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Programmers Guide

EPSON LQ Emulation

For Printer PP 40x and PP 80x

Epson LQ 2500/2550 Emulation (ESC/P2)

Acknowledgement

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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.

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



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 be 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
0/0	NUL	Null
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
1/1	DC1	Select Printer
½	DC2	Select Pica (10 cpi)
1/3	DC3	Deselect Printer
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

Table 3: Terminal Management

Escape Sequence	Function
ESC @	Initialize Printer
ESC =	Set Most Significant Bit to 0
ESC >	Set Most Significant Bit to 1
ESC #	Cancel Most Significant Bit Control

Table 4: Vertical Form Handling

Escape Sequence	Mnemonic	Function
ESC 0		Set Line Space to $\frac{1}{8}$ "
ESC 2		Set Line Space to $\frac{1}{6}$ "
ESC 3 P1		Set Line Space to $\frac{P1}{180}$ " (P1 = 0...255)
ESC + P1		Set Line Space to $\frac{P1}{360}$ " (P1 = 0/0...F/F)
ESC A P1		Set Line Space to $\frac{P1}{60}$ " (P1 = 0/0...0/F)
ESC B <i>NUL</i>		Clear Vertical Tabs
ESC B P1 P2 . . . P16 <i>NUL</i>		Set Vertical Tabs (P1...P16 = 0/1...F/F)
ESC C P1		Set Form Length in Lines (P1 = 0/1...F/F)
ESC C <i>NUL</i> P1		Set Form Length in Inches (P1 = 0/1...0/C)
ESC J P1		Perform $\frac{P1}{180}$ " Line Feed (P1 = 0/0...F/F)
ESC N P1		Set Automatic Perforation Skip P1 is the number of lines from bottom of paper to skip. (P1 = 0/1...7/F)
ESC 0		Cancel Automatic Perforation Skip
ESC b P1 P2... P16 <i>NUL</i>		Set Vertical Tabs in Channel P1 P1 = 0/0... 0/7: channel 0 - 7 P2...P16 = line number (P2...P16 = 0/1...F/F)
ESC b P1 <i>NUL</i>		Clear all Tabs in Channel P1 P1 = 0/0... 0/7: channel 0 - 7
ESC j P1		Perform $\frac{P1}{180}$ " Reverse Line Feed (P1 = 0/0...F/F)
ESC / P1		Select Vertical Tab Channel P1 = 0/0... 0/7: channel 0... 7

Escape Sequence	Mnemonic	Function
ESC EM P1		Form Feed and ASF Control <i>EM = 1/9</i> P1 = 0/1 or 1: ASF Bin 1 *) P1 = 0/2 or 2: ASF Bin 2 *) P1 = 0/3 or 3: ASF Bin 3 *) P1 = 8/2 or R: (5/2) eject sheet
ESC [> P1 ; P2 ; P3 ; P4 s	SPSIF	Select Paper Source and Insert Form, Print Gap, Paper Exit, Cut-Mode (any parameter > or P1 to P4 may be skipped, <i>See following alternative command sequences); > = Insert Form</i>
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 **) <i>(Not confirmed by Start/Stop key, controlled by application)</i> 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 5: Horizontal Form Handling and Printing Modes

Escape Sequence	Mnemonic	Function
ESC SO		Select Double Width for One Line
ESC SI		Select Condensed 10 cpi -> 17 cpi 12 cpi -> 20 cpi 15 cpi -> 15 cpi (unchanged) Proportional -> proportional cond.
ESC SP P1		Select Inter Character Space Unit 1/120" for DRAFT (P1 = 0/0...7/F) Unit 1/180" for NLQ/LQ (P1 = 0/0...7/F)
ESC ! P1		Select Multiple Print Mode P1 selects: Bit0 = 0: 10 cpi (Pica) Bit0 = 1: 12 cpi (Elite) Bit1 = 1: proportional Bit2 = 1 : Condensed Bit3 = 1: Emphasized Bit4 = 1 : Double Strike Bit5 = 1: Double Width Bit6 = 1: Italics Bit7 = 1: Underline
ESC \$ P1 P2		Set Absolute Horizontal Position $(P1 + P2 * 256) * \frac{1}{60}$ " (P1 = 0/0...F/F) (P2 = 0/0...0/3)
ESC \ P1 P2		Set Relative Horizontal Position Draft: $(P1 + P2 * 256) * \frac{1}{120}$ " (P1 = 0/0...F/F) (P2 = 0/0...0/6) NLQ/LQ: $(P1 + P2 * 256) * \frac{1}{180}$ " (P1 = 0/0...F/F) (P2 = 0/0...0/9)
ESC % P1		Select Standard / User Defined Character Set P1 = 0/0: Standard Character Set P1 = 0/1: User Defined Character Set

Escape Sequence	Mnemonic	Function
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ESC & NUL P1 P2 P3 P4 P5 v1... vn

Define User Defined Characters

P1 = first code table position

P2 = last code table position (P1 = 0/0...P2) (P2 = P1...7/F)

P3 = front space (P3 = 0/0...5/0)

P4 = body length Draft: (P4 = 0/0...0/F) LQ: (P4 = 0/0...2/5)

P5 = rear space (P5 = 0/0...5/0)

v1... vn = binary data in hex (vn = 0/0...F/F)

Notes: - This Command defines one or more characters in a RAM character table.

- All User Defined Characters are erased when the printer is switched off.
- Set the Interface Buffer to 1k or 8K (max 50 defined char in LQ, 128 in draft), or use a RAM card for up to 128 User Defined Characters in LQ.
- Set maximum every second dot to "1" in a horizontal line!
- User Defined Characters can be defined in four different print modes:
- resolution (vertical x horizontal)

Resolution (vertical x horizontal)

Normal Size with Draft: 24 x 15

Normal Size with LQ / proportional: 24 x 37

Sub-/ Superscript with Draft: 16 x 15

Sub-/ Superscript with LQ / proportional: 16 x 37

- The characters can only be activated in the same mode as defined.
- The character layout is coded in three bytes (24 bit vertical) or two bytes (16 bit vertical) per column, top to bottom.
- To print the character change to the User Defined Character Set with ESC %.

Example: vertical box, normal size with draft at code table position "41" (P3=8, P4=5, P5=8)

Hex: 1B 26 00 41 41 08 05 08 FF FF FF 00 00 00 80 00 01 00 00 00 FF FF FF

Table 5: (Cont.) Horizontal Form Handling and Printing Modes

Escape Sequence	Mnemonic	Function
ESC (- P1 P2 P3 P4 P5		Select Line Marking P1 = 0/3 (fixed value) P2 = 0/0 (fixed value) P3 = 0/1 (fixed value) P4 = 0/1: underline P4 = 0/2: strike through P4 = 0/3: over score P5 = 0/0: cancel score line selected by P4 P5 = 0/1: single continuous line P5 = 0/2: double continuous line P5 = 0/5: single broken line P5 = 0/6: double broken line
ESC 4		Set Italics
ESC 5		Cancel Italics
ESC <		Select Unidirectional Mode (one line)
ESC : NUL P1 NUL		Copy ROM Character Set to RAM P1 = 0/0: S. ROMAN P1 = 0/1: L. GOTHIC P1 = 0/2: COURIER P1 = 0/3: PRESTIGE P1 = 0/4: SCRIPT P1 = 0/5: OCR-B P1 = 0/6: OCR-A P1 = 0/7: ORATOR-C P1 = 0/8: ORATOR
ESC - P1		Underline Printing P1 = 0/1: set Underline Printing P1 = 0/0: cancel Underline Printing
ESC D NUL		Clear Horizontal Tabs

Escape Sequence	Mnemonic	Function
ESC D P1 P2 . . . P32 NUL		Set Horizontal Tabs P1 ... P32 = tab position (Pn = 0/1...F/F)
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 M		Select Elite (12 cpi)
ESC P		Select Pica (10 cpi)
ESC Q P1		Set Right Margin (P1 = 0/3 ... F/F)
ESC S P1		Select Superscript/Subscript P1 = 0/0 or 3/0 : select Superscript P1 = 0/1 or 3/1 : select Subscript
ESC T		Cancel Superscript/Subscript
ESC U P1		Cancel/Select Unidirectional Printing P1 = 0/0 or 3/0 : cancel Unidirectional P1 = 0/1 or 3/1 : select Unidirectional
ESC W P1		Cancel/Select Double Width P1 = 0/0 or 3/0 : cancel Double Width P1 = 0/1 or 3/1 : select Double Width
ESC a P1		Select Justification P1 = 0/0 : select left justification P1 = 0/1 : centre between margins P1 = 0/2 : select right justification P1 = 0/3 : select full justification

Escape Sequence	Mnemonic	Function
ESC k P1		Select Font P1 = 0/0 : ROMAN P1 = 0/1 : SAN SERIF P1 = 0/2 : COURIER P1 = 0/3 : PRESTIGE P1 = 0/4 : SCRIPT P1 = 0/5 : OCR-B P1 = 0/6 : OCR-A P1 = 0/7 : ORATOR-C P1 = 0/8 : ORATOR P1 = 1/1 : DATA LARGE
ESC p P1		Cancel/Select Proportional P1 = 0/0 or 3/0 : cancel proportional P1 = 0/1 or 3/1 : select proportional
ESC q P1		Select Character Style P1 = 0/0 : normal style P1 = 0/1 : outline P1 = 0/2 : shadow P1 = 0/3 : outline + shadow
ESC w P1		Cancel/Select Double Height P1 = 0/0 or 3/0 : cancel P1 = 0/1 or 3/1 : select
ESC x P1		Select Character Quality P1 = 0/0 or 3/0 : select Draft P1 = 0/1 or 3/1 : select LQ or NLQ dep. on set-up
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. 9900 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 <i>possible format of</i>		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 <i>possible format of</i>		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 ? K P1		Reassign Graphics Mode K ¹⁾ Standard Density, 8 dpc
ESC ? L P1		Reassign Graphics Mode L ¹⁾ Double Density, 8 dot per column
ESC ? Y P1		Reassign Graphics Mode Y ¹⁾ Double Density & -Speed, 8 dot per col.
ESC ? Z P1		Reassign Graphics Mode Z ¹⁾ Quadruple Density, 8 dot per column
ESC K P2 P3 v1 . . . vn		Standard Density Graphics Mode ¹⁾
ESC L P2 P3 v1 . . . vn		Double Density Graphics Mode ¹⁾
		Double Density / Double Speed Graphics Mode ¹⁾
ESC Z P2 P3 v1 . . . vn		Quadruple Density Graphics Mode ¹⁾

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)

$P1 + P2 * 256 = \text{number of data bytes} + 1$

(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		Enlarge Print Code Area (128-159 dec.)
ESC 7		Enable Upper Control Code (128-159 dec.)
ESC R P1		Select National Version P1 = 0/0 : USA P1 = 0/1 : FRANCE P1 = 0/2 : GERMANY P1 = 0/3 : UK P1 = 0/4 : DENMARK P1 = 0/5 : SWEDEN P1 = 0/6 : ITALY P1 = 0/7 : SPAIN P1 = 0/8 : JAPAN P1 = 0/9 : NORWAY P1 = 0/A : DENMARK 2 P1 = 0/B : SPAIN 2 P1 = 0/C : LATIN AM. P1 = 0/D : TURKEY P1 = 4/0 : LEGAL
ESC t P1		Select Character Table P1 = 0/0 : Italics Character Table P1 = 0/1 : Extended Graphics Character Table P1 = 0/2 : User Defined Character Table

**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

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 = 10 : Norway
- P1 = 11 : Denmark 2
- P1 = 12 : Spain 2
- P1 = 13 : Latin AM
- P1 = 14 : Turkey
- P1 = 64 : 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 = 10 : MAZOVIA
- P1 = 11 : CP 437 H
- P1 = 12 : CP 852 SE
- P1 = 13 : CP 866 LA
- P1 = 14 : 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		<p><i>BARCODE</i> Programming BH Barcode Header</p> <p>P2: Barcode typ</p> <p>P3: Height of barcode</p> <p>P4: Width of the thin bars</p> <p>P5: Width of the thin gaps</p> <p>P6: Ratio width to thin (bars/gaps)</p> <p>P7: Uni-directional or bi-directional printing</p> <p>0 : or not programmed: means no changes</p> <p>1 : uni-directional printing in LQ</p> <p>2 : bi-directional printing in LQ</p> <p>3 : uni-directional printing in NLQ</p> <p>4 : bi-directional printing in NLQ</p>

Note: A switch from unidirectional to bidirectional printing is only possible if the parameter UNI-DIRECT.COMD 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		<p>Set page format</p> <p>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</p>
ESC (C P1 P2 P3		<p>Set page length in defined unit</p> <p>Define page length in units P1 = 02 00 pl = P2 + P3 x 256</p>
ESC (V P1 P2 P3		<p>Set absolute vertical print position</p> <p>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</p>
ESC (v P1 P2 P3		<p>Set relative vertical print position</p> <p>Define relative vertical print position (rvpp) in units P1 = 02 00 rvpp = P2 + P3 x 256 rvpp: moves the print position in defined units.</p>
ESC X P1 P2 P3		<p>Select font by pitch and point</p> <p>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</p>

Table 9: (Cont.) ESC / P2 Commands

Escape Sequence	Mnemonic	Function
ESC (U P1 P2		<p>Set unit P1 = 01 00 P2 = 10, 20, 30, 40, 50, 60 /3600" P2 = 10; Standard</p>
ESC X P1 P2 P3		<p>Select font by pitch and point</p> <p>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 $pz = P2 + P3 \times 256$ 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</p>
ESC (U P1 P2		<p>Set unit P1 = 01 00 P2 = 10, 20, 30, 40, 50, 60 /3600" P2 = 10; Standard</p>
ESC c P1 P2		<p>Set horizontal motion index (HMI)</p> <p>Define HMI-Index Change pitch value in n/360"-steps $HMI = P1 + P2 \times 256$ HMI max. 3 inch</p>

Table 9: (Cont.) ESC / P2 Commands

Escape Sequence	Mnemonic	Function
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ESC (t n1 n2 Pn P1 P2		<p>Assign character table</p> <p>n1 = 3, n2 = 0</p> <p>Pn = Parameter of ESC t : 0, 1, 2, 3, "0", "1", "2" or "3"</p> <p>P1 P2 =character table</p> <p>0 0 : italic</p> <p>1 0 : PC 437 (USA)</p> <p>3 0 : PC 850 (Multilingual)</p> <p>7 0 : PC 860 (Portugal)</p> <p>8 0 : PC 863 (French-Canada)</p> <p>9 0 : PC 865 (Norway)</p> <p>29 5 : ISO 8859-5</p> <p>29 9 : ISO 8859-9</p> <p>29 15 : ISO 8859-15</p> <p>29 16 : ISO 8859-1</p> <p>44 0 : PC 858 (Multilingual + Euro)</p>
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The character table assigned by Pn is one of the four tables which will be selected by the ESC t command.

ESC t Pn		<p>Select character table</p> <p>Selects the character table to be used for printing from among the four character tables which are assigned by ESC (t command.</p> <p>Pn = 0/0 or 3/0 : Character Table 0</p> <p>Pn = 0/1 or 3/1 : Character Table 1</p> <p>Pn = 0/2 or 3/2 : Character Table 2</p> <p>Rmaps downloaded Characters from the positions 0 to 127 to the positions 128 to 255.</p> <p>Pn = 0/3 or 3/3 : Character Table 3</p> <p>Default Setting</p> <p>Pn = 0/0 or 3/0 : Italics Character Table</p> <p>Pn = 0/1 or 3/1 : CP 437</p> <p>Pn = 0/2 or 3/2 : User Defined Character Table</p> <p>Pn = 0/3 or 3/3 : CP 437</p>
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Table 9: (Cont.) ESC / P2 Commands

Escape Sequence	Mnemonic	Function
ESC (^ P1 P2		<p>Print data as characters</p> <p>Prints n data bytes as characters, not control codes $pd = P1 + P2 \times 256$</p>
ESC (G P1 P2		<p>Select graphics mode</p> <p>P1 = 01 00 P2 = 1 or 49</p> <p>Graphics mode may be reset by ESC @.</p>
ESC . P1 P2 P 3 P4 P5 P6		<p>Print raster graphics</p> <p>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) $hzd = P5 + P6 \times 256$ Combination P2 = 10, P3 = 20 is not possible.</p>

Hex Code	Format	Page
00	Null	3
08	Backspace	3
09	Horizontal Tab	3
0A	Line Feed	3
0B	Vertical Tab	3
0C	Form Feed	3
0D	Carriage Return	3
11	Select Printer	3
12	Cancel Condensed Mode	3
13	Deselect Printer	3
14	Cancel Double Width	3
18	Cancel Buffer	3
1B	Escape	3
20	Space	3
7F	Delete	3
1B 0E or 0E	Select Double Width for One Line	7
1B 0F or 0F	Select Condensed Mode	7
1B 23	Cancel Most Significant Bit Control	3
1B 30	Set Line Space to $\frac{1}{8}$ "	4
1B 32	Set Line Space to $\frac{1}{6}$ "	4
1B 34	Set Italics	9
1B 35	Cancel Italics	9
1B 36	Enlarge Print Code Area	16
1B 37	Enable Upper Control Code Area	16
1B 3C	Select Unidirectional Mode (one line)	9
1B 3D	Set Most Significant Bit to 0	3
1B 3E	Set Most Significant Bit to 1	3
1B 40	Initialize Printer	3
1B 45	Select Emphasized (bold)	10
1B 46	Cancel Emphasized	10

1B 47	Select Double Strike Printing (bold)	10
1B 48	Cancel Double Strike Printing	10
1B 4D	Select Elite (12 cpi)	10
1B 4F	Cancel Automatic Perforation Skip	4
1B 50	Select Pica (10 cpi)	10
1B 54	Cancel Superscript/Subscript	10
1B 67	Select Pitch 15 cpi	11
24 24	Control String Introducer for ESC [17
24 24 2F	Control String Introducer for ESC	17
1B 19 P ₁	Form feed and ASF Control	5
1B 20 P ₁	Select Inter Character Space	7
1B 21 P ₁	Select Multiple Print Mode	7
1B 25 00 / 1B 25 01	Select Standard- / User Defined Char. Set	7
1B 2B P ₁	Set line Space to $P^1/_{360}$ "	4
1B 2F P ₁	Select Variable Tab Channel	4
1B 2D 01 / 1B 2D 00	Select / Cancel Underline Printing	9
1B 33 P ₁	Set Line Space to $P^1/_{180}$ "	4
1B 41 P ₁	Set line Space to $P^1/_{60}$ "	4
1B 42 00	Clear Vertical Tabs	4
1B 43 P ₁	Set Form Length in Lines	4
1B 44 00	Clear Horizontal Tabs	9
1B 4A P ₁	Perform $P^1/_{180}$ Line Feed	4
1B 4E P ₁	Set Automatic Perforation Skip	4
1B 51 P ₁	Set Right Margin	10
1B 52 P ₁	Set National Version	16
1B 53 00 / 1B 53 01	Select Superscript / Subscript	10
1B 55 00 / 1B 55 01	Cancel / Select Unidirectional Printing	10
1B 57 00 / 1B 57 01	Cancel / Select Double Width	10
1B 61 P ₁	Select Justification	10
1B 6A P ₁	Perform $P^1/_{180}$ Reverse Line Feed	4

1B 6B P ₁	Select Font	11
1B 6C P ₁	Set Left Margin	11
1B 70 00 / 1B 70 01	Cancel / Select Proportional	11
1B 71 P ₁	Select Character Style	11
1B 74 P ₁	Select Character Table	16 22
1B 77 00 / 1B 77 01	Cancel / Select Double Height	12
1B 78 P ₁	Select Character Quality	12
1B 24 P ₁ P ₂	Set Absolute Horizontal Position	7
1B 26 00 P ₁ P ₂ P ₃ P ₄ P ₅ data	Define User Defined Characters	8
1B 28 2D P ₁ P ₂ P ₃ P ₄ P ₅	Select Line Marking	9
1B 28 43 P ₁ P ₂ P ₃	Set Page Length in defined Unit	20
1B 28 47 P ₁ P ₂	Select Graphics Mode	23
1B 28 55 P ₁ P ₂	Set Unit	21
1B 28 56 P ₁ P ₂ P ₃	Set absolute vertical Print Position	20
1B 28 63 P ₁ P ₂ P ₃ P ₄ P ₅	Set Page Format	20
1B 28 74 P ₁ P ₂ P ₃ P ₄	Assign Character Table	22
1B 28 76 P ₁ P ₂ P ₃	Set relative vertical Print Position	20
1B 28 5E P ₁ P ₂	Print Data as Character	23
1B 2A P ₁ P ₂ P ₃ data	Select Various Graphics Modes	15
1B 2E P ₁ P ₂ P ₃ P ₄ P ₅ P ₆	Print Raster Graphics	23
1B 3A 00 P ₁ 00	Copy ROM Character Set to RAM	9
1B 3F 4B P ₁	Reassign Graphics Mode K	14
1B 3F 4C P ₁	Reassign Graphics Mode L	14
1B 3F 59 P ₁	Reassign Graphics Mode Y	14
1B 3F 5A P ₁	Reassign Graphics Mode Z	14
1B 42 P ₁ ...P ₁₆ 00	Set Vertical Tabs	4
1B 43 00 P ₁	Set Form Length in Inches	4
1B 44 P ₁ P ₂ ...P ₃₂ 00	Set Horizontal Tabs	10
1B 4B P ₂ P ₃ data	Standard Density Graphics Mode	14
1B 4C P ₂ P ₃ data	Double Density Graphics Mode	14
1B 58 P ₁ P ₂ P ₃	Select Font by Pitch and Point	21

EPSON LQ Emulation ESC/P2

1B 59 P ₂ P ₃ data	Double Speed & Double Density Graph. Mode	14
1B 5A P ₂ P ₃ data	Quadruple Density Graphics Mode	14
1B 5B 3B P ₂ 73	AGC / PCC Procedure	5
1B 5B 3B P ₂ 77	Set Code Table	18
1B 5B 3B P ₂ 3B P ₃ 3B P ₄ 3B P ₅ 3B P ₆ 3B P ₇ 20 7A	Barcode Printing	19
1B 5B 3C 73	Eject Form	17
1B 5B 3E 73	Insert Form	17
1B 5B 3E P ₁ 3B P ₂ 3B P ₃ 3B P ₄ 73	Select Paper Source and Insert Form	5
1B 5B 3F 30 68	Set Mode Barcode	19
1B 5B 3F 30 6C	Reset Mode Barcode	19
1B 5B P ₁ 20 58	Select Print Quality	17
1B 5B P ₁ 3B P ₂ 20 72	Select Macro and Change Emulation	17
1B 5B P ₁ 3B P ₂ 20 42	Graphic Size Modification	12
1B 5B P ₁ 3B P ₂ 77	Set National Version and Code Table	18
1B 5B P ₁ 3B P ₂ 78	Select Font and Character Pitch	13
1B 5B P ₁ 77	Set National Version	18
1B 5C P ₁ P ₂	Set Relative Horizontal Position	7
1B 62 P ₁ 00	Clear all Tabs in Channel P ₁	4
1B 62 m P ₁ P ₂ ...P ₉ 00	Set Vertical Tab in Channel P ₁	4

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	169	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