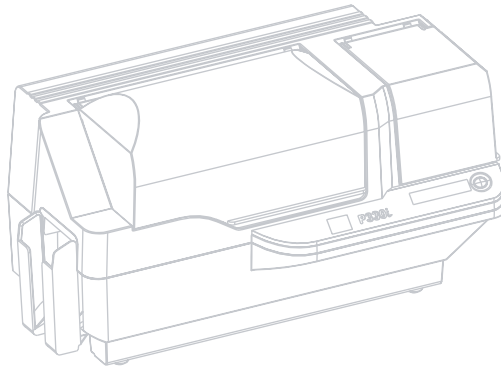


Printing a Card
Feeding One Card at a Time





Cleaning



Caution • PROTECT YOUR FACTORY WARRANTY!

The recommended cleaning procedures must be performed to maintain your factory warranty. Other than the recommended cleaning procedures described in this manual, allow only Zebra authorized technicians to service the P330i Printer.

NEVER loosen, tighten, adjust, bend, etc., any part or cable inside the printer.

NEVER use a high pressure air compressor to remove particles in the printer.

Cleaning the Printer

Clean your P330i Printer using Pre-Saturated Cleaning Cards provided. The regular use of these cards will clean and maintain important parts of your printer that cannot be reached, including the Print Head, Transport Rollers, and optional Magnetic Encoder Station.

When to Clean

When the LCD Panel displays the message **CLEAN PRINTER**.

Approximately every 1000 cards when using 5-panel color ribbon, or every 5000 cards when using a monochrome ribbon.

How to Clean



Note • This cleaning procedure uses two cleaning cards. One cleaning card is the size of a regular plastic card, and is referred to as the “cleaning card.” The other is elongated, with a wider section at one end; it is referred to as the “long cleaning card.”

1. Leave the Printer power on, or turn it on if it was off.
2. Initiate the cleaning process by either of the following methods:
 - At the printer, press and hold the panel button for several seconds, until the LCD Panel displays the message **REMOVE RIBBON THEN CLOSE HEAD**.
 - From the computer, enter the P330i Printer Tools software, and click on the CLEAN button. The LCD Panel will display the message **REMOVE RIBBON THEN CLOSE HEAD**.
3. Open the Main Cover, release the Print Head Carriage, and remove the ribbon. Then close the Print Head Carriage. (For details, see Chapter 2.) The LCD Panel will display the message **EMPTY FEEDER & PRESS BUTTON**.
4. Open the Card Feeder Cover and remove cards from the Card Feeder. The last card is difficult to remove; leave it in place. Press the Panel Button on the front of the printer. The card remaining in the feeder will be ejected. The LCD Panel will then display the message **LOAD CLEANING CARD IN FEEDER**.
5. Place a pre-saturated Cleaning Card into the Card Feeder. The Cleaning Card will automatically feed into the printer and the cleaning process will start (there is a several second delay after the Cleaning Card feeds before the cleaning movement starts). While the cleaning process is underway, the LCD Panel will display the message **CLEANING PRINTER**.
6. At the conclusion of this part of the cleaning process, the Cleaning Card will be ejected, and the LCD Panel will display the message **PRESS BUTTON TO CONTINUE**.
7. After the user presses the panel button, the LCD Panel will display the message **FEED LONG CLEANING CARD IN EXIT**. Insert the long end of the long cleaning card into the card exit (directly above the Output Hopper). If the user inserts a “regular” cleaning card into the card exit, the LCD Panel will display the message **INVALID CARD, PRESS BUTTON** until the user presses the panel button and inserts the long cleaning card into the card exit.



Note • If the user does nothing at this point (i.e., does not insert the long cleaning card), after a timeout the LCD Panel display will change to **CLEAN PRINTER**. The printer will be able to print, but the LCD Panel will continue to display **CLEAN PRINTER**.

This limited cleaning does not do a thorough cleaning, but may be performed if no “long cleaning cards” are available.

To restore the display to **READY**, you will need to perform a complete cleaning process, using both short and long cleaning cards, from step 2 above through step 9 below.

8. The long cleaning card will automatically feed into the printer and the printing process will continue. The LCD Panel will again display the message **CLEANING PRINTER**.
9. When the cleaning process is completed, the long cleaning card will be ejected and the LCD Panel will display the message **READY**, indicating that the printer is ready to resume normal printing operations.
10. Discard both cleaning cards after a single use.



Note • Do not use previously used cleaning cards.

Cleaning the Print Head

A cleaning using the Cleaning Cards usually suffices. However, a separate Print Head cleaning can remove more stubborn deposits when print anomalies persist. To avoid deposits, only use foam-tipped swabs.

1. Place the printer power switch in the OFF (**O**) position.
2. Open the Main Cover, release the Print Head Carriage, and remove the ribbon. Leave the Print Head Carriage in its raised position. (For details, see Chapter 2.)
3. Clean Print Head by moving an alcohol-moistened swab tip side-to-side across the Print Head elements. Only use moderate force. To re-order swabs, please refer to the Media List on the Windows Drivers and User Documentation CD supplied with this printer.
4. The swabs can also be used in a similar manner to clean the optional magnetic encoding head.



Caution • Never use a sharp object or any abrasive to scrape deposits from the print head. Permanent damage to the print head will result.



Caution • Do not touch the print head if the printer has been in service in the last 10 minutes. It could be very hot and cause a burn.

Card Cleaning Cartridge

Your P330i Printer includes a Card Cleaning Cartridge. This item cleans the cards entering the printer through the card feeder. To ensure print quality, the cleaning roller requires periodic replacement. New cleaning rollers are included with each ribbon or may be purchased separately. (To reorder, please refer to the Media List on the Windows Drivers and User Documentation CD supplied with this printer.)

Installation of the Card Cleaning Cartridge is described in Chapter 2 and is not repeated in detail here.



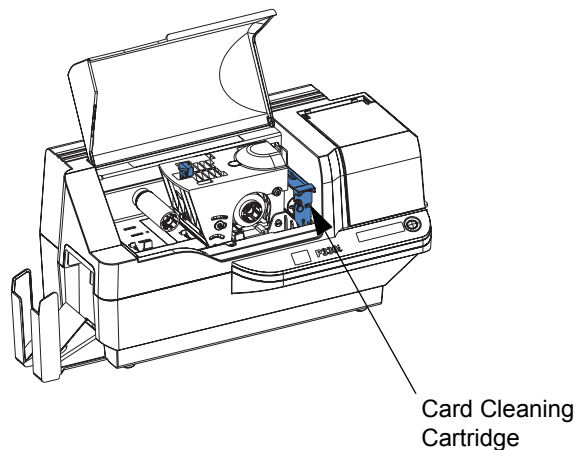
Note • Before replacing the Card Cleaning Cartridge or its cleaning roller, clean the Printer using the Cleaning Cards as described earlier in this chapter.

When to Replace the Cleaning Roller

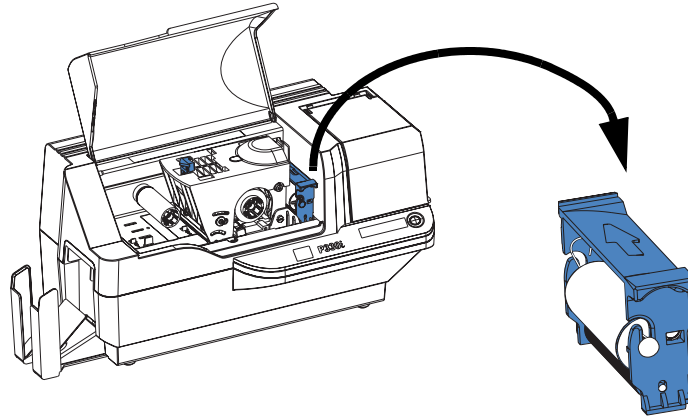
Replace the Cleaning Roller each time you install a new ribbon.

How To Replace the Cleaning Roller

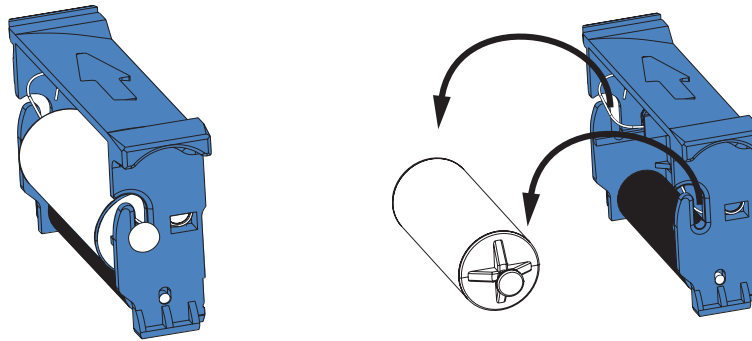
1. Open the main cover and locate the Card Cleaning Cartridge.



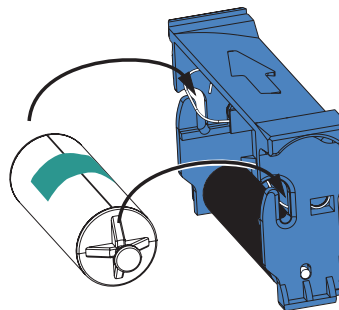
2. Gently remove the Card Cleaning Cartridge. Lift the “handle” end, and then pull it away from the printer.



3. Remove the cleaning roller from the Card Cleaning Cartridge and discard.

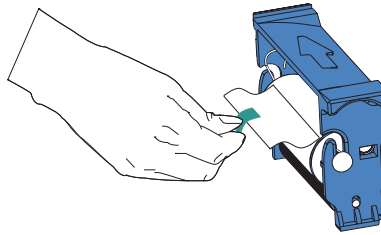


4. Install new cleaning roller into the Card Cleaning Cartridge. To avoid contamination, always hold the cleaning roller by the ends. (For replacement cleaning rollers, please refer to the Media List on the Windows Drivers and User Documentation CD supplied with this printer.)



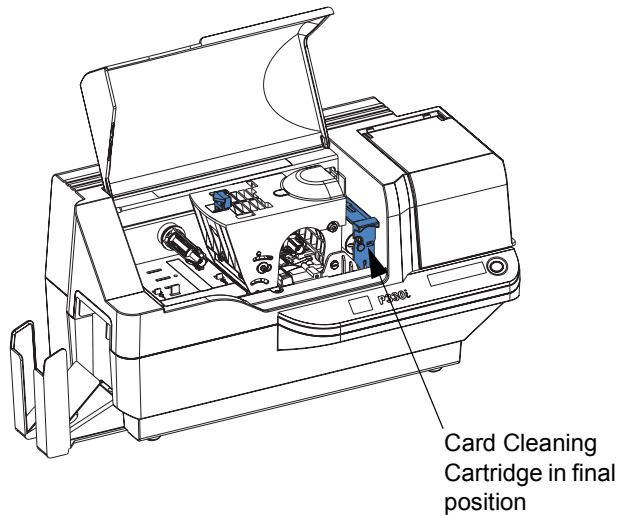
5. Peel protective wrapper from the cleaning roller by gently pulling on the tape.

Cleaning
Card Cleaning Cartridge



Note • DO NOT touch the adhesive roller surface that contacts the cards.

6. Replace the Card Cleaning Cartridge into the printer:



7. Close the printer main cover.



Troubleshooting

The table on the next page offers causes and solutions to symptoms related to improper operation. Check the table when experiencing any loss of operation or print quality.

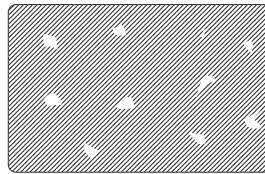
Problem / Description	Cause / Solution
The LCD Panel displays OUT OF CARDS message.	<ol style="list-style-type: none"> 1. Check for cards in the card feeder. If no cards present, load cards. 2. Check that Card Thickness Control lever is properly adjusted (see Loading Cards in Chapter 2). 3. Press the Panel Button for 1 second. The printing job will restart.
The LCD Panel displays OUT OF RIBBON message.	<ol style="list-style-type: none"> 1. Check ribbon. Replace if defective or entirely used. Ribbon will automatically synchronize and printing will restart with a new card.
The LCD Panel displays PRINT HEAD OPEN message.	<ol style="list-style-type: none"> 1. Check that Print Head Carriage is closed and latched. If not, close and latch it.
The LCD Panel displays MECHANICAL ERROR message.	<ol style="list-style-type: none"> 1. Check that you are using the correct card type (see Technical Specifications). 2. Check that Card Thickness Control lever is properly adjusted (see Loading Cards in Chapter 2). 3. If 2 cards are fed into the printer at the same time: Open cover and remove Card Cleaning Cartridge, empty the Card Feeder, and pull the jammed cards out. Replace the Card Cleaning Cartridge. Remove cards from Card Feeder, separate them as shown in Loading Cards in Chapter 2, and replace. 4. Check that ribbon is loaded correctly.
The LCD Panel displays ENCODING ERROR message.	<ol style="list-style-type: none"> 1. Check that you are using the correct magnetic card type (for low or high coercivity encoding). 2. Verify command syntax. 3. Contact Zebra technical support.
The LCD Panel displays CLEAN PRINTER message.	<ol style="list-style-type: none"> 1. Printer cleaning required (see Chapter 4).

Print Quality Issues

This section will help you resolve print quality problems. The print quality is dependent on several factors. The two most important factors that will increase your print quality are cleanliness and card stock. To diagnose and fix print quality problems, follow the troubleshooting procedures below:



Example 1 • Small spots appear on the printed card with a non-printed area or a different color.



Possible Cause:

- Contamination on the card surface.

Solutions:

- Check that cards are stored in a dust free environment.
- Use a different supply of cards.

Possible Cause:

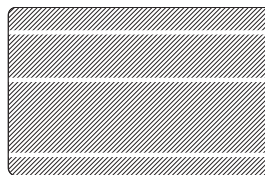
- Dust inside the printer and/or dirty Cleaning Roller.

Solutions:

- Perform a Cleaning of the printer (see Chapter 4).
- Replace Cleaning Roller (see Chapter 4).



Example 2 • There are non-printing horizontal lines (white) on the card surfaces.



Possible Cause:

- Ribbon cartridge is not correctly positioned.

Solutions:

- Ensure that the ribbon is properly rolled onto the ribbon cores of the cartridge and that there are no wrinkles in the ribbon.
- Replace ribbon cassette, making sure it locks in place.

Possible Cause:

- Print Head is dirty.

Solution:

- Clean the Print Head

Possible Cause:

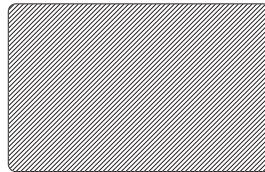
- Print Head elements are damaged (e.g., scratched or burnt).

Solution:

- Call Zebra Customer Service for Print Head replacement information.



Example 3 • Printing shows very pale, very dark, or inconsistent results



Possible Cause:

- Ribbon has been stored improperly or is damaged.

Solution:

- Change ribbon and print again.

Possible Cause:

- Cards may not meet specifications.

Solution:

- Use a different supply of cards.

Possible Cause:

- Contrast and/or Intensity may be set to incorrect values.

Solution:

- Adjust Contrast and/or Intensity values in software.

Possible Cause:

- Head Settings are too low / high.

Solution:

- Adjust Head Settings higher / lower.

Possible Cause:

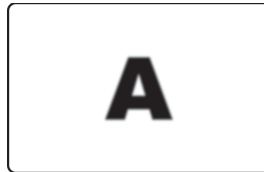
- Dust or embedded contamination on elements of the Print Head.

Solution:

- Perform a Cleaning of the Print Head (see Chapter 4).



Example 4 • Printing shows blurry printed image.



Possible Cause:

- Ribbon cartridge may not be correctly positioned.

Solution:

- Check that the ribbon is properly rolled onto the ribbon cores of the cartridge.
- Replace ribbon cartridge, making sure it locks in place, and print again.

Possible Cause:

- Ribbon may not be synchronized on the correct color panel position.

Solution:

- Open the Print Head Carriage, then close it. This will cause the ribbon to re-synchronize.

Possible Cause:

- Cards may not meet specifications.

Solution:

- Use a different supply of cards.

Possible Cause:

- Dust or embedded contamination inside the printer and/or dirty Cleaning Roller.

Solution:

- Clean the Print Head.
- Replace the Cleaning Roller.



Example 5 • No printing on the card.

Possible Cause

- Ribbon may not be installed in the printer.

Solution:

- Check for ribbon in the printer.

Possible Cause

- Cards may not meet specifications.

Solution:

- Use a different supply of cards.

Possible Cause

- Print Head elements may be scratched or burnt.

Solution

- Call Service for Print Head replacement information.



Example 6 • Only one panel of a color ribbon prints.

Possible Cause

- Using the wrong type of ribbon.

Solution:

- Use only *i* Series ribbons for full color printing.



Note • For optimum print quality, always keep the Main Cover and the Card Feeder Cover of the printer closed.

Troubleshooting the Ethernet Connection and Adapter

Resetting to Factory Defaults

To reset the Ethernet Adapter configuration parameters to the factory defaults, press the Ethernet Switch

and hold it in while turning the printer power on. Keep the Panel Button pressed until the Status Indicator light turns green, then release the Ethernet Switch. To print a configuration card, press and hold the Ethernet Switch until a card starts to print.

Ethernet Adapter Status Indicator

A bi-color Status Indicator displays the operational status of the Ethernet Adapter. The following conditions might occur:

1. During normal operation, the LED is solid **green** for more than 30 seconds. This indicates all the hardware is functioning properly and the Ethernet Adapter has detected the presence of the network. It does not mean the Ethernet Adapter has an IP address or is attached to a printer queue.
2. If the LED is rapidly flashing **green** (9 times/sec), the Ethernet Adapter has not detected the presence of a network cable. To solve the problem:
 - Verify that the network cable is appropriate for the network and has an RJ-45 connector.
 - Turn the printer power off (○). Remove the network cable from the Ethernet Adapter. Plug the network cable back in until you hear a positive click. Check the other end of the cable in the same manner. Turn the printer power on; if the Ethernet Adapter still does not detect a cable, continue.
 - Connect the Ethernet Adapter to a known good network connection. If the Ethernet Adapter is still unable to detect the network cable, contact Technical Support for assistance.



Important • Cables with a rating higher than CAT-6 have **not** been tested.

3. If the LED is slowly flashing green (1 time/sec), the Ethernet Adapter is trying to print a job. If the job does not print, check the following:
 - Verify that the printer has media and ribbon. If the printer is showing any errors, it is unlikely that the Ethernet Adapter can send data to the printer. The LED continues to blink until the printer malfunction is resolved or until the printer is turned off (○).
 - Flashing red indicates the Power On Self Test (POST) is in progress.
4. If the LED is solid **red** for more than 30 seconds, the Ethernet Adapter has failed the POST. A failed POST can be caused by any of the following:
 - The printer attached to the Ethernet Adapter device is malfunctioning. Turn the printer power off, wait 10 seconds, then turn the printer back on (|).
 - If the Ethernet Adapter still fails the POST, the Ethernet Adapter has a hardware problem that can be fixed only by replacing or returning the unit. Contact Technical Support for repair or replacement information.

5. If the LED is alternately flashing **red** and **green** for longer than 2 minutes, the Ethernet Adapter is in firmware-download mode. This means it is waiting for new firmware data to be sent before it continues normal functioning. Perform the following:
 - If the Ethernet Adapter was purposely put into firmware-download mode, finish the download with the proper update utility. Contact the Zebra web site at <http://www.zebra.com> to download this utility.
 - Contact Technical Support for help recovering this unit.

Network Status/Activity Indicator

A bi-color Status/Activity LED indicates network speed, established link, and network activity.

1. If the LED is off, no link was established.
2. If the LED is solid **green**, a 100Base link is established.
3. If the LED is flashing **green**, a 100Base link is established and network activity has been detected.
4. If the LED is solid **orange**, a 10Base link is established.
5. If the LED is flashing **orange**, a 10Base link was established and network activity has been detected.

Network activity detected by this LED does not mean the activity is data for the print server. The activity is all activity on the network seen on the Ethernet Adapter.



Technical Specifications

General Specifications

- Full color dye-sublimation card printing
- 25 seconds per card single-sided color printing (YMCKO)
- Monochrome thermal transfer printing
- 4 seconds per card monochrome

Ribbon Specifications

- Patented ribbon core and spindle system
- *i* Series technology featuring RFID



Note • "*i* Series" Printers require the use of "*i* Series" ribbons for full color printing. For more information about Card Media and Ribbons available from Zebra Technologies Corp., please refer to the Media List on the Windows Drivers and User Documentation CD supplied with this printer.

Card Specifications

- Types: PVC or Composite
- Card Width/length ISO CR-80 - ISO 7810, 2.125" (54 mm) x 3.375" (86 mm)
- Option: Magnetic Stripe - ISO 7811
- Card thickness: 10-60 mil (0.25-1.5 mm) \pm 10%
- Card feeder capacity: up to 100 cards (30mil) (Optional high-capacity feeder: up to 220 cards)
- Card output hopper capacity: 100 cards (30mil)

Bar Codes

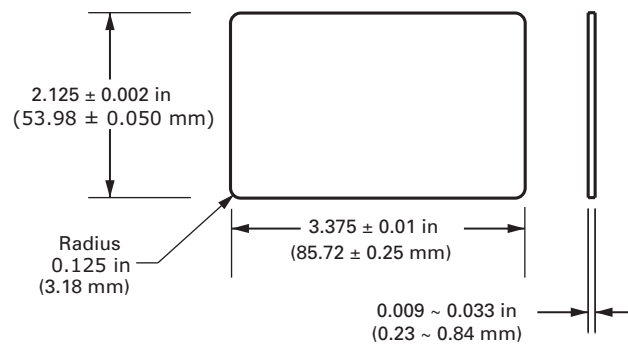
- Code 39, Code 128 B & C with & without check digit
- 2 of 5 and 2 of 5 interleaved
- UPC-A, EAN8, and EAN13
- PDF-417 2D bar code and other symbologies available via Windows printer driver

Fonts

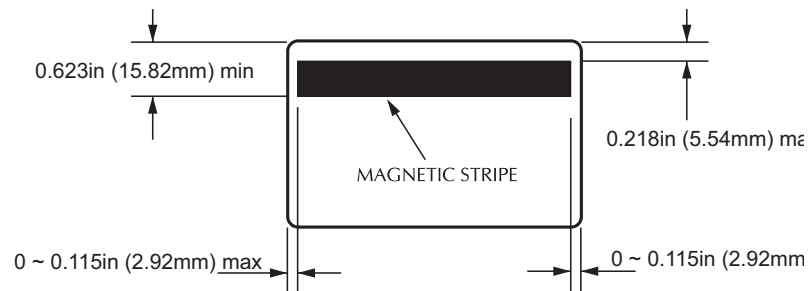
- Arial and Arial Bold
- True Type fonts available via Windows Driver

Card Dimensions

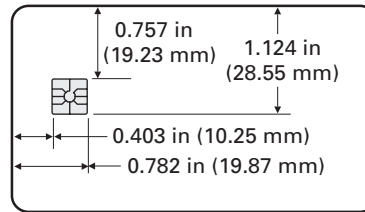
ISO Standard 7810 Dimensions for Plain Card



ISO Standard 7811 Dimensions for Magnetic Stripe Card



Contact Location for Smart Card ISO Standard 7816



Bi-Directional Communications Interfaces

- USB
- Built-in Ethernet (optional)

Mechanical Specifications

- Width: 18.2 in (462 mm)
- Depth: 9.4 in (239 mm)
- Height: 10.1 in (256 mm)
- Weight: 15.5 lbs (7 kg)

Electrical

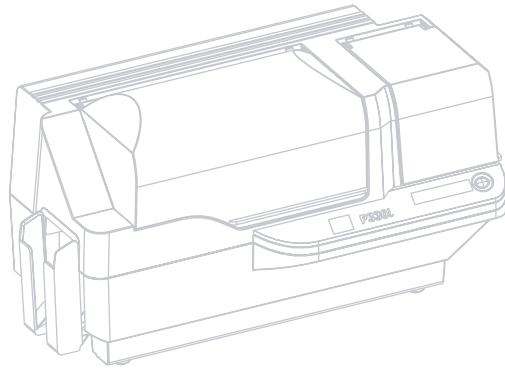
- 110 ~ 230 Volts AC \pm 10% (100 - 254 V), 60 ~ 50 Hz \pm 3Hz (47 - 63 Hz)
- FCC Class B, CE, UL, and CUL approved

Environmental

- Operating Temperature: 60°F to 86°F (15°C to 30°C)
- Operating Humidity: 20% to 65% non condensing
- Storage Temperature: 23°F to 158°F (-5°C to 70°C)
- Storage Humidity: 20% to 70% non-condensing
- Ventilation: Reasonably dust free air environment

Options

- Built-in Ethernet network communications
- Three track magnetic stripe encoder (standard and reverse)
- High capacity feeder (220 30-mil cards)
- Contactless encoding (MIFARE and HID iCLASS)
- Contact encoding (Station and encoder)





Magnetic Card Encoder

Introduction

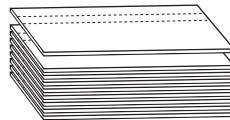
This Appendix includes operation and maintenance requirements for the P330i Printer with the optional magnetic card stripe encoder. (See Chapter 2 for location of the Magnetic Card Stripe Encoder.)

The magnetic encoder can be set for either high or low coercivity. Use the printer driver to change the encoder setting.

Media Loading Orientation

The magnetic encoder may be installed with the read/write head positioned below the card path. Magnetic Card Stripe Encoder upgrade kits are also available.

When loading cards with magnetic stripes into the card feeder, please ensure that the magnetic stripe is down and nearer to the rear of the printer.



Also available are Printer models with the Magnetic Read/Write head positioned above the card path. When loading cards into one of these models, ensure that the magnetic stripe is up and nearer to the rear of the printer.



Sample Encoding Program

Refer to the Programmer's Manual (part number 98001-001).



Note • ONLY USE cards that comply with ISO 7810 and 7811 standards for magnetic stripe cards. The magnetic stripe must be flush to the surface of the card to work properly. Never use cards which have taped-on magnetic stripes.

Magnetic Encoder Cleaning

The Magnetic Encoder Read/Write Head is cleaned as part of the printer cleaning process. If the frequency of encoding errors increases, the magnetic encoder head may need cleaning.

When to Clean

When the LCD Panel displays the message **ENCODING ERROR** at an increasing frequency.

How to Clean

1. Leave power on.
2. Press and hold the front panel button for a few seconds.
3. Open the main cover and release the Print Head Carriage latch, raise the Print Head Carriage, and remove the ribbon. Close the Print Head Carriage.
4. Close the main cover.
5. Open the Card Feeder cover and remove any cards.
6. Insert a Pre-Saturated Cleaning Card (provided) into the slot below the Card Feeder. The cleaning card will feed into the printer and carry out the cleaning process. Repeat the process with a new cleaning card if necessary.
7. Additional cleaning of the magnetic head can be accomplished using the alcohol-soaked swabs provided with the printer. Follow the directions given in Section 4.

ISO Standard Encoding

Track #	Field Separator	Track Density	Valid Characters	# of characters
1	^	210 BPI*	Alphanumeric (ASCII 20~95†)	79‡
2	=	75 BPI*	Numeric (ASCII 48~62)	40‡
3	=	210 BPI*	Numeric (ASCII 48~62)	107‡

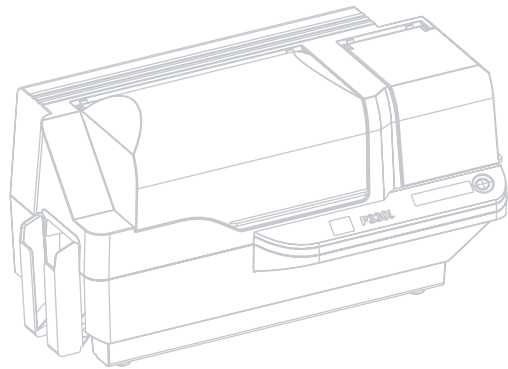
*Bits per inch

†Except the “?” character

‡Including Start, Stop, and LRC characters. Also note that these 3 characters are automatically managed by the magnetic encoder according to the ISO Standard Norms.



Note • Refer to the Card Printer Programmer’s Manual for complete programming information.





Smart Card Contact Station

This section contains information on the additional operations of a P330i Printer equipped with the optional Smart Card Contact Station. (See Chapter 2 for location.)

Introduction

Smart Cards can have a built-in microcomputer and/or memory to store fingerprints, voice recognition patterns, medical records, and other such data. The P330i Printer may be equipped with an optional contact station for programming Smart Cards (ISO 7816). This printer model responds to commands that position the card at the contact station, where the printer connects to the contacts on the Smart Card. All other printer operations remain the same as the standard P330i model.

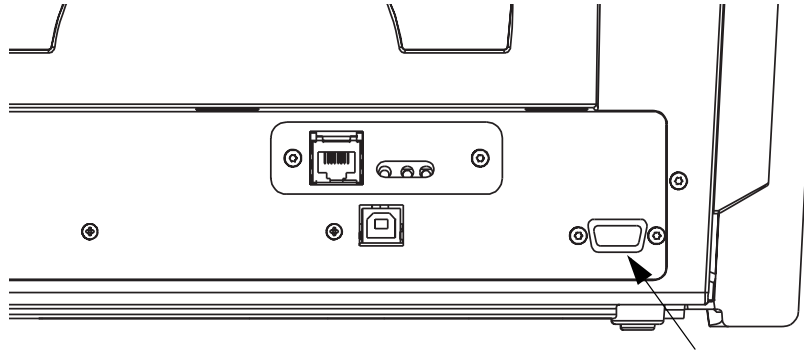
Media Loading Orientation

Orient the cards with the gold-plated Smart Card contacts at the top surface of the card and facing to the left.



Smart Card Contact Station Interface

When a command to the printer interface sends a card to the Smart Card Contact Station, the printer connects the Smart Card Contact Station to the female DB-9 connector on the rear of the printer.



DB-9 Connector location for Smart Card Contact Station

An attached external Smart Card Programmer can be used to program Smart Card chips. The following table shows the Smart Card Contact Points.

DB-9 Pin	Smart Card Contact Points	DB-9 Pin	Smart Card Contact Points
1	C1 (VCC)	6	C6 (Vpp)
2	C2 (Reset)	7	C7 (I/O)
3	C3 (Clock)	8	C8 (RFU)
4	C4 (RFU)	9	(GND when chip is at station)
5	C5 (GND)		

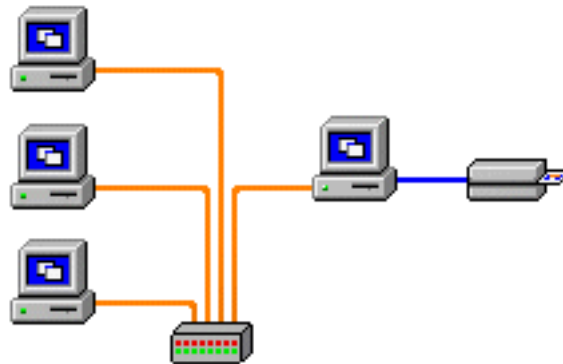


Connecting to a Network

Card printers can be connected to an Ethernet network in three ways.

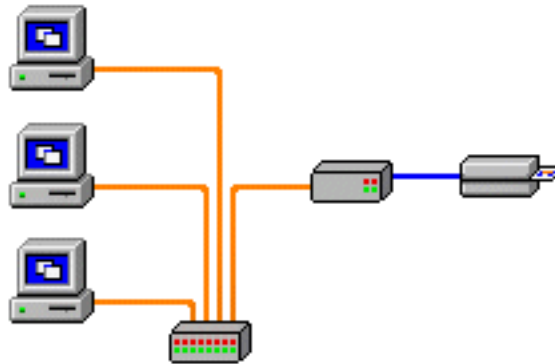
Printer Sharing

In printer sharing, the printer is connected locally to the host computer and configured to be shared to other client computers. Client computers connect to the printer over the network through the host computer.



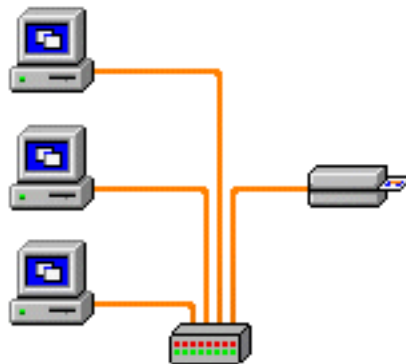
External Print Server

A stand alone device that acts as a server on the network specifically for receiving print jobs and passing them to the printer. Client computers connect to the print server over a network.



Internal Print Server

Similar to an external print server, except the print server is integrated into the printer. This removes the need for a separate power supply and separate device drivers. This is the simplest way to network a printer.





Worldwide Sales & Support

Sales and Support Locations

The Americas:

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