# E CLASS™

# Operator's Manual

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Part Number: 88-2304-01

Revision: C

# Agency Compliance and Approvals:

**UL1950** Information Technology Equipment
**C22.2 No. 950-M93**

**Listed**

**EN60950**

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

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

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

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

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

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

Gost-R

BE01

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

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

# Important Safety Instructions

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

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

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

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

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

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

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

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

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

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

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

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**Printer Overview**

## 1.0   Introduction

The E-4203, E-4204, and E-4304 (hereafter referred to as 'the printer') are user-friendly devices that blend quality and durability into an affordable package. The printer, available in direct and optional thermal transfer configurations, uses a unique front panel design to simplify operation, while its RS232 serial, USB, and parallel interfaces allow easy connection to your host system.
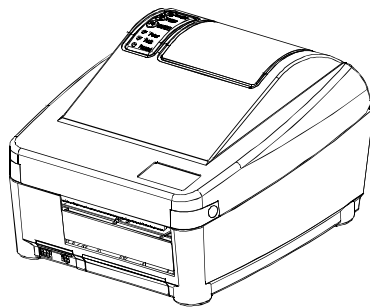


**Direct Thermal Model**          **Thermal Transfer Model**
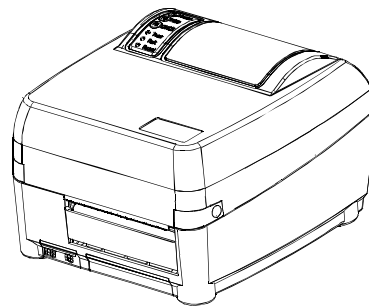
This manual provides all the information necessary to operate the printer.

To print labels or tags simply refer to the instructions included with the software you have chosen to create the labels.  A Windows™ printer driver can be found on our website (http://www.datamaxcorp.com/) or on the Datamax Accessories CD-ROM.

If you wish to write a custom program, a copy of the *Class Series Programmer's Manual* (part number 88-2316-01) can also be found on our website.

# 1.1   About this Printer

This printer offers the following standard and optional features:

## 1.1.1  Standard Features

### *Printing*

> ➢ Direct Thermal Printing
>
> ➢ On Demand and Batch Printing
>
> ➢ 203 or 300 DPI Printhead (*model dependent*)
>
> ➢ AGFA Scalable Font Engine

### *Memory*

> ➢ 1 MB FLASH Memory
>
> ➢ 2 MB DRAM Memory

### *Interfaces*

> ➢ RS-232 serial interface
>
> ➢ Centronics® parallel interface
>
> ➢ USB Port

### *Operational*

> ➢ Simple Media Loading
>
> ➢ Media Tearbar
>
> ➢ Fan-fold media compatible from rear of printer
>
> ➢ 1inch (25mm) internal media supply core

### 1.1.2  Optional Features

***Adjustable Media Sensor***

The Adjustable Media Sensor allows the printer to detect the position of the gap, notch, or reflective mark at many locations across the media.

***External Media Supply Stand***

The External Media Supply Stand allows the printer to use large media supply rolls, up to 8-inches in diameter and wound on one to three inch cores. (Not available for the E-4304.)

***FLASH Memory Expansion***

The FLASH Expansion cartridges are used for permanent storage of custom fonts, formats and graphics. The FLASH memory cartridges cannot be used in conjunction with the ILPC option.

***ILPC***

The International Language Print Capability consisting of one of the following:

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

***Media Cutter***

The Media Cutter automatically cuts your tag or label media after printing. This device mounts easily onto the front of the printer and cuts material with a maximum thickness of .007" (.177 mm).

### Light Duty Media Cutter

This rotary-type device automatically cuts material with a maximum thickness of .005" (.127 mm).

### Present Sensor

The Present Sensor allows the printer to be configured for "one up" printing. With the sensor installed, the printer will not print the next label until the previously printed label has been removed from the printer.

### Thermal Transfer

The Thermal Transfer option allows the printer to use ribbon. The ink/wax from the ribbon transfers to the media to create an image with exceptional clarity and scanability.

![Getting Started logo with number 2] **Getting Started**

## 2.0   Before Using the Printer

### Removing the Packaging

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

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

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

➢ Remove the packing foam, cardboard divider, and power supply box.

➢ Lift the printer from the box and remove the packing foam.

➢ Remove the printer from the plastic bag.

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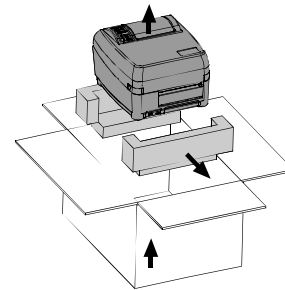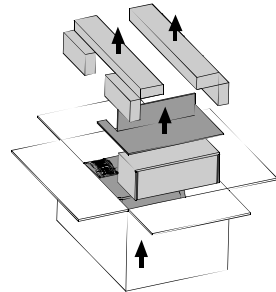
☑ **Note:**   It is a good idea to save all packaging materials in the event that shipping the printer is ever required.

---

## Inspecting the Printer

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

➢ Printer
➢ Power supply
➢ Accessories CD-ROM
➢ Any special or additionally purchased items
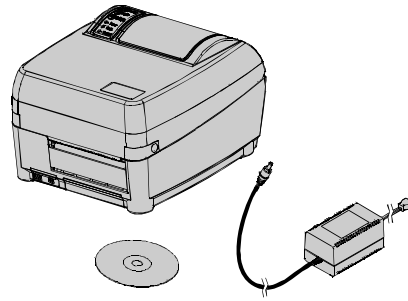
## Additional Requirements

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

➢ USB, Serial, or parallel cable
➢ Applicable media
➢ Applicable software
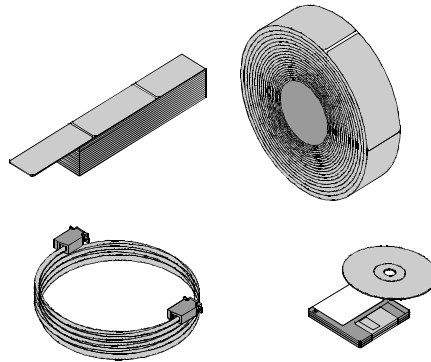
## 3.0 Introduction

This section explains how to connect your printer, load media (and ribbon, if equipped for thermal transfer), and print a configuration label.

## 3.1 Connecting the Printer

### 3.1.1 Power Connection

The printer is powered by an external auto-ranging power supply, which connects between the printer and wall outlet as shown below.

Before connecting, ensure that the range of the printer's power supply is compatible with your electrical service (see Specifications for details).

Power
Connection
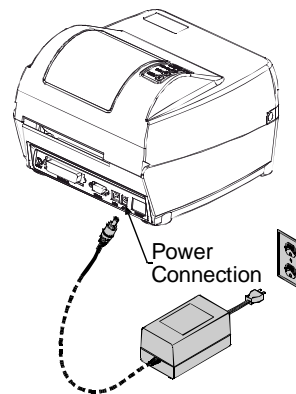
### 3.1.2  Interface Connection

The printer can be connected
to the host via a USB, serial or
parallel cable.
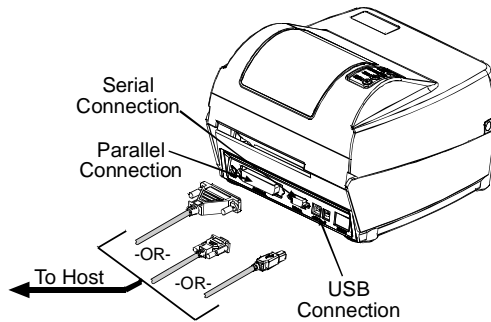


### 3.1.3  Interface Cables

Choose a connection method that will best serve your purpose:

- To connect the printer to the host's serial (RS-232C) interface use an
  acceptable cable configuration, as shown below (contact your reseller
  for ordering information).



| Host DB-9S | Printer DB-9P | Host DB-25S | Printer DB-9P |
|---|---|---|---|
| TX 3 | 2 RX | TX 2 | 2 RX |
| RX 2 | 3 TX | RX 3 | 3 TX |
|  | 7 RTS |  | 7 RTS |
| CTS 8 | 4 DTR | CTS 5 | 4 DTR |
| DSR 6 | 8 CTS | DSR 6 | 8 CTS |
| GND 5 | 5 GND | GND 7 | 5 GND |
| DTR 4 |  | DTR 20 |  |
| Shield | Shield | Shield | Shield |
| Part # 32-2483-01 | | Part # 32-2301-01 | |
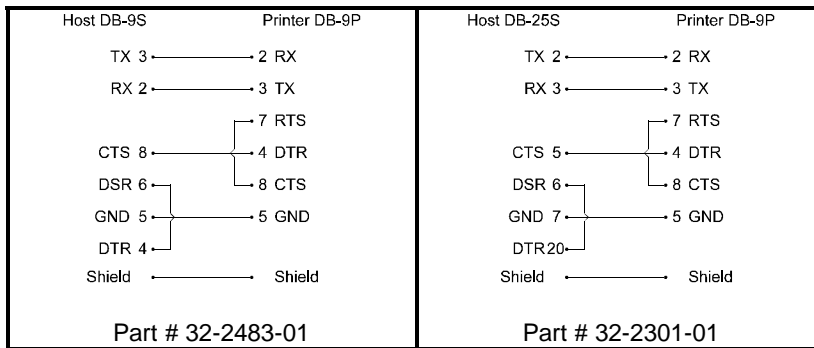
- To connect the printer to the host's parallel interface use a
  Centronics® parallel cable.

- To connect the printer to the host's USB interface use a standard USB
  cable.

Note that the printer has a versatile communications feature: When
connected to more than one interface, the printer will automatically
connect to the first port (serial, parallel, or USB) from which valid data is
received. After this connection has been made, the printer's power must be
cycled 'Off' and 'On' to change the interface connection.

## 3.2   Adjusting the Media Sensor

The printer is available with a Fixed-Position Media Sensor or an Adjustable Media Sensor. To identify the type of sensor in your printer, proceed as follows:

1.   Open the cover.

2.   Push down the Printhead Latch and raise the Printhead Carrier Assembly.

The **Fixed-Position Media Sensor**, shown below, is immoveable. If your printer has this sensor, proceed to 'Loading Media' (Section 3.3).
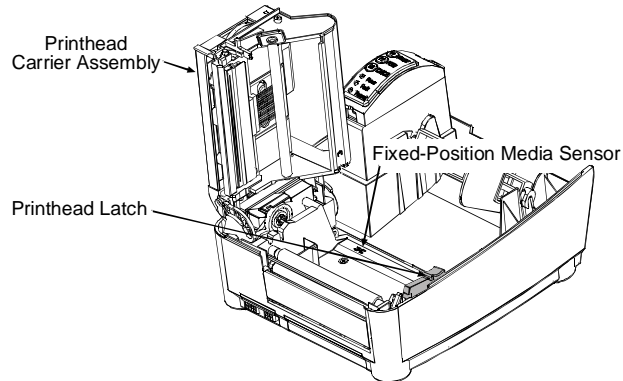


The **Adjustable Media Sensor** (AMS), shown below, may need to be positioned as described below:
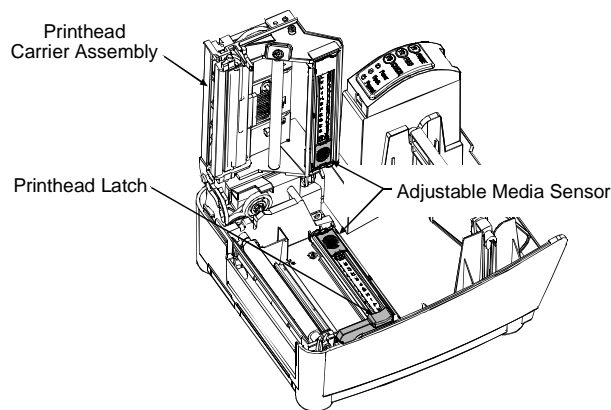
For the proper detection of media and the label top of form (TOF), the table below indicates suggested AMS positions for various media types.

| Adjustable Media Sensor Position | | |
|---|---|---|
| **Media Type** | **Suggested Sensor Placement** | **TOF Sensing Used** |
| Continuous* | Near the center of the media | Continuous |
| Die-cut | Near the center of the label | Gap |
| Notched | Near the center of the notch | Gap |
| Reflective | Near the center of the black mark | Reflective |

*Label TOF for continuous media is set via the Front Panel (CONT FORM LENGTH) or software; see Section 4.4.2.

To properly position the AMS, you will need to know where the TOF mark is located on your media. (For more information on media, see Specifications.)

Depending of your media type, take a measurement from the left-justified media edge across to the center of the TOF mark as suggested in the table above. The following example illustrates the measurement of notched media.

☑ **Note:** Reflective marks are placed on the underside of the media.
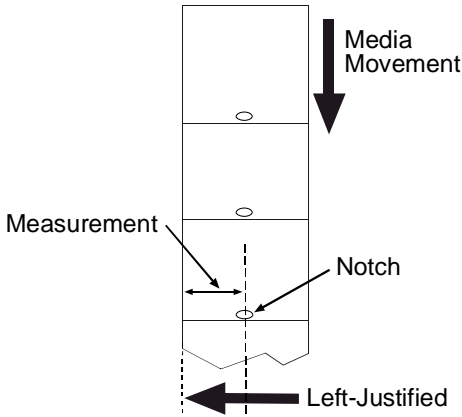


To simplify the adjustment, the AMS uses Reference Letter designators that correspond to the following TOF mark distances:

| Reference Letter | Distance of the TOF Mark from the Media Edge | |
|---|---|---|
| | (inches) | (millimeters) |
| A | .180 | 4.6 |
| B | .500 | 12.7 |
| C | .750 | 19.1 |
| D | 1.00 | 25.4 |
| E | 1.25 | 31.8 |
| F | 1.50 | 38.1 |
| G | 1.75 | 44.5 |
| H | 2.00 | 50.8 |
| I | 2.25 | 57.2 |
| J | 2.50 | 63.5 |
| K | 2.75 | 69.9 |
| L | 3.00 | 76.2 |

Position the Adjustable Media Sensor as follows:

1. Based on the measurement made earlier, choose the Reference Letter that best corresponds to the location of your TOF mark.
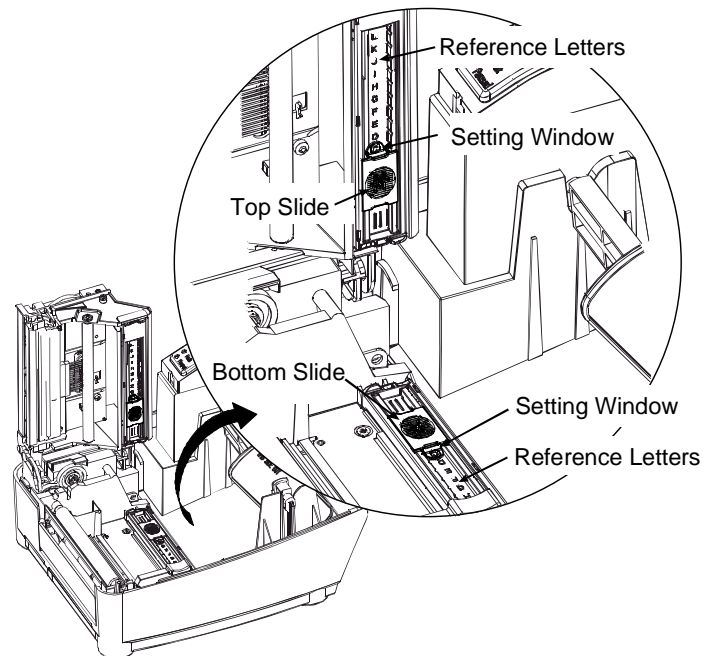
2. Use a finger to move the Bottom Slide until your selected Reference Letter appears in the Setting Window of the slide.

3. Use a finger to move the Top Slide until your selected Reference Letter appears in the Setting Window of the slide.

> ☑ **Note:** *The Top and Bottom Slides <u>must</u> be positioned over the same Reference Letter for proper media sensor function.*

4. Proceed to 'Loading Media' (Section 3.3).

## 3.3   Loading Media

Load media into the printer as follows:

1. With the Cover open and the Printhead Carrier Assembly raised, remove the Media Hub and insert it through the Roll Media (with the labels spilling forward).

2. Place the Media Hub Flange (with its smooth side toward the media) onto the Media Hub.

3. Place the Media Hub, flange, and media onto the Standoffs in the printer.

4. Route the media through the printer, as shown below.

Slide Hub Flange Against Media

Media Sensor (Under Media)

Slide Media Guide Against Media

Align Media Flush Left
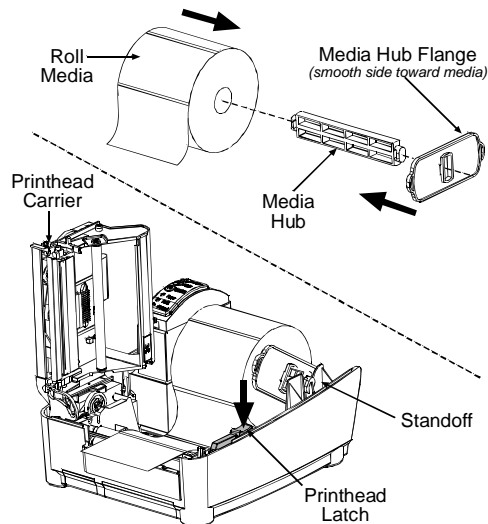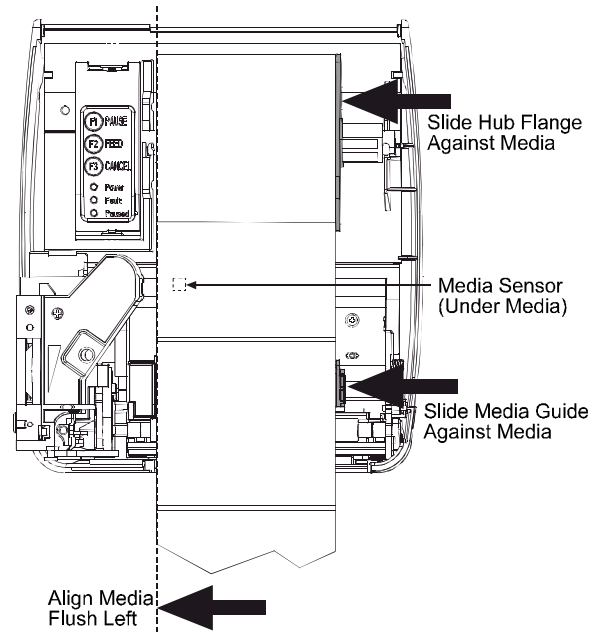
5.   Slide the Media Guide and Media Hub Flange to the edge of the media.

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

7.   Close the cover and press the Feed button several times to position the media and ensure proper tracking.

     (If the printer does not correctly sense the top of each label, as denoted by the FAULT Light, it may be necessary to perform the Calibration Procedure, Section 4.6.)

> ☑ **Note:**   The printer is factory set to use 4-inch media (and ribbon, if thermal transfer equipped). When using a different media width, refer to Section 5 for additional printing adjustments.

### 3.3.1 Loading Media for Peel Configuration

1. Open the cover.

2. Push the Printhead Latch down and raise the Printhead Carrier Assembly.

3. Place a roll of media (labels facing up) on the Media Hub and insert them into the printer. Slide the Media Hub Flange with its smooth side towards media onto the Media Hub.

4. Pull the Peel Lever forward to the 'Open' position.

5. Remove 6″ (152 mm) of labels from the backing. Route the Media Backing over the Platen and Peel Bar and behind the Peel Roller and Fascia as shown below.
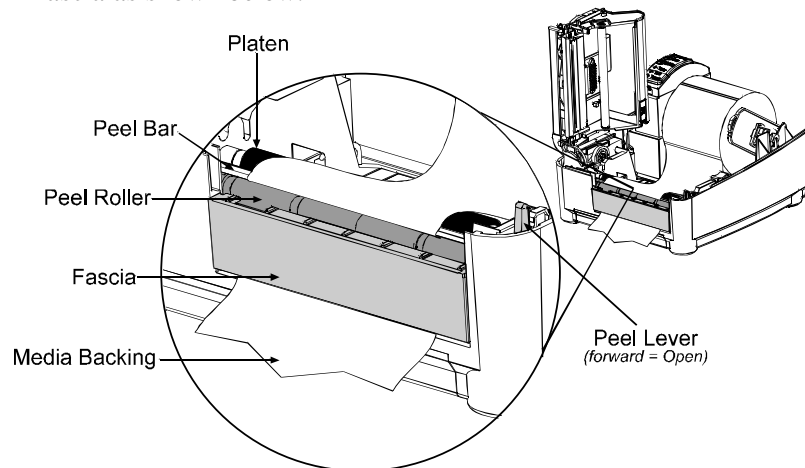


6. Push the Peel Lever back to the 'Closed' position.

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

8. Close the cover and press the Feed button several times to advance the media and ensure proper tracking. The labels will separate automatically as it is fed through the printer. (If the printer does not correctly sense the top of each label, as denoted by the FAULT Light, it may be necessary to perform the Calibration Procedure, Section 4.6.)

## 3.4   Loading Ribbon

Ribbon is required with thermal transfer media. If your printer is equipped with the thermal transfer option and if you will be using thermal transfer media, load ribbon as follows:

1. Open the cover.

2. Remove both Ribbon Hubs.

Push in and lift
to remove the Hubs
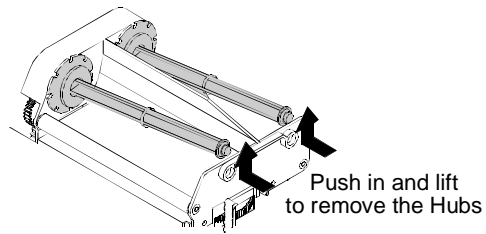
3. Slide a roll of Ribbon onto one of the Ribbon Hubs and an Empty Core onto the other hub.
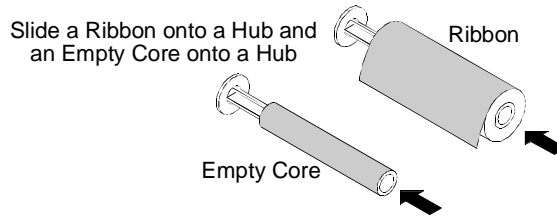
Slide a Ribbon onto a Hub and
an Empty Core onto a Hub

Ribbon

Empty Core

4. Push the Printhead Latch down and raise the Printhead Carrier Assembly.

Direct

Media Type Switch

Transfer

5. Slide the Media Type Switch into the 'Transfer' position.
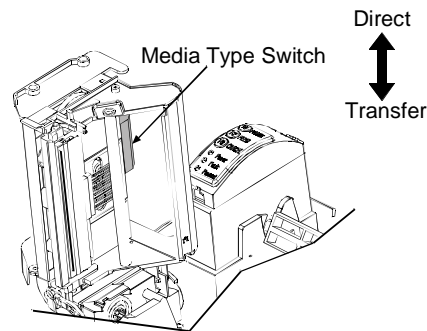
6. Place the Ribbon Hubs back into the printer and route the ribbon through the Printhead Carrier Assembly, as shown below.

Wrap end of ribbon around empty core on Hub
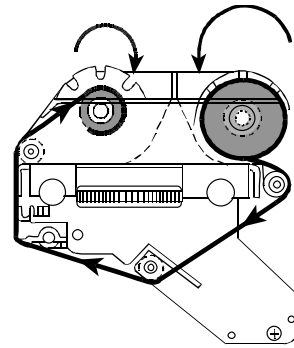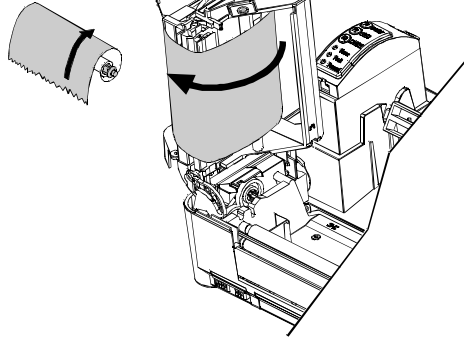
Right Side View

☑ **Note:** *Ensure the inked side of the ribbon faces the media and <u>NOT</u> the printhead.*

7. The 'Media Type' setting within the printer's setup must be set to 'Thermal Transfer' to print using a ribbon. See Section 4.4.

## 3.5  Flash Memory Expansion

The printer can be equipped with the optional Flash Memory Expansion. This additional memory can be used to store label formats and fonts (for font downloading instructions, see Section 5.8).

To install the Flash Memory Expansion, proceed as follows:

1. Turn the power off and unplug the printer. Remove any installed media from the printer.

2. Using a coin, flathead screwdriver, or similar object, insert it into the Slot on the underside of the printer and gently pry the Expansion Cover from the printer.
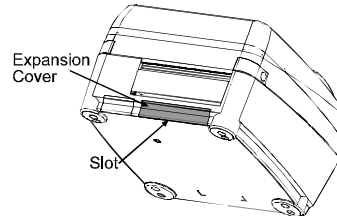
3. With its connector facing down, as shown, gently insert the Flash Memory Expansion Assembly into the Expansion Bay until the assembly is firmly seated.

4. Plug in and turn on the printer.
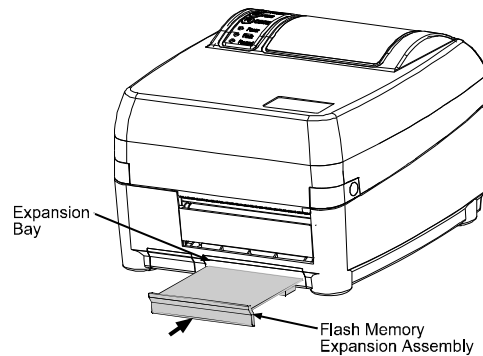
> ☑ **Note:**  When using a blank expansion module for the first time, the printer will automatically format it upon power-up; this initial format can take up to one minute to perform.

# 4 Using the Front Panel

## 4.0 Introduction

The Front Panel consists of three indicator lights and three dual-function buttons. The functions of these indicators and controls are listed below.
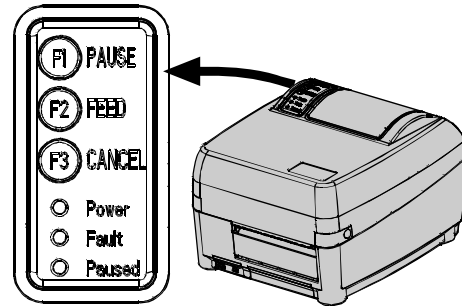


## 4.1 Lights

*(Normal power-up)*

**Normal Mode**

○ **Power**  — Indicates the printer is on

○ **Fault**  — Indicates a top of form or mechanical error has occurred

○ **Paused**  — **Solid On:** Indicates the printer is in the 'Paused' state

**Blinking:** Indicates the printer is receiving data from the host

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

## 4.2   Buttons

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

**Normal:**              Normal printer functions. See Section 4.3.

**Printer Setup:**  Allows changes to the printer's operational settings. See Section 4.4.

**Calibration**:      Allows the 'calibration' of the media being used for the correct sensing of the top of form. See Section 4.6.


## 4.3   Normal Mode - Button Functions

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

Normal Mode   *(Normal power-up)*

(F1)   *Pauses/Un-pauses the printer.*

(F2)   *Feeds one label. Also, clears fault conditions.*

(F2)   *Press and hold to perform Label Alignment; see Section 4.5.*

(F3)   *Cancels the current batch of labels.*
*Press the Pause button to print the next batch of labels (if any) in the print buffer.*
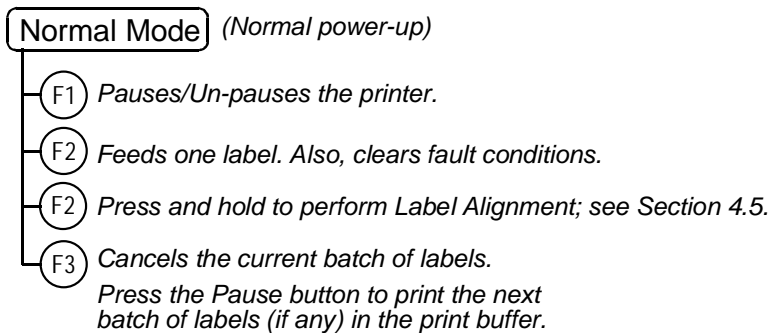
***Button Combinations*** *(push buttons simultaneously)*

| | | | |
|---|---|---|---|
| (F1) | + | (F2) | Prints the Test Label, see Section 4.7.2. |
| (F1) | + | (F3) | Performs a warm reset and returns to the Normal Mode of operation. |
| (F2) | + | (F3) | Produces Database Configuration and Dot Check Labels. |

# 4.4 Printer Setup Mode - Button Functions

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

---

☑ **Notes:** It is recommended that the Printer Setup Mode not be entered while in Peel Mode or with the optional Present Sensor enabled. Depending on label size, this can cause unpredictable results.

Printer and cutter faults are disabled during [Printer Setup Procedure], but can still occur while printing "test" labels.

If at any time you wish to discard your changes and revert back to the previous values, simply turn off power to the printer.

If you wish to restore Factory Defaults see Section 5.7.

---

To change Printer Setup, proceed as follows:

(F1) *(Press and hold during power-up until the Paused Light turns off)*

[Printer Setup Mode]

(F1) *Prints the 'Printer Setup Menu List', see section 4.4.1*

(F2) *(Press and Release) Feeds one label for "test"*

(F2) *(Press and hold to advance to the desired menu item by counting the number of Fault Light flashes)* *(Enters Printer Setup)*

(F3) *Prints the 'Test Label' for "test"*

(F1)+(F3) *Saves the current values and resumes [Normal Mode]*

[Printer Setup Procedure] *(Current Item and Value is printed)*

(F1) *Increments item's value*

(F2) *(Press and Release) Selects the next menu item*

(F2) *(Press and Hold) "Direct Select" menu item (e.g., 7 Fault Light flashes = Baud Rate, menu item #7; see Section 4.4.3)*

(F3) *Decrements item's value*

(F1)+(F3) *Accepts the current values for "test"*

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> ☑ **Note:** *When adjusting CONT FORM LENGTH, LABEL WIDTH, or ALIGN LENGTH, momentarily pressing F1 or F2 will change the value by 1; and, holding either button down until the Fault light flashes will change the value by ten for each flash.*

## 4.4.1  Printer Setup Menu List

The Printer Setup Menu List label, shown below, contains the printer's current values for each menu item that can be modified via the front panel (See Section 4.4.2 for a detailed item description.)

The Menu Item Numbers correspond to the item's position in the Menu List for selection when pressing the ⓕ² button during the Printer Setup Procedure (see Section 4.4). For example to "Direct Select" the BAUD RATE Menu Item press and hold the ⓕ² button for 7 flashes of the FAULT Light or for the TOF GAIN item hold ⓕ² for 12 flashes, etc.

| Menu Item Numbers | Values | Menu Items |
|---|---|---|
| 1) | DIRECT | = MEDIA TYPE |
| 2) | EDGE | = SENSOR TYPE |
| 3) | NO | = PRESENT SENSOR |
| 4) | NO | = CUTTER EQUIPPED |
| 5) | 127 | = SOP ADJUST, 0.005 in. |
| 6) | 127 | = PRESENT ADJUST, 0.005 in. |
| 7) | 9600 | = BAUD RATE, bps |
| 8) | 8 | = DATA BITS |
| 9) | STD | = CONTROL CODES |
| 10) | 100 | = CONT FORM LENGTH, 0.01 in. |
| 11) | 3 | = OOS MAXVOLT, 0.1 Volts |
| 12) | 12 | = TOF GAIN |
| 13) | 10 | = TOF DELTA, 0.1 Volts |
| 14) | 0 | = TOF LOW, 0.1 Volts |
| 15) | 416 | = LABEL WIDTH, 0.01 in. |
| 16) | 64 | = SCALABLE FONT, 4KB |
| 17) | 64 | = INTERNAL MODULE, 4KB |
| 18) | NO | = LABEL ALIGNMENT |
| 19) | 100 | = ALIGNMENT LENGTH, 0.01 in. |
| 20) | HOST | = STOP LOCATION |
| 21) | DPL | = INPUT MODE |
| 22) | 10 | = HEAT |

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

## 4.4.2 Menu Items and Values

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

| 1) MEDIA TYPE | 2) SENSOR TYPE |
|---|---|
| Sets printing for direct thermal (no ribbon) or thermal transfer (ribbon) media. | Selects the sensor type used to detect the media's Top Of Form (TOF) mark. |
| *Possible Values:* | *Possible Values:* |
| * DIRECT THERMAL THERMAL TRANSFER | * EDGE: gap / notch TOF marks REFL (Reflective): black marks CONT (Continuous): no TOF marks |

| 3) PRESENT SENSOR | 4) CUTTER EQUIPPED |
|---|---|
| Enables/Disables the optional Present Sensor feature. | Enables/Disables the optional Media Cutter feature. |
| *Possible Values:* | *Possible Values:* |
| * NO YES | * NO YES |

| 5) SOP ADJUST | 6) PRESENT ADJUST |
|---|---|
| Sets the start of print (SOP) location, relative to the top of form. | Specifies an additional amount to feed the label after printing. |
| *Possible Values:* | *Possible Values:* |
| Range: 0 – 255; default = *128 | Range: 0 – 255; default = *128 |
| (0 = close to edge; 255 = farthest from edge) | (0 = close to edge; 255 = farthest from edge) |

| 7) BAUD RATE | 8) DATA BITS |
|---|---|
| Sets the serial port baud rate. (Must match the host setting). | Sets the serial data word length (Must match the host setting). |
| *Possible Values:* | *Possible Values:* |
| 600 to 38.4k; default = *9600 BPS | * 8 7 |

| **9) CONTROL CODES** | **10) CONT FORM LENGTH** |
|---|---|
| Allows code selections listed in the *Class Series Programmer's Manual*. | Sets the page (label) size when the 'SENSOR TYPE' is set to continuous media**.** |
| ***Possible Values:*** | ***Possible Values:*** |
| * (STD) Standard Codes<br>   (ALT) Alternate Codes | Range: 0 – 9999; default = *100<br>(Units = .01 inch) |

| **11) OOS MAXVOLT** | **12) TOF GAIN** |
|---|---|
| Sets the media sensor level for the Out Of Stock condition. | Sets media sensor Top of Form gain value. |
| ***Possible Values:*** | ***Possible Values:*** |
| Range: 0 – 16; default = *2<br>(Units = .1 volt) | Range: 0 – 15; default = *10 |

| **13) TOF DELTA** | **14) TOF LOW** |
|---|---|
| Sets the minimum media sensor change required to signify a label gap or mark. | Sets the minimum media sensor reading for paper (gap/notch) or mark (reflective). |
| ***Possible Values:*** | ***Possible Values:*** |
| Range: 0 – 50; default = *10<br>(Units = .1 volt) | Range: 0 – 50; default = *0<br>(Units = 0.1 volt) |

| **15) LABEL WIDTH** | **16) SCALABLE FONT** |
|---|---|
| Sets the label width. | Sets the number of memory blocks to allocate for scalable fonts. |
| ***Possible Values:*** | ***Possible Values:*** |
| Range: 75 – 410; default = *410<br>(Units = .01 inch) | Range: 0 – 128; default = *64<br>(Units = 4K Bytes) |

| **17) INTERNAL MODULE** | **18) LABEL ALIGNMENT** |
|---|---|
| Sets the number of memory blocks to allocate for the internal RAM module. | Sets the label alignment method *(see Section 4.5)*. |
| ***Possible Values:*** | ***Possible Values:*** |
| Range: 0 – 128; default[1] = *128<br>(Units = 4K Bytes)<br><br>[1] The E-4304 has a default value of 64. | YES   (user manually determines 'ALIGN LENGTH')<br>AUTO (printer determines 'ALIGN LENGTH')<br>* NO   (no Label Alignment used) |

### 19) ALIGN LENGTH

Leading edge distance of two successive labels. Must be entered if 'LABEL ALIGNMENT' is set to Yes *(see Section 4.5)*.

*Possible Values:*

0 – 999; default =100*
(Units = .01 inch)

### 20) STOP LOCATION

Sets label stopping (and in certain cases the starting) location for different printer configurations.

*Possible Values:*

* HOST  (uses host values of 'SOP' and 'PRESENT ADJUST')
  PEEL  (sets the stop location just behind the peel bar of the optional Peel Mechanism)
  CUT  (sets stop location at the blade of the optional Media Cutter)
  COVER (sets stop location at the tear plate on the printer's cover)
  NONE  (uses normal start location and ignores the host command)

### 21) INPUT MODE

Selects between the standard or template interpretation of incoming data.

*Possible Values:*

* DPL  (printer constructs the label using the standard DPL commands)
  LINE  (printer constructs the label using a preloaded template form)

### 22) HEAT

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

*Possible Values:*

Range: 0 – 30; default = *10

**\* = Default Setting**
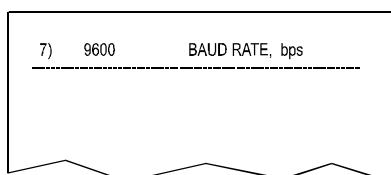
> ☑ **Note:** *All of the menu items listed in the previous section are stored in non-volatile memory.*

### 4.4.3  Step by Step Modification of the Printer Setup

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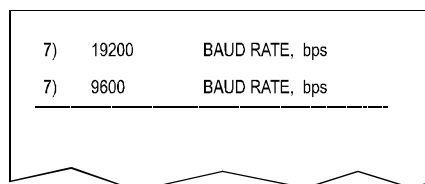
☑ **Note:** *It is recommended that the Printer Setup Mode not be entered while in Peel Mode or with the optional Present Sensor enabled. Depending on label size this can cause unpredictable results.*

1. With printer 'Off' and properly loaded with media, press and hold the Ⓕ₁ button while powering 'On' the printer. Continue to hold the button until the PAUSED Light turns off, then release it.

2. Press and hold the Ⓕ₂ button and count 7 flashes of the FAULT Light, then release it. The following printout should be produced:

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

3. Press the Ⓕ₁ button one time to increment to the 19200 bps value. The following printout should be produced:

```
7)     19200         BAUD RATE,  bps

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

4. At this point you will accept the current values for "test" and exit the Printer Setup Procedure by simultaneously and briefly pressing the Ⓕ₁+Ⓕ₃ buttons. Wait until the PAUSED Light goes off.

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

5. Now you can save your changes and resume [ Normal Mode ] by simultaneously and briefly pressing the Ⓕ₁+Ⓕ₃ buttons. Wait until the PAUSED Light goes off.

6. To confirm that your changes have been made press the Ⓕ2＋Ⓕ3 buttons simultaneously, this will print the Database Configuration Label.  The label should show the new Baud Rate value of 19200.

```
TUE NOVEMBER 15, 2005 19:29 236    CONFIGURATION
VER: E4204 - 04.21 07/28/03        DIRECT THERMAL
BOOT 83-2279-04H                   SERIAL PORT SELECTED
CODE 83-2280-04W                   19.2; 8BITS  ◄─────────────── The new
FONT 83-2431-01A                   EDGE                           19200
CPLD 59-2170-01C                   CONT FORM LENGTH__   0          Baud
INTERNAL FLASH MODULE PRESENT      PRESENT ADJUST____  127         Rate
SYSTEM RAM CHECKS____ GOOD         SOP ADJUST_____  127
SYSTEM RAM SIZE___ 2015 KBYTES     TOF LOW_____   0   0
SYSTEM RAM AVAIL__ 1244 KBYTES     TOF DELTA_____  10  10
REG POWER SUPPLY__ YES             TOF GAIN_____  12  10
                                   OOS MAXVOLT_____   3   3
                                   LABEL ALIGNMENT___  NO
                                   ALIGN LENGTH_____  100
                                   STOP LOCATION_____ HOST
                                   IMPUT MODE_____ DPL
                                   HEAT_____ 10
INPUT VALUES
PAPER_____ 255
POT_____ 113             COUNTER INFORMATION
TRAN_____ 255              ABSOLUTE VALUES  6-18-2004
REFL_____ 149              LENGTH____     773 INCHES
RIBN_____  87              TIME_____      20 HOURS
TEMP_____  48             RESETTABLE VALUES 6-22-2004
VOLT_____ 223              LENGTH____     576 INCHES
                                    TIME_____      10 HOURS

                                   MEMORY CONFIGURATION
                                   INTERNAL MODULE A_____128
                                   SCALABLE FONTS_____64
                                   LABEL SIZE     0416:02157 IN
```

## 4.5   Label Alignment

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

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

The Label Alignment function is chosen via the menu system (see Section 4.4) or by host commands. The three possible modes, YES, AUTO, and NO, are detailed in the following sections.

### 4.5.1   Label Alignment = YES

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



Alignment Length
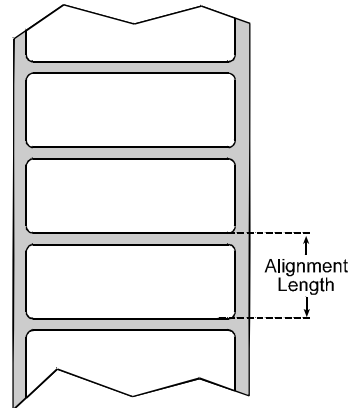
The measured value must be sent to the printer via the host computer or entered using the Printer Setup Mode (see Section 4.4).

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

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

### 4.5.2  Label Alignment = AUTO

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

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

*Special Case Auto Alignment when the Present Sensor enabled -*

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

### 4.5.3  Label Alignment = NO

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

### 4.5.4 Label Alignment Troubleshooting

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

| Problem | Possible Cause | Solution |
|---------|----------------|----------|
| Attempting to perform Label Alignment results in no paper movement. | With the Present Sensor enabled, Label Alignment cannot be performed without a Label Length. | ➢ Set Label Alignment to AUTO, press and hold FEED until media moves for the automatic length measurement. <br><br> *~OR~* <br><br> ➢ Re-measure the Label Alignment Length. Use Printer Setup mode to enter the new length. Print a Database Configuration label to ensure the new length has been set. |

| Problem | Possible Cause | Solution |
|---|---|---|
| First label is wasted during alignment. All labels thereafter print to the correct start of print position. | Alignment Length is too long.<br><br>*~OR~*<br><br>For labels whose length and stop position cause them to stop between labels on the media sensor, the alignment function can result in wasted labels. | ➢ Set Label Alignment to AUTO, press and hold FEED until paper moves for automatic Label Alignment length measurement.<br><br>*~OR~*<br><br>➢ Re-measure Label Alignment Length, use Menu Setup to set new length, ensure desired length has been set.<br><br>➢ Obtain a slightly different label Alignment Length measurement. Using the Label Alignment AUTO mode, hold the FEED button to force an alignment and label measurement. Ensuring slack in the label stock may result in a slightly different measurement. The Alignment Length may also be set manually via the Setup Menu. Increasing or decreasing the value by 1 or 2 units (in./100) may help to prevent the wasted labels; however, this may result in incorrect print positions for labels that are short in length. |

| Problem | Possible Cause | Solution |
|---|---|---|
| Label Alignment is incorrect. Pressing FEED successively results in a short label length, one-inch. | Label Alignment Length is not correct. The default Label Alignment Length is 1.00", and will result in this behavior when any larger label length is used without setting the appropriate length. | ➢ Set Label Alignment to AUTO. Press and hold FEED until paper moves for automatic Label Alignment Length measurement. <br><br> *~OR~* <br><br> ➢ Measure the label length and use the Setup Menu to set the new length. Print a Database Configuration label to ensure the new length has been set. |
| Label Alignment is incorrect. Pressing FEED successively results in a label length longer than actual, one-inch. | Label Alignment Length is not correct. The default Label Alignment Length is 1.00", and will result in this behavior when any larger label length is used without setting the appropriate length | ➢ Set Label Alignment to AUTO. Press and hold FEED until paper moves for automatic Label Alignment length measurement. <br><br> *~OR~* <br><br> ➢ Measure the label length and use the Setup Menu to set the new length. Print a Database Configuration label to ensure the new length has been set. |

| Problem | Possible Cause | Solution |
|---|---|---|
| Tear Mode is selected but the label stop position (present position) is not far enough forward. | Another present position has been determined. Enabling the Present Sensor causes the label stop position (present position) to be approximately 0.1" behind the peel bar.<br><br>*~OR~*<br><br>The Present Adjust value is not correct. | ➢ Disable the Present Sensor.<br><br>*~OR~*<br><br>➢ Ensure the host computer is not providing a Present Distance shorter than is required for the Tear Bar.<br><br>➢ Use the Setup Menu to modify the Present Adjust value. |
| Tear Mode is selected but the label stop position (present position) is too far forward. | Another present position has been determined.<br><br>*~OR~*<br><br>The Present Adjust value is not correct. | ➢ Ensure the host computer is not providing a Present Distance longer than is required for the Tear Bar.<br><br>➢ Use the Setup Menu to modify the Present Adjust value. |
| The FAULT Indicator illuminates during label alignment. | The label supply is empty | ➢ Load media. |

# 4.6  Calibration Mode – Button Functions

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

☑ **Notes:**  Before calibrating, ensure that the Printhead Carrier Assembly is latched down, that the cover is closed, and that the media sensor has been set for the appropriate media type, see Section 4.4.2.

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

If at any time you wish to discard your changes and revert back to the previous calibration simply turn off power to the printer. Also, Factory Defaults can be restored, see Section 5.7

To perform Calibration:

F3 *(Press and hold during power-up until the Paused Light turns off)*

Calibration Mode

F1

Auto Media Calibration *(See Section 4.6.1)*

F2 — *(Press and Release)* *Feeds one label for "test"*

F2 — *(Press and hold until the Paused Light turns on)*

F3  *Prints the 'Test Label' for "test"*

F1 + F3  *Saves the current values and resumes* Normal Mode

Media Sensor Calibration *(See Section 4.6.2)*
*(The Fault Indicator flashes during analysis)*

F1  *Analyze media*

F2  *Analyze media backing material or reflective mark*

F3  *Analyze no media condition*

F1 + F3  *Accepts the current analysis for "test"*

### 4.6.1 Auto Media Sensor Calibration

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

> ☑ **Note:** *Before calibrating, be sure the media sensor is set for the appropriate media type, see Section 4.4.2; also, ensure that the Printhead Carrier Assembly is latched down and the cover is closed.*

To automatically calibrate the media sensor, proceed as follows:

1. With the desired media loaded, hold the ⓕ³ button while powering up the printer. Continue to hold the button until the PAUSED Light turns off then release it.

3. Next press the ⓕ¹ button. *The printer will feed approximately ten inches of media to calculate the TOF Delta and Low values to be used.*

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

   PAUSED Light = Successful calibration. Proceed to Step 5.

   FAULT Light = Unsuccessful calibration. Proceed to Section 4.6.2.

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

5. Now save the changes and resume ⌊Normal Mode⌋ by pressing the ⓕ¹+ⓕ³ buttons simultaneously and briefly. Wait until the PAUSED Light goes off.

## 4.6.2  Manual Media Sensor Calibration

The Manual Media Sensor Calibration procedure should be used in cases where the printer continues to suffer from media sensing problems after performing or attempting to perform the Auto Media Sensor Calibration (see Section 4.6.1).

> ☑ **Note:**  *Before calibrating, be sure the media sensor is set for the appropriate media type, see Section 4.4.2; also, ensure that the Printhead Carrier Assembly is latched down and the cover is closed.*

To manually calibrate the media sensor, proceed as follows:

1.  Hold the ⓕ³ button and power-up the printer. Continue to hold the button until the PAUSED Light turns off; then release the button. Next, press and hold the ⓕ² button, continue to hold the button until the PAUSED Light turns on; then release the button.

2.  Place the media with the backing attached (if any) over the media sensor  (see Section 3.2 for the sensor's location), close the Printhead Carrier Assembly, and then press the ⓕ¹ button. *The printer will flash the FAULT Light as it analyzes the material.*

3.  Position the backing material or the black (reflective) mark over the media sensor, close the Printhead Carrier Assembly, and then press the ⓕ² button. *The printer will flash the FAULT Light as it analyzes the top of form mark.*

4.  Remove all the material from the media sensor, close the Printhead Carrier Assembly, and then press the ⓕ³ button. *The printer will flash the FAULT Light as it analyzes the no media condition.*

5.  Simultaneously and briefly press the ⓕ¹ + ⓕ³ buttons to accept the calibration for "test" and exit the Media Sensor Calibration. One of the following Indicators will flash five times to denote the result of the manual calibration attempt:

    PAUSED Light = Successful calibration. Proceed to Step 6.

    FAULT Light = Unsuccessful calibration. Retry the procedure beginning at Step 1.

6. Use the Ⓕ2 button (feeds a label), and the Ⓕ3 button (prints a test label) to test the current calibration.

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

7. Now save the changes and resume [Normal Mode] by pressing the Ⓕ1+Ⓕ3 buttons simultaneously and briefly. Wait until the PAUSED Light goes off.

## 4.7   Internal Labels

The following section details the printer's resident labels.

### 4.7.1  The Database Configuration Label

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

*To print the Database Configuration Label, proceed as follows:*

With the printer on, loaded with media (at least 4 inches wide) and ribbon (if printing with thermal transfer media), press the Ⓕ2+Ⓕ3 buttons simultaneously.

```
TUE NOVEMBER 15, 2005 19:29 236    CONFIGURATION
VER: E4204 - 04.21 07/28/03        DIRECT THERMAL
BOOT 83-2279-04H                   SERIAL PORT SELECTED
CODE 83-2280-04W                   19.2; 8BITS
FONT 83-2431-01A                   EDGE
CPLD 59-2170-01C                   CONT FORM LENGTH__   0
INTERNAL FLASH MODULE PRESENT      PRESENT ADJUST____  127
SYSTEM RAM CHECKS____ GOOD         SOP ADJUST_____  127
SYSTEM RAM SIZE___ 2015 KBYTES     TOF LOW_____   0   0
SYSTEM RAM AVAIL__ 1244 KBYTES     TOF DELTA_____  10  10
REG POWER SUPPLY__ YES             TOF GAIN_____  12  10
                                   OOS MAXVOLT_____   3   3
                                   LABEL ALIGNMENT___  NO
                                   ALIGN LENGTH_____  100
                                   STOP LOCATION_____  HOST
                                   IMPUT MODE_____  DPL
                                   HEAT_____  10
INPUT VALUES
PAPER_____ 255
POT_____ 113            COUNTER INFORMATION
TRAN_____ 255            ABSOLUTE VALUES  6-18-2004
REFL_____ 149             LENGTH____    773 INCHES
RIBN_____  87             TIME_____     20 HOURS
TEMP_____  48            RESETTABLE VALUES 6-22-2004
VOLT_____ 223             LENGTH____    576 INCHES
                                    TIME_____     10 HOURS

                                   MEMORY CONFIGURATION
                                   INTERNAL MODULE A_____128
                                   SCALABLE FONTS_____64
                                   LABEL SIZE     0416:02157 IN
```

The second label printed is the Test Label. This label is used to check the condition of the printhead, as shown below:
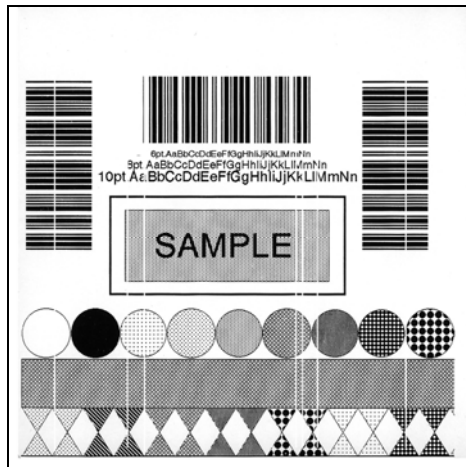


***Faulty Label:***

*Instead of consistent patterns, streaks in the direction of print indicate a dirty or faulty printhead. See Section 5 for cleaning instructions.*

### 4.7.2  Test Label

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

*To print the Test Label, proceed as follows:*

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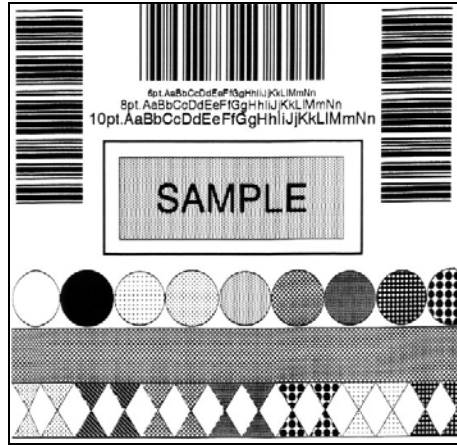


### 4.7.3  Hex Dump Label

The Hex Dump Label is a useful tool in the diagnosis of problems including communications handshaking and DPL syntax errors. To generate a Hex Dump Label the printer enters into Hex Dump Mode. In this mode, all data sent to the printer will be immediately output in hexadecimal code, along with the printable ASCII equivalents. To decode this information, the *Class Series Programmer's Manual* is an essential reference. As a final note, many software programs use bit mapping to construct the label, making diagnosis of this data difficult. Contact Datamax Technical Support with any questions.

*To enter Hex Dump Mode and print a Hex Dump Label, proceed as follows:*

With the printer on, loaded with media (at least 4 inches wide) and ribbon (if printing with thermal transfer media), press and hold the Ⓕ² button while turning the printer on. Continue holding the Ⓕ² button until the PAUSED Light turns off. Now, all data received by the printer will be output in hexadecimal code, as shown below.

```
0000   02 4C 0D 44 31 31 0D 31   ^L.D11.1
0008   36 31 31 30 30 30 30 33   61100003
0010   32 30 30 30 31 30 46 4F   200010FO
0018   4E 54 20 36 3A 20 41 4C   NT 6: AL
0020   4C 20 56 41 4C 49 44 20   L VALID
0028   20 20 20 20 20 20 20 20
0030   20 20 20 0D 31 36 31 31        .1611
0038   30 30 30 30 32 30 30 30   00002000
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   %&()*+.-
```

*To exit the Hex Dump Mode, turn the printer off.*

# Maintenance and Adjustments

## 5.0   Introduction

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

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

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

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

# 5.1   Cleaning the Printhead

To clean the printhead, follow the instructions below.

| ⚠️ **WARNING** | Before servicing, disconnect the printer from the AC outlet. |
|---|---|

1.  Turn 'off' and unplug the printer. Open the cover.

2.  Push the Printhead Latch down and raise the Printhead Carrier Assembly. Allow the Printhead to cool.

3.  Using a Cotton Swab dipped in isopropyl alcohol, rub the Cotton Swab along the Printhead.
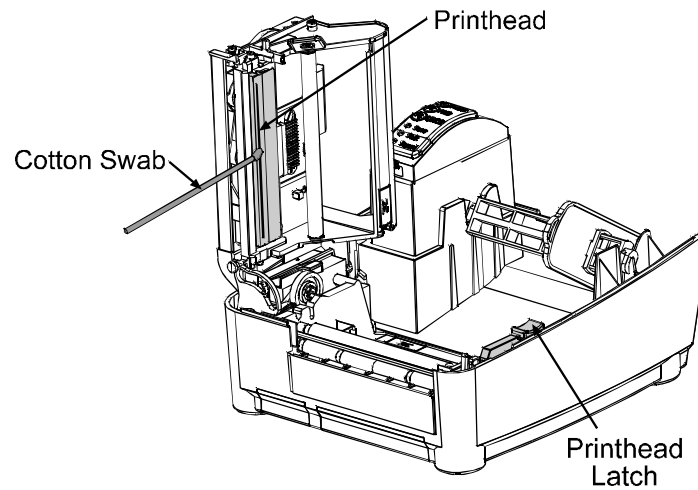
## 5.2 Media Width Adjustment

A Thumbwheel on the side of the Printhead Carrier Assembly allows the printhead to be adjusted for various sizes of media. When adjusting for narrow media move the Thumbwheel to the left (clockwise); conversely, when adjusting for wide media move it to the right (counterclockwise).

> ☑ **Note:** The numbers on the Thumbwheel are for reference only and do not correspond to specific media widths.



Thumbwheel
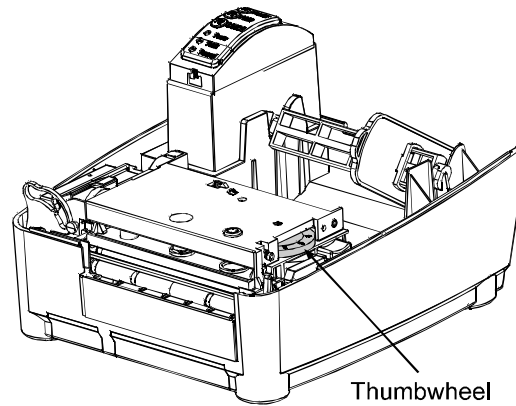
To perform a media width adjustment, proceed as follows:

1. Load media into the printer. Print a label (press the (F2)+(F3) buttons simultaneously) and examine it.

2. If the printing appears too light on the right-hand side of the label (see example below), then move the Thumbwheel counterclockwise. Print another label and examine it; make additional adjustments as necessary.

---

*If the printing is light on the right side of a label, make a counterclockwise adjustment with the Thumbwheel.*
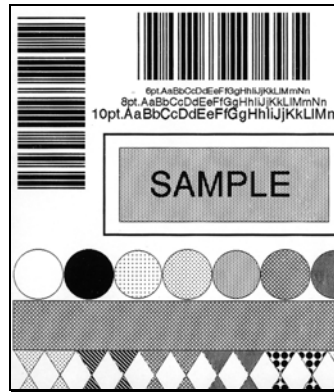


Direction of Media Movement

> ☑ **Note:** *If the media begins tracking too far to the right while printing, the Thumbwheel should be adjusted to the clockwise.*

## 5.3 Ribbon Width Adjustment

The adjustable ribbon handler feature, found on printers equipped with the thermal transfer option, allows the optimum amount tension to be supplied by the ribbon supply hub. Adjust the ribbon tension as follows:

1. Turn 'off' the printer.

2. Hold the Hub and then rotate the Ribbon Tension Adjustment Knob to meet your media/ribbon width based on the table below. Ensure that the Ribbon Tension Adjustment Knob is turned fully to the clockwise or counterclockwise position. (The knob will no longer turn once it is in the proper position; do not force this knob.)
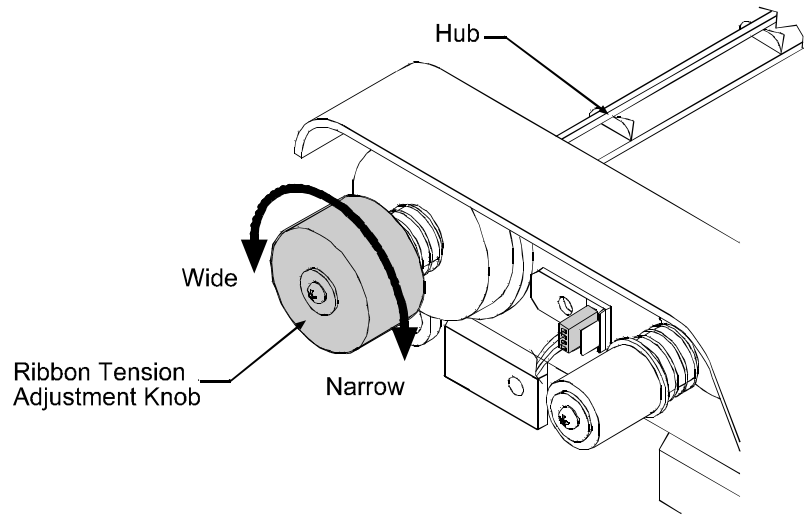
| Ribbon Size | Ribbon Width | Direction of Rotation |
| --- | --- | --- |
| Narrow | 1 - 2 inches | Clockwise |
| Wide | 2 - 4 inches | Counterclockwise |

## 5.4   Fine Printhead Adjustment

The Fine Printhead Adjustment Set Screw, located on top of the printhead carrier assembly, is used for adjusting print quality. This adjustment is set at the factory and should not need further adjustment; however, with the different types and thickness of media some re-adjustment may be necessary if print quality suffers.

> ☑ **Note:**   If thermal transfer equipped, it is not necessary to remove the Ribbon Handler Assembly; an access hole through the assembly is provided.

To adjust the printhead, turn the Set Screw until optimum print quality is obtained (some trial and error may be necessary). Do not over tighten the Set Screw.
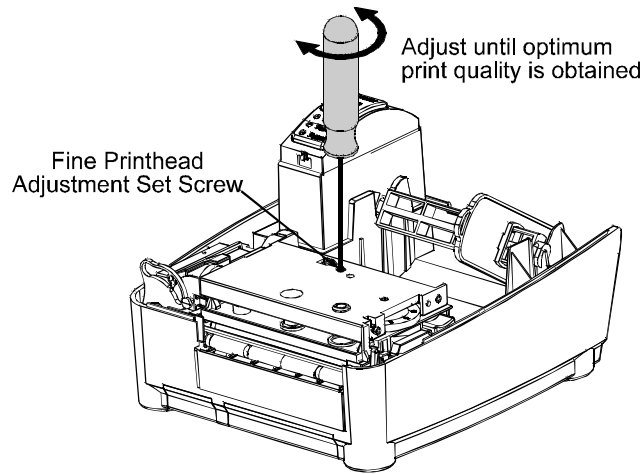
## 5.5   Printhead Replacement

> ☑ **Notes:**  *Always follow proper Electro Static Discharge procedures when replacing the printhead.*
>
> *If thermal transfer equipped, it is not necessary to remove the Ribbon Handler Assembly; an access hole is provided.*

Remove the printhead as follows:

1. Turn off the printer.

2. Loosen the Printhead Screw until the printhead is freed.

3. Press the Printhead Latch then raise the carrier assembly.

4. Remove the printhead cable from the back of the printhead.
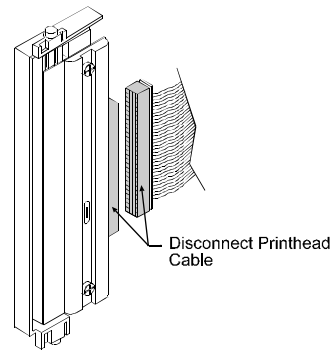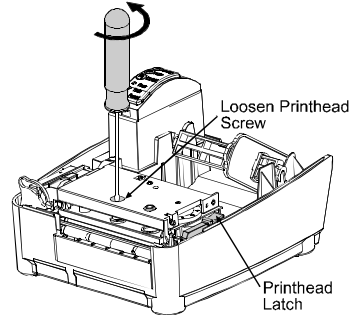
Replace the printhead as follows:

1. Connect the printhead cable to the new printhead.

2. Position the printhead in the printhead carrier assembly, ensure that the printhead cable is not pinched, and then tighten the Printhead Screw.

3. Clean the Printhead (see Section 5.1) and allow it to dry before use.

4. Use the Darkness Adjustment to match the print contrast of the new printhead to that of the old printhead (see Section 5.6).

## 5.6   Darkness Adjustment

The Darkness Adjustment (located on the rear of the printer) allows the operator to match the print contrast following a printhead replacement. Turning the Darkness Adjustment clockwise will darken the print, while turning it counterclockwise will lighten the print. Compare a label printed with the old printhead and make this adjustment so that the new printhead matches the darkest portion of that label.

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

## 5.7   Resetting to the Factory Defaults

With the printer power 'Off,' press and hold the F1, F2, and F3 buttons while turning 'On' the printer.  Continue to hold the buttons down until the PAUSED Light turns off.  The printer will now be set to the 'Factory Defaults.'  See Section 4.4.1 for a listing of the factory default settings.

## 5.8   Downloading Firmware and Fonts

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

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

2.   Ensure that the printer is connected to the host and that the power is 'On.' Using the DOS copy command enter:

```
copy filename.dlf lpt1/b
```

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

3. The PAUSED Light will flash during the download.

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

   ➢ **Following an unsuccessful download**, the FAULT Light will illuminate then the printer will perform a 'warm reset' (both the POWER and PAUSED Light will be on during power-up initialization). The original firmware will remain operational. If the printer fails to reset, toggle the power 'Off' and 'On.'

   Try re-sending the file to the printer. If the failure continues, check the following possible causes:

   - An invalid or corrupted file is being downloaded - Ensure the file being downloaded is correct and applicable for your printer model.

   - Possible communications error - Check the cable connection between the host and printer and ensure that a quality, shielded cable is used.

   - Possible Flash memory problem - Call for service.

   If the printer fails to boot-up after an unsuccessful download, turn 'Off' the power. Simultaneously press and hold the F1 and F3 buttons while powering 'On' the printer. Now, try downloading the file to the printer.

# 6 Troubleshooting

## 6.0   Introduction

Occasionally, situations arise that require troubleshooting. Possible problem situations and potential solutions are listed in this section. While not every situation is addressed, you may find some of these tips helpful. After the correction action is taken press the FEED button to clear the alarm. Contact a qualified service technician for problems that persist or are not covered in this section.

## 6.1   Troubleshooting Tips

The following table lists the symptoms and the associated page numbers of the topics covered in the troubleshooting section.

| Problem | Page |
|---------|------|
| Unacceptable print quality | 52 |
| The printer does not print or prints several labels at once | 52 |
| The ribbon does not advance | 52 |
| Skips every other label | 53 |
| Unable to print in rotation 4 | 53 |
| Prints light on the right side of the label | 53 |
| Printer fails to turn on | 53 |
| Label advances 1-2 inches before a fault indication | 54 |
| Label advances 16 inches before a fault indication | 54 |
| Tracking Problems | 54 |

**Unacceptable print quality:**

- Dirty printhead: Clean the printhead (see Section 5).

- The temperature setting may be incorrect for the media being used: Use the software program or DPL commands adjust the Heat Setting and Print Speed.

- A mismatched incorrect ribbon/media combination is being used: Check the types being used.

- Verify that the Media Type Switch is in the correct position for the printing method being used (see Section 3.4).

- Faulty printhead: Replace it (see Section 5) or call for service.

**The printer does not print or prints several labels at once:**

- The labels are incorrectly loaded: See the loading instructions on the inside cover of the printer or Section 3.

- The media is not calibrated: Calibrate it (see Section 4).

- If equipped, the Adjustable Media Sensor may need to be repositioned (see Section 3).

- The media sensor or sensor circuitry may be defective: Call for service.

**The ribbon does not advance** (the paper advances, but ribbon does not):

- The ribbon may be installed incorrectly: Ensure that the ribbon's inked side faces the paper. With most ribbons this can be verified by rubbing paper against the ribbon; the ink should smudge the paper. Or, if using label stock, the sticky side of a label will pull off the ink.

- A mismatched ribbon/paper combination is resulting in an insufficient amount of friction between paper and ribbon: Ensure that the correct type of ribbon is being used with the media.

**Skips every other label** (print quality is good, but every other label is skipped):

- The label is formatted too close to the top edge of the label: Leave white space equal to 8-dot rows (about .02 inch [.5mm]) at the top of the label.

- The media is not calibrated: Calibrate it (see Section 4).

- If equipped, the Adjustable Media Sensor may need to be repositioned (see Section 3).

- The media sensor or media sensor circuitry may be defective: Call for service.

**Unable to print in rotation 4:**

- The characters are formatted outside the dimensions of the label: Check that the row/column values provide enough room for the height of the image being printed.

**Prints light on the right side of the label:**

- The media width adjustment is set for a narrower media width than is actually being used: Adjust for the media width (see Section 5).

- The printhead is not properly aligned: Call for service.

- The printhead carrier assembly is not latched down: Latch it.

**Printer fails to power on:**

- The AC wall outlet may be faulty: Try another outlet.

- A fuse may be blown: Call for service.

- The power supply may be faulty: Replace it.

- A defective power switch may exist on the printer: Call for service.

**Label advances 1-2 inches before a fault indication:**

- The ribbon may be incorrectly installed. Ensure that the ribbon's inked side faces the paper. With most ribbons this can be verified by rubbing paper against the ribbon; the ink should smudge the paper. Or, if using label stock, the sticky side of a label will pull off the ink.

- A mismatched ribbon/paper combination is resulting in an insufficient amount of friction between paper and ribbon: Ensure that the correct type of ribbon is being used with the media.

**Label advances 16 inches before a fault indication:**

- The media may not be properly loaded: Reload it (see Section 5). When loading media ensure that the media hub and media guide are against the media and that gaps or marks in the labels are in line with the media sensor.

- If equipped, the Adjustable Media Sensor may need to be repositioned (see Section 3).

- The media sensor or media sensor circuitry may be defective: Call for service.

**Labels move excessively from side to side during printing:**

- The media may not be properly loaded: Reload it (see Section 5). When loading media ensure that the media hub and media guide are against the media and that gaps or marks in the labels are in line with the media sensor.

- The media width adjustment may not be properly set: Readjust for the label width (see Section 5).

# Specifications

## Mechanical

| | |
|---|---|
| Width | 8.5 inches (21.6 cm) |
| Depth | 9.5 inches (24.1 cm) |
| Height | 6.25 inches (15.9 cm) |
| Weight | 4 pounds (1.8 kg) |
| Operating Temperature | 40° to 95° F (4° to 35° C) |
| AC Input Voltage | Power Supply (50-2050-01); 100 VAC to 240 VAC / 50-60 Hz |

## Printing

| | |
|---|---|
| Print Method | Direct Thermal; Thermal Transfer (optional) |
| Print Speed | *E-4203:* 1 - 3 IPS (25.4 – 76.2 mm/s) |
| | *E-4204 & E-4304:* 1 - 4 IPS (25.4 - 101.6 mm/s) |
| Resolution | *E-4203 & E-4204:* 203 DPI (8 dots/mm) |
| | *E-4304:* 300 DPI (11.8 dots/mm) |
| Tear Bar | Tear up |
| DRAM Memory | 2MB |
| FLASH Memory | 1MB |

## Media / Ribbon

| | |
|---|---|
| Media Types | Roll-Fed, Die-Cut, Continuous, Fan-Fold |
| Max. Media Width | 4.3 inches (109.2 mm) |
| Min. Media Width | 1 inches (25.4 mm) |
| Max. Print Width | 4.09 inches (104 mm) |
| Print Length Range | .375 – 24.0 inches (9.52-609.6 mm); *min length of 1 .25 inches (31.8mm) with optional Cutter.* |
| Media Thickness Range | .0025 - .01 inches (.064 - .254 mm); *up to .007 inches (.117 mm) with optional Cutter; up to .005 inches (.127 mm) with optional LD Cutter* |
| Media Supply Roll Capacity | *E-4203:* 4 inches (101.6 mm) O.D. on a 1 inch (25.4 mm) core |
| | *E-4204 & E-4304:* 5 inches (127.0 mm) O.D. on a 1 inch (25.4 mm) core |
| Ribbon Width Range | 1.0 - 4.3 inches (25 - 110 mm) |
| Ribbon Roll Capacity | Matched to media: approx. 361 feet (110 m) long with a 1.5 inch (38 mm) O.D. on a .5 inch core |

## Communications

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

## Fonts

9 Bit Map Fonts; rotated 0, 90, 180, and 270 degrees.

## Embedded Bar Codes

Code 39, Interleaved 2 of 5,Code 128 A, B & C, Codabar, LOGMARS, UPC-A, UPC-E, UPC 2&5, EAN-8, EAN-13, EAN 2&5, UPC Random Weight, Code 93, Plessey, USCS, Code 128 MOD 43, Postnet, USS/EAN-128 Random

Weight, Telepen, UPS Maxicode, PDF417, DataMatrix, Aztec, QR Code, MicroPDF417, and TLC39

## Approved Media

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

For a current list of approved media and ribbons for use in direct thermal and thermal transfer applications, please contact a Media Representative at (407) 523-5650.
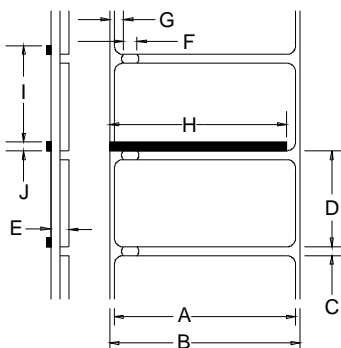


| Designator | Description | Maximum[1] | Minimum[1] |
|:---:|---|:---:|:---:|
| A | Label width | 4.09 | 1.00 |
| B | Backing width | 4.30 | 1.00 |
| C | Gap between labels | .25 | .10 |
| D | Label length | 24[3] | .375[4] |
| E | Total thickness | .010[6] | .0025 |
| F | Notch opening width | .50 | .20 |
| G | Distance from the edge of the media to the media sensor aperture (left justified) | .175 | .125 |
| | with the Adjustable Media Sensor option | 2.94 | .125 |
| H | Reflective mark width[2] | 4.10 | .50 |
| I | Distance between reflective marks | 24[3] | .375[5] |
| J | Reflective mark length | .25 | .10 |

[1] Units of measure are in inches.

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

[3] The label length may vary up to 99 inches with printable area not exceeding the maximum label length.

[4] This distance is inclusive of the minimum gap between labels. Min length of 1.25 inches (31.8mm) with optional Cutter installed.

[5] This distance is inclusive of the minimum reflective mark.

[6] .007 inches (.117 mm) w/Standard Cutter, .005 inches (.127 mm) w/LD Cutter

# Appendix A

## ASCII Control Code Chart

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

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

---

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

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

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

# Appendix B

## Embedded Fonts and Barcodes

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

### Fonts

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

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

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

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

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

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



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



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



**Font 3**  62-character alphanumeric, uppercase.

**Font 4** 62-character
alphanumeric, uppercase.

**Font 5** 62-character
alphanumeric, uppercase.

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

FONT 5:
#$%&()*+.-./0123456789:
ABCDEFGHIJKLMNOPQRSTUVWXYZ
ÇÅÄÉÖÜ£ØÑ¿ß

**Font 6** 62-character alphanumeric, uppercase.

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

**Font 7** OCR-A, size I.

**Font 8** OCR-B, size III.

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

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

**Font 9** Internal Triumvirate font.

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

6 pt ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz0123456789
8 pt ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
10 pt ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklm
12 pt ABCDEFGHIJKLMNOPQRSTUVWXYZabc
14 pt ABCDEFGHIJKLMNOPQRSTUVWX
18 pt ABCDEFGHIJKLMNOPQR
24 pt ABCDEFGHIJKLM
30 pt ABCDEFGHIJ
36 pt ABCDEFG
48 pt ABCD

## Barcodes

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

| Bar Code ID | Type | Length | Check-sum | Valid ASCII Characters, decimal value representation |
|---|---|---|---|---|
| A / a | Code 3 of 9 | Varies | No | 32, 36, 37, 42, 43, 45-57, 65-90 |
| B / b | UPC-A | 11 | Yes | 48-57 Numeric only Option V used in the 6th & 7th position |
| C / c | UPC-E | 6 | Yes | 48-57 Numeric only |
| D / d | Interleaved 2 of 5 (I 2 of 5) | Varies | No | 48-57 Numeric only |
| E / e | Code 128 | Varies | M-103 | 32-127 |
| F / f | EAN-13 | 12 | Yes | 48-57 Numeric only. Option V used in the 7th & 8th position |
| G / g | EAN-8 | 7 | Yes | 48-57 Numeric only |
| H / h | Health Industry Bar Code | Varies | M-43 | 32, 36-39, 42, 43, 45-57, 65-90 |
| I / i | Codabar | Varies | No | 36, 43, 45-58, 65-68 |
| J / j | I 2 of 5 with modulo 10 checksum | Varies | M-10 | 48-57 Numeric only |
| K / k | Plessey | Up to 14 | M-10 | 48-57 Numeric only. Option + is Last Character for Second M-11 checksum |
| L / l | I 2 of 5 with modulo 10 checksum & bearer bars | 13 | M-10 | 48-57 Numeric only |
| M / m | 2 digit UPC addendum | 2 | Yes | 48-57 Numeric only |
| N / n | 5 digit UPC addendum | 5 | Yes | 48-57 Numeric only |
| O / o | Code 93 | Varies | No | 35-38, 42-58, 65-90, 97-122 |
| p | Postnet | Varies | Yes | 48-57 Numeric only |
| Q / q | UCC/EAN Code 128 | 19 | Yes | 48-57 Numeric only |
| R / r | UCC/EAN Code 128 K-Mart NON EDI bar code | 18 | Yes | 48-57 Numeric only |
| S / s | UCC/EAN Code 128 Random Weight | 34 + | Yes | 48-57 Numeric only |
| T / t | Telepen | Varies | Yes | Alphanumeric |
| U | UPS MaxiCode | 84 | Yes | Alphanumeric |

| Bar Code ID | Type | Length | Check-sum | Valid ASCII Characters, decimal value representation |
|---|---|---|---|---|
| u | UPS MaxiCode with Byte Count | Specified | Yes | Alphanumeric |
| v | FIM | 1 | No | A, B, C, D |
| z | PDF417 | Varies | Yes | All |
| Z | PDF417 with Byte Count | Specified | Yes | All |
| W1c | DataMatrix | Varies | Yes | All 8-bit values |
| W1C | DataMatrix with Byte Count | Specified | Yes | All 8-bit values |
| W1d | QR Code – Auto format | Varies | Yes | Alphanumeric |
| W1D | QR Code – Manual format | Varies | Yes | Single-byte or Kanji double-byte |
| W1f | Aztec | Varies | Yes | All 8-bit values |
| W1F | Aztec with Byte Count | Specified | Yes | All 8-bit values |
| W1T | TCIF Linked Barcode 3 of 9 (TLC39) | Varies | No | Alphanumeric |
| W1z | MicroPDF417 | Varies | Yes | All 8-bit values |
| W1Z | MicroPDF417 with Byte Count | Specified | Yes | All 8-bit values |

**Barcode A** Code 3 of 9

0123456789

**Barcode B** UPC-A

0 12345 67890 5

**Barcode C** UPC-E

0 012345 7

**Barcode D** Interleaved 2 of 5

0123456790

**Barcode E** Code 128

01234567890

**Barcode F** EAN-13

0 123456 789012

**Barcode G** EAN-8

0123 4565

**Barcode H** Health Industry Barcode (HIBC)

+012345678900

**Barcode I** Codabar

A012345678900

**Barcode J** Interleaved 2 of 5 w/module 10 checksum

012345678905

**Barcode K** Plessey

01234567890

**Barcode L** Interleaved 2 of 5 w/module 10 checksum and shipping bearer bars

0 12 34567 89012 8

**Barcode M** 2 Digit UPC addendum

42

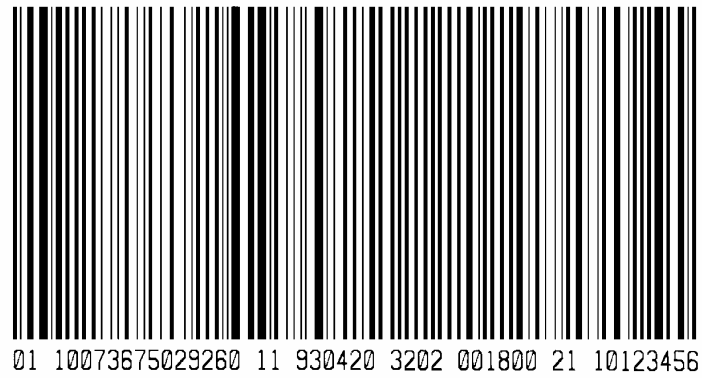**Barcode N** 5 Digit UPC addendum

01234
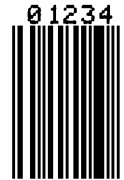
**Barcode O** Code 93

**Barcode p** Postnet

**Barcode Q**  UCC/EAN Code 128

**Barcode R**  UCC/EAN Code 128
KMART NON EDI

(01) 2 3456789 012345678 9

34 567890 123 4567

01 10073675029260 11 930420 3202 001800 21 10123456
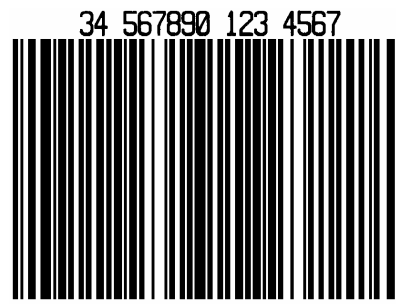
**Barcode S**  UCC/EAN Code 128 Random Weight
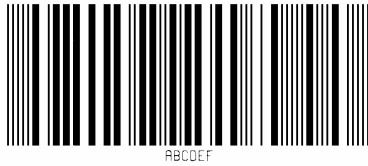
**Barcode T** Telepen
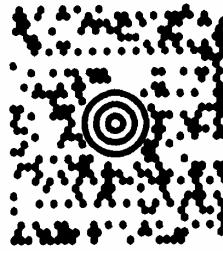


**Barcode u** UPS MaxiCode



**Barcode v** FIM



**Barcode z** PDF417



**Bar Code W1c:** DataMatrix



**Bar Code W1d:** QR Code



**Bar Code W1f:** Aztec



**Bar Code W1z:** MicroPDF417



A1B2C3DAAA

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

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# Appendix C

## Datamax Barcode Products
## Limited Warranty Statement

### E-Class™ 4203/4204/4304 Printer

## Printer

Datamax warrants to Purchaser that under normal use and service, the E-Class™ 4203/4204/4304 Printer, (with the exception of the thermal printhead) purchased hereunder shall be free from defects in material and workmanship for a period of (365) days from the date of shipment by Datamax.

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

## Thermal Printhead

This warranty is limited to a period of one year, (365 days), or 1,000,000 linear inches of use, whichever comes first, for the E-Class™ 4203/4204/4304 thermal printhead. This one year (365 days) warranty is valid only if a Datamax - approved thermal label media is used, as defined in the then current Datamax list of approved thermal/thermal transfer media, a copy of which is available from Datamax. Failure to use Datamax-approved media is justification for invalidation of this thermal printhead warranty. This warranty does not cover printheads which have been misused, altered, neglected, handled carelessly, or damaged due to improper cleaning or unauthorized repairs.

## Warranty Service Procedures

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

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

# General Warranty Provisions

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

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

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

# Limitation of Liability

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

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

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

# *Glossary*

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

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

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

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

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

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

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

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

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

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

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

**diagnostics** Programs used to locate and diagnose hardware problems.

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

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

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

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

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

**fan-fold** Media that is folded and stacked.

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

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

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

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

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

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

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

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

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

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

**mark** Generalized term to indicate the label top of form indicator.

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

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

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

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

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

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

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

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

**registration** Repeatable top to bottom alignment of printed labels.

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

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

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

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

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

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

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

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

**void** An undesirable blank space in a printed image.