MAINTENANCE

Your printer requires very little care. Occasional cleaning and replacement of the ribbon cartridge are all that is required.

Lubrication of the printer is not usually necessary.
If the print head carriage does not move smoothly back and forth, clean the printer as described in this chapter. If the problem continues, contact your dealer to determine whether lubrication might be needed.

CLEANING

The front and back covers, the ejection cover, and the acoustic cover of the printer help protect against dust, dirt, and other contaminants. However, paper produces small particles that accumulate inside the printer. This section explains how to clean and vacuum the printer and how to clean the platen and paper bail rollers.

It is easier to clean the printer when the front cover, the ejection cover, and the cut sheet stand and back cover are removed.

Cleaning and Vacuuming the Printer

WARNING
To avoid any possibility of injury, before cleaning the printer, turn off the power to both the printer and the computer, and unplug the printer.

Use the following procedure to clean and vacuum the printer as required:

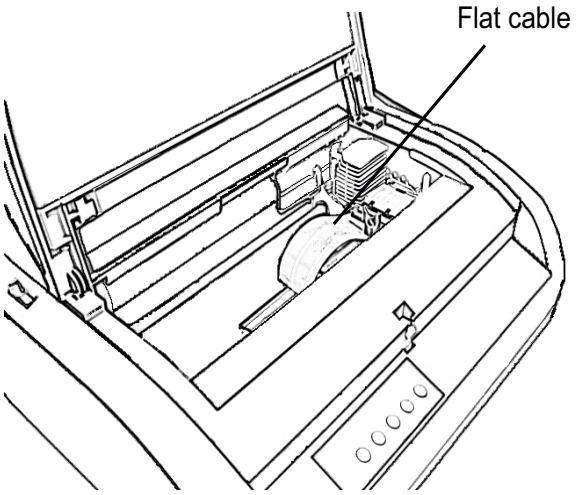
1. Remove any paper from the printer. Make sure that the power is off, and then disconnect the printer power cord.

2. Using a soft vacuum brush, vacuum the exterior of the printer. Be sure to vacuum the air vents at the front, left sides, and bottom of the printer. Also vacuum the cut sheet stand or feeder.

3. Use a soft, damp cloth to wipe the exterior of the printer, including the covers and separator. A mild detergent may be used.

   CAUTION
   Do not use solvents, kerosene, or abrasive cleaning materials that may damage the printer.

4. Open the front cover of the printer and remove the ribbon cartridge. Using a soft vacuum brush, gently vacuum the platen, print head carriage, and surrounding areas. You can easily slide the print head to the left or right when the power is off. Be careful not to press too hard on the flat ribbon cable that extends from the print head carriage.



Printer interior

5. Re-install the ribbon cartridge. Close the front cover.

6. Open the ejection cover. Vacuum the rollers, paper entry slot, and surrounding areas.

7. Raise the cut sheet stand and the back cover. Vacuum the forms tractors and surrounding areas.

Cleaning the Platen and Paper Bail Rollers

Clean the platen and rollers about once a month to remove excess ink. Use the platen cleaner recommended by your supplier and proceed as follows:

1. Apply a small amount of platen cleaner to a soft cloth. Avoid spilling platen cleaner inside the printer.

   CAUTION
   Do not use alcohol to clean the platen. Alcohol may cause the rubber to harden.

2. Place the cloth against the platen and manually rotate the platen knob.

3. To dry the platen, place a dry cloth against the platen and manually rotate the platen knob.

4. Gently wipe the rollers using the cloth moistened with the platen cleaner. Dry the rollers using a dry cloth.

REPLACING THE RIBBON

There are two ways of replacing the ribbon. You can install a new ribbon cartridge in the printer or refill the old ribbon cartridge with new ribbon from a ribbon subcassette. Appendix A lists order numbers for ribbon cartridges and ribbon subcassettes. The following procedure is for ribbon cartridges. For ribbon subcassettes, refer to the instructions shipped with the subcassette.

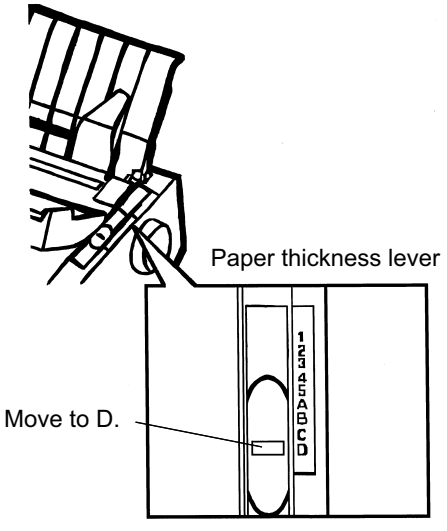
To replace the ribbon cartridge:

1. Turn off the printer.

2. Open the front cover of the printer. For easy installation, slide the print head carriage to a position where it does not face a roller.

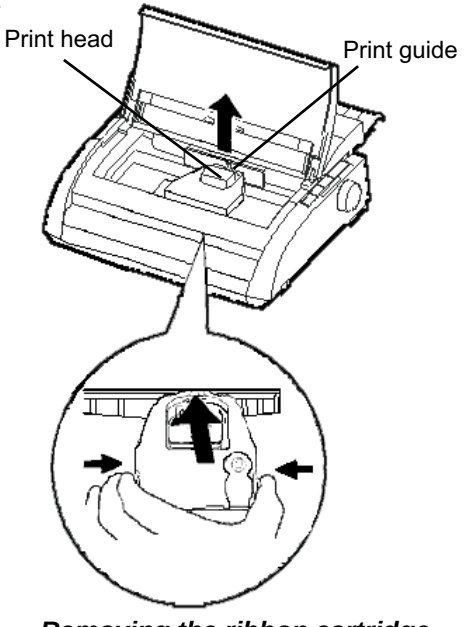
   CAUTION
   The print head may be hot if you have been printing recently.

3. Move the paper thickness lever to position D.



Paper thickness lever

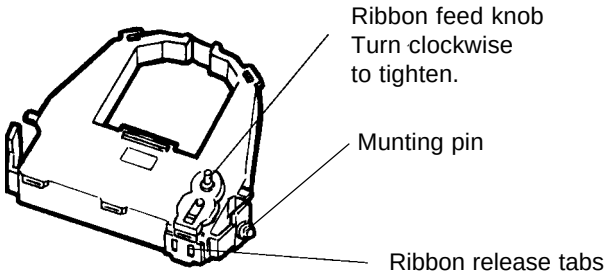
4. To remove the ribbon cartridge, press the ribbon release levers located on either side of the cartridge and carefully lift the cartridge out of the printer.



Removing the ribbon cartridge

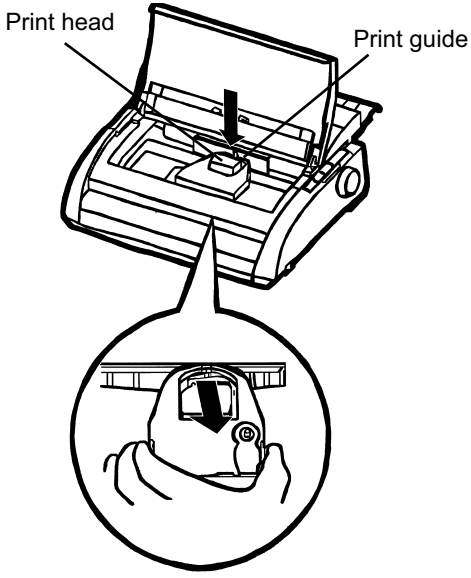
5. Remove the new ribbon cartridge from its package. Push in the sides of the two ribbon release tabs. The tabs will snap into the cartridge and the ribbon feed mechanism will engage.

   Turn the ribbon feed knob clockwise to be sure that it feeds properly.



Preparing the new ribbon cartridge

6. Place the two mounting pins on the ribbon support brackets of the head carrier. The two mounting pins are located on the sides of the ribbon release levers.) Insert the ribbon so that the ribbon falls between the nose of the print head and the plastic print guide.



Installing the new ribbon cartridge

7. Press the ribbon release levers until the mounting pins snap into the holes on the ribbon support brackets. Gently pull on the cartridge to verify that the pins are securely positioned in the holes.

8. Turn the ribbon feed knob clockwise to tighten the ribbon.

9. Move the paper thickness lever back to its original position. For single sheet printing, the correct position is 1. Table 3.2 in Chapter 3 gives other paper thickness lever settings.

10. Close the front cover of the printer.

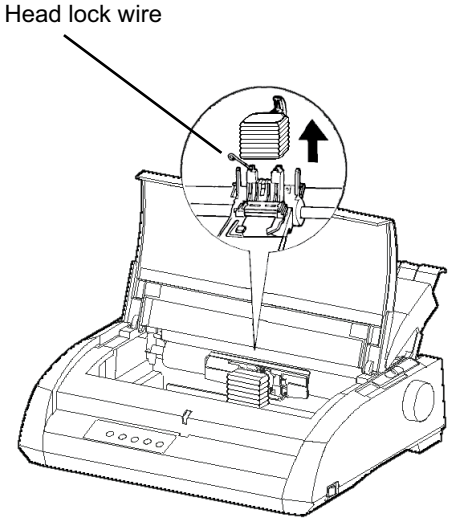
REPLACING THE PRINT HEAD

The print head is easy to replace.

CAUTION
The print head may be hot if you have been printing recently.

To remove the print head:

1. Turn off the printer.
2. Open the front cover of the printer and remove the ribbon cartridge.
3. Pull the right end of the head lock wire forward to release it from the hook at the right of the print head carriage. Then release the wire from the center hook.
4. Remove the print head from the connector on the carriage, as shown in the figure below.



Replacing the print head

To install the print head:

1. Carefully fit the mounting guide grooves of the print head on the locating studs on the carriage.

2. Push the print head into the connector and hook the wire into place in the reverse order of removal.

7

TROUBLE-SHOOTING

Your printer is extremely reliable, but occasional problems may occur. You can solve many of these problems yourself, using this chapter. If you encounter problems that you cannot resolve, contact your dealer for assistance.

This chapter is organized as follows:

- Solving problems
- Diagnostic functions
- Getting help

SOLVING PROBLEMS

The tables in this section describe common printer problems and their solutions. The following types of problems are considered:

- Print quality problems
- Paper handling problems
- Operating problems
- Printer failures

Print Quality Problems

Poor print quality or other printing problems are often caused by incorrect printer setup or incorrect software settings. A gradual decrease in print quality usually indicates a worn ribbon. Table 7.1 identifies common print quality problems and suggests solutions.

Table 7.1 Print Quality Problems and Solutions

Problem	Solution
Printing is too light or too dark.	Make sure that the ribbon cartridge is properly installed and that the ribbon feeds smoothly. Make sure that the paper thickness lever is set for the thickness of your paper. See Table 3.2 in Chapter 3. Check ribbon wear. Replace the ribbon if necessary.
Stains or smudges appear on the page.	Make sure that the paper thickness lever is set for the thickness of your paper. See Table 3.2 in Chapter 3. Check ribbon wear. Replace the ribbon if necessary. Check whether the tip of the print head is dirty. Clean the head with a soft cloth if necessary.
The page is blank.	Make sure that the ribbon cartridge is properly installed.
Printing is erratic or the wrong characters are printed. Many "?" characters are printed.	Make sure that the interface cable is securely connected to both the printer and computer. Make sure that the printer emulation selected in your software is the same as the emulation selected on the printer. See the section **Selecting an Emulation** in Chapter 2. If you are using an RS-232C serial interface, make sure that the serial settings required by your software or computer are the same as the settings on the printer. See the section **Changing Hardware Options** in Chapter 5.

Table 7.1 Print Quality Problems and Solutions (Cont.)

Problem	Solution
Printing is vertically misaligned (jagged).	Use the printer's V-ALMNT function to check the vertical print alignment. If necessary, adjust the print alignment. See the section **Using the Diagnostic Functions** in Chapter 5.
The top margin is wrong.	The top margin is the sum of the top-of-form setting, the software-specified top margin, and the printer's TOP-MRG setting. Proceed as follows: • Make sure that the top-of-form setting is correct. The factory default is 25.4 mm (1 inch). See the section **Changing Top-of Form** in Chapter 5. • Check the software-specified top margin. Refer to your software documentation. • Check the printer's TOP-MRG setting. See the section **Changing MENU1 and MENU2 Options** in Chapter 5.
Lines are double spaced instead of single spaced.	Check the line spacing setting in your software. Change the CR-CODE setting in the printer setup mode to CR ONLY. See the section **Changing MENU1 and MENU2 Options** in Chapter 5.
The printer overprints on the same line.	Change the CR-CODE setting in the printer setup mode to CR & LF. See the section **Changing MENU1 and MENU2 Options** in Chapter 5.
The next print line starts where the previous line ended instead of at the left margin.	Change the LF-CODE setting in the printer setup mode to LF & CR. See the section **Changing MENU1 and MENU2 Options** in Chapter 5.

Paper Handling Problems

Table 7.2 describes common paper handling problems and suggests solutions. See Chapter 3 for detailed procedures on loading and using paper.

Table 7.2 Paper Handling Problems and Solutions

Problem	Solution
Paper cannot be loaded or fed.	Make sure that the paper select lever is set correctly. Move the lever backward for continuous forms and forward for single sheets. Make sure that the paper covers the paper-out sensor, i.e., the left paper edge is within 52 mm for single sheets or 41 mm for continuous forms from the left edge of the platen. (This problem cannot occur if you use the forms tractor unit or insert a single sheet with its left edge in contact with the left paper guide.) Make sure that the paper holder is closed and forms tractors are positioned correctly to match the width of your paper.

Table 7.2 Paper Handling Problems and Solutions (Cont.)

Problem	Solution
Paper jams while loading.	Turn off the printer and remove the jammed paper. Remove any obstructions from the paper path. Make sure that the paper thickness lever is set for the thickness of your paper. See Table 3.2 in Chapter 3. Make sure that the paper is not folded, creased, or torn. Reload the paper.
Paper jams while printing.	Turn off the printer and remove the jammed paper. Remove any obstructions from the paper path. Make sure that the paper thickness lever is set for the thickness of your paper. See Table 3.2 in Chapter 3. For continuous forms, make sure that the incoming and outgoing paper stacks are correctly placed. Paper should feed straight.
Paper slips off the forms tractors or the perforated holes of the paper tear during printing.	Make sure that the forms tractors are positioned correctly for the width of your paper and that the perforated holes of the paper fit directly over the tractor sprockets.

Tips for clearing a jammed sheet from the printer

If a sheet of paper is jammed between the print head and the platen and cannot be removed, clear it as follows:

1. Turn off the printer and disconnect the power cord from the receptacle.

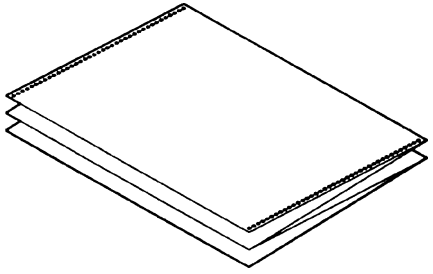
2. Push up the locking levers to rlease the forms tractors and open the paper holders.

3. Move the paper thickness lever to position D.

4. Move the print head so that you can remove the jammed sheet easily and clear the sheet.

NOTE
The print head is hot immediately after printing. Move it after making sure that it gets cool.

- **If you cannot clear the jammed sheet by the above procedure, set fourfold continuous forms paper on the forms tractors and turn the platen knob to feed the paper forward. The jammed paper is pushed out. Before operation, be sure to position the print head at the center of the jammed paper.**



Operating Problems

If any of the errors listed in Table 7.3 occurs, the PAPER OUT LED lights up, and an alarm beeps, and the printer goes offline.

In such cases, the buttons on the control panel can be used in the same manner as those when the printer is in the offline state.

Table 7.3 Operating Problems and Solutions

Error name	Error description	Recovery method
Paper end (PE) error	Paper end is detected. (*1)	- Insert and load the paper in the paper tray.
Eject jam error	Paper end is not detected even after a large amount of continuous forms or cut sheets were ejected.	- Eject forms or sheets. - Press the online button to turn the printer online.
Continuous form/ cut sheet switch lever error	In continuous form loading status, the continuous form/ cut sheet switch lever is switched to cut sheet mode. In cut sheet loading status, the continuous form/cut sheet switch lever is switched to continuous form mode. If the error occurs, all buttons are disabled.	- Switch the continuous form/cut sheet switch lever back to its original position. - Remove the loaded paper.
Load jam error	After the tractor PE sensor detected the form at continuous form loading, the TOF sensor does not detect the top of the form even after line feed is executed a certain number of times. After the set sensor detects the sheet at cut sheet loading, the TOF sensor does not detect he top of the sheet even after line feed is executed a certain number of times.	- Execute the loading operation. - Press the online button to turn the printer online. - When the cut sheets are loaded, remove the sheets once, and then insert them again. They are then loaded automatically.

LEDs light up depending on the following error types.

	LED status		
Error name	Blink		Light
	ONLINE	AREA OVER	PAPER OUT
Paper end			*
Eject jam error		*	*
Continuous form/ cut sheet switch lever error	*		*
Load jam error			*

*1 If the setup item PPR-OUT:IGNORE is specified, paper end is not detected.

Printer Failures

A user cannot generally resolve a problem involving defective printer hardware. On detecting a fatal error, the printer will:

- Stop printing
- Beep four times
- Turn the ONLINE indicator off
- Blink the PAPER OUT indicator (see Table 7.4 for the error type).

Table 7.4 Printer Failures

Error	LED states	
	<Lit>	<Blinking>
+34 V undervoltage error	ONLINE	PAPER OUT
Left end sensor error	MENU1	PAPER OUT
Overload printing error	MENU2	PAPER OUT
RAM error	AREA OVER	PAPER OUT

The following errors cause the printer to turn off the power:

- Print head error
- Space motor error
- Line feed motor error
- +34 V overvoltage error

No error condition is displayed if any of these errors occurs.

Turn the printer off and back on, then rerun the same job to check if the error was transient. If the error recurs, contact your dealer.

DIAGNOSTIC FUNCTIONS

The printer diagnostic functions are SELF-TST, HEX-DUMP, and V-ALMNT.

- SELF-TST tells you whether the printer hardware is functioning correctly. If the printer hardware is functional, any problems you are having are probably caused by incorrect printer settings, incorrect software settings, the interface, or the computer.

- HEX-DUMP allows you to determine whether the computer is sending the correct commands to the printer, and whether the printer is executing the commands correctly. This function is useful to programmers or others who understand how to interpret hex dumps.

- V-ALMNT allows you to check and, if necessary, correct the printer's vertical print alignment.

For details on using these functions, all of which are available in the printer setup mode, see the section **Using the Diagnostic Functions** in Chapter 5.

GETTING HELP

If you are not able to correct a problem using this chapter, contact your dealer for assistance. Be prepared to provide the following information:

- Your printer model number, serial number, and date of manufacture. Look for this information on the rating label on the left side of the printer.
- Description of the problem
- Type of interface you are using
- Names of your software packages
- List of the printer default settings. To print the default settings, see the section **Printing a List of Selected Options** in Chapter 5.

A

SUPPLIES AND OPTIONS

This appendix lists the supplies, options, and programmer's manuals available for the printer. Contact your dealer for information on ordering any of these items.

SUPPLIES

Supplies	Order Number
Ribbon cartridges	
Black ribbon	CA02374-C104
Ribbon subcassette	
Black ribbon	CA02374-C204
Print head	CA02281-E718

USER OPTION

Option	Order Number	Description
		RS-232C serial interface board.

B

PRINTER AND PAPER SPECIFICATIONS

This appendix gives the physical, functional, and performance specifications for the printer. It also gives detailed paper specifications.

PHYSICAL SPECIFICATIONS

Dimensions	Height:	120 mm (4.72 in)
	Width:	415mm (16.3 in)
	Depth:	330 mm (13 in)
Weight:		7.5 kg (16.5 lb)
AC power requirements		
	Model:	M33331A 100 to 120 VAC ±10%; 50/60 Hz
	Model:	M33331B 220 to 240 VAC –10%, +6%; 50/60 Hz
Power consumption		Average 120 VA Maximum 240 VA
Heat generation		Average 65 kcal/h
Interface		Centronics parallel Centronics parallel and RS-232C serial Centronics parallel and USB
Data buffer size		0, 256, 2K, 8K, 24K, 32K, 96K or 128K bytes
Download buffer		Maximum 128K bytes (128K minus data buffer size)
Operating environment		5 to 38½C (41 to 100½F) 30% to 80% RH (no condensation) Wetbulb temperature, less than 29½C (84½F)
Storage environment		–15 to 60½C (–4 to 140½F) 10% to 95% RH (no condensation)
Acoustic noise		Average 49 dBA when printing in letter quality ISO 7779 (Bystander Position Front)

FUNCTIONAL SPECIFICATIONS

Print method		Impact dot matrix with a 0.2 mm, 24-wire head
Print direction		Bidirectional logic-seeking or unidirectional seeking
Character cell		Horizontal ¥ vertical
	Letter (10 cpi):	36 ¥ 24 dots
	Letter (12 cpi):	30 ¥ 24 dots
	Report:	18 ¥ 24 dots
	Draft:	12 ¥ 24 dots
	High-speed draft:	9 ¥ 24 dots
Paper handling		
	Standard:	Friction-feed platen (cut sheets) Push tractors (rear feed of continuous forms) Paper loading by LOAD button Advancing perforations to tear-off edge by TEAR OFF button Parking continuous forms when using cut sheets
Paper type		1-to 5-part side-glued or paper-stapled fanfolded continuous forms or label sheets with sprocket holes 1-to 5-part top-glued cut sheets and envelopes
Paper size		
Continuous	Width:	102–267 mm (4–10.5 in)
	Length:	102 mm (4 in) or greater
Cut sheets	Width:	102–267 mm (4–10.5 in)
	Length:	76–364 mm (3–14.3 in)
Paper thickness		Up to 0.35 mm (0.014 inch)

Paper length

By software	Programmable in one line or inch increments in all emulations
By control panel	Depends upon emulations. Default is 11 inches for all emulations.
DPL24C+/XL24E:	3, 3.5, 4, 5, 5.5, 6, 7, 8, 8.5, 11, 11.6, 12, 14, or 18 inches
ESC/P2:	4, 4.5, 5, 5.5, ..., 11, 11.5, ..., 22 inches

Number of copies Up to 5, including the original

Command sets (emulations)

Resident
Fujitsu DPL24C PLUS
IBM Proprinter XL24E
Epson ESC/P2

Character sets

DPL24C+/XL24E:
- IBM PC character sets 1 and 2
- IBM PS/2 character sets (code pages 437, 850, 852, 855, 860, 863, 865, 866, and DHN)
  IBM 437 and 851
  ISO 8859-1 and ECMA 94
  Total of 59 national character sets
- Fujitsu character sets (691 characters)

ESC/P2:
- Italic character set
  Graphics character sets 1 and 2
- IBM PS/2 character sets (code pages 437, 850, 852, 855, 860, 863, 865, 866, and DHN)
  IBM 437 and 851
  ISO 8859-1 and ECMA 94
  Total of 63 national character sets

PERFORMANCE SPECIFICATIONS

Fonts

Resident		Eighteen fonts available
	Bit map:	Courier 10, Pica 10, OCR-B 10, OCR-A 10, Prestige Elite 12, Boldface PS, Correspondence, Compressed, Draft, and High-speed Draft
	Outline:	Courier, Timeless, and Nimbus Sans ®; each in normal, bold, and italic styles
Downloaded		Available from independent vendors

Line spacing

1, 2, 3, 4, 5, 6, 7, or 8 lines per inch.
Programmable in 1/360 inch or various increments for image graphics.

Character pitch

2.5, 3, 5, 6, 10, 12, 15, 17.1, 18, or 20 cpi, or proportional spacing.
Programmable in 1/360 inch or various increments for image graphics.

Characters per line

10 cpi:	80 cpl
12 cpi:	96 cpl
15 cpi:	120 cpl
17.1 cpi:	136.8 cpl
18 cpi:	144 cpl
20 cpi:	160 cppl

cpi: characters per inch
cpl: characters per line

Print speed

	10 cpi	12 cpi
Letter:	113 cps	135 cps
Report:	225 cps	270 cps
Correspondence:	225 cps	270cps
Draft:	360 cps	432 cps
High-speed draft:	400 cps	480 cps

cpi: characters per inch
cps: characters per second

Line feed speed

80 ms per line at 6 lines per inch

Form feed speed 5.6 inches per second

Ribbon life

Up to 5.0 million characters

Certification

Safety:

Model	Regulation	Country
M33331A	UL 1950-D3 (for 100 to 120 VAC)	United States
	CSA C22.2/950 (for 100 to 120 VAC)	Canada
M33331B	TÜV EN60950 (for 220 to 240 VAC)	Germany Europe

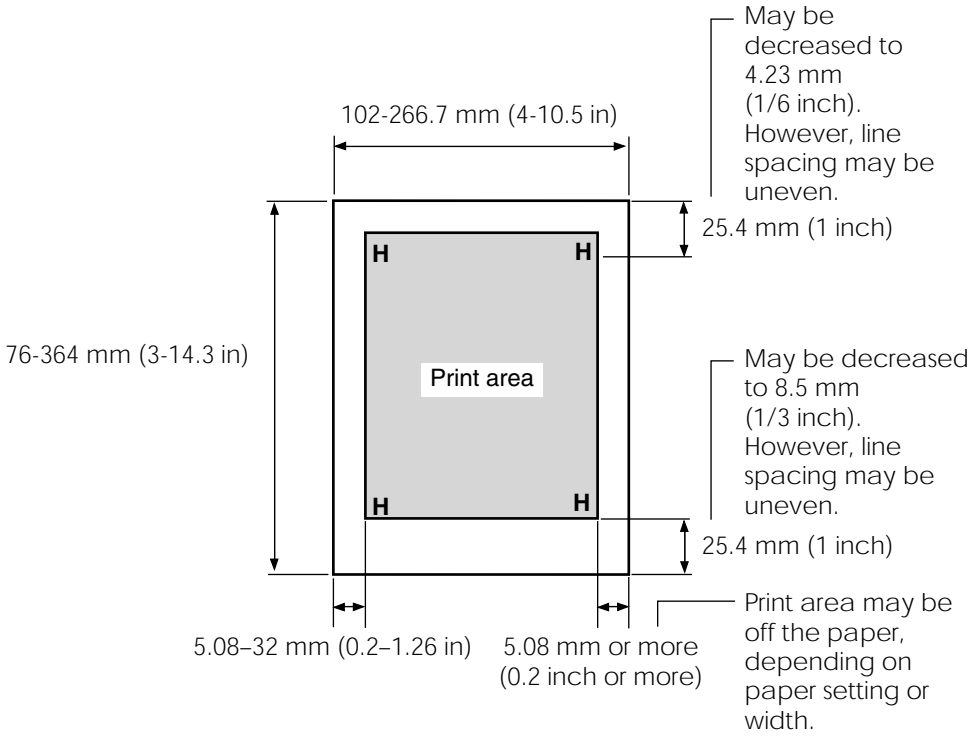
EMI regulation:

Model	Regulation	Country
M33331A	FCC Part 15B class B (for 100 to 120 VAC)	United States
	ICES-003 class B (for 100 to 120 VAC)	Canada
M33331B	EN 55022 class B (for 220 to 240 VAC)	Europe
	AS/NZS 3548 class B (for 220 to 240 VAC)	Australia and New Zealand
M33331A	CNS 13438 class B (for 100 to 120 VAC)	Asia
M33331B	CNS 13438 class B (for 220 to 240 VAC)	Taiwan

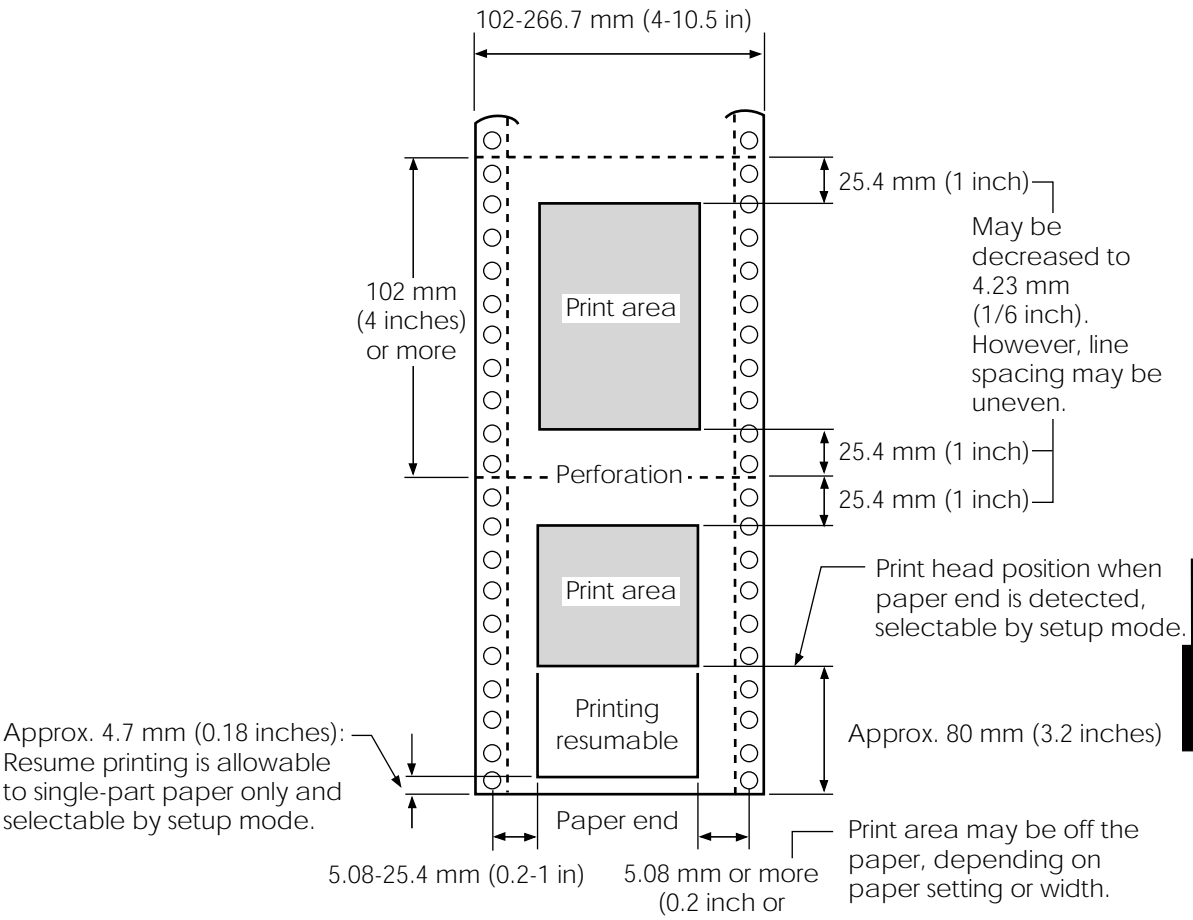
PAPER SPECIFICATIONS

Print Area

This section illustrates the recommended print area for single sheets and continuous forms.



Print area for single sheets

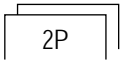
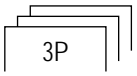
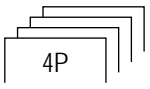
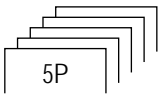


Print area for continuous forms

Paper Thickness

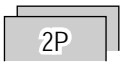
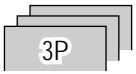
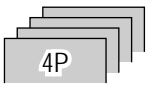
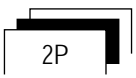
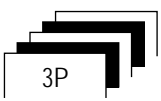
Paper thickness is given by the weight of the paper in either grams per square meter (g/m^2) or in pounds per bond (lbs/bond). The following table shows the allowable paper thickness for one-part paper or for each sheet of multipart paper. The total thickness must not exceed 0.35 mm (0.014 inch).

The weight of carbonless or carbon-backed paper may vary, depending upon the paper manufacturer. When using paper of borderline thickness, test the paper before running a job.

Type of Paper	Number of Parts	Thickness
One-part	Single	47-81 g/m^2 (40-70 kg or 12-22 lb)
Carbonless		
	Top Bottom	40-64 g/m^2 (34-55 kg or 11-17 lb) 40-81 g/m^2 (34-70 kg or 11-22 lb)
	Top Middle Bottom	40-64 g/m^2 (34-55 kg or 11-17 lb) 40-64 g/m^2 (34-55 kg or 11-17 lb) 40-81 g/m^2 (34-70 kg or 11-22 lb)
	Top Middle Middle Bottom	40-64 g/m^2 (34-55 kg or 11-17 lb) 40-64 g/m^2 (34-55 kg or 11-17 lb) 40-64 g/m^2 (34-55 kg or 11-17 lb) 40-81 g/m^2 (34-70 kg or 11-22 lb)
	Top Middle Middle Middle Bottom	40-52 g/m^2 (34-45 kg or 11-17 lb) 40-52 g/m^2 (34-45 kg or 11-17 lb) 40-52 g/m^2 (34-45 kg or 11-17 lb) 40-52 g/m^2 (34-45 kg or 11-17 lb) 40-64 g/m^2 (34-55 kg or 11-17 lb)

kg: Weight in kilograms of 1000 sheets of 788 ¥ 1091 mm paper (1.16 g/m^2)

lb: Weight in pounds of 500 sheets of 17 ¥ 22 inch paper (3.76 g/m^2)

Type of Paper	Number of Parts	Thickness
Carbon-backed	*Do not use in high humidity environments.*	
	Top Bottom	40-64 g/m² (34-55 kg or 11-17 lb) 40-81 g/m² (34-70 kg or 11-22 lb)
	Top Middle Bottom	40-64 g/m² (34-55 kg or 11-17 lb) 40-64 g/m² (34-55 kg or 11-17 lb) 40-81 g/m² (34-70 kg or 11-22 lb)
	Top Middle Middle Bottom	40-64 g/m² (34-55 kg or 11-17 lb) 40-64 g/m² (34-55 kg or 11-17 lb) 40-64 g/m² (34-55 kg or 11-17 lb) 40-81 g/m² (34-70 kg or 11-22 lb)
	Top Middle Middle Middle Bottom	40-52 g/m² (34-45 kg or 11-14 lb) 40-52 g/m² (34-45 kg or 11-14 lb) 40-52 g/m² (34-45 kg or 11-14 lb) 40-52 g/m² (34-45 kg or 11-14 lb) 40-64 g/m² (34-55 kg or 11-17 lb)
Carbon-interleaved	*Avoid using carbon-interleaved single sheets.*	
	Top Carbon Bottom	35-64 g/m² (30-55 kg or 9-17 lb) Counted as one sheet 35-81 g/m² (30-70 kg or 9-22 lb)
	Top Carbon Middle Carbon Bottom	35-52 g/m² (30-45 kg or 9-14 lb) Counted as one sheet 35-52 g/m² (30-45 kg or 9-14 lb) Counted as one sheet 35-64 g/m² (30-55 kg or 9-17 lb)

kg: Weight in kilograms of 1000 sheets of 788 ¥ 1091 mm paper (1.16 g/m²)

lb: Weight in pounds of 500 sheets of 17 ¥ 22 inch paper (3.76 g/m²)

C

COMMAND SETS

This appendix describes printer commands and their parameters.

This printer has three resident command sets:

- Fujitsu DPL24C PLUS (native command set for Fujitsu DL series printers)
- IBM Proprinter XL24E
- Epson ESC/P2

Select the same emulation on the printer and in your software. If your software emulations include DPL24C PLUS, select DPL24C PLUS for optimum performance.

FUJITSU DPL24C PLUS

This section describes the printer commands for the DPL24C PLUS command set which is the native command set of this printer.

Function	Command
Print Mode Control	
Double-strike (bold) printing on	ESC G
Double-strike (bold) printing off	ESC H
Emphasized (shadow) printing on	ESC E
Emphasized (shadow) printing off	ESC F
Italic printing on	ESC 4
Italic printing off	ESC 5
Select character style and screening	ESC e S (n_1) (n_2)
n_1 = 0: Normal	
1: Outline	
2: Shaded	
3: Outline and shaded	
4: Thin outline	
5: Thin shaded	
6: Thin outline and shaded	
n_2 = 0: Transparent	
1: Light dot matrix	
2: Heavy dot matrix	
3: Vertical bars	
4: Horizontal bars	
5: Slants	
6: Back slants	
7: Lattice	
One-line double width characters on	SO or ESC SO
One-line double width characters off	DC 4
Double width characters on/off (on: n = 1, off: n =0)	ESC W (n)

Function	Command
Double-height characters on/off (on: n = 1, off: n =0) This command does not adjust the line spacing.	ESC V (n)
Multiwidth and height printing n = 0: Not adjusted 1: Character pitch multiplied 2: Line spacing multiplied 3: Character pitch and line spacing multiplied h_1: Tens digit of horizontal multiple h_2: Units digit of horizontal multiple v_1: Tens digit of vertical multiple v_2: Units digit of vertical multiple ($0 \leq h_1\ h_2$ or $v_1\ v_2 \leq 11$)	ESC u (n) (h_1) (h_2) (v_1) (v_2)
Condensed characters on	SI or ESC SI
Condensed characters off	DC2
Subscript or superscript printing on (subscript: n=1, superscript: n=0)	ESC S (n)
Subscript and superscript printing off	ESC T
Select underline type n = 0: Single line 1: Bold single line 2: Extremely bold single line 3: Double line 4: Bold double line 5: Extremely bold double line	ESC e U (n)
Underline on/off (on: n=1, off: n=0)	ESC – (n)
Overline on/off (on: n=1, off: n=0)	ESC e o (n)

Function	Command
Select printing style This command allows you to combine various printing styles. The value of *n* is the sum of the values of the styles you want to combine. *n* = 0: Pica pitch 1: Elite pitch 4: Condensed 8: Shadow 16: Bold 32: Double width 64: Proportional	ESC ! (*n*)
Select image overlay type This command allows you to overlay a pattern on characters. *n* = 1: Light dot matrix 2: Heavy dot matrix 3: Vertical bars 4: Horizontal bars 5: Slants 6: Back slants 7: Lattice	ESC e I (*n*)
Image overlay printing on/off (on: *n*=1, off: *n*=0)	ESC e L (*n*)
Horizontal Control	
Space	SP
Backspace	BS
Carriage return	CR
Elite pitch (12 cpi)	ESC M
Pica pitch (10 cpi)	ESC P
Proportionally spaced characters on/off (on: *n*=1, off: *n*=0)	ESC p (*n*)
Set character pitch to (n-1)/120 inch (1 - *n* - 127)	ESC US (*n*)
Set character pitch to n/180 inch (0 - *n* - 255)	ESC h (*n*)

Function	Command
Set character offset to n/120 inch Cancelled by CR or ESC x. (0 - *n* - 63) (64 - *n* - 127)	ESC DC1 (*n*)
Set character pitch to n/360 inch (0 - n_1 n_2 n_3 - 999) n_1, n_2, and n_3 are the hundreds, tens, and units digits.	ESC e H (n_1) (n_2) (n_3)
Vertical Control	
Line feed	LF
Reverse line feed	ESC LF
Form feed	FF
Advance paper n/180 inch (0 - *n* - 255)	ESC J (*n*)
Reverse paper n/180 inch (0 - *n* - 255)	ESC j (*n*)
Advance paper n/360 inch (0 - n_1 n_2 n_3 - 999) n_1, n_2, and n_3 are the hundreds, tens, and units digits.	ESC e J (n_1) (n_2) (n_3)
Reverse paper n/360 inch (0 - n_1 n_2 n_3 - 999) n_1, n_2, and n_3 are the hundreds, tens, and units digits.	ESC e j (n_1) (n_2) (n_3)
Set line spacing to 1/8 inch (8 lpi)	ESC 0
Set line spacing to n/180 inch (0 - *n* - 255)	ESC 3 (*n*)
Set line spacing to 7/60 inch	ESC 1
Set line spacing to n/60 inch (0 - *n* - 127)	ESC A (*n*)
Set line spacing to 1/6 inch (6 lpi) or to the value set with the ESC A command. The preset line spacing command is ESC A (*n*).	ESC 2
Set line spacing to n/360 inch (0 - n_1 n_2 n_3 - 999) n_1, n_2, and n_3 are the hundreds, tens, and units digits.	ESC e V (n_1) (n_2) (n_3)
Set line spacing to n/360 inch (1 - *n* - 255)	FS 3 (*n*)

Function	Command
Tabulation	
Horizontal tab execution	HT
Set horizontal tabs	ESC D (n_1) ... (n_k)
The values of n_1 to n_k in this command are the ASCII values of the print columns (at the current character width) at which tabs are to be set.	NUL
(1 - *n* - 255) (1 - *k* - 255)	
Move to print column *n* (1 - *n* - 255)	ESC HT (*n*)
Move dot column n/360 inch	ESC $ (n_1) (n_2)
(*n* = n_1 + n_2 x 256)	
The value below is for 136-column printers.	
(0 - n_1 255) (0 - n_2 - 19)	
(0 - n_2 x 256 + n_1 - 4895)	
Horizontal relative move by n/360 inch	ESC e R (*s*)
(–999 - n_1 n_2 n_3 - +999)	(n_1) (n_2) (n_3)
n_1, n_2, and n_3 are the hundreds, tens, and units digits of the distance. *s* is a plus or minus (+ or –) sign.	
Vertical tab execution	VT
Set vertical tabs	ESC B (n_1) ... (n_k)
The values of n_1 to n_k in this command are the ASCII values of the lines (at the current line spacing) at which tabs are to be set.	NUL
(1 - *n* - 255) (1 - *k* - 64)	
Move to line n (1 - n - 255)	ESC VT (*n*)
Page Formatting	
Set right margin (0 - *n* - 255)	ESC Q (*n*)
Set left margin (0 - *n* - 255)	ESC *l* (*n*)
Set perforation skip by n lines	ESC N (*n*)
(1 - *n* - 127)	
Perforation skip off	ESC O
Set page length to n lines	ESC C (*n*) or
(1 - *n* - 127)	ESC e C (*n*) or
	ESC FF (*n*)

Function	Command
Set page length to n inches (1 - *n* - 22)	ESC C NUL (*n*) or ESC e C NUL (*n*) or ESC FF NUL (*n*)
Set page length to n/360 inch ($n = n_1$ ¥ 256 + n_2) (0 - n_1 n_2 - 255) (1 - n_1 ¥ 256 + n_2 - 7920)	ESC e f (n_1) (n_2)
Character Set Control	
Select character set 1 Appendix E gives the character sets	ESC 7
Select character set 2 Appendix E gives the character sets.	ESC 6
Select international character set *n* = 0: USA 1: France 2: Germany 3: United Kingdom 4: Denmark 1/Norway 5: Sweden/Finland 6: Italy 7: Spain 8: Denmark 2	ESC R (*n*)
Clear print buffer	CAN
Select printer	DC1
Deselect printer (ignore input)	DC3
Force most significant bit to 1	ESC >
Force most significant bit to 0	ESC =
Cancel control over most significant bit	ESC #

<table>
<tr><th>Function</th><th>Command</th></tr>
<tr><td>Select code table
n = 0: Code page 437
1: Code page 850
2: Code page 860
3: Code page 863
4: Code page 865
5: ISO 8859-1/ECMA 94
Select extended character by character number
(0 £ $n_1n_2n_3$ £ 664)
n_1, n_2, and n_3 are the hundreds, tens, and units digits.</td><td>ESC e C (n)

ESC e E
(n_1) (n_2) (n_3)</td></tr>
<tr><td>Word Processing
Line justification on
Automatically center printing
Reset word processing features</td><td>
ESC m
ESC c
ESC x</td></tr>
<tr><td>Font Selection and Downloading
Select font m with source and style set by n
•m (bits 0 and 1: Font device selection)
<table><tr><th>Bit 1</th><th>Bit 0</th><th>Selection of font</th></tr><tr><td>0</td><td>0</td><td>Resident font</td></tr><tr><td>0</td><td>1</td><td>Downloaded font</td></tr><tr><td>1</td><td>0</td><td>Resident font</td></tr></table>•m (bits 2 and 3: Print quality specification
<table><tr><th>Bit 3</th><th>Bit 2</th><th>Print quality</th></tr><tr><td>0</td><td>0</td><td>Original quality of font</td></tr><tr><td>0</td><td>1</td><td>Letter quality (360 dpi)</td></tr><tr><td>1</td><td>0</td><td>Correspondence quality (180 dpi)</td></tr><tr><td>1</td><td>1</td><td>Draft quality (120 dpi)</td></tr></table></td><td>ESC % (m) (n)</td></tr>
</table>

Function	Command
• *n* (bit 0 to 2: Specification of font number) (1) Resident fonts *n* / *m* = 0, 0 / m = 1, 0 0 Courier 10 OCR-B 1 Prestige elite 12 OCR-A 2 Draft 3 Compressed 4 Boldface PS 5 Pica 10 6 Correspondence 7 High-speed draft (2) Downloaded fonts *n* = 0: Downloaded font 0 1: Downloaded font 1	
Select print quality (font attributes) *n* = 0: Letter (360 ¥ 180 dpi) 1: Correspondence (180 ¥ 180 dpi) 2: Draft (120 ¥ 180 dpi) 3: High-speed Draft (90 ¥ 180 dpi)	ESC e q (*n*)
Select spacing mode (font attributes) *n* = 0: Fixed pitch font 1: Proportional spacing font	ESC e s (*n*)
Select character pitch (n/360 inch, font attributes) (0 - n_1 - 255) (1 - n_2 - 255) ($n = n_1$ ¥ 256 + n_2) Ex. *n* = 36: 10 pitch 30: 12 pitch 24: 15 pitch 21: 17 pitch	ESC e p (n_1) (n_2)
Condense/enlarge vertically (font attributes) *n* = 1: Executed 0: Not executed	ESC e A (*n*)
Select point size (n/1200 inch, font attributes) (0 - n_1 - 255) (0 - n_2 - 255) ($n = n_1$ ¥ 256 + n_2) Ex. *n* = 166: 10 point	ESC e v (n_1) (n_2)

Command Sets

Function	Command
Select character style (font attributes) *n* = 0: Upright 1: Italic	ESC e i (*n*)
Select stroke weight (font attributes) *n* = 249: –7 (reserved) 251: –5 (reserved) 253: –3 (light) 0: 0 (medium) 3: 3 (bold) 5: 5 (black) 7: 7 (ultrablack)	ESC e w (*n*)
Select typeface (font attributes) *n* = 1: Pica 3: Courier (bitmap) 4: Nimbus Sans ® 5: Timeless 8: Prestige 23: Boldface 130: OCR-A 131: OCR-B 134: Courier (scalable)	ESC e t (*n*)
Select font by I.D. (font attributes)	ESC e F (*n*)

n	Quality	Spacing	Pitch	Point	Typeface
1	LQ	Fixed	10 cpi	12 pt	Courier (bitmap)
2	LQ	Fixed	12 cpi	10 pt	Prestige
3	LQ	PS	–	12 pt	Boldface
4	LQ	Fixed	10 cpi	12 pt	Pica
9	LQ	Fixed	10 cpi	12 pt	OCR-A
10	LQ	Fixed	10 cpi	12 pt	OCR-B
32	CQ	Fixed	10 cpi	12 pt	Courier (bitmap)
34	DQ	Fixed	12 cpi	11 pt	Gothic
128	LQ	PS	–	10 pt	Timeless
129	LQ	PS	–	10 pt	Timeless Italic
130	LQ	PS	–	10 pt	Timeless Bold
132	LQ	PS	–	10 pt	Nimbus Sans ®
133	LQ	PS	–	10 pt	Nimbus Italic
134	LQ	PS	–	10 pt	Nimbus Bold
140	LQ	Fixed	10 cpi	10 pt	Courier (scalable)
141	LQ	Fixed	10 cpi	10 pt	Courier Bold (scalable)
142	LQ	Fixed	10 cpi	10 pt	Courier Italic (scalable)

<table>
<tr><th>Function</th><th>Command</th></tr>
<tr><td>Copy resident font to download area
m = 0: Courier 10
1: Prestige Elite 12
2: Draft
3: Compressed
4: Boldface PS
5: Pica 10
6: Correspondence
7: High-speed Draft
n = 0: Downloaded font 0
1: Downloaded font 1</td><td>ESC : NUL (m) (n)</td></tr>
<tr><td>Create download font
• m (bits 4 and 5: Specifies the quality of characters to be registered)
<table>
<tr><th>Bit 5</th><th>Bit 4</th><th>Font quality selection</th></tr>
<tr><td>0</td><td>1</td><td>Letter (360 dpi)</td></tr>
<tr><td>1</td><td>0</td><td>Correspondence (180 dpi)</td></tr>
<tr><td>1</td><td>1</td><td>Draft (120 dpi)</td></tr>
</table>
• m (bit 0: Specifies external font number to be registered)
<table>
<tr><th>Bit 0</th><th>Font number selection</th><th>Remarks</th></tr>
<tr><td>0</td><td>Downloaded font 0</td><td>At power on, resident font 0 is automatically downloaded.</td></tr>
<tr><td>1</td><td>Downloaded font 1</td><td>At power on, resident font 1 is automatically downloaded.</td></tr>
</table>
• m (bits 1, 2, 3, 6, 7) Not used (don’t care)
• Cs (Download start character, ASCII code)
• Ce (Download end character, ASCII code)
<table>
<tr><td>Decimal</td><td>0 - Cs, Ce < 255</td></tr>
<tr><td>Hex</td><td>00 - Cs, Ce - FF</td></tr>
</table>
Precaution: Ce • Cs
• data (More than one byte of data containing bit map data)</td><td>ESC & (m) (Cs) (Ce) (data)</td></tr>
<tr><td>(Reserved)</td><td>ESC e D (data);</td></tr>
</table>

Function	Command
Bit Image Graphics	
Graphics type m graphics	ESC * (*m*) (n_1) (n_2) (*data*)
Graphics type m graphics	ESC e b (*m*) (n_1) (n_2) (*data*) or ESC e B *(m)* (n_1) (n_2) (*data*)
Single-density graphics	ESC K (n_1) (n_2) (*data*)
Double-density graphics	ESC L (n_1) (n_2) (*data*)
High-speed double-density graphics	ESC Y (n_1) (n_2) (*data*)
Quadruple-density graphics	ESC Z (n_1) (n_2) (*data*)
360 dot per inch 24-pin graphics	FS Z (n_1) (n_2) (*data*)
Initialize Printer	
Reset printer	ESC @
Reset printer	ESC CR P
Initialize printer	ESC SUB I
Bar Code Printing	
Print bar code b: Total number of parameters R: (fixed) (To be continued)	ESC DC4 (b) R (*c*) (*w*) (*h*) (*a*) (ch_1) ... (ch_n)

Function	Command
c: Type of bar code	

ASCII	Decimal	Hex	Type of bar code
1	49	31	Codebar (nw-7)
2	50	32	EAN 13
3	51	33	EAN 8
4	52	34	Code 3 to 9
5	53	35	Industrial 2 of 5
6	54	36	Interleaved 2 of 5
7	55	37	Matrix 2 of 5
A	65	41	UPC type A
B	66	42	Code 128
a	97	61	UPC type A with checkdigit printing

w: Width of narrow bar in 1/1440 inch units	
h: Height of bar code	
a: Defines check characters and OCR characters	
$ch_1 ... ch_n$: Bar code characters	
Miscellaneous	
Sound bell	BEL
Enable paper-out sensor	ESC 9
Ignore paper-out sensor	ESC 8
Typewriter mode on/off (on: *n*=1, off: *n*=0)	ESC i (*n*)
Move print head to home position	ESC <
Unidirectional printing on/off (on: *n*=1, off: *n*=0)	ESC U (*n*)
Select CR code definition	ESC e r (*n*)
n = 0: CR = CR only	
1: CR = CR + LF	
Select LF code definition	ESC e *l* (*n*)
n = 0: LF = LF only	
1: LF = LF + CR	
Enter online setup mode	ESC e ONLINE (*data*)
Move print head (unit: 1/180 inch) (0 - n_1 - 255) (0 - n_2 - 255)	ESC e h (n_1) (n_2)

Factory Default Settings

The following table describes the printer commands used to control options of the items that can be selected in printer setup mode. Command parameters are omitted.

Item	Selectable options in setup mode	Command
Emulate	DPL24C+, XL24E, ESC/P2	Controllable in online setup mode
Font	COUR 10, PRSTG 12, COMPRSD, BOLDFCE, PICA 10, CORRESP, COUR-N, COUR-B, COUR-I, TIMLS-N, TIMLS-B, TIMLS-I, N.SAN-N, N.SAN-B, N.SAN-I. OCR-B, OCR-A, DOWNLD 0, DOWNLD 1	ESC e t ESC e F ESC %
Quality	LETTER, REPORT, DRAFT, HI-DRFT	ESC e q
Pitch	2.5, 3, 5, 6, 10, 12, 15, 17, 18, 20 CPI or PROP SP	ESC e p ESC e H ESC h ESC US ESC M ESC P ESC p ESC i ESC e s
Line space	1, 2, 3, 4, 5, 6, 7, 8, LPI	ESC e V ESC 0 ESC 1 ESC 2 ESC 3 ESC A
Character width	NORMAL, 2 TIMES, 4 TIMES	ESC W SO or ESC SO (DC4) ESC u ESC !
Character height	NORMAL, 2 TIMES, 4 TIMES	ESC V ESC u

Underline: Factory default
( ): Cancel command

Item	Selectable options in setup mode	Command
Attributes	NONE, ITALICS, CONDNSD, SHADOW, BOLD	ESC 4 (ESC 5) SI or ESC SI (DC2) ESC E (ESC F) ESC G (ESC H) ESC e i ESC !
Page length	3.0, 3.5, 4.0, 5.0, 5.5, 6.0, 7.0, 8.0, 8.5, 11.0, 11.6, 12.0, 14.0, 18.0 IN	ESC C NUL ESC e C NUL ESC FF NUL ESC C ESC e C ESC FF
Left end	1 , 2, 3, ... , 41 COLM	Controllable in online setup mode
Top margin	1 , 2, 3, ... , 10 LINE	Controllable in online setup mode
Language	USA, UK, GERMAN, FRENCH, ITALIAN, SPANISH, SWEDISH, FINNISH, DANISH1, DANISH2, NORWEGN, PAGE437, PAGE850, PAGE860, PAGE863, PAGE865 ISO8859, ECMA94	ESC R ESC e C
	PG852, PG852-T, PG855, PG866, HUNGARY, HUNG-T, SOLV, SOLV-T, POLISH, POLSH-T, MAZOWIA, MAZOW-T, LATIN7, LATIN2, LATN2-T, KAMENIC, KAMEN-T, TURKY, TURKY-T, CYRILIC, IBM437, IBM851, ELOT928, PG-DHN, LATIN-P, ISO-LTN, LITHUA1, LITHUA2, MIK, MACEDON, ABG, ABY, PG-MAC, ELOT927, DEC-GR, GREEK 11, PG862, HBR-OLD, HBR-DEC, ISO-TUK, RUSCII, LATIN-9	Uncontrollable by commands but controllable in online setup mode

Underline: Factory default
( ): Cancel command

Item	Selectable options in setup mode	Command
Character set	SET 1, SET2	ESC7 ESC6
Perfora-tion skip	SKIP, NO-SKIP	ESC N (ESC O)
Paper width	8.0 IN	Controllable in online setup mode
Zero font	NO-SLSH, SLASH	Controllable in online setup mode
DC3	ENABLE, DISABLE	Controllable in online setup mode
CR code	CR-ONLY, CR & LF	ESC e r
LF code	LF-ONLY, LF & CR	ESC e *l*
Right end wrap	WRAP, OVR-PRT	Controllable in online setup mode
Paper-out	CNTONLY, DETECT, IGNORE	ESC 9 (ESC 8)
Print direction	BI-DIR, UNI-DIR	ESC U

Underline: Factory default
( ): Cancel command

IBM PROPRINTER XL24E EMULATION

This section describes the printer commands for the IBM Proprinter XL24E emulation. Asterisks in the "Function" column indicate extended commands that are not supported by the original printer.

Function	Command
Print Mode Control	
Double-strike (bold) printing on	ESC G
Double-strike (bold) printing off	ESC H
Emphasized (shadow) printing on	ESC E
Emphasized (shadow) printing off	ESC F
One-line double-width characters on	SO or ESC SO
One-line double-width characters off	DC4
Double-width characters on/off (on: $n = 1$, off: $n = 0$)	ESC W (n)
Double-height/double-width characters $n_1 = 4$, $n_2 = 0$, $m_1 = 0$, $m_2 = 0$ m_3 controls character height and line spacing:	ESC [@ (n_1) (n_2) (m_1) ... (m_4)

m_3	Height	Spacing
0	Unchanged	Unchanged
1	Normal	Unchanged
2	Double	Unchanged
16	Unchanged	Single
17	Normal	Single
18	Double	Single
32	Unchanged	Double
33	Normal	Double
34	Double	Double

m_4 controls character width:

m_4	Width
0	Unchanged
1	Normal
2	Double

Function	Command
Condensed characters on	SI or ESC SI
Condensed and elite characters off	DC2
Subscript or superscript printing on (subscript: *n* = 1, superscript: *n* = 0)	ESC S (*n*)
Subscript and superscript printing off	ESC T
Underline on/off (on: *n* = 1, off: *n* = 0)	ESC - (*n*)
Overline on/off (on: *n* = 1, off: *n* = 0)	ESC _ (*n*)
Horizontal Control	
Space	SP
Backspace	BS
Carriage return	CR
Elite characters on	ESC :
Proportionally spaced characters on/off (on: *n* = 1, off: *n* = 0)	ESC P (*n*)
Vertical Control	
Line feed	LF
Form feed	FF
Advance paper n/216 inch (1 - *n* - 255)	ESC J (*n*)
Advance paper n/180 inch (in AG mode) (1 - *n* - 255)	ESC J (*n*)
Set line spacing to 1/8 lines	ESC 0
Set line spacing to 7/72 inch	ESC 1
Set line spacing to n/216 inch (0 - *n* - 255)	ESC 3 (*n*)
Set line spacing to n/180 inch (in AG mode) (0 - *n* - 255)	ESC 3 (*n*)
Preset line spacing to n/72 inch (1 - *n* - 255)	ESC A (*n*)
Preset line spacing to n/60 inch (in AG mode) (1 - *n* - 255)	ESC A (*n*)
Set line spacing to 1/6 inch or to the value preset by line spacing command ESC A (*n*)	ESC 2

Function	Command
Change graphics line spacing base to 1/216 or 1/180 inch (for ESC J and ESC 3) m_1 = 4, m_2 = 0 0 - t_1 - 255, 0 - t_2 - 255, t_3 = 0 t_4 = 180 or 216	ESC [\ (m_1) (m_2) (t_1) ... (t_4)
Tabulation	
Horizontal tab execution	HT
Set horizontal tabs The values of $n_1$to n_k in this command are the ASCII values of the print columns (at the current character width) at which tabs are to be set. (1 - *n* - 255) (1 - *k* - 28)	ESC D (n_1) ... (n_k) NUL
Clear all horizontal tabs	ESC D NUL
Move print position right by n/120 inch (0 - n_1, n_2 - 255) (n = n_1 + n_2 ¥ 256)	ESC d (n_1) (n_2)
Vertical tab execution	VT
Set vertical tabs The values of $n_1$to n_k in this command are the ASCII values of the lines (at the current line spacing) at which tabs are to be set. (1 - *n* - 255) (1 - *k* - 64)	ESC B (n_1)... (n_k) NUL
Clear all vertical tabs	ESC B NUL
Reset tabs to default values	ESC R
Page Formatting	
Set left margin at column n and right margin at column m (0 - *n*, *m* - 255)	ESC X (*n*) (*m*)
Set perforation skip by n lines (1 - *n* - 255)	ESC N (*n*)
Perforation skip off	ESC O
Set page length to n lines (1 - *n* - 255)	ESC C (*n*)
Set page length to n inches (1 - *n* - 22)	ESC C NUL (*n*)
Set top of form	ESC 4

Function	Command
Character Set Control	
Select character set 1	ESC 7
Select character set 2	ESC 6
Print $n_1 + n_2$ ¥ 256 characters from all-character set (*chars*.: codes of characters to print, 0 - *chars*. - 255)	ESC \ (n_1) (n_2) (*chars*.)
Print a character from all-character set (*char*.: a code of character to print, 0 - *char*. - 255)	ESC ^ (*char*.)
Select code page table n ($0 - n_1, n_2 - 255$) ($n = n_1 + n_2$ ¥ 256)	ESC [T (n_1) (n_2) 0 0 (c_1) (c_2)
Clear input buffer	CAN
Select printer	DC1
Deselect printer (ignore input)	ESC Q #
Downloading	
Select resident or downloaded font Ex. *n* = 0: Resident Draft 2: Resident Courier 4: Downloaded Draft 6: Downloaded Courier	ESC I (*n*)
Create download font	ESC = (n_1) (n_2) ID (m_1) (m_2) (*data*)

c_1	c_2	Code page ID
0	0	Ignore command
1	181	Code page 437
3	82	Code page 850
3	92	Code page 860
3	95	Code page 863
3	97	Code page 865

Function	Command
Bit Image Graphics	
Single-density graphics	ESC K (n_1) (n_2) (*data*)
Double-density graphics	ESC L (n_1) (n_2) (*data*)
High-speed double-density graphics	ESC Y (n_1) (n_2) (*data*)
Quadruple-density graphics	ESC Z (n_1) (n_2) (*data*)
High-resolution graphics	ESC [g (n_1) (n_2) (*m*) (*data*)
Select graphics mode (in AG mode only)	ESC * (*m*) (c_1) (c_2) (*data*)
Miscellaneous	
Sound the bell	BEL
Unidirectional printing on/off (on: *n* = 1, off: *n* = 0)	ESC U (*n*)
Add a carriage return to all line feeds (on: *n* = 1, off: *n* = 0)	ESC 5 (*n*)
Printer offline	ESC j
Enter online setup mode*	ESC e ONLINE (*data*)
Select default settings	ESC [K (n_1) (n_2) (*i*) (*ID*) (p_1) (p_2)

EPSON ESC/P2 EMULATION

This section describes the printer commands for the Epson ESC/P2 emulation. Asterisks in the "Function" column indicate extended commands that are not supported by the original printer.

Function	Command
Print Mode Control	
Double-strike (bold) printing on	ESC G
Double-strike (bold) printing off	ESC H
Emphasized (shadow) printing on	ESC E
Emphasized (shadow) printing off	ESC F
Italic printing on	ESC 4
Italic printing off	ESC 5
Select character style	ESC q (*n*)
n = 0: Normal	
1: Outlined	
2: Shaded	
3: Outlined and shadowed	
One-line double-width characters on	SO or ESC SO
One-line double-width characters off	DC4
Double-width characters on/off	ESC W (*n*)
(on: *n* = 1, off: *n* = 0)	
Double-height characters on/off	ESC w (*n*)
(on: *n* = 1, off: *n* = 0)	
Condensed characters on	SI or ESC SI
Condensed characters off	DC2
Subscript or superscript printing on	ESC S (*n*)
(subscript: *n* = 1, superscript: *n* = 0)	
Subscript and superscript printing off	ESC T
Underline on/off	ESC - (*n*)
(on: *n* = 1, off: *n* = 0)	

Function	Command
Select line n_1 = 3, n_2 = 0, d_1 = 1 d_2 = 0: Ignore command 1: Underline 2: Strike through 3: Overscore d_3 = 0 or 4: Cancel line selection 1: Single line 2 or 3: Double line 5: Single-dotted line 6 or 7: Double-dotted line	ESC (- (n_1) (n_2) (d_1) (d_2) (d_3)
Select printing style This command allows you to combine various printing styles. The value of n is the sum of the values of the styles you want to combine. n = 0: Pica pitch 1: Elite pitch 2: Proportional spacing 4: Condensed 8: Shadow 16: Bold 32: Double-width 64: Italics 128: Underline	ESC ! (n)
Horizontal Control	
Space	SP
Backspace	BS
Carriage return	CR
Set elite pitch	ESC M
Set pica pitch	ESC P
Set 15 CPI	ESC g
Proportionally spaced characters on/off (on: n = 1, off: n = 0)	ESC p (n)
Set inter-character space to n/120 inch (for draft) or n/180 inch (for letter and proportional) (0 - n - 127)	ESC SP (n)

Function	Command
Set character pitch to (n_1 + n_2 ¥ 256)/360 inch (0 - n_1 - 255) (0 - n_2 - 4)	ESC c (n_1) (n_2)
Select character pitch (specify unit o pitch) n_1 = 1, n_2 = 0 d = 10 to 19: 10/3600 inch = 1/360 inch d = 20 to 29: 20/3600 inch = 1/180 inch d = 30 to 39: 30/3600 inch = 1/120 inch d = 40 to 49: 40/3600 inch = 1/90 inch d = 50 to 59: 50/3600 inch = 1/72 inch d = 60 to 69: 60/3600 inch = 1/60 inch	ESC (U (n_1) (n_2) (d)
Vertical Control	
Line feed	LF
Form feed FF	
Advance paper n/180 inch (1 - n - 255)	ESC J (n)
Set line spacing to 1/8 inch	ESC 0
Set line spacing to n/180 inch (0 - n - 255)	ESC 3 (n)
Set line spacing to n/60 inch (0 - n - 127)	ESC A (n)
Set line spacing to 1/6 inch	ESC 2
Set line spacing to n/360 inch (0 - n - 255)	ESC + (n)
Tabulation	
Horizontal tab execution	HT
Set horizontal tabs The values of n_1 to n_k in this command are the ASCII values of the print columns (at the current character width) at which tabs are to be set. (1 - n - 255) (1 - k - 32)	ESC D (n_1) ... (n_k) NUL
Move print position n/60[*1] inch right from left margin (n = n_1 + n_2 ¥ 256)	ESC $ (n_1) (n_2)
Move print position n/120[*1] inch (for draft) or n/180[*1] inch (for letter) left or right from the current position (n = n_1 + n_2 ¥ 256)	ESC \ (n_1) (n_2)
Vertical tab execution	VT

[*1] This pitch is the default, but can be changed by the ESC (U command beforehand.

Function	Command
Set vertical tabs The values of $n_1$to n_k in this command are the ASCII values of the lines (at the current line spacing) at which tabs are to be set. (1 - n - 255) (1 - k - 16)	ESC B (n_1) ... (n_k) NUL
Move to dot line (d_1 + d_2 ¥ 256)/360(*1) inch n_1 = 2, n_2 = 0 (0 - d_1 - 255) (0 - d_2 - 127)	ESC (V (n_1) (n_2) (d_1) (d_2)
Vertical relative move by (d_1 + d_2 ¥ 256)/360(*1) inch n_1 = 2, n_2 = 0 (0 - d_1 - 255) (0 - d_2 - 127) –32768 - d_1 + d_2 ¥ 256 - 32768	ESC (v (n_1) (n_2) (d_1) (d_2)
Page Formatting	
Set right margin to column n (1 - n - 255)	ESC Q (n)
Set left margin to column n (0 - n - 255)	ESC l (n)
Set top and bottom margins from top of page n_1 = 4, n_2 = 0 • Top margin = (t_1 + t_2 ¥ 256)/360(*1) inch (0 - t_1 - 255) (0 - t_2 - 127) • Bottom margin = (b_1 + b_2 ¥ 256)/360(*1) inch (0 - b_1 - 255) (0 - b_2 - 127)	ESC (c (n_1) (n_2) (t_1) (t_2) (b_1) (b_2)
Set perforation skip by n lines (1 - n - 127)	ESC N (n)
Perforation skip off	ESC O
Set page length to n lines (1 - n - 127)	ESC C (n)
Set page length to n inches (1 - n - 22)	ESC C NUL (n)
Set page length to (d_1 + d_2 ¥ 256)/360(*1) inch n_1 = 2, n_2 = 0 (0 - d_1 - 255) (0 - d_2 - 127)	ESC (C (n_1) (n_2) (d_1) (d_2)

*1 This pitch is the default, but can be changed by the ESC (U command beforehand.

Function	Command
Character Set Control	
Select character set 1	ESC 7
Select character set 2	ESC 6
Select character set table	ESC t (*n*)
n = 0: Italics character set	
1: Graphics character set	
2: Downloaded character set	
3: Graphics character set	
Select international character set	ESC R (*n*)
n = 0: USA	
1: France	
2: Germany	
3: United Kingdom	
4: Denmark 1	
5: Sweden	
6: Italy	
7: Spanish 1	
8: Japan	
9: Norway	
10: Denmark 2	
11: Spanish 2	
12: Latin America	
13: Korea	
64: Legal	

Function	Command
Assign a character set to active character set number 0 to 3 n_1= 3, n_2 = 0 d_1 = 0: Active character set number 0 1: Active character set number 1 2: Active character set number 2 3: Active character set number 3 d_2 = 0: Italic 1: PC 437 (USA) 3: PC 850 (Multilingual) 7: PC 860 (Portugal) 8: PC 863 (Canada-French) 9: PC 865 (Norway) d_3 = 0	ESC (t (n_1) (n_2) (d_1) (d_2) (d_3)
Print n_1 + n_2 ¥ 256 characters from all-character set (0 - n_1 - 255) (0 - n_2 - 127) (0 - n_1 + n_2 ¥ 256 - 255) (0 - *character codes* - 254)	ESC (^ (n_1) (n_2) (*character codes*)
Clear input buffer	CAN
Delete a character	DEL
Force most significant bit to 1	ESC >
Force most significant bit to 0	ESC =
Cancel control over most significant bit	ESC #
Font Selection and Downloading	
Select font n = 0: Resident character set 1: Downloaded character set	ESC % (n)
Select letter or draft quality n = 0: Draft 1: Letter	ESC x (n)

Function	Command
Select type style •Bitmap font: *n* = 0: Courier 1: Courier 2: Courier 3: Prestige 4: Courier 5: OCR-B 6: OCR-A 7: Courier 8: Courier 9: Courier •Scalable font: *n* = 0: Timeless 1: Nimbus Sans ® 2: Courier 3: Timeless 4: Timeless 5: Timeless 6: Timeless 7: Timeless 8: Timeless 9: Timeless	ESC k (*n*)
Set scalable font mode • m sets character pitch. m = 0: Keep previous pitch 1: Set proportional space mode m • 5: Select character pitch (m/360 inch) (Reset proportional space mode) • n_1 and n_2 set point size of font. Point size = (n_1 + n_2 ¥ 256) ¥ 0.5 point (0 - n_1 - 255) (0 - n_2 - 127)	ESC X m (n_1) (n_2)
Copy resident character set to download area	ESC : NUL (*n*) (*s*)
Create download font	ESC & NUL (n_1) (n_2) (d_0) (d_1) (d_2) (*data*)

Function	Command
Bit Image Graphics	
Graphics type m graphics	ESC * (*m*) (n_1) (n_2) (*data*)
Bit image mode definition	ESC ? (*s*) (*n*)
Single-density graphics	ESC K (n_1) (n_2) (*data*)
Double-density graphics	ESC L (n_1) (n_2) (*data*)
High-speed double-density graphics	ESC Y (n_1) (n_2) (data)
Quadruple-density graphics	ESC Z (n_1) (n_2) (*data*)
Select raster image graphics n_1 = 1, n_2 = 0 *d* = 1: Raster image graphics mode	ESC (G (n_1) (n_2) (*d*)
Print raster image graphics	ESC . (*c*) (*v*) (*h*) (*m*) (n_1) (n_2) (*data*)
Miscellaneous	
Sound the bell	BEL
Move print head to home position	ESC <
Unidirectional printing on/off (on: *n* = 1, off: *n* = 0)	ESC U (*n*)
Initialize printer	ESC @
Enter online setup mode *	ESC e ONLINE (*data*)

* Indicates extended commands not supported by the original printer.

D

INTERFACE INFORMATION

This printer can communicate with a computer through a Centronics parallel interface, a RS-232C serial interface, or a USB interface. You can specify the interface selection mode so that the printer uses which interface or it can automatically select the interface from which it first receives data.

This appendix provides information you may need for wiring your own interface cables or for programming computer-to-printer communications. Most users do not need the information in this appendix. To simply connect your printer to your computer, follow the instructions in Chapter 2.

PARALLEL INTERFACE

This parallel interface can operate in the following two modes:

- **Unidirectional (forward channel) mode or conventional mode**: This printer supports a conventional Centronics interface.
- **Bidirectional (forward/reverse channel) mode or nibble mode**: This printer supports a bidirectional communication per Nibble mode of the IEEE 1284 Standard.

The cable connector at the printer side should be a shielded, Amphenol DDK 57FE-30360 or equivalent.

The connector pin assignments are given in the following tables by modes. In the tables:

- "Input" denotes a signal from the computer to the printer.
- "Output" denotes a signal from the printer to the computer.
- The return lines specified in the second column represent twisted pairs, with one side connected to signal ground.
- The standard signal levels are 0.0 to +0.4 V (low), and +2.4 to +5.0 V (high).

USB INTERFACE

Cable

This printer supports the USB 1.1 Full speed specification. To connect to the host, use USB 2.0-compliant INF cables (5 meters or shorter). (Use the shielded cables.)

Connector pin alignment

No.	Signal line name	Function
1	vbus	Power supply
2	D-	Data transfer
3	D+	Data transfer
4	GND	Signal ground
Shell	Shield	

- **Connector specification**
  - **Printer side** Type B receptacle (female) Upstream port
  - **Cable side** Type B plug (male)

Specification

- **Basic specification** USB interface compliant

  Note

  It does not guarantee all operations on hosts.

- **Power control** Self-power device
- **Transmission mode** Full speed (Maximum 12 Mbps + 0.25%)

Compatible Mode

Pin No.	Return Pin No.	Signal name	Direction	Description
1	19	Data Strobe (DSTB)	Input	This signal is a strobe pulse for reading data (Data 1 to 8). The printer reads data when this signal is low. The pulse width must be 1 µs or more at the receiving terminal.
2–9	20--27	Data 1 to 8	Input	Data 8 (pin 9) is the most significant bit; however, this pin is not used in 7-bit ASCII communications. Logical 1 signals must go high at least 1 µs before the falling edge of the Data Strobe signal and must stay high for at least 1 µs after the rising edge.
10	28	Acknowledge (ACK)	Output	This pulse signal indicates that the printer has received data and is ready to accept the next set of data. This signal is also sent when the printer is switched from offline to online.
11	29	Busy	Output	Data cannot be received when this signal is high. This signal is high during data entry, when the printer is offline, when the buffer is full, or when an error occurs.
12	30	Paper Empty (PE)	Output	This signal is high when the printer is out of paper.

Pin No.	Return Pin No.	Signal name	Direc-tion	Description
13	–	Select (SLCT)	Output	This signal is high when the printer is online.
14	–	$\overline{\text{Auto Feed XT}}$	Input	Not used
15	–	–	–	No connection
16	–	Signal Ground	–	Logic ground level (0 V)
17	–	Frame Ground	–	Printer chassis ground line. FG and SG are connected.
18	–	+5V	Output	+5 V source (up to 300 mA)
19–30	–	Signal Ground	–	Twisted pair return lines
31	–	$\overline{\text{Input Prime}}$ ($\overline{\text{INPRM}}$)	Input	If this signal is low for more than 50 µs, the printer is reset to the initial condition and is placed online.
32	–	$\overline{\text{Fault}}$	Output	This signal is low when the printer is offline, paper is out, or when there is a printer error.
33	–	Signal Ground	–	Logic ground level (0 V)
34	–	–	–	No connection
35	–	+5 VR	Output	Pulled up to +5 V through a 3.3 ký resistor
36	–	$\overline{\text{SLCT-IN}}$	Input	Not used

Nibble Mode

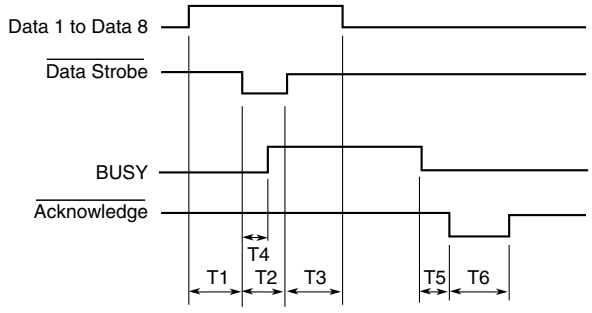
Pin numbers 2 to 9, 15 to 31, and 33 to 35 are the same as the conventional mode.

Pin No.	Return Pin No.	Signal name	Direc-tion	Description
1	19	Host Clock	Input	This signal is set high when the host requests the reverse data transfer phase (nibble mode).
10	28	Printer Clock	Output	Reverse data transfer phase: This signal goes high when data being sent to the host is established. Reverse idle phase: This signal is set low then goes high to interrupt the host, indicating that data is available.
11	29	Printer Busy	Output	Reverse data transfer phase: Data bit 3, data bit 7, then forward path (host to printer) busy status
12	30	Ack Data Req	Output	Reverse data transfer phase: Data bit 2, then data bit 6 Reverse idle phase: This signal is set high until the host requests data and, after that, follows the Data Available signal.
13	–	X Flag	Output	Reverse data transfer phase: Data bit 1, then data bit 5

Pin No.	Return Pin No.	Signal name	Direc-tion	Description
14	–	Host Busy	Input	Reverse data transfer phase: This signal is set low when the host can receive data, and goes high when the host has received data. Following a reverse data transfer, the interface enters the reverse idle phase when the Host Busy signal goes low and the printer has no data. Reverse idle phase: This signal goes high when the Printer Clock signal goes low so that the interface re-enters the reverse data transfer phase. If it goes high with the 1284 Active signal low, the 1284 idle phase is aborted and the interface returns to the compatibility mode.
32	–	$\overline{\text{Data Available}}$	Output	Reverse data transfer phase: This signal is set low when the printer is ready to send data to the host. During the data transfer, it is used as data bit 0 (LSB), then data bit 4. Reverse idle phase: This signal is used to indicate that data is available.
36	–	1284 Active	Input	This signal goes high to cause the printer to enter the reverse data transfer phase (nibble mode).

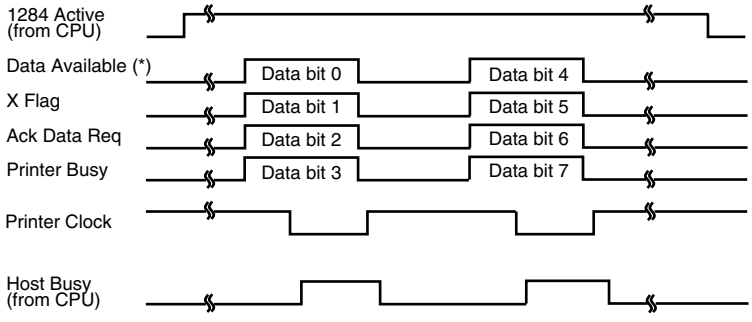
Data Transmission Timing

In unidirectional mode (conventional Centronics interface), this printer guarantees the received data when the Data and Data Strobe signals from the computer have the following timing with respect to the Busy and Acknowledge signals from the printer.



T1, T2, T3 > 1 µs
T4 < 1 µs
0 µs < T5 < 3 µs
2 µs < T6 < 6 µs

In bidirectional mode (nibblemode), this printer can send data to the computer. Data is sent in units of four bits (nibble) using four output signal lines as data paths. The following outlines one byte of data sent during reverse data transfer phase in nibble mode.



* Data Available is assigned for the cable.

SERIAL INTERFACE

RS-232C is the standard serial interface for data terminal equipment. The cable connector at the printer side should be a D-subminiature Cannon or Cinch DB-25P male connector or equivalent that conforms to EIA standards.

The table that follows shows the pin assignments commonly used by most computers. In the table:

- "Input" denotes a signal from the computer to the printer.
- "Output" denotes a signal from the printer to the computer.
- The signal level for mark state (logical 1) is -3 V or lower; for space state (logical 0), it is +3 V or higher.

Pin No.	Signal Name	Direc-tion	Description
1	FG	–	Frame Ground
2	TD	Output	Transmitted Data. This pin carries information from the printer to the computer.
3	RD	Input	Received Data. This pin carries information from the computer to the printer.
4	RTS	Output	Request To Send. Spaces are sent when the printer is ready to transmit data.
5	CTS	Input	Clear To Send. Spaces are sent when the computer is ready to receive data.
6	DSR	Input	Data Set Ready. Spaces are sent when the computer has been powered on and is ready to receive or transmit data.
7	SG	–	Signal Ground (common return)
8	CD	Input	Carrier Detect. Spaces are sent when the computer allows the printer to receive data.
11	RC	Output	Reverse Channel. This signal is used instead of the DTR signal in the RC protocol. Spaces are sent when the printer is ready to receive or transmit data.
20	DTR	Output	Data Terminal Ready. Spaces are sent when the printer has been powered on and is ready to receive or transmit data.

Serial Options

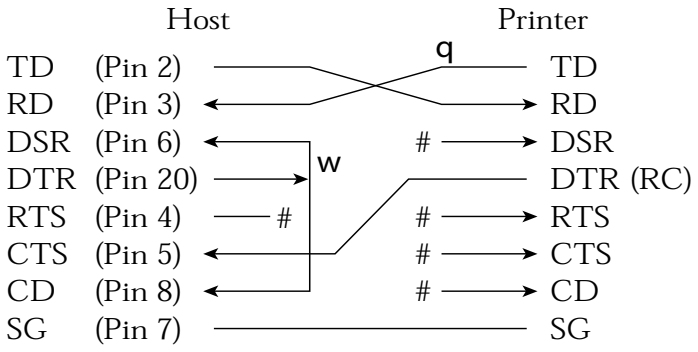
The serial options for the computer and the printer must match. Use the printer control panel, the computer operating system, or your software to change options specified as "selectable."

Transmission mode:	Asynchronous, full duplex, or half duplex (selectable)
Speed:	150, 300, 600, 1200, 2400, 4800, 9600, or 19200 baud (selectable)
Data bits:	7 or 8 bits (selectable)
Parity bit:	Odd, even, mark, space, or none (selectable)
Start bit:	1 bit
Stop bit:	1 or 2 bits (selectable)
Protocol:	XON/XOFF (DC1/DC3), DTR (Data Terminal Ready), or RC (Reverse Channel) (selectable)
Buffer size:	256, 2K, 8K, 24K, 32K, 96K, or 128K bytes (selectable)

Cable Wiring

This printer allows two types of serial communication control: DSR-enabled and DSR-disabled. The type of control required is determined by your computer requirements. The type of control also affects the way the interface cable is wired. To determine whether you need DSR-enabled control or DSR-disabled control, use the printer HARDWRE function (see Chapter 5).

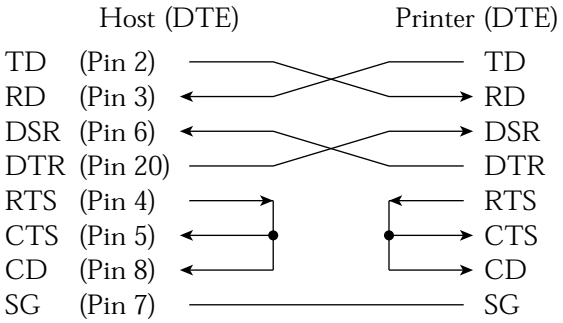
DSR-disabled control offers simpler cabling and communication than does DSR-enabled control. DSR-disabled control can be used to interface with an IBM PC and most other personal computers. With DSR-disabled control, the input control signals DSR, CTS, and CD are always considered high, regardless of their actual states. Therefore, no wire connection for these pins is required. The following figure shows the wiring required for connection to an IBM PC.



# indicates an open wire.
Wire **q** is unnecessary for the DTR (or RC) protocol.
Some computers may not require wire **w**.

DSR-enabled control enables communication using an RS-232C interface. The CTS and DSR input control signals are enabled; CD is ignored. DSR must be high when the printer receives data. If the printer has data to be transmitted to the computer, the printer transmits the data when both DSR and CTS are high.

When using DSR-enabled control, use a straight-through cable to connect to a DCE (data communications equipment) device. Use a null-modem cable to connect to a DTE (data terminal equipment) device, as shown below.



Serial Protocols

A protocol is a set of instructions that control the way data is transmitted between devices such as a computer and printer. The protocol ensures that the computer does not send information to the printer faster than the information can be processed. By telling the computer when the printer can receive data, the protocol prevents the printer's buffer from overflowing.

This printer offers a choice of four different protocols for connection to a variety of computers: XON/XOFF, DTR, and RC. If you computer documentation does not recommend a particular protocol, try DTR. The following table describes the three protocols.

Protocol	Description
XON/XOFF (DC1/DC3)	When the printer is ready to receive data, it sends the XON (DC1) code (hex 11). When fewer than 255 bytes of space remain in the buffer (or when the printer is taken offline), the printer sends the XOFF (DC3) code (hex 13). (When the input buffer is configured for 256 bytes, the buffer limit is reduced from 255 bytes to 63 bytes.) The computer must stop transmitting data within 255 (63) characters of receiving the XOFF code, or information may be lost. If paper runs out, the printer sends an NAK code (hex 15).
DTR	DTR is a hardware protocol; that is, the DTR signal on interface cable pin 20 is used to control the flow of data rather than transmission of a character code. When the printer is ready to receive data, pin 20 is high. When fewer than 255 (63) bytes of space remain in the buffer (or when the printer is taken offline), pin 20 is low. The computer must stop transmitting data within 255 (63) characters of DTR being low, or information may be lost.
RC	The RC protocol is the same as the DTR protocol, except that the Reverse Channel signal (pin 11) is used instead of the Data Terminal Ready signal (pin 20).

CHARACTER SETS

CHARACTER SETS 1 AND 2 (DPL24C PLUS AND IBM XL24E EMULATION)

Below are character sets 1 and 2 of Code Page 437, available in the DPL24C PLUS command set and the IBM Proprinter XL24E emulation. Characters enclosed in boxes differ for sets 1 and 2. Characters in set 2 also vary with the national character set. Code Page 437 is for the USA character set.

Code Page 437 Character Set 1

L\H	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	NUL	DLE	SP	0	@	P	`	p	NUL	DLE	á	▒	└	╨	α	≡
1	SOH	DC1	!	1	A	Q	a	q	SOH	DC1	í	▒	┴	╤	ß	±
2	STX	DC2	"	2	B	R	b	r	STX	DC2	ó	▒	┬	╥	Γ	≥
3	ETX	DC3	#	3	C	S	c	s	ETX	DC3	ú	▒	├	╙	π	≤
4	EOT	DC4	$	4	D	T	d	t	EOT	DC4	ñ	▒	─	╘	Σ	⌠
5	ENQ	NAK	%	5	E	U	e	u	ENQ	NAK	Ñ	▒	┼	╒	σ	⌡
6	ACK	SYN	&	6	F	V	f	v	ACK	SYN	ª	▒	╞	╓	µ	÷
7	BEL	ETB	'	7	G	W	g	w	BEL	ETB	º	▒	╟	╫	τ	≈
8	BS	CAN	(	8	H	X	h	x	BS	CAN	¿	▒	╚	╪	Φ	°
9	HT	EM	)	9	I	Y	i	y	HT	EM	⌐	▒	╔	┘	Θ	∙
A	LF	SUB	*	:	J	Z	j	z	LF	SUB	¬	▒	╩	┌	Ω	·
B	VT	ESC	+	;	K	[	k	{	VT	ESC	½	▒	╦	█	δ	√
C	FF	FS	,	<	L	\	l	|	FF	FS	¼	▒	╠	▄	∞	ⁿ
D	CR	GS	-	=	M	]	m	}	CR	GS	¡	▒	═	▌	Ø	²
E	SO	RS	.	>	N	^	n	~	SO	RS	«	▒	╬	▐	ε	■
F	SI	US	/	?	O	_	o	DEL	SI	US	»	▒	╧	▀	∩	SP

Code Page 437 Character Set 2

L\H	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	NUL	DLE	SP	0	@	P	`	p	Ç	É	á	▒	└	╨	α	≡
1	SOH	DC1	!	1	A	Q	a	q	ü	æ	í	▒	┴	╤	ß	±
2	STX	DC2	"	2	B	R	b	r	é	Æ	ó	▒	┬	╥	Γ	≥
3	♥	DC3	#	3	C	S	c	s	â	ô	ú	▒	├	╙	π	≤
4	♦	DC4	$	4	D	T	d	t	ä	ö	ñ	▒	─	╘	Σ	⌠
5	♣	§	%	5	E	U	e	u	à	ò	Ñ	▒	┼	╒	σ	⌡
6	♠	SYN	&	6	F	V	f	v	å	û	ª	▒	╞	╓	µ	÷
7	BEL	ETB	'	7	G	W	g	w	ç	ù	º	▒	╟	╫	τ	≈
8	BS	CAN	(	8	H	X	h	x	ê	ÿ	¿	▒	╚	╪	Φ	°
9	HT	EM	)	9	I	Y	i	y	ë	Ö	⌐	▒	╔	┘	Θ	∙
A	LF	SUB	*	:	J	Z	j	z	è	Ü	¬	▒	╩	┌	Ω	·
B	VT	ESC	+	;	K	[	k	{	ï	ç	½	▒	╦	█	δ	√
C	FF	FS	,	<	L	\	l	|	î	£	¼	▒	╠	▄	∞	ⁿ
D	CR	GS	-	=	M	]	m	}	ì	¥	¡	▒	═	▌	Ø	²
E	SO	RS	.	>	N	^	n	~	Ä	₧	«	▒	╬	▐	ε	■
F	SI	US	/	?	O	_	o	DEL	Å	ƒ	»	▒	╧	▀	∩	SP

ITALIC AND GRAPHICS CHARACTER SETS (ESC/P2 EMULATION)

The following shows character sets available in the Epson ESC/P2 emulation. Characters differ in codes 128 to 255 (hex 80 to FF).

Italic Character Set

L/H	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	NUL	DLE	SP	0	@	P	`	p	NUL	DLE	SP	*0*	*@*	*P*	*`*	*p*
1	SOH	DC1	!	1	A	Q	a	q	SOH	DC1	!	*1*	*A*	*Q*	*a*	*q*
2	STX	DC2	"	2	B	R	b	r	STX	DC2	"	*2*	*B*	*R*	*b*	*r*
3	ETX	DC3	#	3	C	S	c	s	ETX	DC3	#	*3*	*C*	*S*	*c*	*s*
4	EOT	DC4	$	4	D	T	d	t	EOT	DC4	$	*4*	*D*	*T*	*d*	*t*
5	ENQ	NAK	%	5	E	U	e	u	ENQ	NAK	%	*5*	*E*	*U*	*e*	*u*
6	ACK	SYN	&	6	F	V	f	v	ACK	SYN	&	*6*	*F*	*V*	*f*	*v*
7	BEL	ETB	'	7	G	W	g	w	BEL	ETB	'	*7*	*G*	*W*	*g*	*w*
8	BS	CAN	(	8	H	X	h	x	BS	CAN	(	*8*	*H*	*X*	*h*	*x*
9	HT	EM	)	9	I	Y	i	y	HT	EM	)	*9*	*I*	*Y*	*i*	*y*
A	LF	SUB	*	:	J	Z	j	z	LF	SUB	*	*:*	*J*	*Z*	*j*	*z*
B	VT	ESC	+	;	K	[	k	{	VT	ESC	+	*;*	*K*	*[*	*k*	*{*
C	FF	FS	,	<	L	\	l	|	FF	FS	,	*<*	*L*	**	*l*	*|*
D	CR	GS	-	=	M	]	m	}	CR	GS	-	*=*	*M*	*]*	*m*	*}*
E	SO	RS	.	>	N	^	n	~	SO	RS	.	*>*	*N*	*^*	*n*	*~*
F	SI	US	/	?	O	_	o	DEL	SI	US	/	*?*	*O*	*_*	*o*	SP

Graphics Character Set 1

L/H	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	NUL	DLE	SP	0	@	P	`	p	NUL	DLE	á	▒	└	╨	α	≡
1	SOH	DC1	!	1	A	Q	a	q	SOH	DC1	í	▒	┴	╤	ß	±
2	STX	DC2	"	2	B	R	b	r	STX	DC2	ó	▒	┬	╙	Γ	≥
3	ETX	DC3	#	3	C	S	c	s	ETX	DC3	ú	▒	├	╘	π	≤
4	EOT	DC4	$	4	D	T	d	t	EOT	DC4	ñ	▒	─	╒	Σ	⌠
5	ENQ	$	%	5	E	U	e	u	ENQ	NAK	Ñ	▒	┼	╓	σ	⌡
6	ACK	SYN	&	6	F	V	f	v	ACK	SYN	ª	▒	╞	╫	µ	÷
7	BEL	ETB	'	7	G	W	g	w	BEL	ETB	º	▒	╟	╪	τ	≈
8	BS	CAN	(	8	H	X	h	x	BS	CAN	¿	▒	╚	┘	Φ	°
9	HT	EM	)	9	I	Y	i	y	HT	EM	⌐	▒	╔	┌	Θ	●
A	LF	SUB	*	:	J	Z	j	z	LF	SUB	¬	▒	╩	█	Ω	·
B	VT	ESC	+	;	K	[	k	{	VT	ESC	½	▒	╦	▌	δ	√
C	FF	FS	,	<	L	\	l	|	FF	FS	¼	▒	╠	▐	∞	ⁿ
D	CR	GS	-	=	M	]	m	}	CR	GS	¡	▒	═	▀	ø	²
E	SO	RS	.	>	N	^	n	~	SO	RS	«	▒	╬	▄	ε	■
F	SI	US	/	?	O	_	o	DEL	SI	US	»	▒	╧	▄	∩	SP

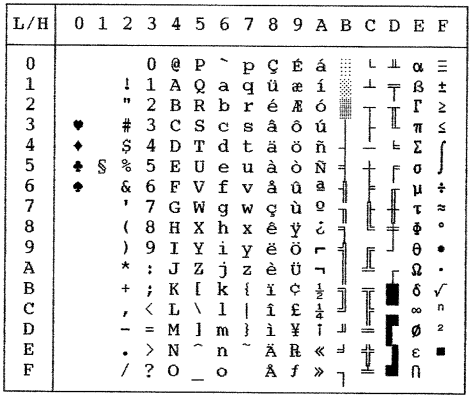
Graphics Character Set 2

L/H	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	NUL	DLE	SP	0	@	P	`	p	Ç	É	á	▒	└	╨	α	≡
1	SOH	DC1	!	1	A	Q	a	q	ü	æ	í	▒	┴	╤	ß	±
2	STX	DC2	"	2	B	R	b	r	é	Æ	ó	▒	┬	╙	Γ	≥
3	ETX	DC3	#	3	C	S	c	s	â	ô	ú	▒	├	╘	π	≤
4	EOT	DC4	$	4	D	T	d	t	ä	ö	ñ	▒	─	╒	Σ	⌠
5	ENQ	§	%	5	E	U	e	u	à	ò	Ñ	▒	┼	╓	σ	⌡
6	ACK	SYN	&	6	F	V	f	v	å	û	ª	▒	╞	╫	µ	÷
7	BEL	ETB	'	7	G	W	g	w	ç	ù	º	▒	╟	╪	τ	≈
8	BS	CAN	(	8	H	X	h	x	ê	ÿ	¿	▒	╚	┘	Φ	°
9	HT	EM	)	9	I	Y	i	y	ë	Ö	⌐	▒	╔	┌	Θ	∙
A	LF	SUB	*	:	J	Z	j	z	è	Ü	¬	▒	╩	▄	Ω	·
B	VT	ESC	+	;	K	[	k	{	ï	¢	½	▒	╦	▌	δ	√
C	FF	FS	,	<	L	\	l	|	î	£	¼	▒	╠	▐	∞	ⁿ
D	CR	GS	-	=	M	]	m	}	ì	¥	¡	▒	═	▀	ø	²
E	SO	RS	.	>	N	^	n	~	Ä	₧	«	▒	╬	■	ε	■
F	SI	US	/	?	O	_	o	DEL	Å	ƒ	»	▒	╧	▀	∩	SP

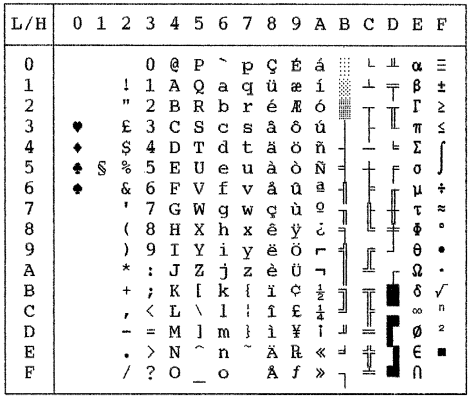
NATIONAL CHARACTER SETS (ALL EMULATIONS)

Below are the 50 national character sets available for all emulations of this printer. These character sets support different characters and symbols specific to different languages. Note that these tables are for Courier 10, a resident font, and that some national character sets do not have some characters and symbols whose use depends on resident fonts. For details, see the table at the end of this appendix.

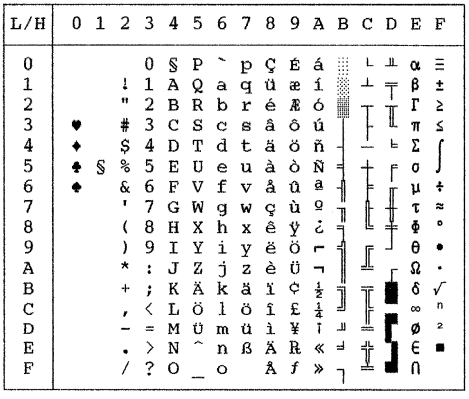
PAGE437/USA (Code Page 437/USA)



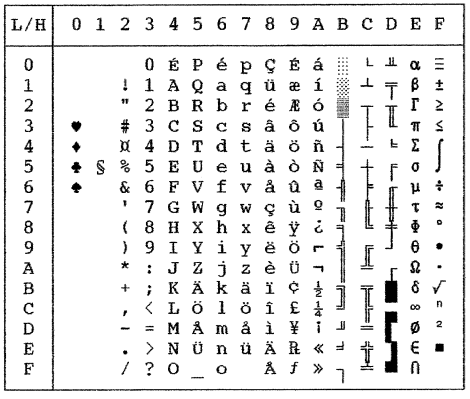
UK (British English)



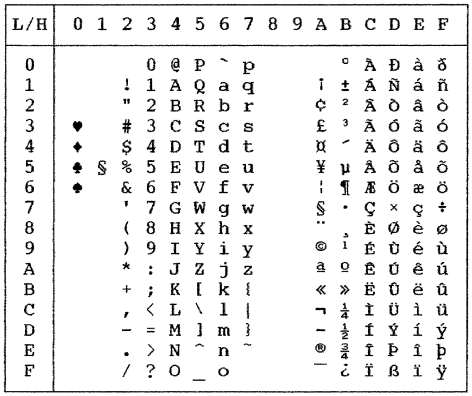
GERMAN (German)



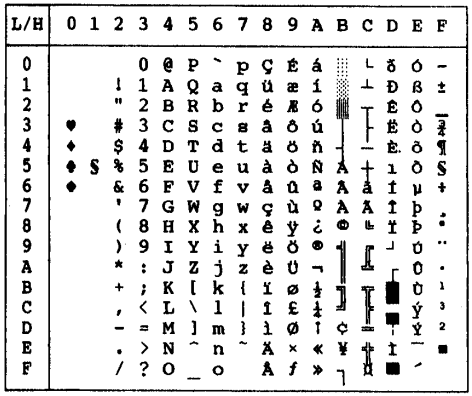
SWEDISH (Swedish)



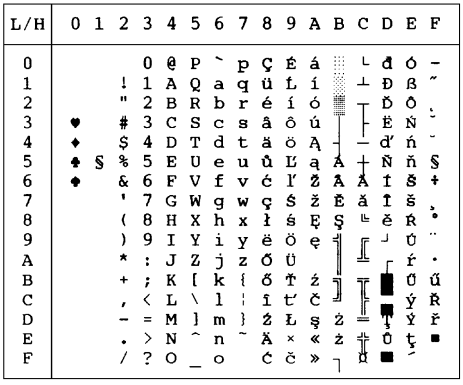
ISO8859/ECMA94 (ISO 8859-1/ECMA94)



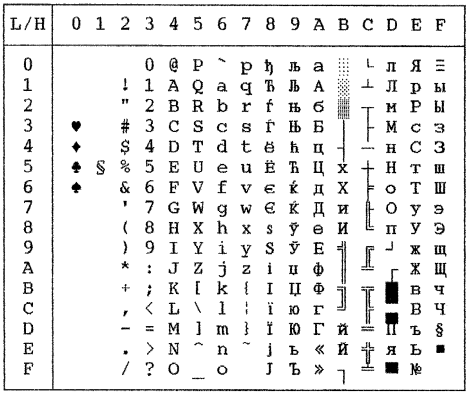
PAGE850 (Code Page 850(Multilingual))



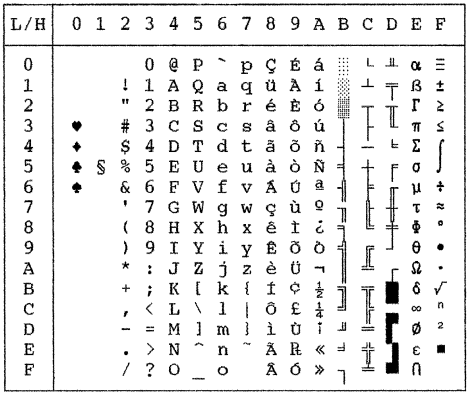
PAGE852/PG852-T (Code Page 852)



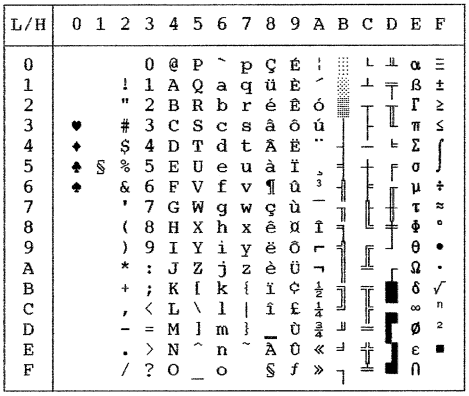
PAGE855 (Code Page 855)



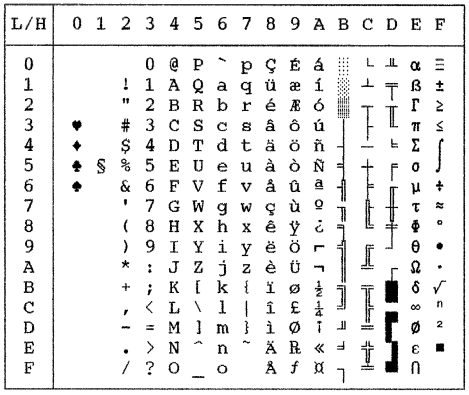
PAGE860 (Code Page 860(Portugal))



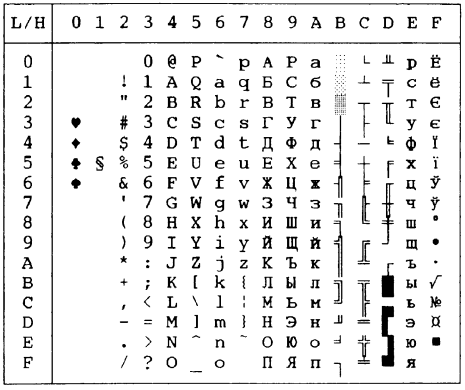
PAGE863 (Code Page 863 (Canada-French))



PAGE865 (Code Page 865(Nordic))



PAGE866 (Code Page 866(Cyrillic))



HUNGARY/HUNG-T (Hungarian)

L/H	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0				0	@	P	`	p	Ç	É	á	░	└	╨	α	≡
1			!	1	A	Q	a	q	ü	æ	í	▒	┴	╤	β	±
2			"	2	B	R	b	r	é	Æ	ó	▓	┬	╥	Γ	≥
3	♥		#	3	C	S	c	s	â	ő	ú	│	├	╙	π	≤
4	♦		$	4	D	T	d	t	ä	ö	ñ	┤	─	╘	Σ	⌠
5	♣	§	%	5	E	U	e	u	à	ó	Ñ	╡	┼	╒	σ	⌡
6	♠		&	6	F	V	f	v	å	ű	ª	╢	╞	╓	µ	÷
7			'	7	G	W	g	w	ç	Ú	ő	╖	╟	╫	τ	≈
8			(	8	H	X	h	x	ê	Ű	¿	╕	╚	╪	Φ	°
9			)	9	I	Y	i	y	ë	Ö	⌐	╣	╔	┘	Θ	•
A			*	:	J	Z	j	z	è	Ü	¬	║	╩	┌	Ω	·
B			+	;	K	[	k	{	ï	¢	½	╗	╦	█	δ	√
C			,	<	L	\	l	¦	î	£	¼	╝	╠	▄	∞	ⁿ
D			-	=	M	]	m	}	í	¥	¡	╜	═	▌	ø	²
E			.	>	N	^	n	~	Ä	₧	«	╛	╬	▐	∈	■
F			/	?	O	_	o		Á	ƒ	»	┐	╧	▀	∩	

SLOV/SLOV-T (Slovenian)

L/H	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0				0	Ž	P	ž	p	Ç	É	á	░	└	╨	α	≡
1			!	1	A	Q	a	q	ü	æ	í	▒	┴	╤	β	±
2			"	2	B	R	b	r	é	Æ	ó	▓	┬	╥	Γ	≥
3	♥		#	3	C	S	c	s	â	ô	ú	│	├	╙	π	≤
4	♦		$	4	D	T	d	t	ä	ö	ñ	┤	─	╘	Σ	⌠
5	♣	§	%	5	E	U	e	u	à	ò	Ñ	╡	┼	╒	σ	⌡
6	♠		&	6	F	V	f	v	å	û	ª	╢	╞	╓	µ	÷
7			'	7	G	W	g	w	ç	ù	º	╖	╟	╫	τ	≈
8			(	8	H	X	h	x	ê	ÿ	¿	╕	╚	╪	Φ	°
9			)	9	I	Y	i	y	ë	Ö	⌐	╣	╔	┘	Θ	•
A			*	:	J	Z	j	z	è	Ü	¬	║	╩	┌	Ω	·
B			+	;	K	Š	k	š	ï	¢	½	╗	╦	█	δ	√
C			,	<	L	Đ	l	đ	î	£	¼	╝	╠	▄	∞	ⁿ
D			-	=	M	Ć	m	ć	ì	¥	¡	╜	═	▌	ø	²
E			.	>	N	Č	n	č	Ä	₧	«	╛	╬	▐	∈	■
F			/	?	O	_	o		Å	ƒ	»	┐	╧	▀	∩	

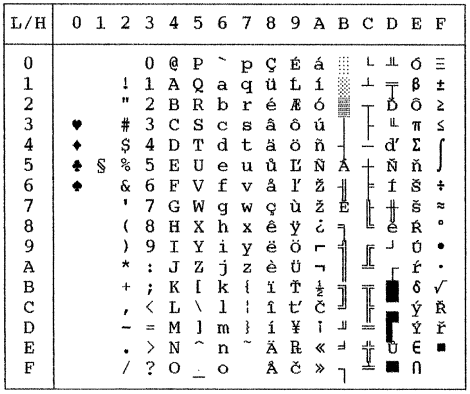
POLISH/POLSH-T (Polish)

L/H	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0				0	@	P	`	p	Ç	Ę	Ż	░	└	đ	α	–
1			!	1	A	Q	a	q	ü	ę	Ź	▒	┴	Đ	ß	˝
2			"	2	B	R	b	r	é	ł	ó	▓	┬	Ď	Ô	˛
3	♥		#	3	C	S	c	s	â	ô	Ó	│	├	Ë	π	ˇ
4	♦		$	4	D	T	d	t	ä	ö	ń	┤	─	ď	Σ	˘
5	♣	§	%	5	E	U	e	u	ů	Ć	Ń	Á	┼	Ň	ň	§
6	♠		&	6	F	V	f	v	ą	ľ	ż	Â	Ă	Í	Š	÷
7			'	7	G	W	g	w	ç	ù	Ž	Ě	ă	Î	š	¸
8			(	8	H	X	h	x	ê	Ś	¿	Ş	╚	ě	Ŕ	
9			)	9	I	Y	i	y	ë	Ö	⌐	╣	╔	┘	Ú	¨
A			*	:	J	Z	j	z	Ő	Ü		║	╩	┌	ŕ	˙
B			+	;	K	[	k	{	ő	Ť	ź	╗	╦	█	Ű	ű
C			,	<	L	\	l	¦	î	Ł	Č	╝	╠	▄	ý	Ř
D			-	=	M	]	m	}	ć	¥	ş	╜	═	Ţ	Ý	ř
E			.	>	N	^	n	~	Ä	ś	«	╛	╬	Ů	ţ	■
F			/	?	O	_	o		Å	č	»	┐	¤	▀	´	

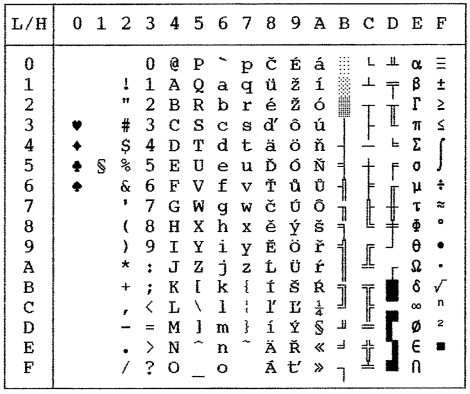
MAZOWIA/MAZOW-T (Mazowian)

L/H	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0				0	@	P	`	p	Ç	Ę	Ź	░	└	╨	α	≡
1			!	1	A	Q	a	q	ü	ę	Ż	▒	┴	╤	β	±
2			"	2	B	R	b	r	é	ł	ó	▓	┬	╥	Γ	≥
3	♥		#	3	C	S	c	s	â	ô	Ó	│	├	╙	π	≤
4	♦		$	4	D	T	d	t	ä	ö	ń	┤	─	╘	Σ	⌠
5	♣	§	%	5	E	U	e	u	à	Ć	Ń	╡	┼	╒	σ	⌡
6	♠		&	6	F	V	f	v	ą	û	ź	╢	╞	╓	µ	÷
7			'	7	G	W	g	w	ç	ù	ż	╖	╟	╫	τ	≈
8			(	8	H	X	h	x	ê	Ś	§	╕	╚	╪	Φ	°
9			)	9	I	Y	i	y	ë	Ö	⌐	╣	╔	┘	Θ	•
A			*	:	J	Z	j	z	è	Ü	¬	║	╩	┌	Ω	·
B			+	;	K	[	k	{	ï	zł	½	╗	╦	█	δ	√
C			,	<	L	\	l	¦	î	Ł	¼	╝	╠	▄	∞	ⁿ
D			-	=	M	]	m	}	ć	¥	¡	╜	═	▌	ø	²
E			.	>	N	^	n	~	Ä	ś	«	╛	╬	▐	∈	■
F			/	?	O	_	o		Å	ƒ	»	┐	╧	▀	∩	

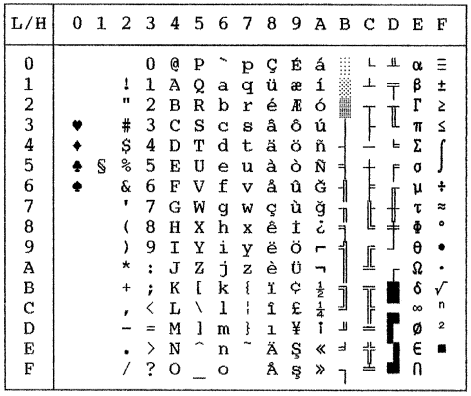
LATIN2/LATN2-T (Latin2)



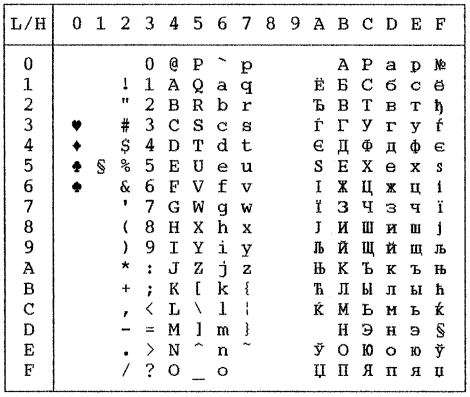
KAMENIC/KAMEN-T (Kamenicky)



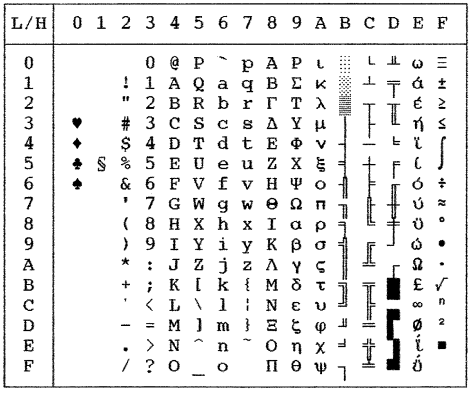
TURKY/TURKY-T (Turkish)



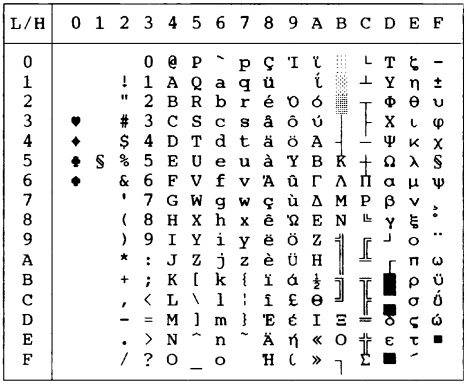
CYRILIC (Cyrillic)



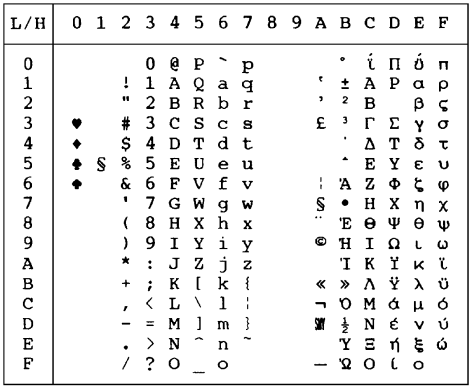
IBM437 (IBM 437)



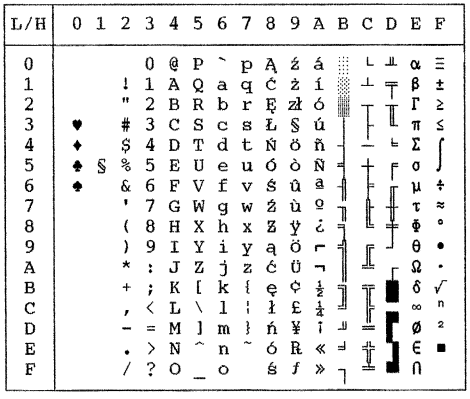
IBM851 (IBM 851)



ELOT928 (ELOT 928)



PG-DHN (Code Page DHN)



LATIN-P (Latin Polish)

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5	♣	§	%	5	E	U	e	u	à	ò	ą	╡	┼	╒	σ	⌡
6	♠		&	6	F	V	f	v	ć	û	ª	╢	╞	╓	µ	÷
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ISO-LTN (ISO Latin)

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2			"	2	B	R	b	r			˘	˛	Â	Ň	â	ň
3	♥		#	3	C	S	c	s			Ł	ł	Ă	Ó	ă	ó
4	♦		$	4	D	T	d	t			¤	´	Ä	Ô	ä	ô
5	♣	§	%	5	E	U	e	u			Ľ	ľ	Ĺ	Ő	ĺ	ő
6	♠		&	6	F	V	f	v			Ś	ś	Ć	Ö	ć	ö
7			'	7	G	W	g	w			§	ˇ	Ç	×	ç	÷
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9			)	9	I	Y	i	y			Š	š	É	Ů	é	ů
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F			/	?	O	_	o				Ż	ż	Ď	ß	ď	˙

LITHUA1 (Lithuanian 1)

L/H	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0				0	@	P	`	p	А	Р	а	░	└	ą	р	≡
1			!	1	A	Q	a	q	Б	С	б	▒	┴	č	с	±
2			"	2	B	R	b	r	В	Т	в	▓	┬	ę	т	≥
3	♥		#	3	C	S	c	s	Г	У	г	│	├	ė	у	≤
4	♦		$	4	D	T	d	t	Д	Ф	д	┤	─	į	ф	⌠
5	♣	§	%	5	E	U	e	u	Е	Х	е	Ą	┼	š	х	⌡
6	♠		&	6	F	V	f	v	Ж	Ц	ж	Č	Ų	ų	ц	÷
7			'	7	G	W	g	w	З	Ч	з	Ę	Ū	ū	ч	≈
8			(	8	H	X	h	x	И	Ш	и	Ė	╚	ž	ш	°
9			)	9	I	Y	i	y	Й	Щ	й	╣	╔	┘	щ	∙
A			*	:	J	Z	j	z	К	Ъ	к	║	╩	┌	ъ	·
B			+	;	K	[	k	{	Л	Ы	л	╗	╦	█	ы	√
C			,	<	L	\	l	|	М	Ь	м	╝	╠	▄	ь	ⁿ
D			-	=	M	]	m	}	Н	Э	н	Į	═	▌	э	²
E			.	>	N	^	n	~	О	Ю	о	Š	╬	▐	ю	■
F			/	?	O	_	o		П	Я	п	┐	Ž	▀	я	

LITHUA2 (Lithuanian 2)

L/H	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0				0	@	P	`	p	А	Р	а	░	└	╨	р	Ę
1			!	1	A	Q	a	q	Б	С	б	▒	┴	╤	с	ę
2			"	2	B	R	b	r	В	Т	в	▓	┬	╥	т	Ė
3	♥		#	3	C	S	c	s	Г	У	г	│	├	╙	у	ė
4	♦		$	4	D	T	d	t	Д	Ф	д	┤	─	╘	ф	Į
5	♣	§	%	5	E	U	e	u	Е	Х	е	╡	┼	╒	х	į
6	♠		&	6	F	V	f	v	Ж	Ц	ж	╢	╞	╓	ц	Š
7			'	7	G	W	g	w	З	Ч	з	╖	╟	╫	ч	š
8			(	8	H	X	h	x	И	Ш	и	╕	╚	╪	ш	Ų
9			)	9	I	Y	i	y	Й	Щ	й	╣	╔	┘	щ	ų
A			*	:	J	Z	j	z	К	Ъ	к	║	╩	┌	ъ	Ū
B			+	;	K	[	k	{	Л	Ы	л	╗	╦	█	ы	ū
C			,	<	L	\	l	|	М	Ь	м	╝	╠	Ą	ь	Ž
D			-	=	M	]	m	}	Н	Э	н	╜	═	ą	э	ž
E			.	>	N	^	n	~	О	Ю	о	╛	╬	Č	ю	■
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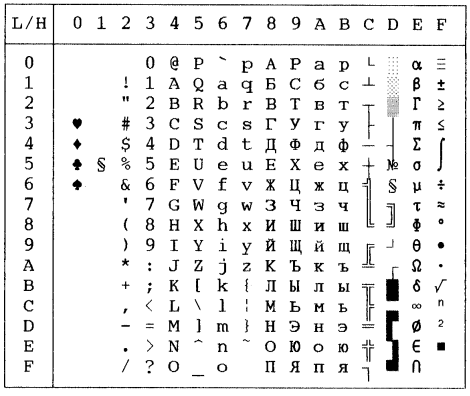
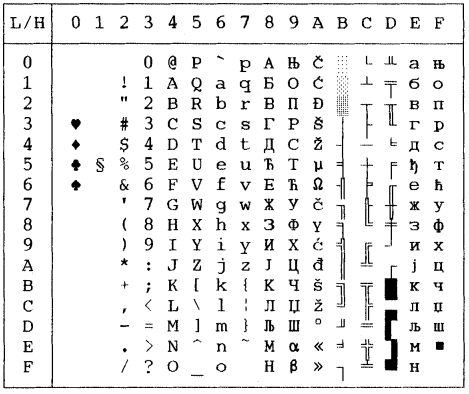
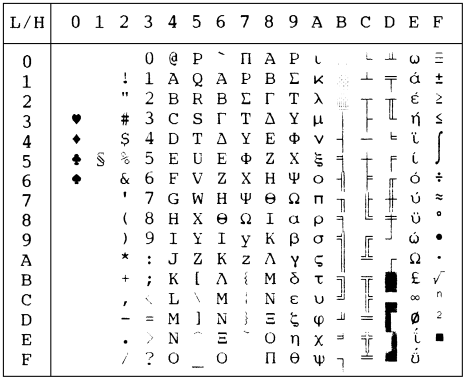
MIK



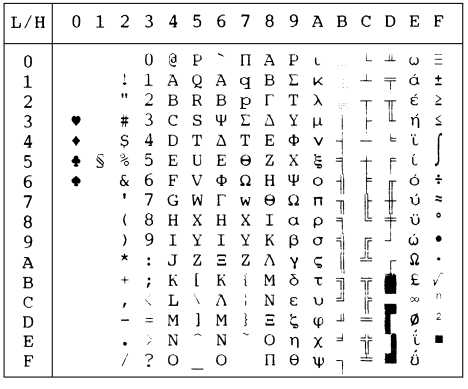
MACEDON (Macedonian)



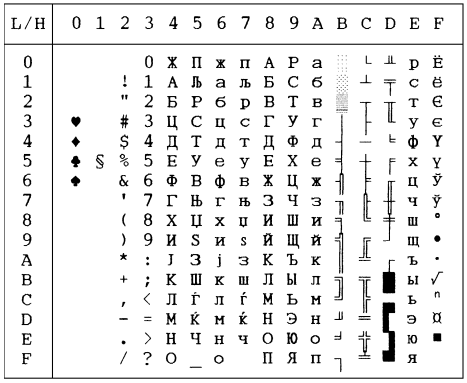
ABG



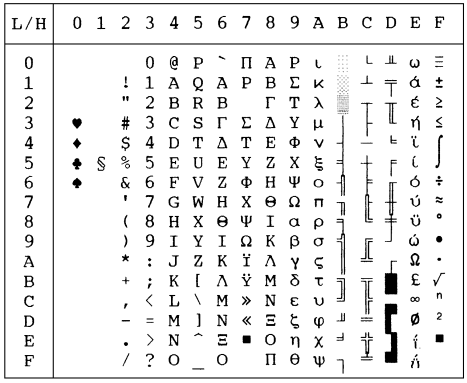
ABY



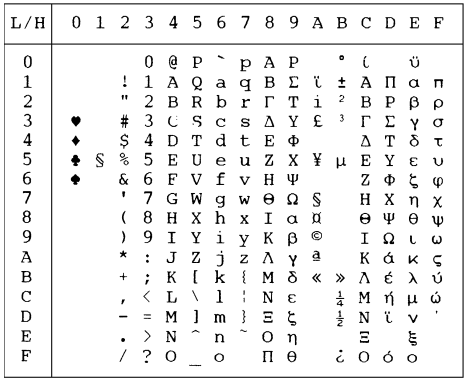
PG-MAC



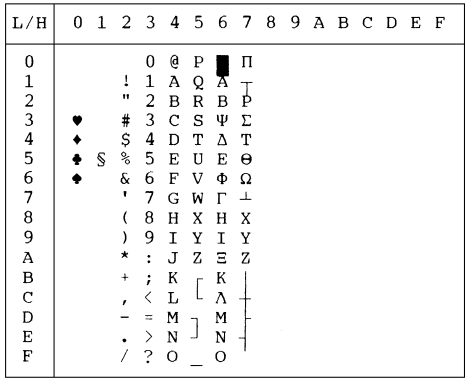
ELOT927



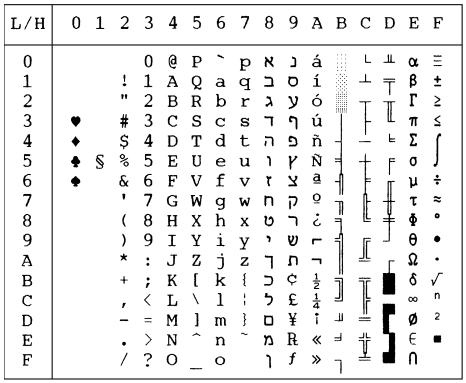
DECGR



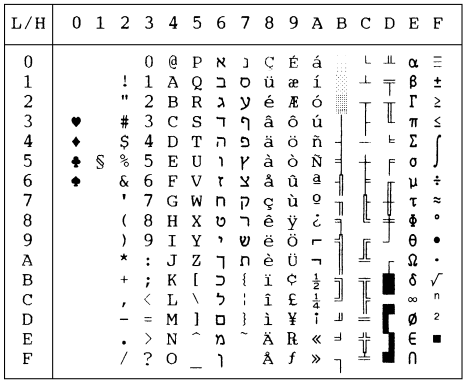
GREEK 11



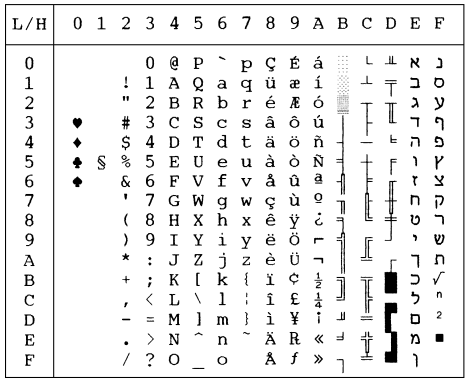
PAGE862



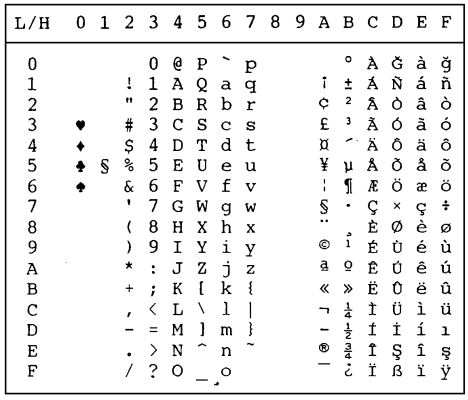
HBR OLD



HBR DEC



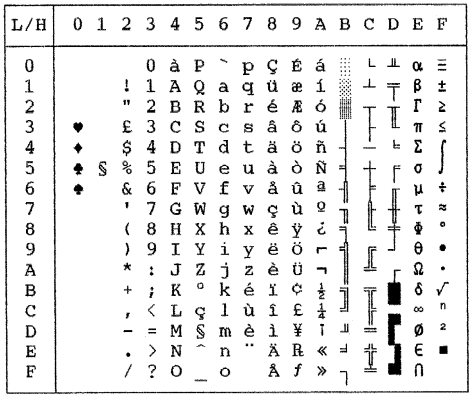
ISO-TUK



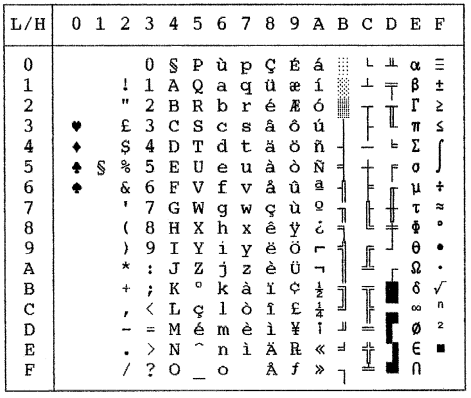
NATIONAL CHARACTER SETS (DPL24C PLUS AND IBM XL24E EMULATION)

The following character sets differ from those of Code Page 437 (USA), available in the DPL24C PLUS command set and the IBM Proprinter XL24E emulation.

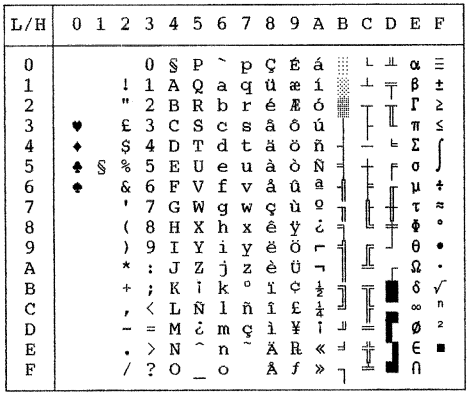
FRENCH (French)



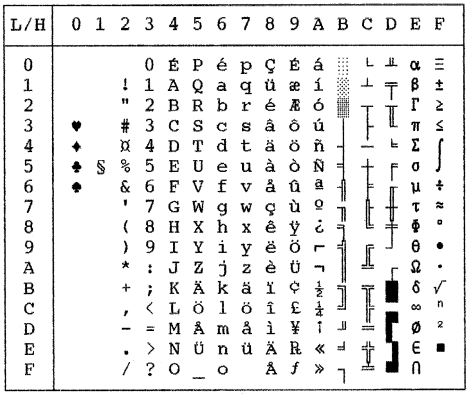
ITALIAN (Italian)



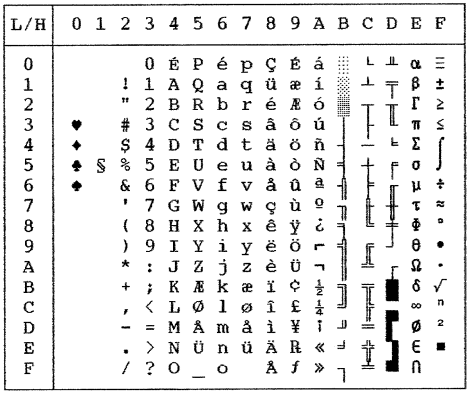
SPANISH (Spanish)



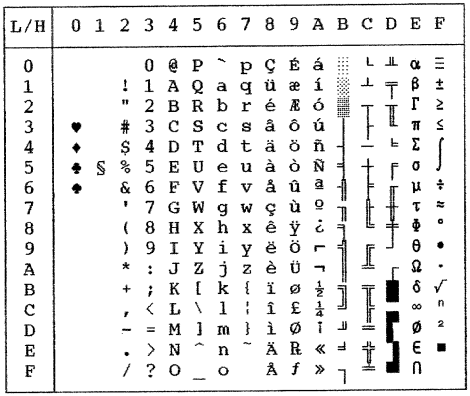
FINNISH (Finnish)



DANISH1/NORWEGN (Danish1/Norwegian)



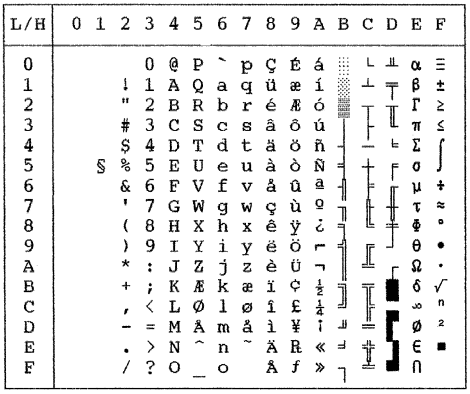
DANISH2 (Danish2)



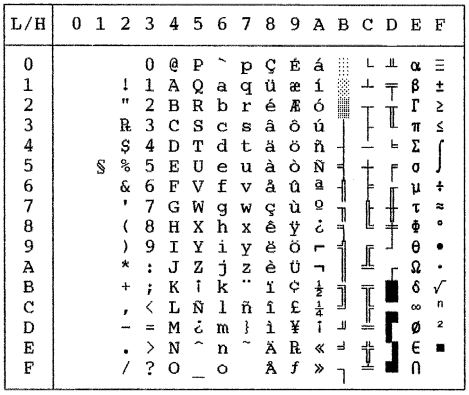
NATIONAL CHARACTER SETS (ESC/P2 EMULATION)

The following character sets differ from the graphics character sets available in the Epson ESC/P2 emulation.

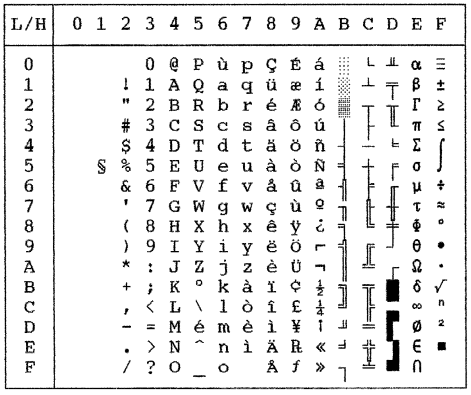
DANISH1 (Danish1)



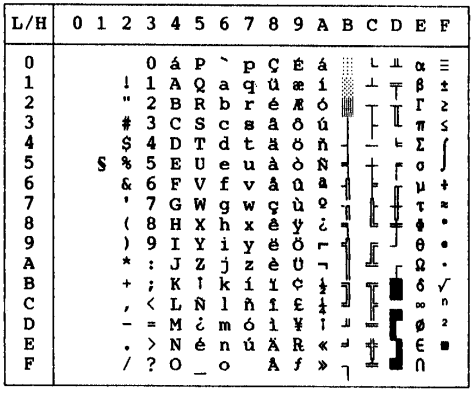
SPANSH1 (Spanish1)



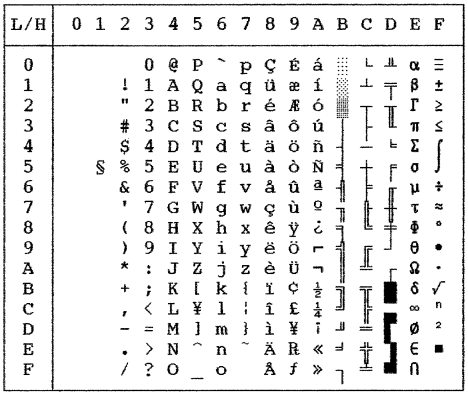
ITALIAN (Italian)



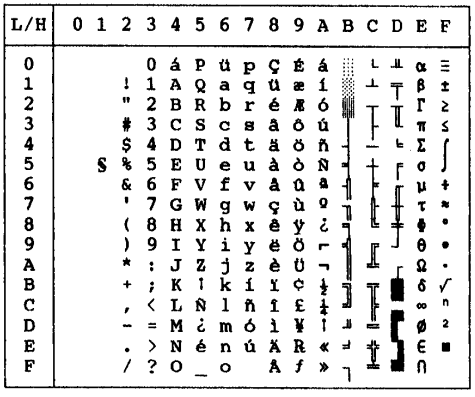
SPANSH2 (Spanish2)



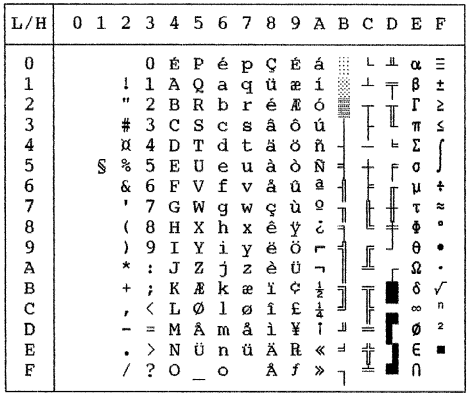
JAPAN (Japanese)



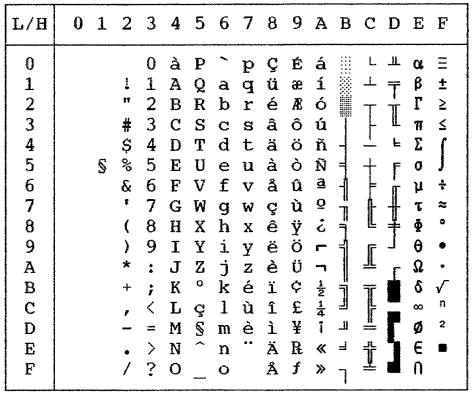
LATIN A (Latin American)



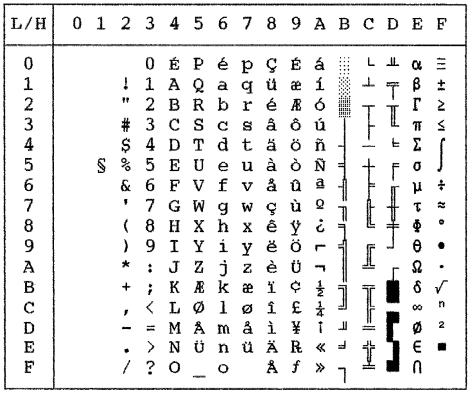
NORWEGN (Norwegian)



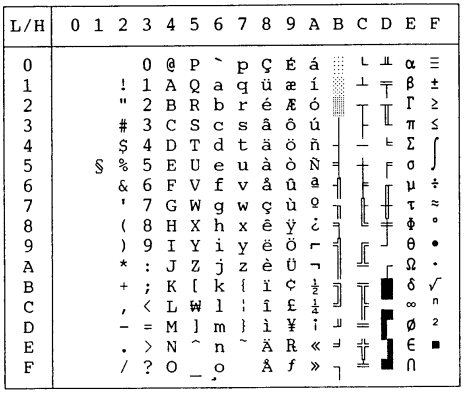
FRENCH (French)



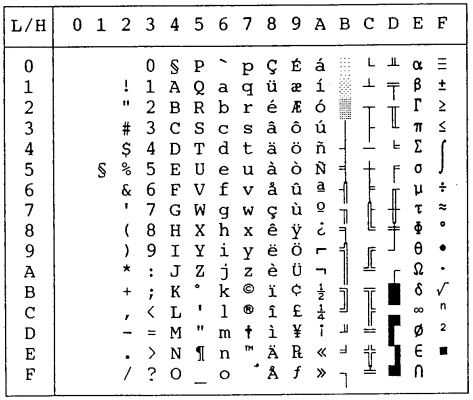
DANISH2 (Danish2)



KOREA (Korea)



LEGAL (Legal)



NATIONAL CHARACTER SETS AND SUPPORTED RESIDENT FONTS (ALL EMULATIONS)

In all emulations, this printer supports 50 national character sets for characters and symbols specific to different languages. Some national character sets, however, do not have some characters and symbols and may not be usable, depending on resident fonts. The following tables show which of the resident fonts are supported for each national character set:

Resident font		Courier 10	Elite 12	Compress	Draft	Bold PS	Pica 10	Courier scalable**	Timeless **	Nimbus Sans **	Correspondence	H-draft***	OCR-B	OCR-A
National character set	Name in setup menu													
USA *	USA	√	√	√	√	√	√	√	√	√	√	√	√	
United Kingdom	UK	√	√	√	√	√	√	√	√	√	√	√		
German	GERMAN	√	√	√	√	√	√	√	√	√	√	√		

(Continued on the next page)

* USA is the same as Code Page 437.

** These are scalable and provided with upright, italic, and bold as resident fonts.

*** H-draft stands for high-speed draft.

√: Supported

Resident font		Courier 10	Elite 12	Compress	Draft	Bold PS	Pica 10	Courier scalable**	Timeless **	Nimbus Sans **	Correspondence	H-draft***	OCR-B	OCR-A
National character set	Name in setup menu													
Swedish	SWEDISH	√	√	√	√	√	√	√	√	√	√	√	√	
ISO 8859-1	ISO8859	√	√	√	√	√	√	√	√	√	√	√	√	
ECMA94	ECMA94	√	√	√	√	√	√	√	√	√	√	√	√	
Code Öage 437 *	ÖAGE437	√	√	√	√	√	√	√	√	√	√	√	√	√
Code Öage 850	ÖAGE850	√	√	√	√	√	√	√	√	√	√	√	√	
Code Öage 852	ÖAGE852	√	√	√	√	√	√	√	√	√	√	√		
Code two-Öass	ÖAGE852-T	√	√	√	√	√	√	√	√	√	√	√		
Code Öage 855	ÖAGE855	√	√	√	√			√	√	√				
Code Öage 860	ÖAGE860	√	√	√	√	√	√	√	√	√	√	√	√	
Code Öage 863	ÖAGE863	√	√	√	√	√	√	√	√	√	√	√	√	
Code Öage 865	ÖAGE865	√	√	√	√	√	√	√	√	√	√	√	√	
Code Öage 866	ÖAGE866	√	√	√	√			√	√	√				
Hungarian	HUNGARY	√	√	√	√	√	√	√	√	√	√	√		
Hungarian two-Öass	HUNG-T	√	√	√	√	√	√	√	√	√	√	√		
Slovenian	SLOV	√	√	√	√	√	√	√	√	√	√	√	√	
Slovenian two-Öass	SLOV-T	√	√	√	√	√	√	√	√	√	√	√		
Öolish	ÖOLISH	√	√	√	√	√	√	√	√	√	√	√		
Öolish two-Öass	ÖOLSH-T	√	√	√	√	√	√	√	√	√	√	√		
Mazovian	MAZOWIA	√	√	√	√	√	√				√	√		
Mazovian two-Öass	MAZOW-T	√	√	√	√	√	√				√	√		
Latin 2	LATIN2	√	√	√	√	√	√	√	√	√	√	√		
Latin 2 two-Öass	LATIN2-T	√	√	√	√	√	√	√	√	√	√	√		

(Continued on the next page)

* USA is the same as Code Page 437.

** These are scalable and provided with upright, italic, and bold as resident fonts.

*** H-draft stands for high-speed draft.

√: Supported

Resident font		Courier 10	Elite 12	Compress	Draft	Bold PS	Pica 10	Courier scalable**	Timeless **	Nimbus Sans **	Correspondence	H-draft***	OCR-A	OCR-B
National character set	**Name in setup menu**													
Kamenicky	KAMENIC	√	√	√	√	√	√	√	√	√	√	√		
Kamenicky two-Öass	KAMEN-T	√	√	√	√	√	√	√	√	√	√	√		
Turkish	TURKY	√	√	√	√	√	√	√	√	√	√	√		
Turkish two-Öass	TURKY-T	√	√	√	√	√	√	√	√	√	√	√		
Cyrillic	CYRILIC	√	√	√	√			√	√	√				
IBM 437	IBM437	√	√	√	√			√	√	√		√		
IBM 851	IBM851	√	√	√	√			√	√	√		√		
ELOT 928	ELOT928	√	√	√	√							√		
Code Öage DHN	ÖG-DHN	√	√	√	√	√	√				√	√		
Latin Öolish	LATIN-Ö	√	√	√	√	√	√				√	√		
ISO Latin	ISO-LTN	√	√	√	√	√	√				√	√		
Lithuanian 1	LITHUA1	√	√	√	√									
Lithuanian 2	LITHUA2	√	√	√	√									
MIK	MIK	√	√	√	√			√	√	√				
Macedonian	MACEDON	√	√	√	√			√	√	√				
ABG	ABG	√	√	√	√			√	√	√				
ABY	ABY	√	√	√	√			√	√	√				
Code Öage MAC	ÖG-MAC	√	√	√	√			√	√	√				
ELOT927	ELOT927	√	√	√	√			√	√	√				
DEC Greek	DEC GR	√	√	√	√			√	√	√				
Greek 11	GREEK 11	√	√	√	√			√	√	√				
Code Öage 862	ÖG862	√	√	√	√	√	√							
Hebrew Old	HBR-OLD	√	√	√	√	√	√							
Hebrew DEC	HBR-DEC	√	√	√	√	√	√							
ISO-Turkish	ISO-TUK	√	√	√	√	√	√							
RUSCII														
LATIN-9														

* USA is the same as Code Page 437.

** These are scalable and provided with upright, italic, and bold as resident fonts.

*** H-draft stands for high-speed draft.

√: Supported

F

RESIDENT FONTS

This appendix provides print samples of the printer's nineteen resident fonts.

COURIER 10

The 24-wire dot-matrix printer prints quality characters and symbols using a variety of sizes and fonts.

PRESTIGE ELITE 12

The 24-wire dot-matrix printer prints quality characters and symbols using a variety of sizes and fonts.

DRAFT 12

The 24-wire dot-matrix printer prints quality characters and symbols using a variety of sizes and fonts.

COMPRESSED

The 24-wire dot-matrix printer prints quality characters and symbols using a variety of sizes and fonts.

PICA 10

The 24-wire dot-matrix printer prints quality characters and symbols using a variety of sizes and fonts.

CORRESPONDENCE 10

The 24-wire dot-matrix printer prints quality characters and symbols using a variety of sizes and fonts.

HIGH-SPEED DRAFT 12

The 24-wire dot-matrix printer prints quality characters and symbols using a variety of sizes and fonts.

BOLDFACE PS

The 24-wire dot-matrix printer prints quality characters and symbols using a variety of sizes and fonts.

OCR-B 10

The 24-wire dot-matrix printer prints quality characters and symbols using a variety of sizes and fonts.

OCR-A 10

The 24-wire dot-matrix printer prints quality characters and symbols using a variety of sizes and fonts.

COURIER (SCALABLE)

Normal

The 24-wire dot-matrix printer prints quality characters and symbols using a variety of sizes and fonts.

Bold

The 24-wire dot-matrix printer prints quality characters and symbols using a variety of sizes and fonts.

Italic

The 24-wire dot-matrix printer prints quality characters and symbols using a variety of sizes and fonts.

NIMBUS SANS ® (SCALABLE)

Normal

The 24-wire dot-matrix printer prints quality characters and symbols using a variety of sizes and fonts.

Bold

The 24-wire dot-matrix printer prints quality characters and symbols using a variety of sizes and fonts.

Italic

The 24-wire dot-matrix printer prints quality characters and symbols using a variety of sizes and fonts.

TIMELESS (SCALABLE)

Normal

The 24-wire dot-matrix printer prints quality characters and symbols using a variety of sizes and fonts.

Bold

The 24-wire dot-matrix printer prints quality characters and symbols using a variety of sizes and fonts.

Italic

The 24-wire dot-matrix printer prints quality characters and symbols using a variety of sizes and fonts.

GLOSSARY OF TERMS

A4 size

A standard paper size used in Japan and other countries. Paper is 210 ¥ 295 mm (8.25 ¥ 11.6 inches).

Application software

Software programs that perform tasks on a computer. Such programs include word processing, database management, and accounting, for example.

ASCII

The acronym for American National Standard Code for Information Interchange. ASCII is a set of 256 codes (numbered 0 to 255) used to communicate information between a computer and another device such as a printer.

Baud rate

The speed, in bits per second, at which data is transmitted to a device such as a printer. Baud rates apply to serial data only. 1200 baud equals approximately 120 characters per second.

Bidirectional printing

Alternate printing of lines from left to right and right to left. Bidirectional printing is faster than unidirectional printing because there are no carriage returns.

Bit

The smallest unit of information in computer memory. A bit is a single digit, either a 1 or a 0, in the binary numbering system. Eight bits equal one byte.

Buffer

A storage area for data in the printer or computer. The printer's buffer consists of a print buffer and a download buffer. The print buffer holds data to be printed. The download buffer holds downloaded data such as download (soft) fonts.

Byte

A byte consists of eight bits that constitute one symbol. A byte represents a single character, such as number, letter, or special control character.

Carriage return (CR) The return of the print head carriage to the beginning of the next line.

Centronics interface A type of parallel interface. See Parallel interface.

Column A vertical section on a printed page. This printer can print 80-column pages at 10-pitch (10 characters per inch).

Command set A set of print and format commands used to control the printer. Each printer has its own resident command sets embedded in the printer firmware. These command sets are actuated by codes sent from the host computer.

Condensed print Print that uses "condensed" characters. Condensed characters are narrower than regular characters. Using condensed print increases the number of characters per line.

Continuous forms Connected, fan-folded sheets of paper that are fed into the printer using forms tractors. The fan-folded sheets are separated by tearing them at their perforations.

Control panel A panel containing the printer indicators and buttons. The control panel is used to control printer operations, such as loading paper, selecting print features, and changing setup options.

cpi Characters per horizontal inch. Also referred to as pitch. For example, 12-pitch means 12 cpi.

cps Characters per second.

Cut sheets See Single sheets.

Defaults Settings selected automatically by the printer when power is turned on. Enter setup mode to change the defaults to ensure compatibility with your system hardware and software.

Dot matrix The grid used to print characters on a dot matrix printer. Each dot corresponds to a wire in the print head.

Downloading — Transferring soft fonts from the computer to the printer's memory. Downloading allows you to use fonts not resident in the computer.

dpi — Dots per inch.

Emulation — A command set that allows one printer to print like another printer. This printer has three resident emulations: Fujitsu DPL24C PLUS (native command set), IBM proprinter XL24E, and Epson ESC/P2.

Font — A complete set of printable characters having the same size and style. For example, Courier 10 and Prestige Elite 12 are commonly used fonts.

Form feed (FF) — A signal to the printer to advance the paper forward one page. Form feeds can be executed either by your software or by holding down the LF/FF button on the printer control panel.

Graphics printing — Controlling the print head wires (dots) individually to produce a picture or an image on the page.

Hexadecimal — A base-16 numbering system (also commonly referred to as hex numbers). Since a base-16 system requires 16 digits, numbers 0 through 9 and letters A through F are used. Expressing binary numbers in hexadecimal uses fewer digits.

Hex dump — A hexadecimal printout of control codes and data. Hex dumps are used to debug computer programs and to troubleshoot printer malfunctions. To print a hex dump on the printer, use the HEX-DUMP function in setup mode.

Interface — A connection that allows communication from one part of a system to another. For example, electrical signals are transferred between the computer and printer over an interface cable.

K byte — Kilobyte. 1K byte equals 1024 bytes.

Letter size — A standard paper size used in the United States and other countries. Paper is 8-1/2 ¥ 11 inches (215.9 ¥ 279.4 mm).

Line feed (LF) — A signal to the printer that advances the paper forward one line. Line feeds can be executed either by your software or by pressing the LF/FF button on the printer control panel.

Line spacing — The vertical spacing between lines, measured in lines per inch.

lpi — Lines per inch. Used to measure line spacing.

Monospacing — Character spacing in which each printed character has the same width. Also called fixed pitch, monospacing is the opposite of proportional spacing. Typewriter or computer-printed text is typically monospaced.

Nonresident font — Fonts not present (resident) in the printer's permanent memory. Soft fonts and fonts on font cards are examples of nonresident fonts.

Normal mode — One of the printer's two operating modes. In normal mode, the control panel can be used to perform everyday printer operations, such as loading and unloading paper, feeding paper, and selecting print features. See also Setup mode.

Offline — When the printer is offline, it receives commands from the printer control panel rather than from the computer. "Offline" indicates that the printer is not "online" with the computer.

Online — When the printer is online, it is ready to receive or is receiving commands from the computer. The printer must be online to print.

Parallel interface — A standard computer interface. Information is transferred between devices over separate wires, allowing all of the bits that make up the character to be transmitted simultaneously (in parallel).

Park position — The position in which continuous forms paper is retracted or "parked" on the rear forms tractors. When continuous forms paper is loaded, it moves forward from the park position to the platen.

Permanent memory — Memory that retains information even when power is turned off. The printer's permanent memory retains the default settings specified using the printer setup mode.

Pitch — Characters per horizontal inch (cpi).

Platen — A hard rubber cylinder that moves paper forward during printing.

Proportional spacing — Character spacing in which wide characters occupy more space than do narrow characters. For example, characters such as "W" or "M"occupy more horizontal space than do characters such as "i" or "l." Many soft fonts are proportionally spaced. Sometimes designated PS, proportional spacing is the opposite of monospacing.

Protocol — A set of instructions that control how data is transmitted between devices such as a computer and printer.

Rear feed — In rear feed, paper is fed from the rear of the printer. The forms tractor unit pushes paper into the printer.

Resident fonts — Fonts present (resident) in the printer's permanent memory. For this printer, the resident fonts are Courier 10, Prestige Elite 12, Pica 10, OCR-B 10, OSR-A 10, Boldface PS, Compressed font, Correspondence, Draft, and High-speed Draft. Unlike soft fonts, resident fonts can always be accessed.

RS-232C interface — A type of serial interface. See Serial interface.

Self-test — A test that determines whether the printer is working correctly. Test pages are printed to show print quality and verify whether all characters print. The self-test only tests the printer. It does not test how thecomputer works with the printer.

Serial interface — A standard computer interface. Information is transferred between devices over a single wire (although other wires are used for control). A serial interface can use an interface cable greater than 3 meters (10 feet). A long cable is often necessary in networking environments, where the printer may be shared.

Setup mode

One of the printer's two operating modes. In setup mode, the controlpanel can be used to select the printer default settings, such as print features, hardware options, and top-of-form. Setup mode also provides some diagnostic functions. See also Normal mode.

Shadow printing

Shadow printing prints characters twice for emphasis. Characters printed the second time are shifted slightly to the right.

Single sheets

Single sheets are sheets of paper, envelopes, and noncontinuous multipart forms fed into the printer using the cut sheet stand or optional cut sheet feeder. Single sheets are also called cut sheets.

Soft fonts

Fonts downloaded from a disk to the printer memory. Soft fonts are also referred to as downloaded fonts. Unlike resident fonts, soft fonts are available only when in the printer memory.

Software

Programs that control the computer and printer to perform specified tasks, such as word processing, database management, and preparation of spreadsheets. Software is sometimes referred to as application software.

Top margin

The total space at the top of the printed page. The top margin is the sum of the top-of-form setting, the software-specified top margin, and the printer's TOP-MRG setting.

Top-of-form (TOF)

The logical top of the physical page, as "understood" by the printer when loading paper. The default TOF settings are 1 inch (25.4 mm) for both cut sheets and continuous forms.

Tractor feed

A method for feeding continuous forms forward for printing. Holes on the sides of the forms fit over sprockets on two tractors located inside the printer. The forms are pulled for bottom feeding and pushed for rear feeding.

Unidirectional printing

Printing is performed in one direction only, left to right. Unidirectional printing is slower than bidirectional printing, but the vertical alignment is more accurate. Unidirectional printing is useful when precise vertical alignment is required, as in ruled tables.

USB interface

A serial bus standard. An abbreviation of Universal Serial Bus.HotSwap using Plug&Play is available. The maximum cable length is five meters.
The transmission mode is 12 Mbps + 0.25% at full speed.

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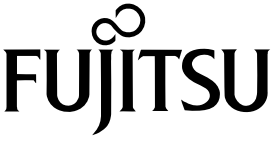

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