

# User Guide

## **RS-232C/RS-422 Serial Interface Option**

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GEG-99020D

## How This Guide is Organized

### *Chapter 1 - Installing the Serial Interface in 21 Page-Per-Minute Printers*

This chapter explains the procedure for installing the RS-232C/RS-422 Serial Interface option in 21 page-per-minute laser printers.

### *Chapter 2 - Installing the Serial Interface in 28 Page-Per-Minute Printers*

This chapter explains the procedure for installing the RS-232C/RS-422 Serial Interface option in 28 page-per-minute laser printers.

### *Chapter 3 - Installing the Serial Interface in 32, 40 and 45 Page-Per-Minute Printers*

This chapter explains the procedure for installing the RS-232C/RS-422 Serial Interface option in 32, 40 and 45 page-per-minute laser printers.

### *Chapter 4 - Using the RS232-C/RS422 Serial Interface*

This chapter lists the Serial Interface setup features and available selections via the control panel menus. The Serial Interface connector pinouts are listed. Troubleshooting error messages appearing on the printer's control panel are also discussed.

### *Chapter 5 - Troubleshooting*

This chapter discusses troubleshooting error messages appearing on the printer's control panel. Sources of help, information and technical support are also discussed.

## Features of the RS-232C/RS-422 Serial Interface

The RS-232C/RS-422 Serial Interface for your printer provides the following:

- RS-232C or RS-422 support
- Baud rate support from 1200 bps to 115200 bps
- DB-25 female connector
- Quick and easy installation requiring no tools
- Control panel menus enable fast and easy configuration and troubleshooting.

## Printer Requirements

Before installing the RS-232C/RS-422 Serial Interface option, you will need to make sure of the following two requirements:

- Make sure that your printer has a free network port access slot.
- Make sure that your printer's "Product Version" is V2.03a or later. If you are unsure of your printer's version of code, print a Configuration Summary as described in the user's guide that came with your printer. If your printer has an earlier version of code contact your point of purchase.

## Safety Precautions

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### CAUTION: Handling ESD-Sensitive Parts

Many electronic parts use parts that are known to be sensitive to electrostatic discharge (ESD). To prevent damage to ESD-sensitive parts, follow the instructions below in addition to all the usual precautions, such as turning off power before removing logic boards:

- Keep the ESD-sensitive part in its original shipping container (a special “ESD bag”) until you are ready to install the part into the machine.
  - Make the least-possible movements with your body to prevent an increase of static electricity from clothing fibers, carpets, and furniture.
  - Use an ESD wrist strap on your wrist if available. Connect the wrist band to the system ground point. This discharges any static electricity in your body to the machine.
  - Hold the ESD-sensitive part by its edge connector cover; do not touch its pins. If you are removing a pluggable module, use the correct tool.
  - Do not place the ESD-sensitive part on any metal surface; if you need to put down the ESD-sensitive part for any reason, first put it into its special bag.
  - Metal surfaces are electrical grounds. They increase the risk of damage because they make a discharge path from your body through the ESD-sensitive part. (Large metal objects can be discharged paths without being grounded.)
  - Prevent ESD-sensitive parts from being accidentally touched by other personnel.
  - Take extra care working with ESD-sensitive parts when cold weather heating is used because low humidity increases static electricity.
- 



**WARNING:** To prevent the danger of electric shock, before installing any options be sure to turn the power switch of the printer to the off [O] position and disconnect the power cord from the wall outlet.

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# Chapter 1

## **Installing the Serial Interface in 21 Page-Per-Minute Printers**

### **In this Chapter . . .**

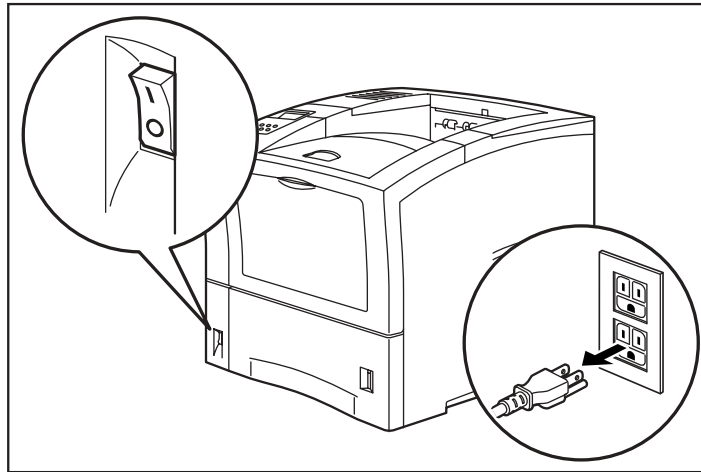
- “About this Chapter” on page 1-2
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## About this Chapter

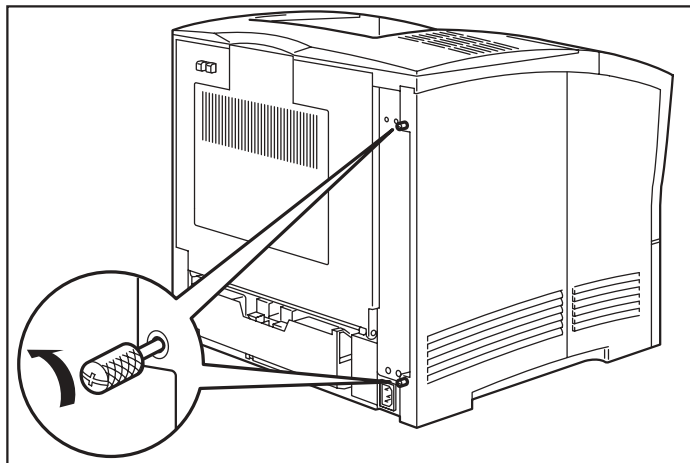
This chapter explains the procedure for installing the RS-232C/RS-422 Serial Interface option in 21 page-per-minute laser printers.

## Installing the RS-232C/RS-422 Serial Interface in 21 Page-Per-Minute Printers

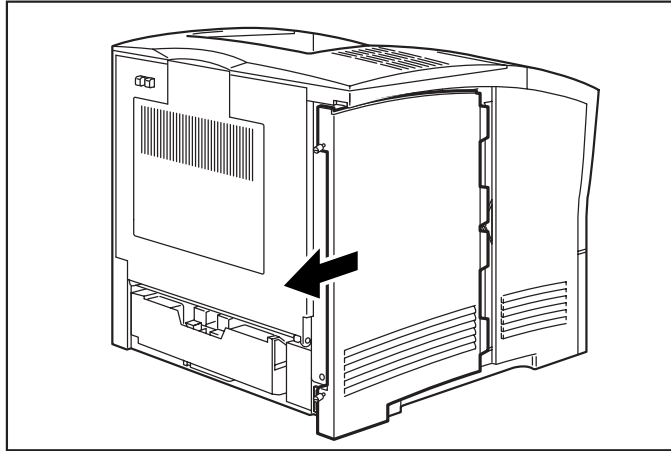
1. Carefully review the safety precautions in the front of this guide before starting this installation procedure.
2. Ensure that the printer power switch is set to the OFF [ O ] position and unplug the power cord from the AC outlet.



3. Loosen the thumbscrews at the top and bottom of the left side cover by turning them in a counter-clockwise direction.



4. Slide the cover towards the rear of the printer and then downwards to remove it.

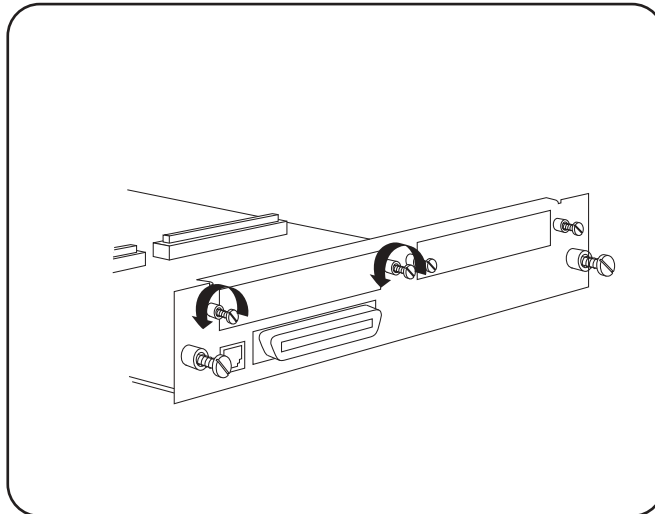


5. Turning thumbscrews counter-clockwise, remove the blank metal plate covering one of the available network ports on the controller bracket.

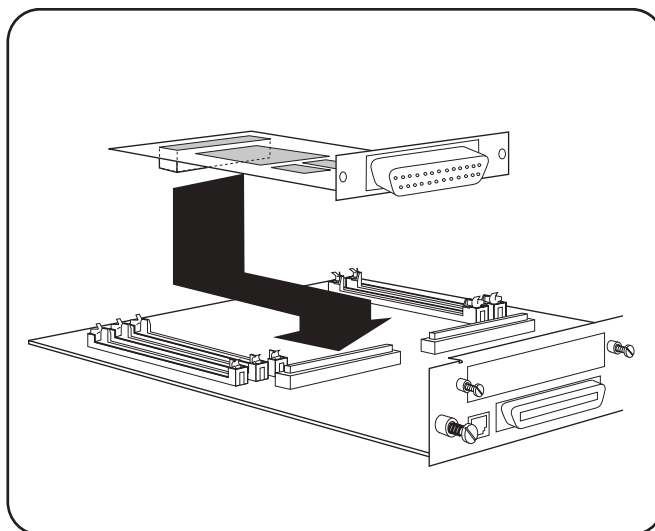
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**NOTE:** It is not necessary to remove the controller from your printer to install the serial interface. For clarity, the following illustrations depict a controller removed from the printer. When facing the front of the controller as shown below, network port 1 is on the right and network port 2 is on the left. However, when installed in the printer, network port 1 is on the bottom and network port 2 is on top. In the following few steps, a serial network interface is being installed in network port 2.

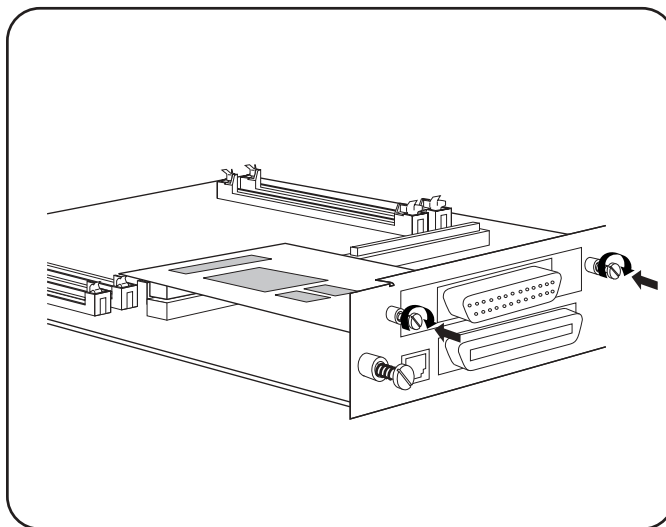
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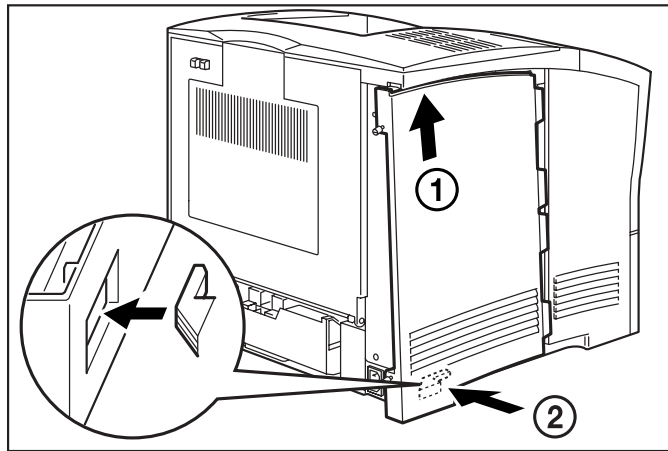
6. While aligning the front bracket of the serial interface assembly to the two respective thumbscrews on the controller assembly bracket, firmly seat the 80-pin male connector on the underside of the interface to the 80-pin female connector on the controller assembly.



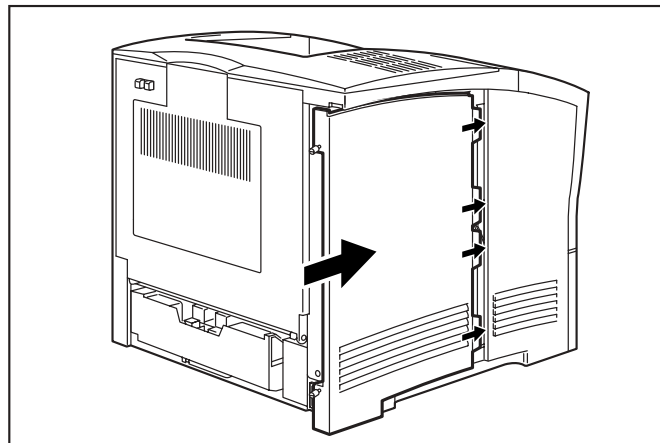
7. Secure the serial interface assembly to the controller bracket by tightening the two smaller thumbscrews in a clockwise direction.



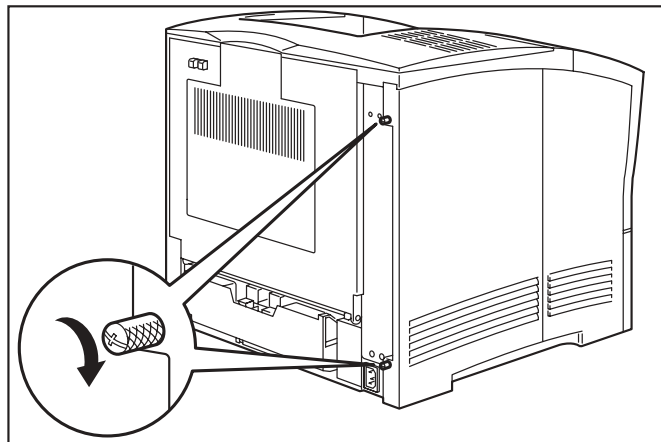
8. Insert the top part of the left side cover into the printer. Ensure the locking tab aligns with the hole in the printer's side.



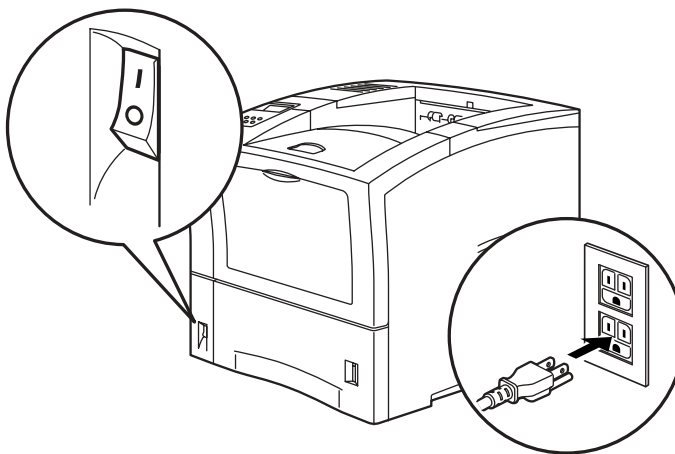
9. Slide the side cover towards the front of the printer to install it.



10. Tighten both thumbscrews in a clockwise direction.



- 11.** Connect the power cord to the wall outlet and turn the printer power switch to the ON [ I ] position.



The installation of your RS-232C/RS-422 serial interface option in your 21 page-per-minute printer is now complete. Proceed to [Chapter 4 Using the RS-232C/RS-422 Serial Interface](#).

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# Chapter 2

## Installing the Serial Interface in 28 Page-Per-Minute Printers

### In this Chapter . . .

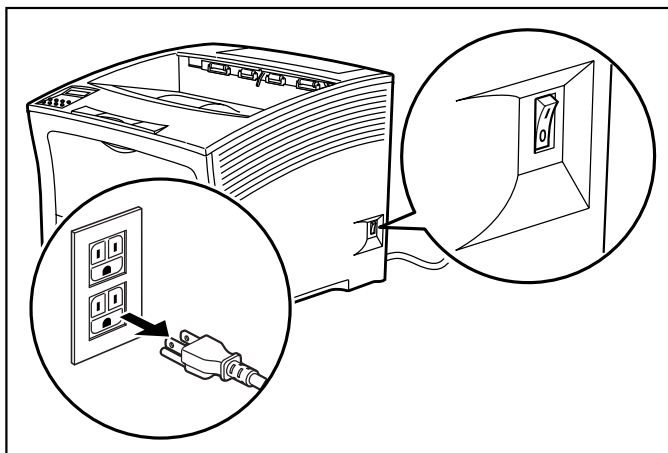
- “About this Chapter” on page 2-2
- “Installing the RS-232C/RS-422 Serial Interface in 28 Page-Per-Minute Printers” on page 2-2

## About this Chapter

This chapter explains the procedure for installing the RS-232C/RS-422 Serial Interface option in 28 page-per-minute laser printers.

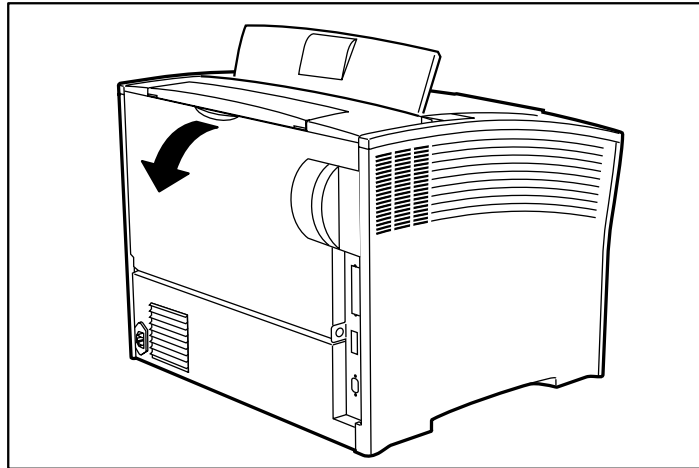
## Installing the RS-232C/RS-422 Serial Interface in 28 Page-Per-Minute Printers

1. Carefully review the safety precautions in the front of this guide before starting this installation procedure.
2. Ensure that the printer power switch is set to the OFF [ O ] position and disconnect the power cord from the wall outlet.

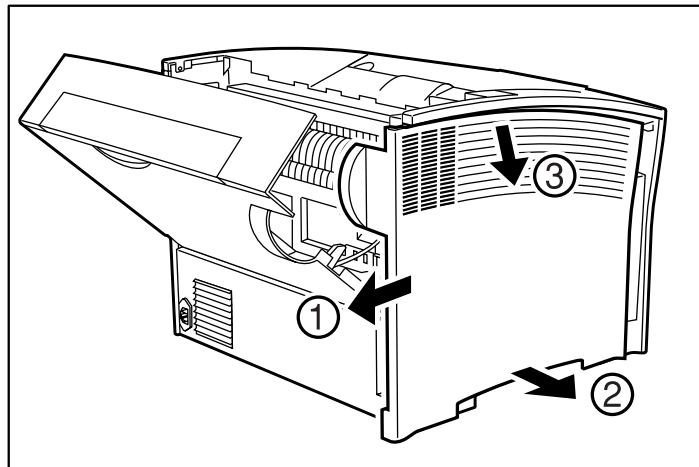




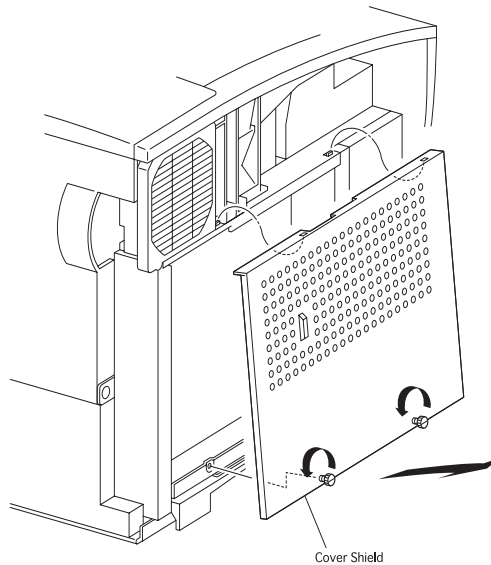
3. Locate the recessed area near the top of the rear of the printer and pull on the recessed area to open the rear cover.



4. Remove the cover on the left side of the printer by first sliding the cover toward the rear of the printer, then pulling the bottom of the cover toward you and then down.



5. Remove the cover shield by first loosening the two thumbscrews in a counter-clockwise direction and then gently pulling towards you.

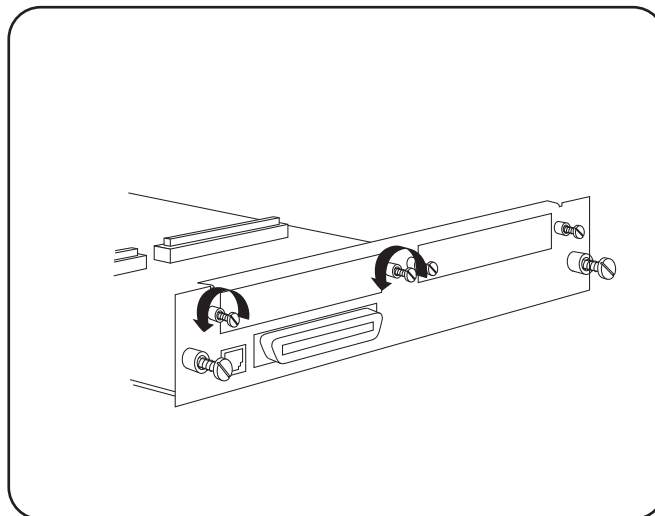


6. Turning thumbscrews counter-clockwise, remove the blank metal plate covering one of the available network ports on the controller bracket.

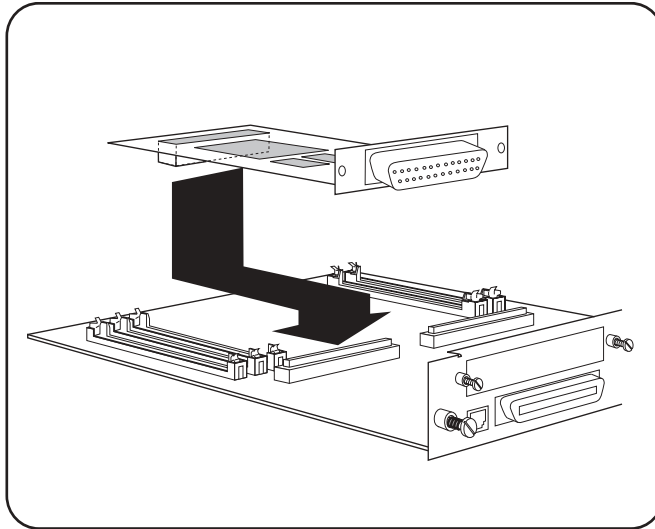
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**NOTE:** It is not necessary to remove the controller from your printer to install the serial interface. For clarity, the following illustrations depict a controller removed from the printer. When facing the front of the controller as shown below, network port 1 is on the right and network port 2 is on the left. However, when installed in the printer, network port 1 is on the bottom and network port 2 is on top. In the following few steps, a serial network interface is being installed in network port 2.

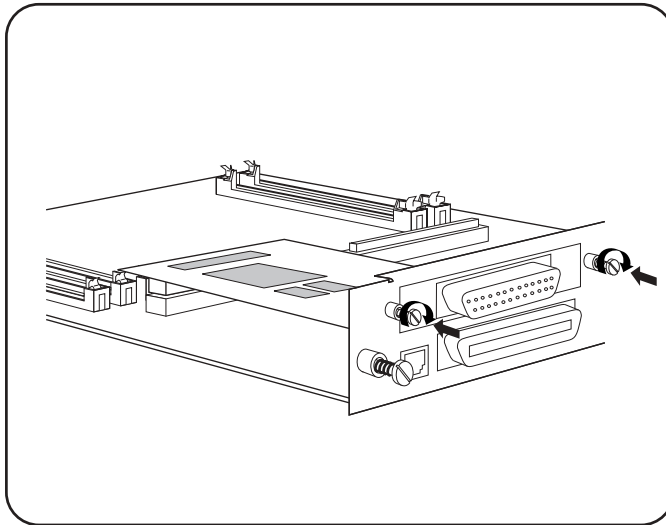
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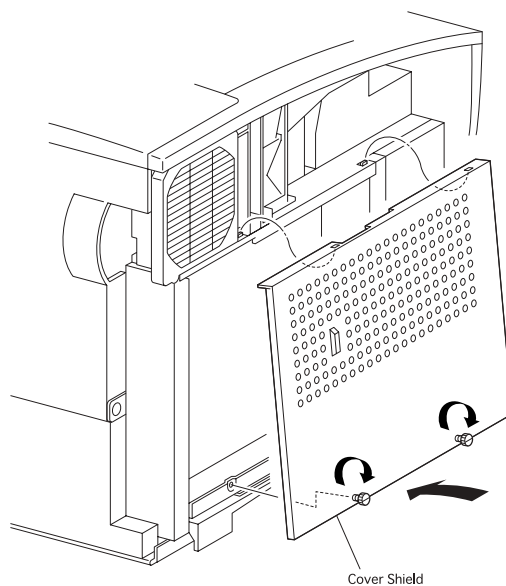
7. While aligning the front bracket of the serial interface assembly to the two respective thumbscrews on the controller assembly bracket, firmly seat the 80-pin male connector on the underside of the interface to the 80-pin female connector on the controller assembly.



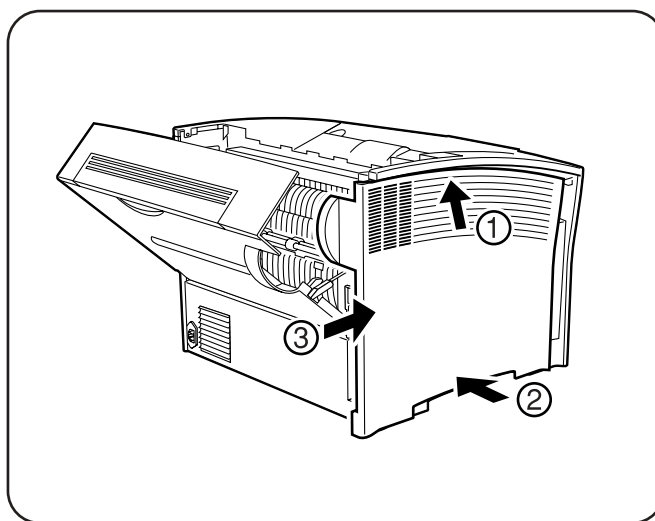
8. Secure the serial interface assembly to the controller bracket by tightening the two smaller thumbscrews in a clockwise direction.



9. Replace the cover shield as shown and tighten the two thumbscrews.



10. Replace the side cover of the printer.



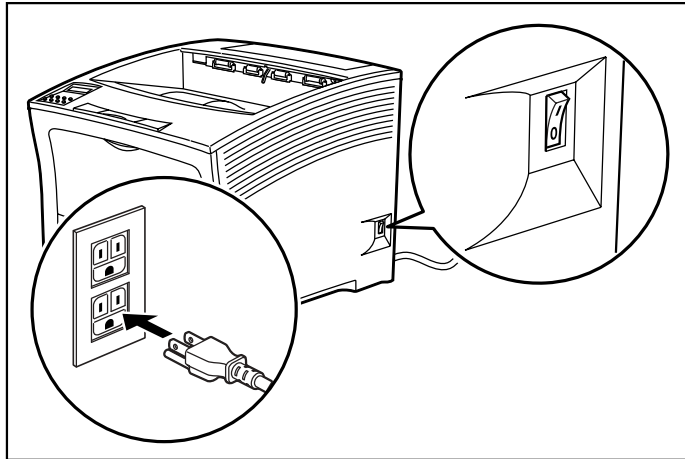
11. Connect the 25-pin serial cable to the 25-pin serial connector of the serial interface.

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**NOTE:** See “RS-232C Serial Cable Pin Assignments” on page 4-7 and “RS-422 Serial Cable Pin Assignments” on page 4-7.

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12. Turn the printer power switch to the ON [ I ] position.



The installation of your RS-232C/RS-422 serial interface option in your 28 page-per-minute printer is now complete. Proceed to [Chapter 4 Using the RS-232C/RS-422 Serial Interface](#).

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# Chapter 3

## Installing the Serial Interface in 32, 40 and 45 Page-Per-Minute Printers

### In this Chapter . . .

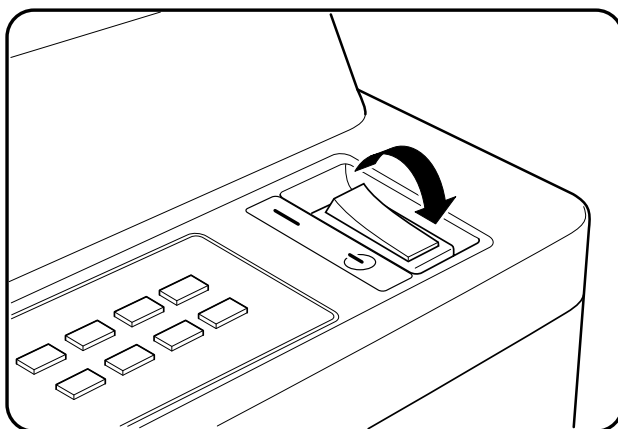
- “About this Chapter” on page 3-2
- “Installing the RS-232C/RS-422 Serial Interface in 32, 40 and 45 Page-Per-Minute Printers” on page 3-2

## About this Chapter

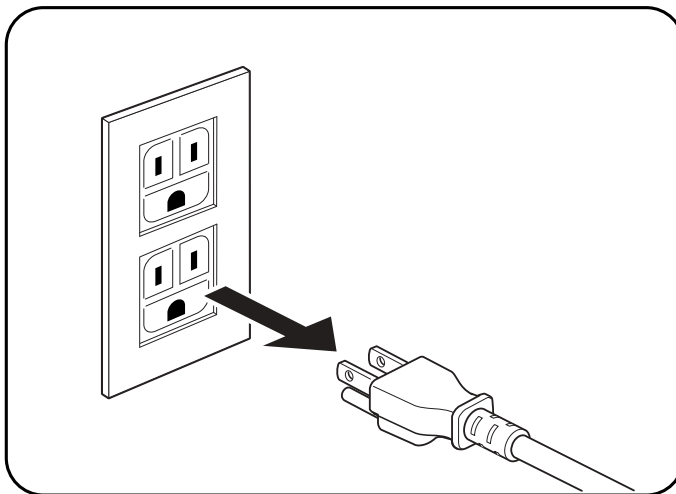
This chapter explains the procedure for installing the RS-232C/RS-422 Serial Interface option in 32, 40 and 45 page-per-minute laser printers.

## Installing the RS-232C/RS-422 Serial Interface in 32, 40 and 45 Page-Per-Minute Printers

1. Carefully review the safety precautions in the front of this guide before starting this installation procedure.
2. Ensure that the printer power switch is set to the OFF [ O ] position.

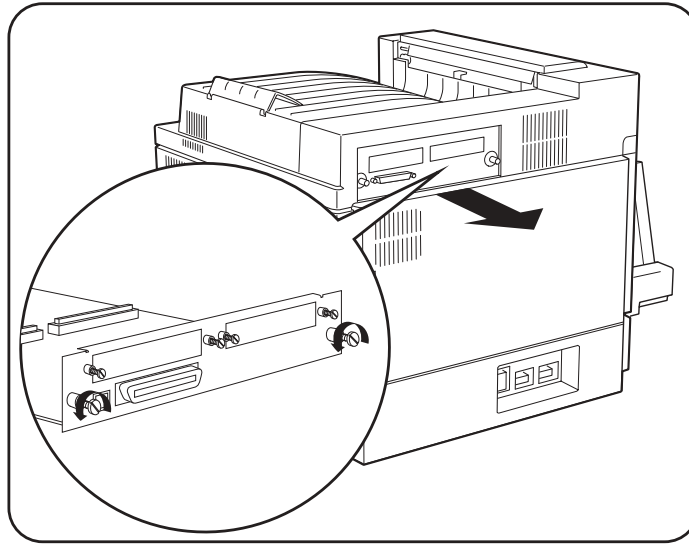


3. Disconnect the power cord from the wall outlet.





4. Turn thumbscrews on controller assembly counterclockwise until loose and gently pull controller assembly towards you to remove from printer.



5. Turning thumbscrews counter-clockwise, remove the blank metal plate covering the available network port access.

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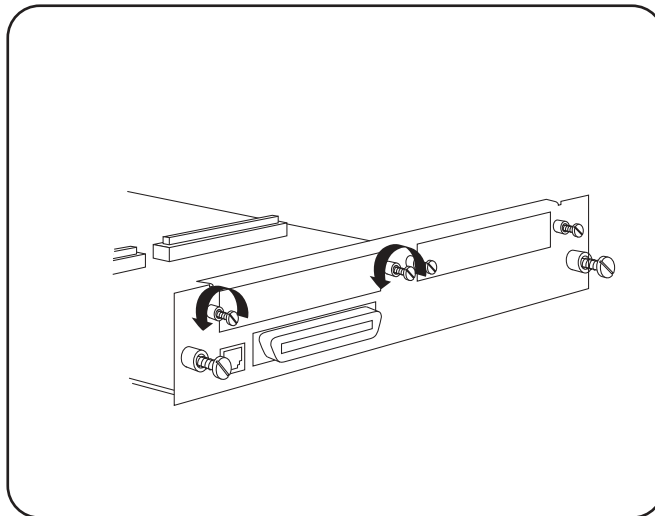
**NOTE:** Some models of printer have metric screws instead of thumbscrews

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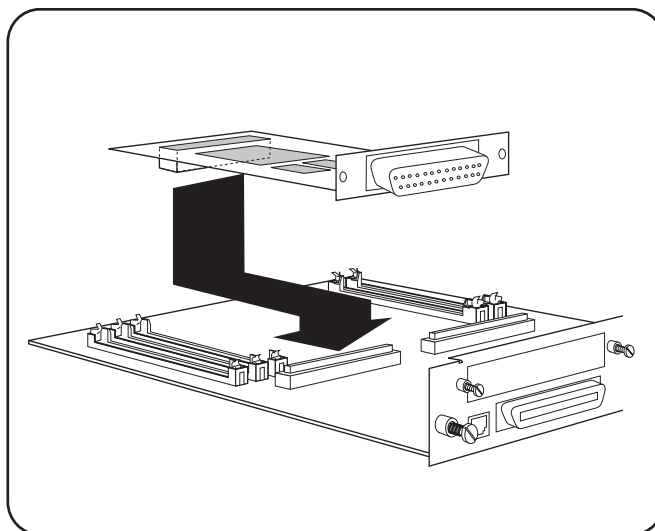
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**NOTE:** When facing the front of the controller as shown below, network port 1 is on the right and network port 2 is on the left. In the following few steps, a serial network interface is being installed in network port 2

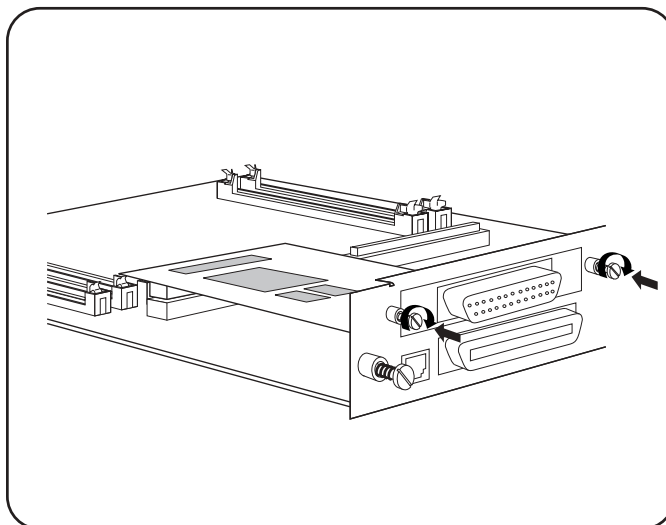
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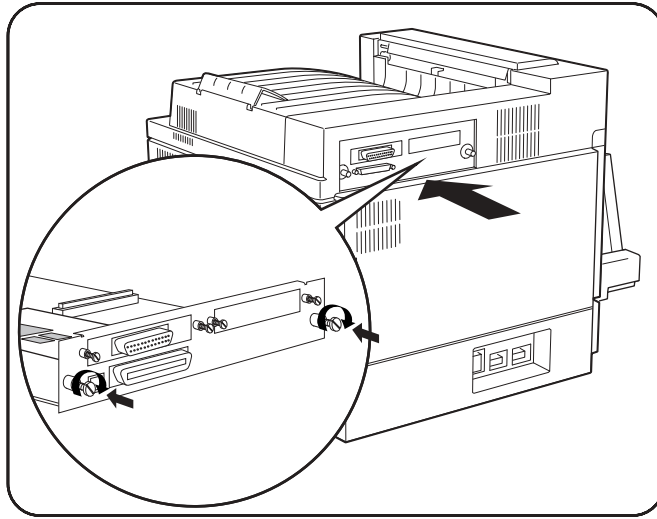
6. While aligning the front bracket of the interface assembly to the two respective thumbscrews on the controller assembly bracket, firmly seat the 80-pin male connector on the underside of the interface to the 80-pin female connector on the controller assembly.



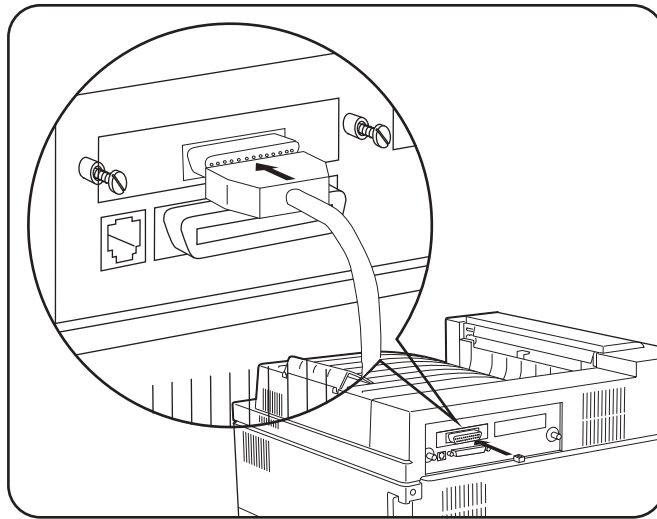
7. Secure the serial interface assembly to the controller bracket by tightening the two smaller thumbscrews in a clockwise direction, or metric screws if so equipped.



8. Return the controller to the printer. Ensure that it is firmly seated in the printer and tighten thumb-screws in a clockwise direction.



9. Connect the 25-pin serial cable to the 25-pin serial connector of the RS232C/RS-422 serial interface.

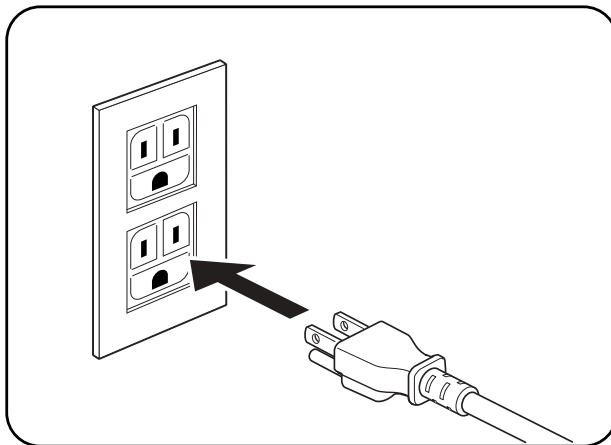


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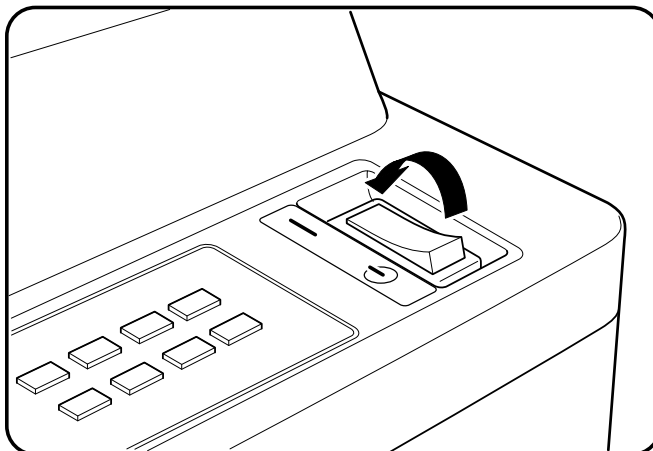
**NOTE:** See “RS-232C Serial Cable Pin Assignments” on page 4-7 or “RS-422 Serial Cable Pin Assignments” on page 4-7.

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- 10.** Connect the power cord to the wall outlet.



- 11.** Turn the printer power switch to the ON [ I ] position.



The installation of your RS-232C/RS-422 serial interface option in your printer is now complete. Proceed to [Chapter 4 Using the RS-232C/RS-422 Serial Interface](#).

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# Chapter 4

## Using the RS-232C/RS-422 Serial Interface

### **In this Chapter . . .**

- “About this Chapter” on page 4-2
- “Control Panel MENU structure” on page 4-2
- “SERIAL SETUP Menu” on page 4-4
- “Disabling the Serial Interface” on page 4-6
- “References for OpenVMS users” on page 4-7
- “RS-232C Serial Cable Pin Assignments” on page 4-7
- “RS-422 Serial Cable Pin Assignments” on page 4-7

## About this Chapter

This chapter lists the Serial Interface setup features and available selections via the control panel menus. The Serial Interface connector pinouts are listed. Troubleshooting error messages appearing on the printer's control panel are also discussed.

## Control Panel MENU structure

When the RS-232C/RS-422 serial interface is installed, the printer control panel menu structure is enhanced as shown in the following table. The shaded areas denote additional features and settings relevant to the RS-232C/RS-422 interface.

Menu				
	Paper Menu			
	Interface Menu			
		Port		
			Parallel	
			Serial	
		Parallel Setup		On
		Serial Setup		Off
			Interpreter	
				Auto Switch
				PCL
				Postscript 3
			Format	
				Normal
				Binary
				Raw
			Serial Mode	
				RS232
				RS422
			Baud Rate	
				1200
				2400
				4800
				9600
				19200
				38400
				57600
				115200
			Data Bits	
				7
				8
			Stop Bits	
				1
				2
			Parity	

				None
				Even
				Odd
			DTR Ready/Busy	
				On
				Off
			DTR Onl/Offl	
				On
				Off
			DTR Error	
				On
				Off
			RTS Ready/Busy	
				On
				Off
			RTS Onl/Offl	
				On
				Off
			RTS Error	
				On
				Off
			XON Ready/Busy	
				On
				Off
			XON Onl/Offl	
				On
				Off
			XON Error	
				On
				Off
			DTR Polarity	
				High
				Low
			RTS Polarity	
				High
				Low
			Robust XON	
				On
				Off
	PS Menu			
	PCL Menu			
	System Menu			

**NOTE:** The structure of your display menus may vary slightly depending on the options installed in your printer.

## SERIAL SETUP Menu

The following selections becomes available within a SERIAL SETUP submenu of the INTERFACE menu when the RS-232C/RS-422 serial interface is installed.

### Interpreter

AVAILABLE SELECTIONS	Auto Switch PCL Postscript 3
DEFAULT	Auto Switch

### Format

AVAILABLE SELECTIONS	Normal Binary Raw
DEFAULT	Raw

### Serial Mode

AVAILABLE SELECTIONS	RS232 RS422
DEFAULT	RS232

### Baud Rate

AVAILABLE SELECTIONS	1200 2400 4800 9600 19200 38400 57600 115200
DEFAULT	9600

### Data Bits

AVAILABLE SELECTIONS	7 8
DEFAULT	8

### Stop Bits

AVAILABLE SELECTIONS	1 2
DEFAULT	1



**Parity**

AVAILABLE SELECTIONS	None Even Odd
DEFAULT	None

**DTR Ready/Busy**

AVAILABLE SELECTIONS	Off On
DEFAULT	Off

**DTR Onl/Offl**

AVAILABLE SELECTIONS	Off On
DEFAULT	Off

**DTR Error**

AVAILABLE SELECTIONS	Off On
DEFAULT	Off

**RTS Ready/Busy**

AVAILABLE SELECTIONS	Off On
DEFAULT	Off

**RTS Onl/Offl**

AVAILABLE SELECTIONS	Off On
DEFAULT	Off

**RTS Error**

AVAILABLE SELECTIONS	Off On
DEFAULT	Off

**XON Ready/Busy**

AVAILABLE SELECTIONS	Off On
DEFAULT	Off

### XON On/Off

AVAILABLE SELECTIONS	Off On
DEFAULT	Off

### XON Error

AVAILABLE SELECTIONS	Off On
DEFAULT	Off

### DTR Polarity

AVAILABLE SELECTIONS	High Low
DEFAULT	High

### RTS Polarity

AVAILABLE SELECTIONS	High Low
DEFAULT	High

### Robust XON

AVAILABLE SELECTIONS	Off On
DEFAULT	Off

## Disabling the Serial Interface

The following selection becomes available within the PORT submenu of the INTERFACE menu when the RS-232C/RS-422 serial interface is installed.

### Serial

The **Serial** option enables you to turn off the serial port on the interface. This selection is often used to permit uninterrupted communication to other ports such as the parallel or other network ports.

AVAILABLE SELECTIONS	On Off
DEFAULT	On

## References for OpenVMS users

You can print to your laser printer via the serial interface option from an OpenVMS system, either directly connected to the system or through a network device such as a terminal server.

It is recommended that DECprint Supervisor (DCPS) be used for printing. Please see the "Setting Up Printers" chapter of the *DCPS System Manager's manual* for information on creating a DCPS print queue.

If DCPS will not be used, please see the "Setting Up and Maintaining Queues" chapter of the *OpenVMS System Manager's manual* for information on setting up print queues using the OpenVMS print symbiont.

## RS-232C Serial Cable Pin Assignments

Eight pins of the 25-pin serial cable are utilized for the RS-232C standard:

Pin No.	Signal	Direction	Description
1	GND		Frame Ground
2	TXD	Out	Transmit Data
3	RXD	In	Receive Data
4	RTS		Request To Send
5	CTS	In	Clear To Send
6	DSR	In	Data Set Ready
7	GND		Logic Ground
20	DTR	Out	Data Terminal Ready

## RS-422 Serial Cable Pin Assignments

Five pins of the 25-pin serial cable are utilized for the RS-422 standard:

Pin No.	Signal	Direction	Description
1	GND		Frame Ground
15	RXD -	In	Receive Data +
17	RXD +	In	Receive Data -
19	TXD -	Out	Transmit Data -
25	TXD +	Out	Transmit Data +

...



# Chapter 5

## Troubleshooting

### In this Chapter . . .

- “About this Chapter” on page 5-2
- “Control Panel Error Messages” on page 5-2
- “Obtaining Help and Information” on page 5-2
- “Technical Support” on page 5-3

## About this Chapter

This chapter discusses troubleshooting error messages appearing on the printer's control panel. Sources of help, information and technical support are also discussed.

## Control Panel Error Messages

The format of control panel error messages is:

NET $x$ : ERROR  $y$

where  $x$  indicates the network slot where the serial interface is installed

and

where  $y$  reflects the error number as shown below:

Error No.	Description	Action Required
1	Overrrun Error	Verify that all DTS, RTS and XON settings within the SERIAL SETUP menu are configured correctly. Check the pinout assignments of cabling between the printer and the host.
2	Parity Error	Verify that the PARITY setting within the SERIAL SETUP menu is configured correctly. Check the pinout assignments of cabling between the printer and the host.
3	Framing Error	Verify that the SERIAL MODE, BAUD RATE, DATA BITS, STOP BITS and PARITY settings within the SERIAL SETUP menu are configured correctly.
4	Flow Control Error	Verify that all DTS, RTS and XON settings within the SERIAL SETUP menu are configured correctly. Check the pinout assignments of cabling between the printer and the host.

### Example

An error message of:

NET2: ERROR3

indicates that the serial interface which is located in network slot 2 has experienced a framing error.

## Obtaining Help and Information

Several sources of help and information are available, depending on the type of help you need:

### Your Point of Purchase

Your local vendor from whom you purchased this printer may be best equipped to help you. Your vendor has specially trained service technicians available to answer questions and the equipment to analyze your printer problems.

### Your Application Vendor

Often, “printing” problems have more to do with the application being used than with the printer. In this case, the application manufacture is the best source of help.

## Technical Support

Technical Support is available world-wide. Please refer to your point of purchase for the appropriate contact in your area.

When calling for assistance, please have the following information readily available:

- Your phone number, fax number and shipping address.
- A description of the problem.
- The printer model.
- The type of host computer you are using.
- The type and version of operating system you are using.
- The application and version you are using.
- The interface you are using (e.g., network, parallel, serial).
- If using the network interface, the network protocol (TCP/IP, EtherTalk, IPX/SPX, NetBIOS/NetBEUI).
- The printer emulation you are using (e.g., PCL or PostScript).
- A printout of your printer’s Configuration Summary. (Refer to your printer’s *User* manual).
- If you have a printer hardware problem you cannot resolve, provide the error message displayed on the Control Panel. For a list of error messages, refer to your printer’s *User* manual.

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**NOTE:** To confirm that a problem is isolated to the RS-232C/RS-422 Serial Interface, you may want to remove the serial interface from the printer and diagnose the printer using the User’s Manual that came with your printer. If the condition persists, it can be assumed that the problem resides within the printer and not necessarily the serial interface.

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