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Programmers Guide

IBM ProPrinter 4207, 4208 XL 24 Quick Reference

For Printer PP 40x and PP 80x

IBM ProPrinter 4207, 4208 XL 24 Quick Reference

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Hommeswiese 116c
D – 57258 Freudenberg
Federal Republic of Germany
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http:\\www.psi-matrix.eu

Great care has been taken to ensure that the information in this handbook is accurate and complete. However, should any errors or omissions be discovered or should any user wish to make suggestions for improving this handbook, please feel encouraged to send us the relevant details.

The contents of this manual are subject to change without notice.

This appendix contains basic information on the EPSON LQ 2550 and ESC/P2 Printer Emulation commands supported in those Printer types:

PP 404 PP 405 PP 407 PP 408 PP 803 PP 806 PP 809

The PINTER NAME as shown above, to which printer a command will indicate it or parameter applies.

[1]) only PP405, PP 806
[2]) only PP404 and PP 405
[3]) only PP803, PP806, PP 809, PP 407, PP 408
*) Option PP 405 and PP 806
**) Function only PP 803
***) Function only PP 803 and PP 408

Characters used in control functions appear in monospaced type. Table 1 explains some of the conventions used.

A pair of numbers separated by a slash (/) character indicates Column/Row notation. This notation refers to the location of a character in a standard code table, such as ASCII. (Example: 1/B = 1B is the hex-code for Escape)

Spaces appear between characters in sequence for clarity; they are not part of the format.

At the end of this chapter, you will find a listing of the IBM ProPrinter Emulation commands classified by Hex Code and a Hex - Decimal conversion table.

The following conventions will used in the command listings:

Table 1 Conventions

ESC	Escape (1/B), introduces an escape sequence
Numeric parameter, or number of units that specify a distance or quantity pertaining to the escape sequence, control function or control string. Accepted values are 0...9999, may be preceded by + or -. If the parameter is in normal notation like "200" the programming in hex- code is according to an ASCII table. ("200" = 32,30,30 in hex). If the parameter must be programmed in hex-code, the notation is with a slash. (1/A = 1A in hex-code)	
v1...vn A	series of parameters pertaining to the escape sequence, control function or control string.
SP	Is standing for Space (hex 20)

Table 2: Control Codes

Escape Sequence	Mnemonic	Function
0/8	BS	Backspace
0/9	HT	Horizontal Tab
0/A	LF	Line Feed
0/B	VT	Vertical Tab
0/C	FF	Form Feed
0/D	CR	Carriage Return
0/E	SO	Double Width Printing By Line
0/F	SI	Condensed Printing (17.1 cpi)
1/1	DC1	Select Printer
½	DC2	Select Pica (10 cpi)
1/3	DC3	Buffer Data Flow Control
1/4	DC4	Cancel Double Width Printing By Line
1/8	CAN	Cancel Buffer
1/B	ESC	Initiate Escape Sequence
2/0	SP	Space
7/F	DEL	Delete
1/B 6/A	ESC j	Set Printer Off Line
1/B 5/1 2/3	ESC Q	Deselect Printer
1/B 5/1 2/4	ESC Q	Deselect Printer

Table 3: Vertical Form Handling

Escape Sequence	Mnemonic	Function
ESC 0		Set Line Space to $^{1}/_{8}$"
ESC 1		Set Line Space to $^{7}/_{72}$"
ESC 2		Start Variable Line Space
ESC 4		Set Top of Form
ESC 5 P1		Carriage Return Function P1 = 1 or 0/1: select CR + LF P1 = 0 or 0/0: cancel CR
ESC A P1		Set Line Space to $^{P1}/_{72}$" ($^{P1}/_{60}$") P1 = $^{P1}/_{72}$" lpi (non AGM) P1 = $^{P1}/_{60}$" lpi (AGM) (P1 = 0/1...5/5) ***Note:*** Default = $^{12}/_{72}$" or 6 lpi
ESC B *NUL*		Clear all Vertical Tabs
ESC B P1 P2 . . . P64 *NUL*		Set Vertical Tabs (Pn = 0/1...F/F)
ESC C P1		Set Form Length in Lines (P1 = 0/1...7/F)
ESC C *NUL* P1		Set Form Length in Inch (P1 = 0/1...1/6)
ESC N P1		Set Automatic Perforation Skip P1:is the number of lines from bottom of paper to skip. (P1 = 0/0...F/F)
ESC O		Cancel Automatic Perforation Skip
ESC [\ *EOT NUL NUL NUL* P1 *NUL*		Set Line Space Unit EOT = 0/4 P1 = B/4 : select 1/180" P1 = D/8 : select 1/216" P1 = 0/0 : setting remains unchanged

Escape Sequence	Mnemonic	Function
ESC]		Reverse Line Feed
ESC] > s *Native Command*	IF	Insert Form
ESC [> P1 ; P2 ; P3 ; P4 s Native Command:	SPSIF	Select Paper Source and Insert Form, Print Gap, Paper Exit, Cut-Mode (any parameter > or P1 to P4 may be skipped,
See following alternative command sequences); > = Insert Form		
ESC [P1 s ***Native Command***	SPS	Paper Source: P1 = 0 : Manual Feed P1 = 1 : ASF, Bin 1 *) P1 = 2 : ASF, Bin 2 *) P1 = 3 : ASF, Bin 3 *) P1 = 6 : upper Tractor ***) P1 = 7 : Tractor Feed (lower Tractor) P1 = 8 : ASF, Bins 1 or 2 *) P1 = 9 : ASF, Bins 2 or 3 *) P1 = 1 0 : ASF, Bins 1 or 2 or 3 *) P1 = 1 5 : upper and lower tractor ***)
ESC [; P2 s ***Native Command,***	AGC/PCC	Print Gap Control: P2 = 0 : Automatic Gap Control P2 = 1 : Print Gap for 1-ply copy P2 = 2 : Print Gap for 2-ply copies P2 = 3 : Print Gap for 3-ply copies P2 = 4 : Print Gap for 4-ply copies P2 = 5 : Print Gap for 5-ply copies P2 = 6 : Print Gap for 6-ply copies **)
ESC [; ; P3 s Native Command		Paper Exit: P3 = 0: Paper Exit Stacker ***) P3 = 1: Paper Exit Front Side **) (Confirmed by Start/Stop key) P3 = 2: Paper Exit Front Side **) *(Not confirmed by Start/Stop key, controlled by application)* P3 = 3: Batch output; rear side
ESC [; ; ; P4 s Native Command		Cut Mode On/Off: ***) P4 = 0: Cut Mode Off P4 = 1: Cut Mode On P4 = 2: Cut on actual position (Cutting edge is approximate 4 mm above the base of the actual line)

Table 4: Horizontal Form Handling and Printing Modes

Escape Sequence	Mnemonic	Function
ESC :		Select Elite (12 cpi)
ESC - P1		Cancel / Select Underline P1 = 0/0 cancel Underline Printing P1 = 0/1 set Underline Printing
ESC _ P1		Cancel / Select Overline Printing P1 = 0/0 cancel Overline Printing P1 = 0/1 set Overline Printing
ESC [@ *EOT NUL NUL NUL* P1 P2		Double, Multiple -Width/ - Height Mode P1 controls line spacing (e.g. 0/x) and character height (e.g. x/0) P2 controls character width P1 = 0/x line spacing unchanged P1 = 1/x single line space P1 = 2/x double line space P1 = 3/x triple line space P1 = 4/x quadruple line space P1 = x/0 character height unchanged P1 = x/1 single character height P1 = x/2 double character height P1 = x/3 triple character height P1 = x/4 quadruple character height P2 = 0/0 character width unchanged P2 = 0/1 single character width P2 = 0/2 double character width P2 = 0/3 triple character width P2 = 0/4 quadruple character width

Examble: Coding to select "double line space", "double character height", and "double character width" in Hex: 1B 5B 40 04 00 00 00 22 02

ESC D *NUL*		Clear all Horizontal Tabs
ESC D P1 P2 ... P32 *NUL*		Set Horizontal Tabs (P1...P32 = 0/1...F/F)

Escape Sequence	Mnemonic	Function
ESC E		Select Emphasized Printing (bold)
ESC F		Cancel Emphasized Printing
ESC G		Select Double Strike Printing (bold)
ESC H		Cancel Double Strike Printing
ESC I P1		Select Character Mode P1 = 0/0 : Draft, 10 cpi P1 = 0/1 : Draft, Proportional P1 = 0/2 : Courier, 10 cpi P1 = 0/3 : Courier, Proportional P1 = 0/8 : Draft, 12 cpi P1 = 0/A : Courier, 12 cpi P1 = 1/0 : Draft, 17 cpi P1 = 1/2 : Courier, 17 cpi Cancel / Select Proportional Printing P1 = 0/0 or 0 : cancel Proportional P1 = 0/1 or 1 : select Proportional
ESC R		Restore Horizontal Tabs to Default
ESC S P1		Select Superscript/Subscript P1 = 0/0 or 0 : select Superscript P1 = 0/1 or 1 : select Subscript
ESC T		Cancel Superscript/Subscript
ESC U P1		Cancel / Select Unidirectional Printing P1 = 0/0 or 0 : cancel Unidirectional P1 = 0/1 or 1 : select Unidirectional

Escape Sequence	Mnemonic	Function
ESC W P1		Cancel / Select Double Width P1 = 0/0 or 0: cancel Double Width P1 = 0/1 or 1: select Double Width
ESC X P1 P2		Set Left and Right Margins P1: Left Margin P2: Right Margin (Pn = 0/0...F/F)
ESC d P1 P2		Set Relative Horizontal Dot Position (P1 + P2 x 256)/120" (Pn = 0/0...F/F)
ESC <		Home Position of Print head (left margin)
ESC ;		Set Left Margin at Current Position
ESC [P1 *SP* r	SPQ	Select Print Quality LQ / NLQ P1 = 0 : LQ P1 = 1 : NLQ
ESC [P1 ; P2 *SP* B ***Native Command,***	GSM	Graphic Size Modification P1 = 100 : normal height P1 = 200 : double height P1 = 300 : triple height P1 = 400 : quadruple height P1 = max. **800** in steps of 100 P2 = 100 : normal width P2 = 200 : double width P2 = 300 : triple width P2 = 400 : quadruple width P2 = max. **800** in steps of 100 Graphic Size Modification for **DATA LARGE** P1 = 100 : normal height P2 = 100 : normal width P1 and P2 max. **9 9 0 0** in steps of 100

Escape Sequence	Mnemonic	Function
ESC [P1 ; P2 x ***Native Command,***	CPL	Select Font and Character Pitch (any parameter P1 or P2 may be skipped, see following alternative command sequences)
ESC [P1 x *possible format of*		P1 selects the font: P1 = 0 or missing : Font is unchanged P1 = 1 : DATA P1 = 2 : ROMAN P1 = 3 : SAN SERIF P1 = 4 : COURIER P1 = 5 : PRESTIGE P1 = 6 : SCRIPT P1 = 7 : OCR B P1 = 8 : OCR A P1 = 9 : ORATOR-C P1 = 10 : ORATOR P1 = 11 : DATA LARGE
ESC [; P2 x *possible format of*		P2 selects the character pitch: P2 = 0 or missing : Pitch is unchanged P2 = 1 : 10 cpi P2 = 2 : 12 cpi P2 = 3 : 15 cpi P2 = 5 : proportional P2 = 6 : 14.4 cpi P2 = 7 : 18 cpi P2 = 8 : 17.1 cpi P2 = 9 : 20 cpi

Escape Sequence	Mnemonic	Function
ESC 3 P1		Set Line Space to P1/216" (P1/180") P1/216 lpi (non AGM), P1/180 lpi (AGM) (P1 = 0/1...F/F)
ESC J P1		Perform P1/216" (P1/180") Line Feed P1/216 lpi (non AGM), P1/180 lpi (AGM) (P1 = 0/0...F/F)
ESC K P1 P2 v1 . . . vn		Standard Density Graphics Mode (P1 + P2 * 256) = number of data (Pn = 0/0...F/F)
ESC L P1 P2 v1 . . . vn		Double Density Graphics Mode (P1 + P2 * 256) = number of data (Pn = 0/0...F/F)
ESC Y P1 P2 v1 . . . vn		Double Speed & Density Graphics Mode (P1 + P2 * 256) = number of data (Pn = 0/0...F/F)
ESC Z P1 P2 v1 . . . vn		Quadruple Density Graphics Mode (P1 + P2 * 256) = number of data (Pn = 0/0...F/F)

[1)] : for coding of P1, P2, P3 see **ESC *** on the next page

Table 6: (Cont.) Graphics Modes

Escape Sequence	Mnemonic	Function
ESC [g P1 P2 P3 v1 . . . vn		Select Various Graphics Modes (IBM) P1 + P2 * 256 = number of data bytes + 1 (P1,P2 = 0/0...F/F) v1 .. vn = binary data in hex code

Parameter Table Graphic Density:

P3 Graphic type

	dots per column	**max. of columns**	**hor. density (dpi)**	**vert. density no AGM**	**vert. density AGM**	
0/0 Standard Density (K)	8	816	60	72	60	
0/1 Double Density (L)	8	1632	120	72	60	
0/2 2xDensity / 2xSpeed (Y)	8	1632	120	72	60	*)
0/3 Quadruple Density (Z)	8	3264	240	72	60	*)
0/8 Standard Density	24	816	60	180	180	
0/9 Double Density	24	1632	120	180	180	
0/B Triple Density	24	2448	180 1	80	180	
0/C Hex Density	24	4896	360	180	180	*)

*) consecutive horizontal dots cannot be printed.

Example: box 8x8 dots with Center point 2x2 dots, standard density, 8 dots / column

hex: 1B 5B 67 09 00 00 FF 81 81 99 99 81 81 FF

Table 7: Character Set Selection

Escape Sequence	Mnemonic	Function
ESC 6		Select Character Set 2
ESC 7		Select Character Set 1
ESC \ P1 P2		Print from All Character Set Number of codes = (P1 + P2 * 256) (Pn = 0/0...F/F)
ESC ^ P1		Print Single Character from All Character Set P1 = Number of Char. Set or Code Page (Pn = 0/0...F/F)
ESC [T n1 n2 NUL NUL P1 P2		Code Page Switching n1 = 4, n2 = 0 P1 P2 for Code-Page number, most significant byte first. P1 P2 1 181 : CP 437 U.S.A. 3 82 : CP 850 Multilingual 3 90 : CP 858 Multilingual + Euro 3 92 : CP 860 Portugal 3 95 : CP 863 French 3 97 : CP 865 Norway

Table 8: Further - Control Sequences, supported by

EPSON LQ Emulation Mode *(Native Commands)*

Escape Sequence	Mnemonic	Function
ESC [	$$	Control String Introducer (CSI) for ESC [
ESC	$$/	control String Introducer for ESC
ESC [< s	EJF	Eject Form
ESC [> s	IF	Insert Form
ESC [P1 *SP* X	SPQ	Select Print Quality P1 = 0: LQ P1 = 1: NLQ
ESC [P1 ; P2 *SP* r	SM #	Select Macro and Change Emulation P1 = 1: Macro 1 P1 = 2: Macro 2 P1 = 3: Macro 3 P1 = 4: Macro 4 P2 = 0: no change of emulation P2 = 1: EPSON Emulation P2 = 2: IBM ProPrinter Emulation P2 = 3: IBM ProPrinter AGM Emulation P2 = 4: EPSON Emulation

Escape Sequence	Mnemonic	Function

ESC * P1 P2 P3 v1 . . . vn

Select Various Graphics Modes
P2 + P3 * 256 = number of columns
(P2, P3 = 0/0...F/F)
v1 .. vn = binary data in hex code

P1 Graphic type

	dots per column	max. of columns	hor. density (dpi)	vert. density no AGM	vert. density AGM	
0/0 Standard Density (K)	8	816	60	72	60	
0/1 Double Density (L)	8	1632	120	72	60	
0/2 2xDensity / 2xSpeed (Y)	8	1632	120	72	60	*)
0/3 Quadruple Density (Z)	8	3264	240	72	60	*)
0/4 CRT I	8	1088	80	72	60	
0/5 Plotter	8	979	72	72		
0/6 CRT II	8	1224	90	72	60	
0/B Double Density Plotter	8	1958	144	72		*)
2/0 Standard Density	24	816	60	180	180	
2/1 Double Density	24	1632	120	180	180	
2/6 CRT III	24	1224	90	180	180	
2/7 Triple Density	24	2448	180	180	180	
2/8 Hex Density	24	4896	360	180	180	*)

*) *consecutive horizontal dots cannot be printed.*

Example: box 8x8 dots with center point 2x2 dots, standard density, 8 dots / column
hex: 1B 2A 00 08 00 FF 81 81 99 99 81 81 FF

Table 8 (Cont.): Further Control Sequences, supported by

EPSON LQ Emulation Mode *(Native Commands)*

Escape Sequence	Mnemonic	Function

ESC [P1 ; P2 w SNVCT **Set National Version and Code Table**

P1 = 1 - 15 national version

Depending on selected character set (see Appendix C Char. Set Tables)

P2 = 3 digit code of the code table (see command SCT)

P1 for national version **EPSON EXT. GCT**:

P1 = 1 : USA
P1 = 2 : France
P1 = 3 : Germany
P1 = 4 : UK
P1 = 5 : Denmark
P1 = 6 : Sweden
P1 = 7 : Italy
P1 = 8 : Spain
P1 = 9 : Japan
P1 = 1 0 : Norway
P1 = 1 1 : Denmark 2
P1 = 1 2 : Spain 2
P1 = 1 3 : Latin AM
P1 = 1 4 : Turkey
P1 = 6 4 : Legal

P1 for IBM CODE PAGE

P1 = 1 : CP 437
P1 = 2 : CP 850
P1 = 3 : CP 860
P1 = 4 : CP 863
P1 = 5 : CP 865
P1 = 6 : CP 858
P1 = 7 : CP 857

P1 for CODE PAGE EE2:

P1 = 1 : CP 771
P1 = 2 : CP 773
P1 = 3 : CP 774
P1 = 4 : CP 775
P1 = 5 : CP BALTIC RIM
P1 = 6 : CP 1251
P1 = 7 : CP 1125 (866 U)
P1 = 8 : KAMENICKY

P1 for CODE PAGE EE:

P1 = 1 : CP 437 GK
P1 = 2 : CP 851 GK
P1 = 3 : CP 928 GK
P1 = 4 : CP 855 CYRI
P1 = 5 : CP 866
P1 = 6 : CP 869
P1 = 7 : CP 852
P1 = 9 : ISO LATIN 2
P1 = 1 0 : MAZOVIA
P1 = 1 1 : CP 437 H
P1 = 1 2 : CP 852 SE
P1 = 1 3 : CP 866 LA
P1 = 1 4 : WIN LAT2

ESC [; P2 w SCT **Set Code Table**

P2 = 3 bit code of the code table

P2 = 0 3 1 : ISO 8859-1 P2 = 0 3 2 : ISO 8859-15
P2 = 0 3 4 : ISO 8859-5 P2 = 0 3 5 : ISO 8859-9
P2 = 0 6 1 : IBM Set 1 P2 = 0 6 2 : IBM Set 2
P2 = 0 6 3 : IBM Code Page P2 = 0 7 1 : EPSON Ext. G. C. T
P2 = 1 0 0 : CODE PAGES EE P2 = 1 0 1 : CODE PAGES EE2

Table 8 (Cont.): Barcode mode *(Native Commands)*

Escape Sequence	Mnemonic	Function
ESC [; P2 ; P3 ; P4 ; P5 ; P6 ; P7 SP z		*BARCODE* Programming BH Barcode Header P2: Barcode typ P3: Height of barcode P4: Width of the thin bars P5: Width of the thin gaps P6: Ratio width to thin (bars/gaps) P7: Uni-directional or bi-directional printing 0 : or not programmed: means no changes 1 : uni-directional printing in LQ 2 : bi-directional printing in LQ 3 : uni-directional printing in NLQ 4 : bi-directional printing in NLQ

Note: A switch from unidirectional to bidirectional printing is only possible if the parameter UNI-DIRECT.CMD is set to YES via operator panel or ESC-sequence.

ESC [? 0 h	SMBC	Set Mode Barcode
ESC [? 0 l	RSBC	Reset Mode Barcode

Table 9: ESC / P2 Commands

Escape Sequence	Mnemonic	Function
ESC (c P1 P2 P3 P4 P5		**Set page format** Sets top and bottom margins in the defined units. P1 = 04 00 tm = P2 + P3 x 256 tm: top margin in units tm bm = P4 + P5 x 256 bm: bottom margin in units bm
ESC (C P1 P2 P3		**Set page length in defined unit** Define page length in units P1 = 02 00 pl = P2 + P3 x 256
ESC (V P1 P2 P3		**Set absolute vertical print position** Define absolute vertical print position (avpp) in units P1 = 02 00 avpp = P2 + P3 x 256 avpp: define print position from top margin in defined units
ESC (v P1 P2 P3		**Set relative vertical print position** Define relative vertical print position (rvpp) in units P1 = 02 00 rvpp = P2 + P3 x 256 rvpp: moves the print position in defined units.
ESC X P1 P2 P3		**Select font by pitch and point** P1 = 0 : No change in pitch P1 = 1 : Selects proportional spacing P1 = 18, 24, 30, 36, 42, 48, 60 or 72 Selects fixed pitch equal to 360/m cpi pz = P2 + P3 x 256 Point size in 0,5 points; 1 point equals 1/72 inch pz = 0: No change in point size pz = 16, 20, 21, 24, 28, 32, 36, 40, 42, 44, 48, 52, 56, 60, 64

Table 9: (Cont.) ESC / P2 Commands

Escape Sequence	Mnemonic	Function
ESC (U P1 P2		**Set unit** P1 = 01 00 P2 = 10, 20, 30, 40, 50, 60 /3600" P2 = 10; Standard
ESC X P1 P2 P3		**Select font by pitch and point** P1 = 0 : No change in pitch P1 = 1 : Selects proportional spacing P1 = 18, 24, 30, 36, 42, 48, 60 or 72 Selects fixed pitch equal to 360/m cpi pz = P2 + P3 x 256 Point size in 0,5 points; 1 point equals 1/72 inch pz = 0: No change in point size pz = 16, 20, 21, 24, 28, 32, 36, 40, 42, 44, 48, 52, 56, 60, 64
ESC (U P1 P2		**Set unit** P1 = 01 00 P2 = 10, 20, 30, 40, 50, 60 /3600" P2 = 10; Standard
ESC c P1 P2		**Set horizontal motion index (HMI)** Define HMI-Index Change pitch value in n/360"-steps HMI = P1 + P2 x 256 HMI max. 3 inch

Table 9: (Cont.) ESC / P2 Commands

Escape Sequence	Mnemonic	Function
ESC (t n1 n2 Pn P1 P2		**Assign character table** n1 = 3, n2 = 0 Pn = Parameter of ESC t : 0, 1, 2, 3, "0","1", "2" or "3" P1 P2 =character table 0 0 : italic 1 0 : PC 437 (USA) 3 0 : PC 850 (Multilingual) 7 0 : PC 860 (Portugal) 8 0 : PC 863 (French-Canada) 9 0 : PC 865 (Norway) 29 5 : ISO 8859-5 29 9 : ISO 8859-9 29 15 : ISO 8859-15 29 16 : ISO 8859-1 44 0 : PC 858 (Multilingual + Euro)

The character table assigned by Pn is one of the four tables which will be selected by the ESC t command.

ESC t Pn		**Select character table** Selects the character table to be used for printing from among the four character tables which are assigned by ESC (t command. Pn = 0/0 or 3/0 : Character Table 0 Pn = 0/1 or 3/1 : Character Table 1 Pn = 0/2 or 3/2 : Character Table 2 Rmaps downloaded Characters from the positions 0 to 127 to the positions 128 to 255. Pn = 0/3 or 3/3 : Character Table 3 **Default Setting** Pn = 0/0 or 3/0 : Italics Character Table Pn = 0/1 or 3/1 : CP 437 Pn = 0/2 or 3/2 : User Defined Character Table Pn = 0/3 or 3/3 : CP 437

Table 9: (Cont.) ESC / P2 Commands

Escape Sequence	Mnemonic	Function
ESC (^ P1 P2		**Print data as characters** Prints n data bytes as characters, not control codes pd = P1 + P2 x 256
ESC (G P1 P2		**Select graphics mode** P1 = 01 00 P2 =1 or 49 Graphics mode may be reset by ESC @.
ESC . P1 P2 P 3 P4 P5 P6		**Print raster graphics** P1 = 0 : graphics mode non compressed P1 = 1 : graphics mode compressed P2 = 10, 20 : vertical resolution in 3600/v DPI P3 = 10, 20 : horizontal resolution in 3600/h DPI P4 : vertical dot count (rows of dot graphics) 1 < P4 < 24 hzd : horizontal dot count (columns of dot graphics) hzd = P5 + P6 x 256 Combination P2 = 10, P3 = 20 is not possible.

0	Null	3
8	Backspace	3
9	Horizontal Tab	3
0A	Line Feed	3
0B	Vertical Tab	3
0C	Form Feed	3
0D	Carriage Return	3
0E	Select Double Width (one line)	3
0F	Select Condensed Printing (17.1 cpi)	3
11	Select Printer	3
12	Select Pica (10 cpi)	3
13	Buffer Data Flow Control	3
14	Cancel Double Width	3
18	Cancel Buffer	3
1B	Escape	3
20	Space	3
7F	Delete	3
1B 30	Set Line Space to 1/8	4
1B 31	Set Line Space to 7/72	4
1B 32	Start Variable Line Space	4
1B 34	Set Top Of Form	4
1B 36	Select Character Set 2	11
1B 37	Select Character Set 1	11
1B 3A	Select Elite (12 cpi)	7
1B 3B	Set Left Margin at Current	9
1B 3C	Home Position of Print head	9
1B 45	Select Emphasized (bold)	8
1B 46	Cancel Emphasized	8
1B 47	Select Double Strike (bold)	8
1B 48	Cancel Double Strike	8
1B 4D	Reverse Line Feed	16
1B 4F	Cancel Automatic Perforation Skip	4
1B 52	Restore Horizontal Tabs to Default	8
1B 48	Cancel Double Strike	8
1B 4D	Reverse Line Feed	5
1B 4F	Cancel Automatic Perforation Skip	3
1B 52	Restore Horizontal Tabs to Default	14
1B 54	Cancel Superscript/Subscript	14

1B 5D	Reverse Line Feed	7
1B 6A	Set Printer Off Line	12
24 24	Control String Introducer for ESC [	4
24 24 2F	Control String Introducer for ESC	4
1B 2D 00 / 1B 2D 01	Cancel / Select / Underline	4
1B 33 P1	Set Line Space to P1/216" (P1/180")	4
1B 35 01 / 1B 35 00	Carriage Return Function	7
1B 41 P1	Set Line Space to P1/72" (P1/60")	8
1B 42 00	Clear all Vertical Tabs	12
1B 43 P1	Set Form Length in Lines	4
1B 44 00	Clear all Horizontal Tabs	8
1B 49 P1	Select Character Mode	3
1B 4A P1	Perform P1/216" (P1/180") Line feed	8
1B 4E P1	Set Skip Over Perforation	8
1B 50 00 / 1B 50 01	Cancel / Select Proportional	9
1B 51 23 or 1B 51 24	Deselect Printer	11
1B 53 00 / 1B 53 01	Select Superscript / Subscript	7
1B 55 00 / 1B 55 01	Cancel / Select Unidirectional Printing	14
1B 57 00 / 1B 57 01	Cancel / Select Double Width	4
1B 5E P1	Single Character from All Char. Set	4
1B 5F 00 / 1B 5F 01	Cancel / Select Overline	7
1B 2A P1 P2 P3 data	Select Various Graphics Modes	12
1B 42 P1....P64 00	Set Vertical Tabs	12
1B 43 00 P1	Set Form Length in Inches	19
1B 44 P1...Pn 00	Set Horizontal Tabs	19
1B 4B P1 P2 data	Standard Density Graphics Mode	19
1B 4C P1 P2 data	Double Density Graphics Mode	9
1B 5B 3B P2 73	AGC / PCC Procedure	12
1B 5B 3B P2 77	Set Code Table	12
1B 5B 3B P2 3B P3 3B P4 3B P5 3B P6 3B P7 20 7A	Bar Code Header	5
1B 5B 3C 73	Eject Form	15
1B 5B 3E 73	Insert Form	20
1B 5B 3E P1 3B P2 3B P3 3B P4 73	Select Paper Source and Insert Form	16
1B 5B 3F 30 68	Set Mode Bar Code	5
1B 5B 3F 30 6C	Reset Mode Bar Code	5
1B 5B 40 04 00 00 00 P1 P2	Double, Multiple -Width/-Height Mode	20
1B 5B 54 n1 n2 00 00 P1 P2	Code Page Switching	20

1B 5B 5C 04 00 00 00 P1 00	Select Line Space Unit	7
1B 5B 67 P1 P2 P3 data	Select Various Graphics Modes (IBM)	4
1B 5B P1 20 58	Select Print Quality LQ / NLQ	13
1B 5B P1 3B P2 20 72	Select Macro and Change Emulation	9
1B 5B P1 3B P2 20 42	Graphic Size Modification	16
1B 5B P1 3B P2 77	Set National Version and Code Table	16
1B 5B P1 3B P2 78	Select Font and Character Pitch	15
1B 5B P1 60	Set Horizontal Position Absolute	10
1B 5B P1 61	Set Horizontal Position Relative	16
1B 5B P1 62	Repeat Character	16
1B 5B P1 64	Set Vertical Position Absolute	16
1B 5B P1 65	Set Vertical Position Relative	17
1B 5B P1 67	Tabulation Clear	17
1B 5B P1 6D	Set Graphic Rendition	17
1B 5B P1 73	Paper Source	18
1B 5B P1 77	Set National Version	5
1B 5B P1 7B	Line Space Load	17
1B 5C P1 P2	Print from All Character Set	17
1B 64 P1 P2	Set Relative Horizontal Dot Position	11

Hex - Decimal Conversion Table

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	0	16	32	48	64	80	96	112	128	144	160	176	192	208	224	240
1	1	17	33	49	65	81	97	113	129	145	161	177	193	209	225	241
2	2	18	34	50	66	82	98	114	130	146	162	178	194	210	226	242
3	3	19	35	51	67	83	99	115	131	147	163	179	195	211	227	243
4	4	20	36	52	68	84	100	116	132	148	164	180	196	212	228	244
5	5	21	37	53	69	85	101	117	133	149	165	181	197	213	229	245
6	6	22	38	54	70	86	102	118	134	150	166	182	198	214	230	246
7	7	23	39	55	71	87	103	119	135	151	167	183	199	215	231	247
8	8	24	40	56	72	88	104	120	136	152	168	184	200	216	232	248
9	9	25	41	57	73	89	105	121	137	153	269	185	201	217	233	249
A	10	26	42	58	74	90	106	122	138	154	170	186	202	218	234	250
B	11	27	43	59	75	91	107	123	139	155	171	187	203	219	235	251
C	12	28	44	60	76	92	108	124	140	156	172	188	204	220	236	252
D	13	29	45	61	77	93	109	125	141	157	173	189	205	221	237	253
E	14	30	46	62	78	94	110	126	142	158	174	190	206	222	238	254
F	15	31	47	63	79	95	111	127	143	159	175	191	207	223	239	255