ISO 8859/7 LT/GK E7	PC-862 LATIN/ARABIC	WINDOWS LATIN/ARABIC
ISO 8859/15 LATIN 9	PI FONT	AGFA TIDBITS
ISO 8859/7 LT/GK EG	PC-850 MULTILINGUAL (Default Setting)	WINDOWS 3.1 LATIN 2
ISO 8859/8 LATIN/HBR	PC-864 LATIN/ARABIC	WINDOWS LATIN/GREEK
ISO 8859/8 LATIN/CYR	PC-8 TK, CP 437T	WINDOWS 3.1 LATIN 5
ISO 69: FRENCH	PC-1004	WINDOWS
GREEK-8	PC-775 BALTIC	WINDOWS 3.0 LATIN 1
PC-8 GREEK	PTXT3000	WINDOWS LATIN/CYRIC
ISO 21: GERMAN	NON-UGL, PI FONT	WINDOWS 3.0 LATIN 5
HEBREW-7	ROMAN-8	
HEBREW-8	ROMAN-9	



Reference the *Programmer's Manual* for code page symbol set details.

DISPLAYED ITEM	ITEM DESCRIPTION
DOUBLE BYTE SYMBOLS	Selects the optional ILPC code page used to print double byte fonts, where:
JIS	Japanese Industry Standard
SHIFT JIS	Shift Japanese Industry Standard
EUC	Extended UNIX Code
UNICODE	Unicode (including Korean). Default setting.
GB	Government Bureau Industry Standard; Chinese (PRC)
BIG 5	Taiwan encoded




Reference the *Programmer's Manual* for the code page symbol set details.




TIME AND DATE	Sets the printer's time and date.
MEDIA COUNTERS	Displays and controls various internal counters, where:
ABSOLUTE COUNTER	Shows the total number of inches printed and the date the counter was set (non-resettable).
PRINthead COUNTER	Shows the total number of inches printed (not user-resettable).
RESETTABLE COUNTER	Shows the number of inches printed since the last reset (user-resettable).
RESET COUNTER	Returns the Resettable Counter to zero.
PRINT CONFIGURATION	Produces a Configuration Label using the printer's current database information.



(1) The information varies with the model, firmware version and installed options.

(2) To capture all the data, use media that is at least 2 inches (51 mm) wide and set the Label Width (in Media Settings) according to the width of your labels.

CONFIGURATION LEVEL	Displays the hardware and software levels of the printer, where:  This information is also provided on the Configuration Label.
PRINTER KEY	Identifies the unique key number of the printer, in the form: vvvv-cwxx-yyyyyy-zzz, where: vvvv - Represents the printer model number. cwxx - 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 (10 = standard DPL, and 20 = Internal CG Times Font). Features are accepted up to this value, but increases beyond the range will require an authorization code. yyyyyy - Is the manufacturing date code. zzz - Is a unique time stamp.
APPLICATION VERSION	Displays the level, version number, and date of the application firmware.
BOOT LOADER	Displays the version level and date of the boot loader.
UPGRADE PRINTER CODE	Upgrades the software feature level of the printer.
UNLOCK FEATURE	Unlocks additional optional features within the printer. (An authorization code is required.)

DISPLAYED ITEM	ITEM DESCRIPTION
SET FACTORY DEFAULTS	Returns the printer settings to the factory-programmed values (except CUSTOM ADJUSTMENTS and calibrations); or, if selected, to the Factory Setting File, where selecting YES at the prompt causes the configuration to be restored.
FORMAT ATTRIBUTES	Defines the manner in which overlapping text and graphics appear when printed, where:
TRANSPARENT	Intersecting text, images, and bar codes will be printed, for example: 
XOR	Intersecting text, images, and bar codes will not be printed, for example:  (Default Setting)
OPAQUE	Intersecting text, images, and bar codes will be printed by obliterating those formatted first, for example: 
LABEL ROTATION	Allows the label format to be rotated 180 degrees before printing, where:
ENABLED	Flips the format.
DISABLED	Does not flip the format. (Default Setting)
IMAGING MODE	Determines the process used to format labels, where:
MULTIPLE LABEL	Images multiple labels as memory permits to achieve the fastest throughput. If time-stamping labels, however, the indicated time will reflect the moment of imaging rather than the actual print time. (Default Setting)
SINGLE LABEL	Images the next label only after the previous label has been printed, providing the most accurate time-stamps but at a slower throughput rate.
PAUSE MODE	Allows for controlled interactive printing, where:
ENABLED	Requires you to press the PAUSE Key to print each label.
DISABLED	Labels are printed without pausing. (Default Setting)
PEEL MODE	Allows the printer to wait until the Start of Print signal is received (via the optional GPIO Port) to feed a label, where:
ENABLED	Inhibits the feed function until the Start of Print signal is received.
DISABLED	Feeds the label regardless of the Start of Print signal. (Default Setting)
SECURITY	Allows all or part of the User Interface to be password-protected and for that password to be modified:
SELECT SECURITY	Allows password to be set for specific User Interface areas, where:
DISABLED	No password is required for menu access. (Default Setting)
SECURE MENU	Sets a password requirement for User and Advanced menu entry.
MENU AND TEST	Sets a password requirement for all menu entries.
ADVANCED MENU	Sets a password requirement for Advanced menu entry. (After enabling this selection, make it effective by returning the Menu Mode to the User setting; see above.)
MODIFY PASSWORD	Modifies the four-digit password required when security is enabled. For modification, the code must be reentered when prompted to confirm.







To be activated, the password must initially be set to a value other than the default setting (0000).

DISPLAYED ITEM	ITEM DESCRIPTION
UNITS OF MEASURE	Sets the measurement standard used, where:
IMPERIAL	Uses inches. (Default Setting)
METRIC	Uses millimeters and centimeters.
INPUT MODE	Defines the type of processing that will occur when data is received, where:
PL-Z	Alternative programming language processing will be used, with the exception of the following DPL specific-parameters: DPL Emulation; SOP Emulation; and, Label Store.
AUTO	Identifies then activates the appropriate emulation parser for the data.
DPL EMULATION	Allows the printer to reproduce, for backward compatibility, label formats with the same characteristics as those produced by legacy models, where:
STANDARD	Standard DPL processing will be used for printing. (Default Setting)
ALLEGRO	Processes DPL data as an Allegro®, including row position calculations based on 194 dots per inch and the exceptions noted below.
PRODIGY PLUS	Processes DPL data as a Prodigy Plus®, including column calculations based on 200 dots per inch and the exceptions noted below.
PRODIGY	Processes DPL data as a Prodigy®, including column calculations based on 200 dots per inch and the exceptions noted below.

-
- Exceptions:
- Data Terminator processing – When printing I 2 of 5 bar codes D, J, and L, the first non-numeric character processed will terminate the bar code data field.
 - Bar Size exception – When printing I 2 of 5 bar code L, if the bar size specified is greater than P (25) it is automatically decreased to 10.
 - Human Readable Fonts fixed size – When printing EAN and UPC bar codes B, C, F, G, M, and N, a fixed font size is produced.
 - Line and box vertical sizing anomaly – When printing rotations 2 and 4, lines and boxes are affected by the vertical multiplication factor defined in the DPL Dxx command.
 - Column position defaults – Column positions greater than the printhead width are adjusted back to the printable area then printed.
 - Bar codes in rotation 3 - (upside down / right to left) default sizing – When row position in rotation 3 is less than bar code height, bar codes falling off the label's leading edge are pushed back onto the label.
 - <STX>L command – When no printable fields reside in the format, it results in no label movement.
-

COLUMN EMULATION	Allows the column dots per inch to be adjusted (153 - 253 dots), so that numbers smaller than the printhead resolution reduce the printed output from right to left, where:
XXX Dots	

DISPLAYED ITEM	ITEM DESCRIPTION
ROW EMULATION	Allows the row dots per inch to be adjusted (103 - 303), so that numbers smaller than the printhead resolution enlarge the height of the printed output and numbers larger reduce it, where:
XXX Dots	
SOP EMULATION	Allows label positioning commands to function with backward compatibility when printing label formats designed for legacy models, where:
DISABLED	Produces the natural start of print position. (Default Setting)
110 (PRODPLUS)	Emulates the Prodigy Plus® start of print position.
220 (ALLEGRO)	Emulates the Allegro® start of print position.
250 (PRODIGY)	Emulates the Prodigy™ start of print position.
BACK AFTER PRINT	Determines media movement when a cutter, present sensor, peel and present, or GPIO is enabled, where:
MODE	Repositions media, where:
DISABLED	Movement occurs only when the next label is ready to print, minimizing edge curling. (Default Setting)
ENABLED	Movement occurs according to BACKUP DELAY timing after a cut, cleared sensor, or SOP to allow fastest throughput.
BACKUP DELAY (1/50s)	Instructs the printer to retract a presented label after a specified time elapses (0 – 255, in one-fiftieth of a second increments), where:
000	Retraction occurs when the next label is received and processed. (Default Setting)
FONT EMULATION	Allows font substitution for all internal fonts, where:
STANDARD FONTS	Prints using a standard (internal) font. (Default Setting)
CG TIMES	Prints using the CG Times font.
USER ID S50	Prints using a downloaded font.
LABEL STORE	Determines the command recall level used when retrieving stored label formats, where:
STATE & FIELDS	Recalls the printer state (i.e., heat, speed settings, etc.) and the label-formatting commands for the stored label. (Default Setting)
FIELDS ONLY	Recalls the label-formatting commands for the stored label.
MENU LANGUAGE	Selects the menu and configuration label language. Only languages that are resident will be displayed (see Appendix C), where:
ENGLISH	Enables English (Default Setting)
DISPLAY SETTINGS	Determines the appearance of the items in the display, where:
GRAPHIC DISPLAY MODE	Determines the magnification of the displayed items, where:
STANDARD	Is the normal setting.
ENHANCED	Is the enlarged setting.
DISPLAY UNITS	Determines the displayed type of distance information, where:
STANDARD	Displays the information according to the UNITS OF MEASURE setting (see above).
IMPERIAL	Displays the information in inches.
METRIC	Displays the information in millimeters and centimeters.
DISPLAY CONTRAST	Adjusts the displays contrast (0-100), where:
35	Is the default setting

DISPLAYED ITEM	ITEM DESCRIPTION
FAULT HANDLING	Determines the intervention required and the disposition of the label in process when a fault occurs, where:
LEVEL	Selects the user action and the reprint status upon declaration of a fault, where:
NO REPRINT	Printing stops and a fault message is displayed. Following correction of the problem, the FEED Key must be pressed to clear the fault, but the label in process is not reprinted.
STANDARD	Printing stops and a fault message is displayed. Following correction of the problem, the FEED Key must be pressed to clear the fault then the label in process is reprinted. (Default Setting.)
VOID AND RETRY	<p>Depending upon the RETRY COUNT (see below), one of the following occurs:</p> <p>If the count has not been exceeded, VOID is printed (see VOID DISTANCE) on the failed label and reprinting automatically occurs;</p> <p>If the count has been exceeded, printing stops and a fault message is displayed. Following correction of the problem, the FEED Key must be pressed to clear the fault before the label in process is reprinted; or,</p> <p>If the CANCEL Key is pressed, reprinting is optional: to reprint press NO; or, to cancel the reprint press YES (and press YES again to cancel the batch.)</p> <hr/> <p> (1) With no Linear Scanner attached, the printer will perform in the STANDARD setting, except that VOID will be printed on the faulted label.</p> <p> (2) VOID will not be printed if insufficient text space exists (see VOID DISTANCE, below), or if the fault occurred after printing.</p> <p>(3) The text can be customized, see the <i>Programmer's Manual</i> for details.</p>
VOID DISTANCE	Sets the distance to backup and then print VOID on a faulted label, where:
(0.09 – 2.00 in.) 0.50	Is the distance, measured from the trailing edge of the label, which indirectly establishes the font size of the text. (The default setting is 0.5 inches.)
RETRY COUNT	Sets the number of reprint attempts, where:
(0 – 3) 1	Is the last label in the count to be voided before the printer will stop and display a fault message. (The default setting is one.)
	Retry counts greater than 1 are only valid for printers equipped with the Linear Scanner or RFID option.
BACKFEED ON CLEAR	Determines the printer's action after a fault is cleared, where:
ENABLED	Backup label positioning will occur after the fault is cleared.
DISABLED	No backup label positioning will occur after fault clearing; the printer will assume that the <u>current</u> position is correct. (This is the default setting.)
	If reloading media, the label must be placed its presented position.
SCL FONT BOLD FACTOR	Sets a scalable font boldfacing amount, where:
08 (1 – 36)	Is the setting, based on an incrementing scale, where eight (08) is nominal.

Communications

The Communications menu contains interface and host control functions:

- Serial Port A*
- Parallel Port A*
- USB Port*
- Network Interface*
- Host Settings*



Items denoted with an asterisk (*) are only accessible through the Advanced Menu.

The menu selections are defined as follows:

DISPLAYED ITEM	ITEM DESCRIPTION
SERIAL PORT A	Controls the RS-232 communications settings for Serial Port A, where:
BAUD RATE	Sets the serial communication rate, where:
(1200 – 115000 BPS) 9600 BPS	Is the range, in Bits Per Second; and, is the Default Setting.
PROTOCOL	Sets the data flow control (handshaking) method, where:
BOTH	XON/XOFF and CTS/DTR are used. (Default Setting)
SOFTWARE	XON/XOFF is used.
HARDWARE	CTS/DTR is used.
NONE	Flow control is not used.
PARITY	Sets word parity, where:
NONE	Parity is not used. (Default Setting)
ODD	Odd parity is used.
EVEN	Even parity is used.
DATA BITS	Sets word length, where:
(7 - 8) 8	A seven or eight bit word is selectable; and, is the Default Setting.
STOP BITS	Sets the number of stop bits, where:
(1 - 2) 1	One stop or two stop bits are selectable; and, is the Default Setting.
PARALLEL PORT A	Controls the communication setting for the parallel port, where:
PORT DIRECTION	Determines if data is returned from the printer, where:
UNI-DIRECTIONAL	No data is returned; communication is one-way.
BI-DIRECTIONAL	Data is returned in compliance with IEEE 1284 back-channel operation. (Default Setting)
	 An IEEE 1284 bidirectional cable is required.
USB PORT	Controls the communication setting for the USB port
USB DEVICE CLASS	Defines the USB port type
PRINTER	Sets the printer for use as a typical Windows printer
CDC	Sets the printer for use with handled PC's and similar devices
Composite	Combines both Printer and CDC classes. (Default Setting)
NETWORK INTERFACE	Controls the communications settings for the network interface, where:
QUICK SETUP	Controls the communications settings for the network interface, where:
WIRED DHCP	Configures the card for wired connection.
SET FACTORY DEFAULTS	Resets NIC Adapter parameters to the factory defaults values.

DISPLAYED ITEM	ITEM DESCRIPTION
GENERIC SETTINGS	Controls global communication settings shared by wired and wireless LAN
ACTIVE INTERFACE	Selects the network interface currently in use by the printer, where:
NONE	Disables both interfaces
WIRED ETHERNET	Selects the Wired Ethernet interface
WIRELESS ETHERNET	Selects the Wireless Ethernet interface
SNMP ENABLE	Sets SNMP
NO	(Default Setting)
YES	
TELNET ENABLE	Enable/Disable Telnet protocol
NO	(Default Setting)
YES	
FTP SERVER ENABLE	Enable/Disable FTP protocol
NO	(Default Setting)
YES	
HTTP SERVER ENABLE	Enable/Disable FTP protocol
NO	
YES	(Default Setting)
LPD PRINT ENABLE	
NO	
YES	(Default Setting)
TCP PRINT ENABLE	
NO	
YES	(Default Setting)
NETCENTER ENABLE	
NO	(Default Setting)
YES	
GRATUITOUS ARP	Sets time interval for ARP transmission packets, where: (0-100 minutes); Default is 0
NETWORK REPORT	Prints or displays a report which lists the printer's network settings.

DISPLAYED ITEM	ITEM DESCRIPTION
WIRED ETHERNET	Controls the communications settings for the wired Ethernet network interface
IP DISCOVERY	Sets the address discovery method, where:
USE STATIC ADDRESSES	The stored static IP, Subnet Mask, and / or Gateway Address will be used.
USE DHCP	The card broadcasts over the network using DHCP protocol to receive addresses from the responsible server at startup. Manual modifications to IP Address, Subnet Mask, or Gateway Address are not allowed; and, if no server is found, the specified static value will be used. (Default Setting) <input checked="" type="checkbox"/> A server assigned IP address takes precedence over any static IP address stored in the interface.
USE BOOTP	The card broadcasts over the network using BOOTP protocol to receive addresses from the responsible server at startup. Manual modifications to IP Address, Subnet Mask, or Gateway Address are not allowed; and, if no server is found, the specified static value will be used. (Default Setting) <input checked="" type="checkbox"/> A server assigned IP address takes precedence over any static IP address stored in the interface.
IP ADDRESS	Specifies the static IP Address of the interface in the standard octet format.
SUBNET MASK	Specifies the static Subnet assigned to the interface, for example: 255.255.255.000.
DEFAULT GATEWAY	Specifies the Gateway Address the interface will use, for example: 192.168.10.1
DUPLEX CAPABILITY	Specifies the transmission and speed of the wired Ethernet connection: <ul style="list-style-type: none"> • Auto-Negotiate (default); • 100 BaseT Full Duplex; • 100 BaseT Half Duplex; • 10 BaseT Full Duplex; or, • 10 BaseT Half Duplex
PRIMARY WINS SERVER	The IP address of the primary WINS Server.
SECONDARY WINS SERVER	The IP address of the secondary WINS Server.
PRIMARY DNS SERVER	The IP address of the primary DNS Server.
SECONDARY DNS SERVER	The IP address of the secondary DNS Server.
SNMP TRAP DESTINATION ADDRESS	Is the address in standard octet format where SNMP traps will be sent when SNMP service is installed on your receiver. When zeroed, no traps are sent.
SNMP SERVER ADDRESS	Is the server address in standard octet format for SNMP services.
NETBIOS ENABLE	Enables or disables the NET BIOS SERVICES
NO	(Default Setting)
YES	

DISPLAYED ITEM	ITEM DESCRIPTION
TCP PRINT PORT	Selects the Port to use for all TCP network communications; Default is 9100
INACTIVITY TIME	Set the amount of time (<i>in seconds</i>) in which the current port will remain open when no activity is present.
LPD PRINT PORT	Selects the Port to use for all LPD network communications; Default is 515
WIRELESS ETHERNET	Controls the communications settings for the wireless Ethernet network interface, where:
IP DISCOVERY	Sets the address discovery method, where:
USE STATIC ADDRESSES	The stored static IP, Subnet Mask, and / or Gateway Address will be used.
USE DHCP	<p>The card broadcasts over the network using DHCP protocol to receive addresses from the responsible server at startup. Manual modifications to IP Address, Subnet Mask, or Gateway Address are not allowed; and, if no server is found, the specified static value will be used. (Default Setting)</p> <p><input checked="" type="checkbox"/> A server assigned IP address takes precedence over any static IP address stored in the interface.</p>
USE BOOTP	<p>The card broadcasts over the network using BOOTP protocol to receive addresses from the responsible server at startup. Manual modifications to IP Address, Subnet Mask, or Gateway Address are not allowed; and, if no server is found, the specified static value will be used. (Default Setting)</p> <p><input checked="" type="checkbox"/> A server assigned IP address takes precedence over any static IP address stored in the interface.</p>
IP ADDRESS	Specifies the static IP Address of the interface in the standard octet format.
SUBNET MASK	Specifies the static Subnet assigned to the interface, for example: 255.255.255.000.
DEFAULT GATEWAY	Specifies the Gateway Address the interface will use, for example: 192.168.10.1
HOST SETTINGS	<p>Controls the communications with a host device, where:</p> <p><input checked="" type="checkbox"/> The "ignore host" settings for ESC SEQUENCES, HEAT, SPEED, TOF SENSING, SYMBOL SET, CNTRL-CODES, STX-V SW SETTINGS, and MAX LENGTH will be unaffected when PL-Z Mode is selected (see Input Mode for details).</p>
HOST TIMEOUT	<p>Sets the number of seconds (1 - 60) that an established communications port must be idle before data can be received through an alternate port, where:</p> <p><input checked="" type="checkbox"/> If the time-out period is exceeded before all data is received, the data will be ignored.</p>
10	Is the Default Setting.

DISPLAYED ITEM	ITEM DESCRIPTION
CONTROL CODES	Allows changes to the prefix of the software commands interpreted by the printer, where:
STANDARD CODES	Use these characters: Hex 01 = SOH command; Hex 02 = STX command; count-by = ^; Hex 1B = ESC; Hex 0x0D = Carriage Return. (Default Setting)
ALTERNATE CODES	Use these characters: Hex 5E = SOH command; Hex 7E = STX command; count-by = @; Hex 1B = ESC; Hex 0x0D = Carriage Return.
ALTERNATE CODES 2	Use these characters: 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.
FEEDBACK CHARACTERS	Allows the printer to return a Hex 1E (RS) after each label successfully prints, and a Hex 1F (US) after each label batch successfully prints, where:
ENABLED	Sends feedback characters to the host.
DISABLED	Does not send feedback characters to the host. (Default Setting)
ESC SEQUENCES	Allows data containing invalid ESC control code sequences to be processed, where:
ENABLED	Processes commands normally. (Default Setting)
DISABLED	Ignores ESC sequences are during processing (since some systems send a "banner" to the printer). Bitmapped font downloads are disabled in this mode.
HEAT COMMAND	Determines the way the DPL Heat command is handled, where:
ENABLED	Processes commands normally. (Default Setting)
DISABLED	Ignores DPL Heat commands; instead, the heat value is controlled via the menu setting.
SPEED COMMANDS	Determines the way DPL Print, Feed, Slew, and Reverse commands are handled, where:
ENABLED	Processes commands normally. (Default Setting)
DISABLED	Ignores DPL speed commands; instead, the speeds are controlled via the menu setting.
TOF SENSING COMMANDS	Determines the way in which DPL Gap, Continuous, and Reflective commands are handled, where:
ENABLED	Processes commands normally. (Default Setting)
DISABLED	Ignores DPL TOF commands; instead, TOF is controlled via the menu setting.
SYMBOL SET COMMAND	Determines the way in which DPL Single and Double Symbol Set commands are handled, where:
ENABLED	Processes commands normally. (Default Setting)
DISABLED	Ignores DPL Symbol Set commands; instead, the Symbol Set selection is controlled via the menu setting.
CNTRL-CODES (DATA)	Determines the way in which DPL SOH, STX, CR, ESC, and ^ codes are handled, where:
ENABLED	Processes commands normally. (Default Setting)
DISABLED	Ignores DPL Control Codes; instead, the control code functions are established via the menu setting.
STX-V SW SETTINGS	Determines the way in which the DPL <STX>V command is handled, where:
ENABLED	Processes commands normally. (Default Setting)
DISABLED	Ignores the option-enable command; instead, the option selections are controlled via menu settings.
MAX LENGTH COMMAND	Determines the way in which the DPL <STX>M command is handled, where:
ENABLED	Processes commands normally. (Default Setting)
DISABLED	Ignores the maximum label length command; instead, Maximum Label Length is controlled via the menu setting.
PROCESS SOH (DATA)	Determines the way the printer responds to an Immediate Command (e.g., Get Status, Module Storage, etc.), where:
ENABLED	Operations are interrupted upon receipt to process the command.
DISABLED	Processes commands normally. (Default Setting)

Diagnostics



The Diagnostics menu contains testing functions and printhead reporting selections:

- Hex Dump Mode*
- Options Testing*
- Print Test Rate (min)*
- Sensor Readings*
- Ribbon Sensor Limits*
- iPH Report*
- Flash Module Report*



Items denoted with an asterisk (*) are only accessible through the Advanced Menu.

The menu selections are defined as follows:

DISPLAYED ITEM	ITEM DESCRIPTION
HEX DUMP MODE	Determines how the printer handles the data received from a host, where:
ENABLE	The printer outputs the raw ASCII data it receives without interpretation; no processing occurs.
DISABLE	Processes data normally. (Default Setting)
FILE CAPTURE	Saves the incoming data to Module H (USB thumbdrive) if present; otherwise, the file is stored on Module G. The file name, in the form [dmx_xxx_yyy.dpl], where the count is automatically incremented for every capture and a unique printer time stamp (xxx), is assigned.
OPTIONS TESTING	Performs printer option diagnostics or monitors and outputs test results, where:
TEST PRESENT SENSOR	Performs a functional test of the Present Sensor by indicating LABEL PRESENTED (when a label blocks the sensor) and LABEL NOT PRESENTED (when no label blocks the sensor). (Note that this test can also be used to check the sensor function of the Peel & Present option.)
TEST CUTTER	Performs a functional test of the Cutter, where:
PERFORM TEST 001 TIMES	Cycles the cutter blade a selected number of times (0 - 999), with PASS / FAIL results given for each cycling attempt.
TEST GPIO	Performs a functional test of the GPIO port, where:
MONITOR GPIO INPUT	Displays input signal logic values for Start of Print (SOP).  If unconnected, a zero or one may be displayed.
TEST GPIO OUTPUT	Displays output signal logic values for End of Print (EP) and Service Required (SR).  To change an output signal state, cursor over the displayed state to select and then toggle it using the UP or Down Arrow Buttons.
PRINT SIGNAL INFO	Prints a reference label containing GPIO signal names, pin assignments, programmed settings, and current signal states.
PRINT TEST RATE (MIN)	Sets a label-to-label delay interval (0 - 120 minutes) when Test label batch printing, where:
000	Is the Default Setting.

DISPLAYED ITEM	ITEM DESCRIPTION																
SENSOR READINGS	<p>Displays the values (0 – 255) from the printer sensors, where:</p> <table data-bbox="721 275 1175 420"> <tr> <td>THR</td> <td>TRAN</td> <td>RIBM</td> <td>24V</td> </tr> <tr> <td>103</td> <td>091</td> <td>009</td> <td>171</td> </tr> <tr> <td>PS</td> <td>HD</td> <td>RANK</td> <td></td> </tr> <tr> <td>003</td> <td>255</td> <td>050</td> <td></td> </tr> </table> <p>THR = Printhead thermistor sensor; TRAN = Gap media sensor (REFL when set to reflective); RIBM = Ribbon sensor; 24V = 24 volt power supply sensor; PS = Present sensor; HD = Printhead position sensor; and, RANK = Printhead ranking resistor.</p>	THR	TRAN	RIBM	24V	103	091	009	171	PS	HD	RANK		003	255	050	
THR	TRAN	RIBM	24V														
103	091	009	171														
PS	HD	RANK															
003	255	050															
RIBBON SENSOR LIMITS	<p>Displays the values from the ribbon sensor readings (see example below) for printers equipped with the thermal transfer option, where:</p> <table data-bbox="932 695 1146 842"> <tr> <td>RIBBON ADC LOW</td> </tr> <tr> <td>111</td> </tr> <tr> <td>RIBBON ADC HIGH</td> </tr> <tr> <td>249</td> </tr> </table>	RIBBON ADC LOW	111	RIBBON ADC HIGH	249												
RIBBON ADC LOW																	
111																	
RIBBON ADC HIGH																	
249																	
iPH REPORT	Displays the IntelliSEAO™ printhead report data, where:																
VIEW	Displays the data.																
PRINT	<p>Prints a reference label:</p> <div data-bbox="704 953 1377 1257" style="border: 1px solid black; padding: 5px;"> <p>iPH REPORT TUE 12:44PM 23MAY2006 4212-HE25-060224-090 PRINTHEAD SERIAL #: 5x-00289 PRINTHEAD MODEL # 163 PRINTER SERIAL # 60430014 PRINTHEAD INCHES 11175 INSTALLATION DATE - INITIAL 02/02/2006 INSTALLATION DATE - LAST 28/ 02/2006 PRINTHEAD CLEANING CLEAN PROCEDURES: 0 CLEAN COUNTER RESET 0 NUMBER OF INCHES - INITIAL 0</p> </div>																
FLASH MODULE REPORT	Displays the module report data, where:																
VIEW	Displays the data.																
PRINT	<p>Prints a reference label:</p> <div data-bbox="704 1398 1377 1530" style="border: 1px solid black; padding: 5px;"> <p>FLASH MODULE REPORT SUN 12:44PM 23MAY2011 Module G Mount Fail: 0 Module G Reformatted: 0</p> </div>																

5 Maintenance and Adjustments

5.1 Cleaning Intervals

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.



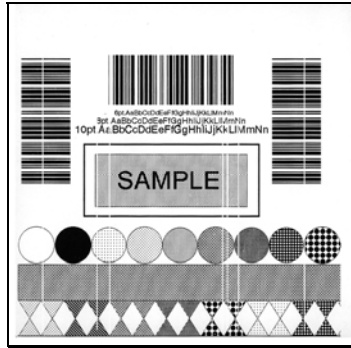
Isopropyl alcohol is a flammable solvent; always take the proper precautions when using this substance.

Proper cleaning is critical. To maintain peak performance of the printer, Datamax-O'Neil offers a complete line of cleaning products including pens, cards, films and swabs.

Certified Datamax-O'Neil – *The worry free choice for optimal printer performance*

5.2 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.



- | | |
|---|--------------------|
| ① | Printhead Latch |
| ② | Printhead Assembly |
| ③ | Cotton Swab |

Automated Printhead Cleaning

1. Remove media and ribbon.
2. Place a Datamax-O'Neil Cleaning Card, part number 70-2013-01 under the printhead. Lower and lock the printhead. Ensure that the Media Width Adjustment is not engaged.
3. Press and hold the TEST Key for approximately four seconds.

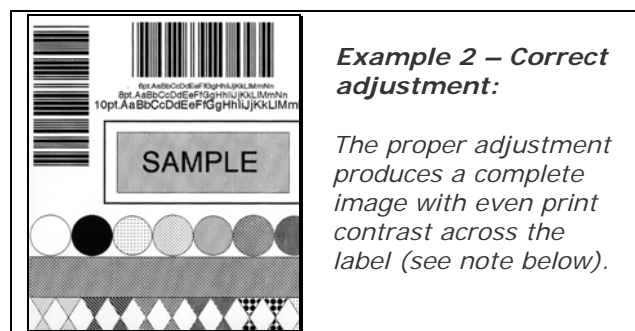
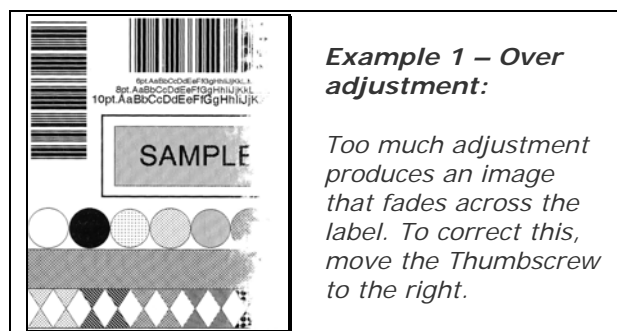
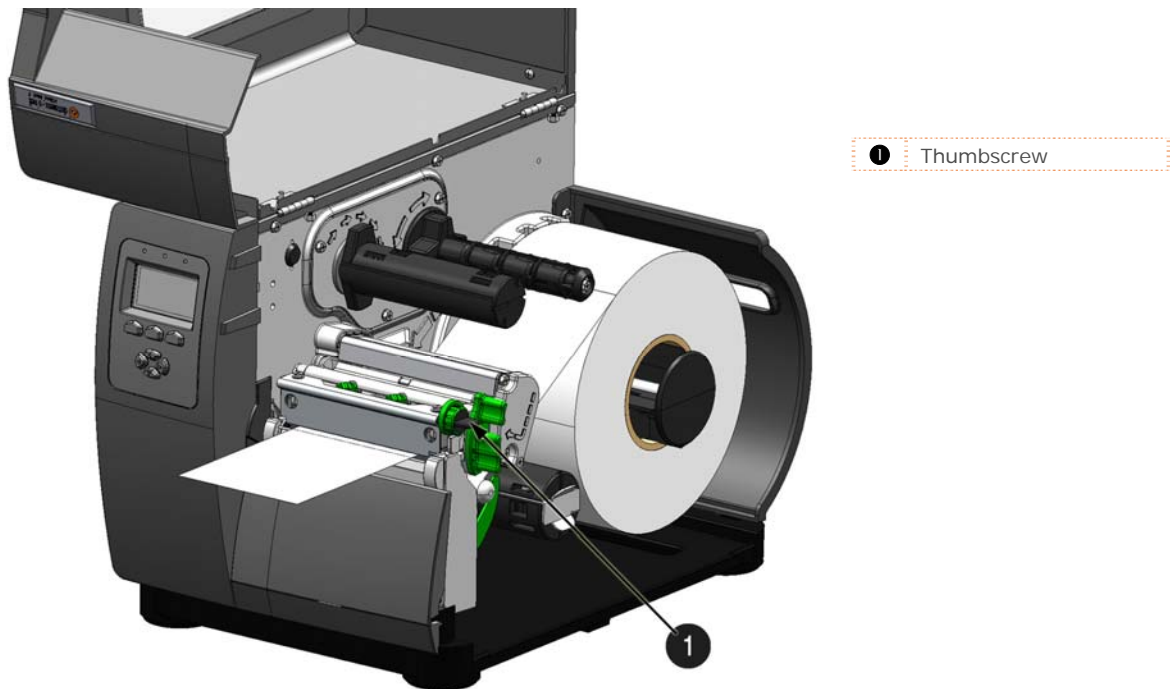
The printer will begin the cleaning routine.

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 Media Width Adjustment, see Section 5.3). Lower and lock the printhead. Close the cover.

5.3 Media Width Adjustment

Whenever using narrow media (sizes that are less than the width of the printhead), adjust the Leveling Cam for even pressure distribution. Adjust the Printhead Leveling Cam as follows:

1. With media loaded, download your label format (or use a Test Menu format) then begin printing a small batch of labels.
2. While observing the printed output, rotate the Leveling Cam counter-clockwise until the image fades across the label, as shown in Example 1 (below).
3. While observing the printed output, rotate the Leveling Cam clockwise until the image is complete, with even contrast, as shown in Example 2 (below).



Under-adjustment can also cause problems including ribbon wrinkling, label tracking, and platen roller and printhead wear. When changing to a different width of label, always perform this adjustment.

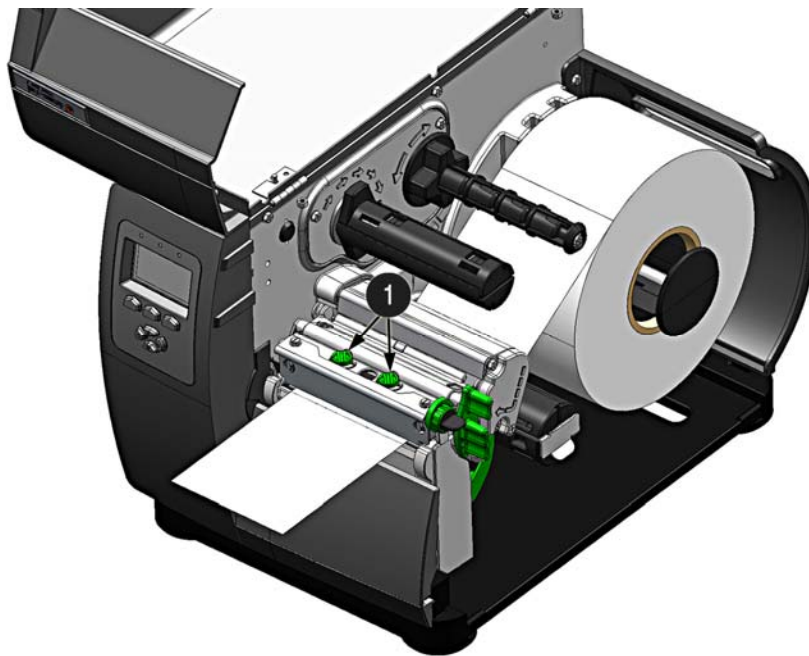
5.4 Printhead Pressure Adjustment

Printhead Pressure Adjustment should only be performed after attempting to improve print quality through the use of other print quality controls.

- A. With media loaded, download your label format (or use a Test Menu format) then begin printing a small batch of labels.
- B. While observing the printed output, turn each Pressure Adjustment Screw (use a small coin or screwdriver) by the same amount until the image is complete, with even contrast:
 - Counterclockwise (+) to increase applied pressure, or;
 - Clockwise (-) to decrease applied pressure.



Ensure that each arrow points in the same direction.



1 Pressure Adjustment Cams

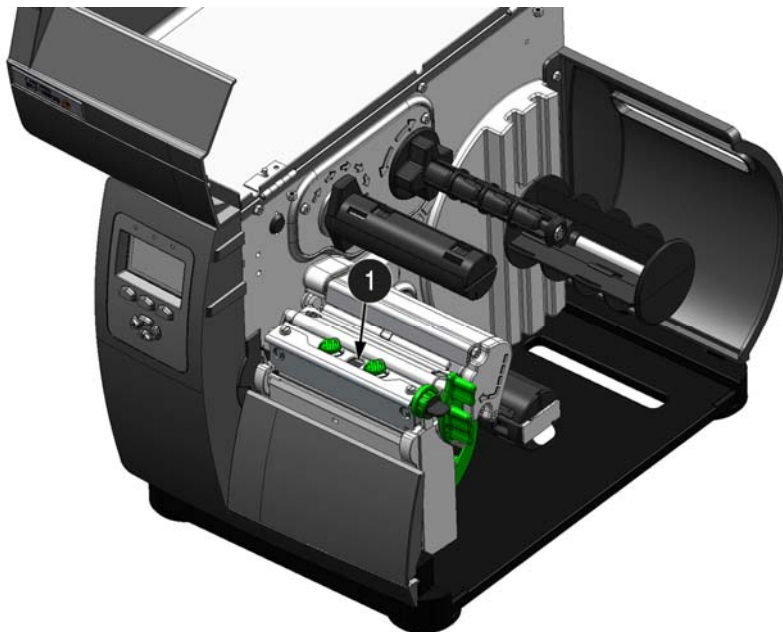
5.5 Printhead Replacement

To replace a damaged printhead, follow the procedure below.



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-O'Neil 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 5.2).
8. Reload ribbon (if removed), lower the printhead assembly, and rotate the printhead latch back, into the locked position.



1 Printhead Mounting Screw

5.6 Resetting the Printer

Soft Reset - To reset the printer and clear any temporary host settings:

1. With the printer 'On', press and hold the **PAUSE** and **CANCEL** buttons for approximately four seconds.

5.7 Upgrading Firmware

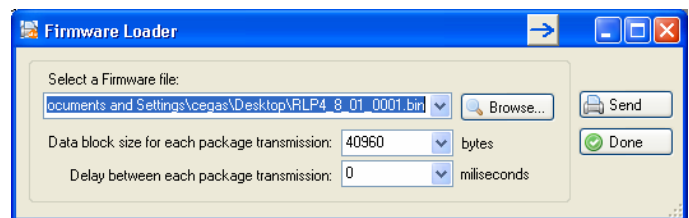
When program updates and/or new features are added, they can be downloaded to the printer as follows:

- 1) Identify the new version for your model of printer from the Datamax-O'Neil Web site and download it onto your computer's hard drive.
- 2) Launch the NETira CT configuration utility, and query (connect) to the printer, (see section 3.3 for more information on NETira CT).



It is recommended that the configuration be saved before downloading firmware, and restored when finished. Be sure to check the box labeled "Include Sensor Calibration Data on Open" when restoring the configuration.

- 3) Go to the Tools>Upgrade>Firmware. Select the binary file (BIN file).
- 4) Click the 'Send' button to start the firmware update.



Be sure only that only one communication cable is connected to the printer before attempting the firmware upgrade. Do not attempt to send any other data or perform operations via the front panel when the firmware is downloading.

Loading Boot 1 and Boot 2 and Firmware

- 1) Connect the printer to your PC using a serial cable
- 2) Launch the NETira CT configuration utility, and query (connect) to the printer, (see section 3.3 for more information on NETira CT).



It is recommended that the configuration be saved before downloading firmware, and restored when finished. Be sure to check the box labeled "Include Sensor Calibration Data on Open" when restoring the configuration.

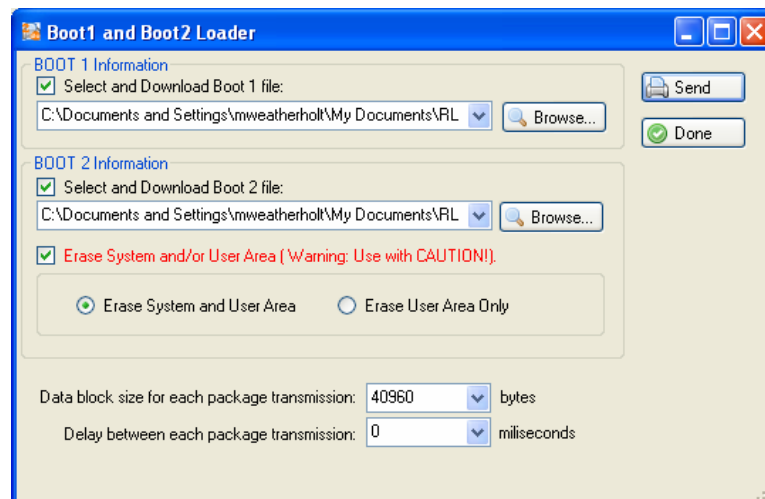
- 3) Go to the Tools>Upgrade>Firmware. Select the binary files (BIN files) for each of the Boot files.
- 4) Check the "Select and Download Boot 1 file:", "Select and Download Boot 2 file:" and "Erase System and/or User Area" boxes and click send to initiate the download.



Be sure only that only one communication cable is connected to the printer before attempting the firmware upgrade. Do not attempt to send any other data or perform operations via the front panel when the firmware is downloading.



Always Check "Erase System and/or User Area" box unless otherwise instructed.



- 5) Once the Boot Loader files have been loaded, the firmware version can now be updated using the procedure outlined in section 5.7.

6 Troubleshooting

6.1 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 display-equipped printers.

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:	<div data-bbox="688 877 1430 940" style="border: 1px solid black; padding: 2px;">WARNING! Use extreme care. Turn 'Off' and unplug the printer before proceeding.</div> <p>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.</p>
* The LCD is blank, but the Ready Indicator is 'On':	The display contrast may set too low. Press and hold the MENU Key for 3 seconds then use the up and down arrow keys until the display reappears.
Erratic feeding:	The printer may require Calibration; see Section 3.4.
Erratic printing (instead of the label format, strange characters are printed):	<p>The printer may be in Hex Dump Mode; see Section 6.2.</p> <p>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).</p>
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:	<p>The Media Width Adjustment may be incorrectly adjusted; see Section 5.3.</p> <p>The Printhead or Platen Roller may be dirty or worn; clean or call for service.</p>

If experiencing this problem...	Try this solution...
<p>Missing information in the printed label:</p>	<p>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.</p> <p>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, see Section 4.5.)</p> <p>If using serial communications, ensure that the interface cable meets the requirements found in Section 2.1.2.</p>
<p>Missing print on left or right side of the label:</p>	<p>Information may be formatted outside the label dimensions. Check your software program label size. For display-equipped printers also check the values in the menu for Print Control / Column Offset and Print Control / Custom Adjustments / Column Offset; see Section 4.5.</p>
<p>No power (all indicator lights are 'Off'):</p>	<p>Verify that the AC power cord connection has been made at both the outlet and the printer; also, ensure the power switch is 'On'.</p> <p>Verify that the AC outlet is functioning, or try moving the printer to another AC circuit.</p> <p>The AC cord may be damaged; replace it.</p> <p>The line fuse may be blown; call for service.</p>

If experiencing this problem...	Try this solution...
<p>Nothing is printing (labels advance normally, but no image is printed):</p>	<p>Examine the used ribbon for an image:</p> <p>If there is an image on the used ribbon:</p> <ul style="list-style-type: none"> • Verify that the ribbon was properly loaded per Section 2.4. • 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 5.2); then replace the ribbon with the correct type for the printer, Section 2.4. <p>If there is no image on the used ribbon:</p> <p>Print any Internal Test Label, see Section 4.4.) If an image is printed, then check the protocol and port settings for both the printer and host. These settings must match.</p> <p>The heat setting may be too low. Make an adjustment in the software program or through the menu.</p> <p>The media/ribbon combination may be incorrect. Contact a Media Representative.</p> <p>The printhead or printhead cable(s) may be loose; power 'Off' the printer then reconnect.</p>
<p>Nothing happens when trying to print using a software program:</p>	<p>Ensure that the printer is at READY.</p> <p>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.</p> <p>Ensure the interface cable meets the requirements found in Section 2.1.2.</p>

If experiencing this problem...	Try this solution...
<p>Poor print quality:</p>	<p>The printhead may need cleaning; see Section 5.2.</p> <p>Adjust the Heat and Print Speed settings through the Front Panel or by host commands, see Section 4.5.)</p> <p>The media/ribbon combination may not be compatible; contact a Media Representative.</p> <p>The Media Width Adjustment may be incorrectly adjusted; see Section 5.3.</p> <p>The Platen Roller may be dirty or worn; clean or call for service.</p>
<p>Skips labels when printing:</p>	<p>Media Calibration may be needed; see Section 3.4.</p> <p>The Media Sensor may be out of position; readjust the position; see Section 2.3.</p> <p>The format may be within 1/8 inch of the label's trailing edge. Try reducing or moving the format slightly.</p>
<p>Unable to print rotated text:</p>	<p>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 <i>Programmer's Manual</i> for details.</p>

6.2 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 *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:

To begin, go to the Diagnostics menu and enable Hex Dump Mode; see Section 4.5. 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-O'Neil Technical Support with any questions.

```
0000 02 4C 00 44 31 31 00 31 ^L.D11.1
0008 36 31 31 30 30 30 30 33 61100003
0010 32 30 30 30 31 30 46 4F 200010F0
0018 4E 54 20 36 3A 20 41 4C NT 5: 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 00 31 36 31 31 .1611
0038 30 30 30 30 32 30 30 30 00002900
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 00 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 2D %&()*+.-
```

A Specifications

Mechanical

Width	12.62 inches (320.6 mm)
Depth	18.60 inches (472.5 mm)
Height	12.70 inches (322.6 mm)
Weight	45 pounds (20.5 kg)
Operating Temperature	32 F to 100 F (0 C to 38 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 – 12 IPS (51 – 305 MMPS): I-4212e 2 – 10 IPS (51 – 254 MMPS): I-4310e 2 – 6 IPS (51 – 152 MMPS): I-4606
Resolution	203 dpi (8 dots/mm): I-4212e 300 dpi (11.8 dots/mm): I-4310e 600 DPI (23.6 dots/mm): I-4606e
Tear Bar	Tear Down
DRAM Memory	32MB
FLASH Memory	64MB

Media/Ribbon

Media Types	Roll-Fed, Die-Cut, Continuous, Fan-Fold
Max. Media Width	4.65" (118 mm)
Min. Media Width	1.0" (25 mm)
Max. Print Width	4.10" (104.0 mm): I-4212e 4.16" (105.7 mm): I-4310e & I-4606e
Print Length Range	.25 - 99" (6 - 2475 mm); with Cutter min. 1.25" (31.8mm); with peel and Present min. 1.50" (38mm)
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) or 1.5" (38mm) core
Ribbon Width Range	1.0 - 4.5" (25 - 114 mm)
Ribbon Roll Capacity	Matched to media: approx. 1968' (600 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

Embedded Fonts and Barcodes

The printer is equipped with the most popular industry fonts and bar codes; see the *Programmer's Manual* for full listings and detailed information.

- 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.

Approved Media

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

Media Dimensional Requirements			
Designator	Description	Minimum ^[1]	Maximum ^[1]
A	Label width	1.00	4.65
B	Liner width	1.00	4.65
C	Gap (or notch) between labels ^[3]	.10	–
D	Label length ^[3]	.25	–
E	Media thickness	.0025	.010
F	Notch opening width	.20	.500
G	Media edge to sensor aperture distance	.20	2.25
H	Reflective (black) mark width ^[2]	.50	4.65
I	Distance between reflective marks ^[3]	.50	–
J	Reflective mark length ^[3]	.10	–
K	Label repeat distance ^[3]	.35	–

^[1] Units of measure are given in inches and referenced by the direction of label feed.

^[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.

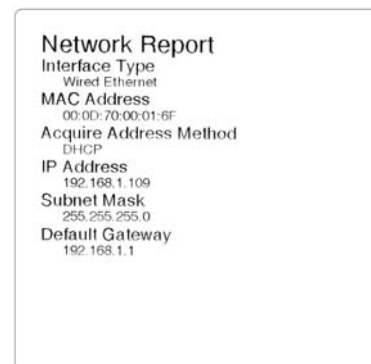
B Wireless and Wired LAN Setup

B.1 Network Card Setup

Whether a wired or wireless connection is intended, it is recommended to establish a wired connection to the printer first. This will allow access to the printer's internal web pages to configure the settings necessary for a typical wireless connection. If a wired connection is not or cannot be achieved, all connection parameters can also be set using the NETira CT configuration utility, see section 3.3.

The printer makes IP requests at power-up, so before making a network connection to the printer, consider how your IP addressing needs to be assigned. The IP addressing of the printer can be configured in one of two ways: Using a static IP Address or Using IP Discovery (DHCP, BootP, or RARP). **At factory default settings IP DISCOVERY is ENABLED (DHCP).**

1. With Printer Off, connect the network cable then turn on Printer.
2. The printer will now search for a DHCP server. Once the printer has obtained an IP address, the icon  will be displayed, signifying that an IP address has been obtained. Allow up to 90 seconds for the printer to retrieve an IP address.
3. At this point, it is recommended to print a Network Report. This Network Report is generated by the printer and lists important default information such as the IP and MAC Addresses as well as SSID for wireless equipped cards. To print the 'Network Report': Press the **PAUSE, FEED, CANCEL** buttons at the same time.
4. Verify the printer has obtained a valid IP address for your network. If a valid IP address was not obtained or you wish to use a different static address, this can be set via the printer's front panel.



The information on this label will vary depending on your configuration and firmware version.

Enter the printer's menu and navigate to the Communications/Network Interface/Wired Ethernet menu branch.

- Set the "IP Discovery" menu item to "Use Static Addresses".
- Set the "IP Address" menu item to desired value, continue the same procedure with "Subnet Mask" and "Default Gateway" menu items if necessary. Exit the printer's menu. Cycle power to the printer, upon start-up the printer will connect to the network using the new parameters you provided.

Once the previous steps have been successfully completed, you may now use the IP Address to:

- If your printer is equipped with wireless capabilities, browse to the printer's internal web pages for wireless/advanced configuration. **See section B.2, Wireless Setup.**

-or-

- Install a printer driver, and start printing from your Windows applications. **See section B.3, Installing the Printer Driver.**

B.2 Wireless Setup

1. Open your web browser. Type in the IP Address assigned to the printer. The printers default IP address is: 192.168.10.26.

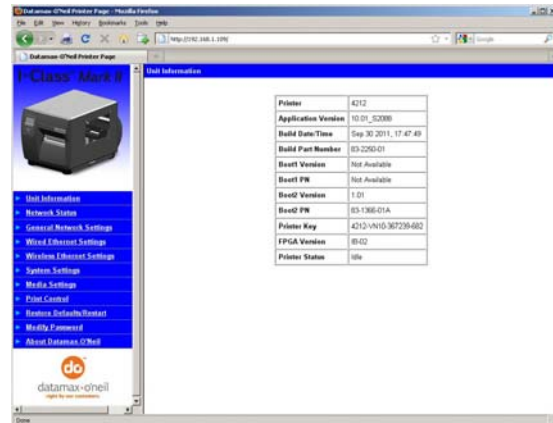


If a different IP Address has been assigned to the printer, make sure to enter the correct IP address.

The following page will appear:

The printer's internal web pages are divided into 10 pages that are accessible via the navigation bar on the left-hand side.


Most of the items on these pages mimic the printer's internal menu. For more information on the function of these settings see the corresponding function in Chapter 4.



You must provide a password to change any settings, the default password is "sysadm".



If any address parameters were changed such as IP address, subnet or gateway, the printer might not be viewable from the current host if they are no longer on the same subnet.

Once the printer has restarted the  icon will be displayed signifying that an IP address has been obtained. Allow up to 90 seconds for the printer to retrieve an IP address.

At this point it is recommended to print a Network Report. This Network Report is generated by the printer and lists important default information such as the IP and MAC Addresses as well as SSID for wireless connections. To print the 'Network Report': Press the **PAUSE, FEED, CANCEL** buttons at the same time.

Once the previous steps have been successfully completed you may now use the IP Address to install a printer driver, and start printing from your Windows applications. See section B.3, Installing the Printer Driver.



The information on this label will vary depending on your configuration and firmware version.

B.2.1 Wireless Setup – Ad-Hoc

After a successful setup is made via a wired connection, the Wireless connection (if equipped) can now be configured in ad-hoc mode using a static IP address. To configure the wireless card in Ad-hoc mode, you must configure your host computer to match the IP settings of the printer. Refer to your operating system's or your wireless network card documentation for information on how to configure your computer.

1. Open your web browser. Type in the IP Address of the printer. The Default IP is: 192.168.10.26.




If a different IP Address has been assigned to the printer, make sure to enter the correct IP address.

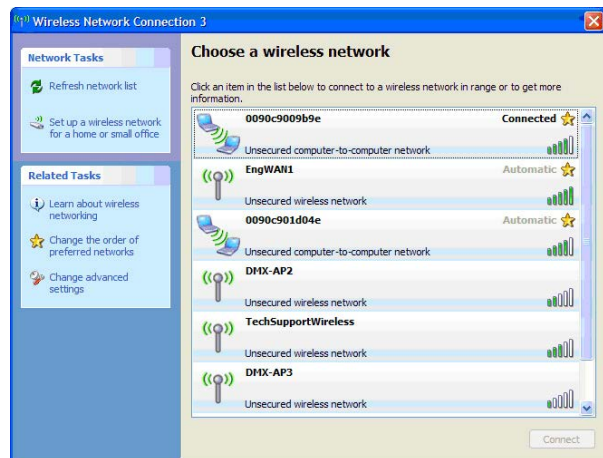
A page similar to the right will appear:



2. Click on the "Wireless Ethernet Settings" menu item on the left side of the screen. Locate and set the following items:
 - In the "Acquire Address Method" section, select the "Use Static Addresses" radio button.
 - In the "Static IP Addresses" section, enter valid static IP addresses for Printer IP Address, Printer Subnet Mask, and Printer Gateway.
3. Scroll down the page to "Network Type", select "Ad-hoc" from the drop down box.

4. In the SSID field type the name of the SSID you wish to assign to the printer.
5. Under the "WIFI Security and Authentication", set any security/authentication settings necessary for your network.
6. Scroll down to the bottom of the page, enter the password (default is "sysadm") and click Apply.
7. Click on the "General Network Settings" menu item on the left side of the screen. Locate and set the following items:
8. In the "Network Interface", select the "Wireless Ethernet" radio button
9. Scroll down to the bottom of the page, enter the password (default is "sysadm") and click Apply.
10. Click on the "Restore Defaults/Restart" menu item on the left side of the screen. Be sure that Restart Printer is displayed in the "Action to Execute:" drop down box. Enter the password at the top of the page (default is "sysadm") and click Execute to restart the printer.
11. Once the printer has restarted the  icon will be displayed signifying that an wireless connection has been obtained. Allow up to 90 seconds for the printer to make a connection.
12. From Windows, you may now "View Wireless Networks". From the list of available wireless networks select the printer that you wish to connect to and then click on the Connect button.

If you do not see your printer listed be sure you have the host computer configured for Ad-hoc wireless networks.



This process will vary depending on your wireless device installed in your host computer and your operating system version.

Once the previous steps have been successfully completed you may now use the IP Address assigned to the printer to install a printer driver, and start printing from your Windows applications. See section B.3, Installing the Printer Driver.

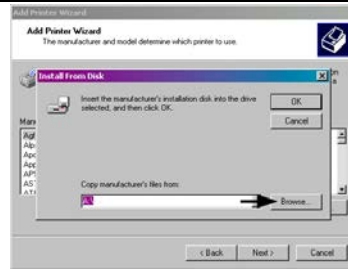
B.3 Installing the Printer Driver

The following screen shots are taken from Windows 2000, other Windows versions will be similar.

<p>1</p> <p>Start the Windows "Add Printer Wizard". The following screen should appear, click 'Next>'.</p>	<p>2</p> <p>Make sure that 'Local Printer' is selected and then click 'Next'.</p>
<p>3</p> <p>Select on 'Create a new port:' and then select 'Standard TCP/IP Port' from the drop down menu. Click 'Next'</p>	<p>4</p> <p>Click 'Next'.</p>
<p>5</p> <p>In the 'Printer Name or IP Address:' field enter the IP address or NetBIOS name of your printer. The 'Port Name' field <u>does not</u> need to be changed. When finished click 'Next'.</p>	<p>6</p> <p>Make sure 'Standard' is selected and then click 'Next'.</p>
<p>7</p> <p>Confirm your settings and then click 'Finish'.</p>	<p>8</p> <p>Click on 'Have Disk'.</p>

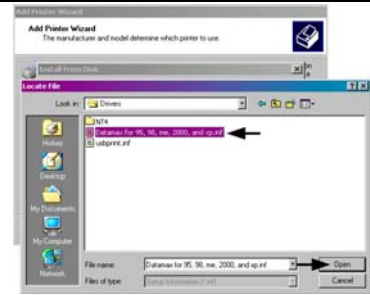
9

Insert the Accessories CD-Rom and click 'Browse'.



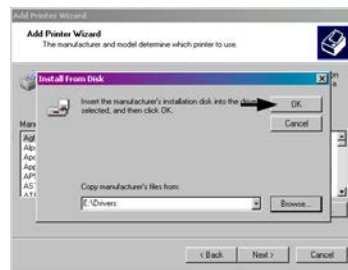
10

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



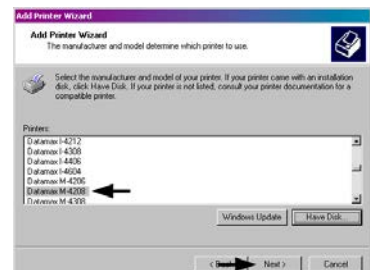
11

Click 'OK'.



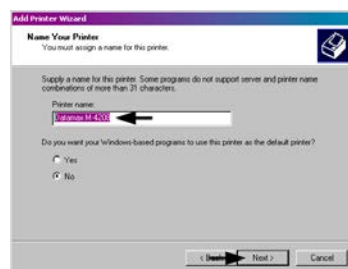
12

Choose your printer from the list and then click 'Next'.



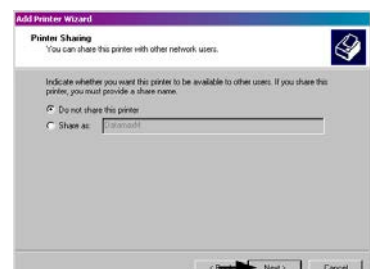
13

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



14

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



15

Select 'No' then Click 'Next'.



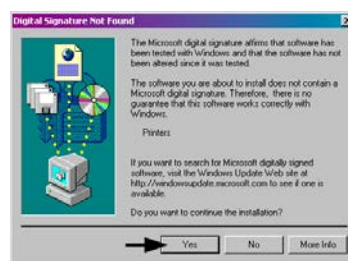
16

Confirm your settings and then click 'Finish'.



17

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



18

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.



C Menu Language

C.1 Changing the Menu Language

Different languages and / or Datamax-O'Neil-provided translations can be downloaded to replace the standard (English) menu of the printer by changing the spreadsheet that defines the system dictionary. To change the language you will add a new language column (or modify the existing column) in the spreadsheet, click on the "Generate DPL file(s)" radio button, and then send that file(s) to the printer.

Software requirements for modifying the menu language are as follows:

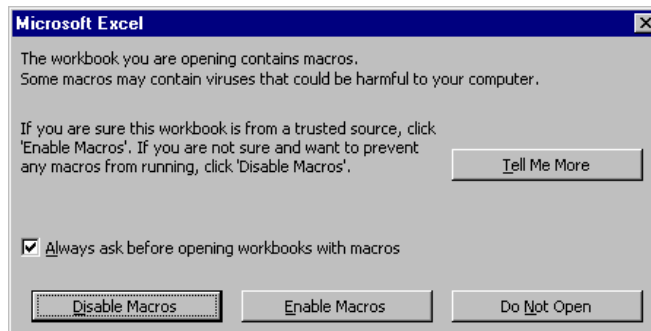
- Microsoft® Excel must be purchased by user;
- Img2dl.exe is a program used during the process to create the DPL file; and,
- Common.xls (also provided at the web site above) is the Menu Dictionary.



Place *Img2dl.exe* and *Common.xls* in the same directory.

Create a Menu Language by following these steps:

- A. Invoke Excel and open the Common.xls file. *After the file opens, the following screen appears:*



B. Click the “Enable Macro” box. *The following screen appears:*

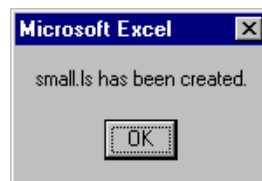
	A	B	C	D	E	F	G
1				Generate Source Files	Generate DPL File(s)		
2	NID	COMMENTS	MAX	MESSAGE ID	ENGLISH	FRANCAIS	ITALIANO
3	0000	System Messages	20	MID_READY	READY	PRÊT	PRONTO
4	0001		20	MID_PRINTING	PRINTING		
5	0002		20	MID_PAUSED	PAUSED	PAUSE	IN PAUSA
6	0003	1Aa	20	MID_CANCEL_PRINT_JOB	CANCEL PRINT JOB?		
7	0004		20	MID_CLEARING_FAULTS	CLEARING FAULTS		CANCELLA ERRORI
8	0005		10	MID_OF	OF	DE	DI
9	0006		20	MID_DOTCHECK_IN_PROGRESS	DOTCHECK IN PROGRESS		
10	0007	Faults	20	MID_SYSTEM_FAULT	SYSTEM FAULT	DEFAILLANCE SYSTEME	ANOMALIA SISTEMA
11	0008		20	MID_ADC_FAULT	ADC FAULT	DEFAILLANCE ADC	ANOMALIA ADC
12	0009		20	MID_HEAD_UP_FAULT	HEAD UP FAULT	TETE NON VEROUILLEE	ANOM. TESTINA ALTA
13	0010		20	MID_RIBBON_FAULT	RIBBON FAULT	DEFAILLANCE RUBAN	ANOMALIA NASTRO
14	0011		20	MID_TOP_OF_FORM_FAULT	TOP OF FORM FAULT	DEFAIL. DEBUT D'IMP.	ANOMALIA BORDO SUP
15	0012		20	MID_OUT_OF_STOCK	OUT OF STOCK	RUPTURE PAPIER	ESAURITO
16	0013		20	MID_CUTTER_FAULT	CUTTER FAULT	DEFAILLANCE COUTEAU	ANOMALIA TAGLIERIN
17	0014		20	MID_VERIFIER_FAULT	VERIFIER FAULT	DEFAILLANCE VERIFIC.	ANOMALIA VERIFICAT
18	0015		20	MID_RIBBONSAVER_FAULT	RIBBONSAVER FAULT	DEFAIL. ECONOM. RUBANOM.	SALVA-NASTRO
19	0016		20	MID_POSITION_FAULT	POSITION FAULT	DEFAILLANCE POSITION	ANOM. POSIZIONAMEN
20	0017		20	MID_TEMPERATURE_FAULT	TEMPERATURE FAULT		
21	0018		20	MID_DMA_FAULT	DMA FAULT	DEFAILLANCE DMA	ANOMALIA DMS
22	0019		20	MID_PRINT_ENGINE_FAULT	PRINT ENGINE FAULT	DEFAILLANCE MOTEUR	
23	0020		20	MID_24V_OUT_OF_TOLERANCE	24V OUT OF TOLERANCE	DEPASS. TOLERANCE 24V	24V FUORI TOLLERAN
24	0021		20	MID_STROBE_TIMING_FAULT	STROBE TIMING FAULT	DEFAIL. DUREE D'IMPULS	ANOM. FASAT. STROB
25	0022	Warnings	20	MID_WARNING_RESOLVED	WARNING RESOLVED	AVERTISSEMENT RESOLU	AVVERTENZA RISOLTA
26	0023		20	MID_RIBBON_LOW	RIBBON LOW	RUBAN FAIBLE	NASTRO BASSO
27	0024		20	MID_GAP_MISSED	GAP MISSED	INTERVALLE MANQUANT	INTERVALLO SALTATO
28	0025		20	MID_DOT_FAILURE	DOT FAILURE	DEFAUT IMPRESSION	ANOMALIA PUNTO
29	0026		20	MID_BAD_SENSOR_DELTA	BAD SENSOR DELTA		
30	0027		20	MID_HOST_CHANGES_PENDING	HOST CHANGES PENDING		MOD. HOST IN ATTES
31	0028		20	MID_LOW_VOLTAGE	LOW VOLTAGE		
32	0029		20	MID_GOODBYE	GOODBYE		
33	0030	Conditions	20	MID_REMOVE_LABEL	REMOVE LABEL	ENLEVER ETIQUETTE	RIMUOVI ETICHETTA
34	0031		20	MID_TEMPERATURE_PAUSE	TEMPERATURE PAUSE		

C. Click on Column J and enter the new language, or modify an existing one. Some tips on this process:

- 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; however, if “cutting and pasting” fields, this warning system may be defeated.)
- Two Line Messages – Some of the message are displayed as two lines. These are indicated in the comment fields.
- Comments – This field can be modified with no effect.

D. After editing is complete, highlight all of the columns to be created by pressing the letter above the column (more than one column can be selected).

E. Press the Generate DPL File(s) radio button. *A file will be generated for each of the selected columns and Excel will provide confirmation (for example, as shown below, small.ls).*



- F. Download the generated files to the printer – one method is the DOS copy command:

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

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

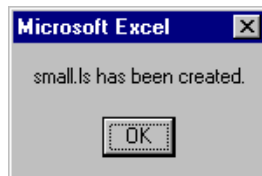
- H. After resetting, verify operation by printing a Configuration Label (see Section 4.4). *New language information will be printed under SYSTEM INFORMATION / OPTIONAL LANGUAGES. (Also, the new language will appear on the display as a menu item in SYSTEM SETTINGS / MENU LANGUAGE. These are the only methods to determine a successful download.)*

Enable the new language. Enter the menu system and go to SYSTEM SETTINGS / MENU LANGUAGE and select the new language. Next select the desired font for the language. Save the changes when prompted. *(A reset will occur as font validation is performed.)*

An error has occurred if the printer displays the new language selection, but all messages remain in English. In this case, re-check your process or contact Datamax-O'Neil Technical Support (be ready to provide the Common.xls and DPL download files created). Other error messages are also possible:

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.

- I. Repeat Steps A – H using the filename misc.xls to translate printer option items. This will output small20.ls.



C.2 Advanced File Handling Information

- The standard 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 *832296.01A to the printer. This file is located on the Datamax-O'Neil 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.
- Deletion of the selected language will reset 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 five.

The screen shot below is an example of Unicode defined languages, Chinese & Russian.
 Note the only additional information required is the “double” in row 1.

	I	J	K	L	M
1				Double	Double
2	ESPAÑOL	small	TREK	Chinese	RUSSIAN
3	LISTO	ready	AWAITING ORDERS	准备	ГОТОВ
4	IMPRIMIENDO	printing	WARP DRIVE ENGAGED	打印中	ПЕЧАТЬ
5	EN PAUSA	paused	ALL STOP	暂停	ПАУЗА
6	CANCELAR IMPRESIÓN	cancel batch?	ABORT MISSION?	取消	ОТМЕНИТЬ ЗАДАНИЕ?
7	BORRAR ERRORES	clearing faults	RE-INITIALIZING	清除错误	СБРОС ОШИБОК
8	DE	of	FACTOR	OF	ОФ
9		advanced menu	KNOWLEDGE BASE	高级菜单	МЕНЮ
10	ERROR DE SISTEMA	system fault	DIRECT HIT SUSTAINED	系统错误	СИСТЕМНАЯ ОШИБКА
11	ERROR DE ADC	adc fault	HULL BREACH DECK TEN	ADC错误	ОШИБКА ADC
12	CABEZAL LEVANTADO	head up fault	ENGINES OFFLINE	打印头抬起错误	ТЕРМОГОЛОВКА ПОДНЯ
13	ERROR DE CINTA	ribbon fault	PHASORS OFFLINE	破带错误	ОШИБКА РИБОНА
14	ERROR INICIO ETIQ.	top of form fault	UNABLE TO GO TO WARP	TOF错误	ОШИБКА ГРАНИЦ ЭТИК
15	SIN PAPEL	out of stock	TORPEDO TUBES EMPTY	标签用完	ОТСУТСТВУЕТ ЭТИКЕТ
16	ERROR DE CORTADOR	cutter fault	CASCADE FAILURE	切刀错误	ОШИБКА РЕЗАКА
17	ERROR DE VERIFICADOR	verifier fault	TRACTOR BEAM FAILURE	检测器出错	ОШИБКА ВЕРИФАЕРА
18	ERROR ECONOM. CINTA	ribbonsaver fault	METAPHASIC FAILURE	破带节约装置错误	ОШИБКА РИБОНСЕЙВЕР
19	ERROR DE POSICION	position fault	UNKNOWN COORDINATES	位置错误	ОШИБКА ПОЛОЖЕНИЯ
20	FALLO DE TEMPERATURA	temperature fault	CORE TEMP. CRITICAL	温度错误	ОШИБКА ТЕМПЕРАТУР
21	ERROR DMA	dma fault	COMPUTER MALFUNCTION	DMA错误	ОШИБКА DMA
22	ERROR MOTOR IMPRES.	print engine fault	PORT NACELL OFFLINE	打印引擎错误	ОШИБКА ДВИГАТЕЛЯ
23	24V FUERA TOLERANCIA	24v out of tolerance	SAFETY LIMIT EXCEEDED	电压越界	ОШИБКА ВОЛЬТАЖА
24		present sensor fault	INERT. DAMP. OFFLINE	出纸检测器错误	ОШИБКА ДАТЧИКА НАЛ
25	ADVERTEN. CORREGIDA	warning resolved	ALL CLEAR	警告	ПРОБЛЕМА УСТРАНЕ
26	CINTA BAJA	ribbon low	TORPEDO TUBES LOW	破带不多	КОНЧАЕТСЯ РИБОН
27		head/cover up fault	LANDING FAULT	打印头抬起错误	ПОДНЯТА КРЫШКА
28	FALLO PUNTO CABEZAL	dot failure	SHIELDS COMPROMISED		ОШИБКА ТЕРМОГОЛОВ
29		label rotation	SYMMETRY INVERSION	标签旋转	ЭТИКЕТКА ПОВЕРНУТ
30	CAMBIOS PENDIENTES	host changes pending	HOSTILE APPROACHING	主机更改评估中	ОБНОВЛЕНИЕ ХОСТА