# Programmers Guide

## HP Quick Reference

HP 2934-A with additional functions of the HP 2235 Printer called Rugged Writer

## For Printer PP 40x / PP 80x

# HP 2934, 2235 Quick Reference

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.

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   PP 405 and PP 806
*) Option PP 405 and PP 806
**) Function only PP803 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
Pn
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)

ParTo specify different parameters in an ESC sequence.
Accepted values are numbers 0...9 and ASCII characters.

*SP*          Is standing for Space (hex 20)

**Table 2: Control Codes**

| Escape Sequence | Mnemonic | Function |
|---|---|---|
| 0/0 | NUL | Null |
| 0/5 | ENQ | Enquire (interface protocol) |
| 0/6 | ACK | Acknowledge (interface protocol) |
| 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 | Invokes Secondary Symbol Set (Shift Out) |
| 0/F | SI | Invokes Primary Symbol Set (Shift In) |
| 1/1 | DC1 | XON |
| 1/3 | DC3 | XOFF |
| 1/B | ESC | Escape |
| 2/0 | SP | Space |
| 7/F | DEL | Delete |

**Table 3: Special Code Sequences**

| Escape Sequence | Mnemonic | Function |
| --- | --- | --- |
| ESC E | | Reset to Initial State |
| ESC I | | Horizontal Tab |
| ESC Y | | Display Mode ON (Hex-dump on) |
| ESC Z | | Display Mode OFF (Hex-dump off) |
| ESC & p P1 X | DMONP | Display Mode ON for P1 characters<br>P1 = number of characters (0..32767)<br>*Printout is Hexdump, different to original* |
| ESC ? | | Serial I/O Status Request<br>Response byte: MSB P011XXXX LSB<br>bit 0 = 0 --> paper ok and cover closed<br>bit 0 = 1 --> paper out or cover open<br>bit 1 = 0 --> printer not busy<br>bit 1 = 1 --> printer busy<br>bit 2 = 0 --> printer ON-Line<br>bit 2 = 1 --> printer OFF_Line<br>bit 3 = 0 --> no data error<br>bit 3 = 1 --> data error<br>bit 7 = P --> Transmitted Parity bit |
| ESC ^ P1 | PSR | Primary Status Request<br>P1= 1/1 (code for XON)<br>the printer returns:  ESC \ < 0640: CR LF |
| ESC o | TROFF | Transfer to the OFF-Line State |
| ESC & k P1 F | SISOC | Shift In / Shift Out Control<br>P1 = 0 :    Shift out active only for one line<br>P1 = 1 :    Shift out is active until shift in |

**Table 3 (Cont.): Special Code Sequences**

| Escape Sequence | Mnemonic | Function |
|---|---|---|
| ESC & k P1 G | LTM | Line Termination Mode |

| in: | CR | LF | FF | VT |
|---|---|---|---|---|
| P1 = 0 : | CR | LF | FF | VT |
| P1 = 1 : | CR+LF | LF | FF | VT |
| P1 = 2 : | CR | CR+LF | CR+FF | CR+VT |
| P1 = 3 : | CR+LF | CR+LF | CR+FF | CR+VT |

**ESC & s P1 C**    EOLW    End Of -Line Wraparound
P1 = 0 :      wraparound on
P1 = 1 :      wraparound off

**ESC * r K**    RMN    Return Model Number
printer returns 2934A followed by CR LF

**ESC & l P1 H**    SPS    Select Paper Source
*PCL-3 compatible*
P1 = 0 :      Eject current page
P1 = -1 :      Eject, select tractor
P1 = 1 :      Eject, select Bin 1 [1]
P1 = 2 :      Eject, select manual
P1 = 4 :      Eject, select Bin 2 [1]
P1 = 5 :      Eject, select pool Bin 1+2+3 [1]
P1 = 8 :      Eject, select Bin 3 [1]
P1 = 9 :      Eject, select pool Bin 1+2 [1]

**ESC & l P1 G**    SPO    Select Paper Output (only for single sheets)
*PCL-3 compatible*
P1 = 1 :      output = stacker
P1 = 2 :      output = front (manual)

**Table 4: Vertical Form Handling**

| Escape Sequence | Mnemonic | Function |
| --- | --- | --- |
| ESC & l P1 D | SLS | Select Line Spacing<br>P1 = 0(=12),1,2,3,4,5,6,8,9,12,18,24,36,72,90 LPI |
| ESC & k P1 C<br>*Rugged Writer* | VMI | Vertical Motion Index<br>P1 = increments in 1/48" (0...126, default = LPI) |
| ESC = | | Half Line Feed |
| ESC & l P1 P | SPL | Set Page Length<br>P1 = page length in lines |
| ESC & l P1 F | STL | Set Text Length<br>P1 = text length in lines |
| ESC & l P1 L | PSM | Perforation Skip Mode<br>P1 = 0 perforation skip disabled<br>P1 = 1 perforation skip enabled |
| ESC & l P1 M | VTAB | Vertical TAB Settings<br>P1 = 1 set vertical Tab in current line<br>P1 = 2 clear vertical Tab in current line<br>P1 = 3 clear all vertical Tabs |
| ESC & l P1 Y | SVTAB | Set Vertical TAB in Absolute Line<br>P1 = line number |
| ESC & l P1 R | CVTAB | Clear Vertical TAB in Absolute Line<br>P1 = line number |
| ESC & a P1 R | VPOSL | Set Vertical Position in Lines<br>P1 =   value --> position to absolute line number<br>P1 = + value --> position relative downwards<br>P1 = - value --> position relative upwards |
| ESC & a P1 V | VPOSD | Set Vertical Position in Decipoints (1/720 inch)<br>P1 =   value --> position to absolute line number<br>P1 = + value --> position relative downward<br>P1 = - value --> position relative upward |

**Table 4 (Cont.): Vertical Form Handling**

| Escape Sequence | Mnemonic | Function |
|---|---|---|

ESC & l P1 V     SVFC     Select Vertical Forms Control channel

| channel | definition |
|---|---|
| P1 = 1: | Top of Form |
| P1 = 2: | Bottom of Form |
| P1 = 3: | Single Space (0,1,2..) |
| P1 = 4: | Double Space (0,2,4..) |
| P1 = 5: | Triple Space (0,3,6..) |
| P1 = 6: | Half Page |
| P1 = 7: | Quarter Page |
| P1 = 8: | Tenth Line (0,10,20..) |
| P1 = 9: | Bottom of Form |
| P1 = 10: | Bottom of Form -1 line |
| P1 = 11: | Top of Form -1 line |
| P1 = 12: | Top of Form |
| P1 = 13: | Seventh Line (0,7,14..) |
| P1 = 14: | Sixth Line (0,6,12..) |
| P1 = 15: | Fifth Line (0,5,10..) |
| P1 = 16: | Sixth Line (0,4,8..) |

**Table 5: Horizontal Form Handling**

| Escape Sequence | Mnemonic | Function |
|---|---|---|
| ESC 1 | | Set Horizontal TAB at Current Position |
| ESC 2 | | Clear Horizontal TAB at Current Position |
| ESC 3 | | Clear All Horizontal TAB |
| ESC & a P1 T | SHTABP | Set Horizontal TAB at Position P1<br>P1 = absolute column number |
| ESC & a P1 U | CHTABP | Clear Horizontal TAB at Position P1<br>P1 = absolute column number |
| ESC 4 | | Set Left Margin at Current Column |
| ESC 5 | | Set Right Margin at Current Column |
| ESC 9 | | Clear All Margins |
| ESC & a P1 L | SLMA | Set Left Margin at Absolute Column<br>P1 = absolute column number |
| ESC & a P1 M | SRMA | Set Right Margin at Absolute Column<br>P1 = absolute column number |
| ESC & a P1 C | HPOSC | Set Horizontal Position in Columns<br>P1 =   value --> position to absolute column<br>P1 = + value --> position relative to the right<br>P1 = - value --> position relative to the left |
| ESC & a P1 H | HPOSD | Set Horizontal Position in Decipoints (1/720 inch)<br>P1 =   value --> position to absolute position<br>P1 = + value --> position relative to the right<br>P1 = - value --> position relative to the left |
| **ESC * p P1 X**<br>*Rugged Writer* | **HPOSDO** | Set Horizontal Position in Dots (1/180 inch)<br>P1 =   value --> position to absolute position<br>P1 = + value --> position relative to the right<br>P1 = - value --> position relative to the left |
| **ESC & l P1 J** | ACJ | Auto Centering and Justification<br>P1 = 0:    no centering or justification<br>P1 = 1:    flush to the right margin<br>P1 = 2:    centering between margins<br>P1 = 3:    justification |

**Table 6: Font Selection, National Version and Code Table Handling**

| Escape Sequence | Mnemonic | Function |
| --- | --- | --- |

ESC ( *Par*     DPSS     Designate Primary Symbol Set
ESC ) *Par*     DSSS     Designate Secondary Symbol Set
                *Par* = 3 @ : Default (operator panel)
                *Par* = 8 U  : Roman 8
                *Par* = B    : Line draw
                *Par* = 0 B  : Line draw
                *Par* = 0 D  : ISO Norway
                *Par* = 0 E  : Roman extension characters
                *Par* = 1 E  : ISO UK
                *Par* = 0 F  : ISO France (25)
                *Par* = 1 F  : ISO France (69)
                *Par* = 0 G  : ISO Germany
                *Par* = 1 G  : ISO Germany
                *Par* = 8 G  : Greek 8
                *Par* = 0 I  : ISO Italy
                *Par* = 0 K  : JIS ASCII
                *Par* = L    : Line draw
                *Par* = 0 L  : Line draw
                *Par* = 8 U  : Roman 8
                *Par* = 0 N  : ECMA 94-Latin 1
                *Par* = 2 N  : ISO 8859-2
                *Par* = 9 N  : ISO 8859-15
                *Par* = 12 N : Greek 7
                *Par* = 0 O  : OCR-A
                *Par* = 1 O  : OCR-B
                *Par* = 8 U  : Roman 8
                *Par* = 0 S  : ISO Sweden / Finland
                *Par* = 1 S  : ISO Spain (HP)
                *Par* = 2 S  : ISO Spain (17)
                *Par* = 3 S  : ISO Sweden
                *Par* = 4 S  : ISO Portugal
                *Par* = 0 U  : US ASCII
                *Par* = 5 U  : HPL
                *Par* = 10U : PC-8
                *Par* = 11U : PC-8 Danish/Norwegian
                *Par* = 13 U : CP 858
                *Par* = 17 U : CP 852
                *Par* = 0 Z  : Blank Set

**Table 6 (Cont.): Font Selection, National Version and Code Table Handling**

| Escape Sequence | Mnemonic | Function |
| --- | --- | --- |

| Escape Sequence | Mnemonic | Function | |
| --- | --- | --- | --- |
| ESC ( s P1 @ | PDSD | Primary Default Set Designation | |
| | | P1 = 0 : | primary default set to primary |
| | | P1 = 1 : | primary default set to primary |
| | | P1 = 2 : | current primary set to primary |
| ESC ) s P1 @ | SDSD | Secondary Default Set Designation | |
| | | P1 = 0 : | secondary default set to secondary |
| | | P1 = 1 : | primary default set to secondary |
| | | P1 = 2 : | current primary set to secondary |
| ESC ( s P1 T | PCST | Primary Character Set Typeface | |
| ESC ) s P1 T | SCST | Secondary Character Set Typeface | |
| | | P1 = 0 : | Default (operator panel) |
| | | P1 = 3 : | Courier |
| | | P1 = 4 : | Orator |
| | | P1 = 6 : | Letter Gothic |
| | | P1 = 8 : | Prestige |
| | | P1 = 9 : | DATA LARGE |
| ESC ( s P1 Q | PPQ | Primary Print Quality | |
| ESC ) s P1 Q | SPQ | Secondary Print Quality | |
| | | P1 = 0 : | data processing quality (DQ) |
| | | P1 = 1 : | near letter quality (NLQ) |
| | | P1 = 2 : | letter quality (DQ) |
| ESC & k P1 S | HCP | Horizontal Character Pitch (primary + secondary) | |
| | | P1 = 0 : | 10 CPI |
| | | P1 = 1 : | 5 CPI |
| | | P1 = 2 : | 16.36 CPI |
| | | P1 = 4 : | 12 CPI |
| | | P1 = 9 : | proportional |
| ESC & k P1 H | HMI | Horizontal Motion Index | |
| *Rugged Writer* | | P1 = increments in 1/120" (0...126, default = CPI) | |

**Table 6 (Cont.): Font Selection, National Version and Code Table Handling**

| Escape Sequence | Mnemonic | Function |
|---|---|---|

| Escape Sequence | Mnemonic | Function |
|---|---|---|
| ESC ( s P1 H | PHCP | Primary Horizontal Character Pitch |
| ESC ) s P1 H | SHCP | Secondary Horizontal Character Pitch |
| | | P1 = 5.00  :           5 CPI |
| | | P1 = 10.00 :          10 CPI |
| | | P1 = 12.00 :          12 CPI |
| | | P1 = 16.36 :          16.36 CPI |
| | | P1 = 20.00 :          20 CPI |
| ESC ( s P1 P | PPCP | Primary Proportional Character Pitch |
| ESC ) s P1 P | SPCP | Secondary Proportional Character Pitch |
| | | P1 = 1 :    proportional ON |
| | | P1 = 0 :    proportional OFF |
| ESC ( s P1 B | PCSB | Primary Character Style Bold |
| ESC ) s P1 B | SCSB | Secondary Character Style Bold |
| | | P1 = 1 :    bold ON |
| | | P1 = 3 :    bold ON (only primary) |
| | | P1 = 7 :    bold ON (only primary) |
| | | P1 = 0 :    bold OFF |
| ESC ( s P1 S | PCSI | Primary Character Style Italic |
| ESC ) s P1 S | SCSI | Secondary Character Style Italic |
| | | P1 = 1 :    italic ON |
| | | P1 = 0 :    italic OFF |
| ESC ( s P1 U *Rugged Writer* | PCSS | Primary Character Style Sub/Superscript |
| | | P1 = - 1   :           subscript ON |
| | | P1 = 1     :           superscript ON |
| | | P1 = 0     :           sub/superscript OFF |
| ESC ( s P1 V *Rugged Writer* | PCH | Primary Character Height |
| | | P1 = 8    :           character height 8 point |
| | | P1 = 12  :           character height 12 point |

**Table 6 (Cont.): Font Selection, National Version and Code Table Handling**

| Escape Sequence | Mnemonic | Function |
|---|---|---|
| ESC & d @ | ULON | Underline ON |
| ESC & d D | ULOFF | Underline OFF |
| ESC & k P1 E | DEC | Display Enhancement Control<br>P1 = 1 :  underline controlled by mode (default)<br>P1 = 0 :  underline active for one line |
| ESC [ P1 ; P2 x<br>*Native Command* | CPL | Select Font (P1) and Character Pitch (P2)<br>P1 = 1:    Data<br>P1 = 2:    Letter Gothic<br>P1 = 3:    Letter Gothic Italic<br>P1 = 4:    Courier<br>P1 = 5:    Micro<br>P1 = 6:    Orator<br>P1 = 7:    Orator-C<br>P1 = 8:    Roman<br>P1 = 9:    Prestige<br>P1 = 10:   Script<br>P1 = 11:   OCR A<br>P1 = 12:   OCR B<br>P1 = 13:   DATA LARGE<br><br>P2 = 1:    10 cpi<br>P2 = 2:    12 cpi<br>P2 = 3:    15 cpi<br>P2 = 4:    proportional<br>P2 = 5:    proportional<br>P2 = 6:    14,4 cpi<br>P2 = 7:    18 cpi<br>P2 = 8:    17 cpi<br>P2 = 9:    20 cpi |

**Table 6 (Cont.): Font Selection, National Version and Code Table Handling**

| Escape Sequence | Mnemonic | Function |
|---|---|---|
| ESC [ P1 ; P2 *SP* B<br>*Native Command* | GSM | Graphic Size Modification<br>P1 = 100 : normal height<br>P1 = 200 : double height<br>P1 = 300 : triple height<br>P1 = 400 : quadruple height<br>P2 = 100 : normal width<br>P2 = 200 : double width<br>P2 = 300 : triple width<br>P2 = 400 : quadruple width<br>P1 and P2 max. = 800 in steps of 100<br><br>Graphic Size Modification for DATA LARGE<br>P1 = 100 / P2 = 100 : normal height/width<br>P1 and P2 max = 9900 in steps of 100 |
| ESC [ P1 ; P2 *SP* r<br>*Native Command* | SM # | Select Macro and Change Emulation<br>P1 = 1: Macro 1<br>P1 = 2: Macro 2<br>P1 = 3: Macro 3<br>P1 = 4: Macro 4<br>P2 = 0: no change of emulation<br>P2 = 1: HP Emulation<br>P2 = 2: IBM ProPrinter Emulation<br>P2 = 3: IBM ProPrinter AGM Emulation<br>P2 = 4: EPSON LQ / ESC/P2 Emulation |
| ESC [ ; P2 s | AGC/PCC | AGC/PCC Procedure:<br>P2 = 0 : Automatic Gap Control<br>P2 = 1 : Print Gap for 1-ply copy<br>P2 = 2 : Print Gap for 2-ply copies<br>P2 = 3 : Print Gap for 3-ply copies<br>P2 = 4 : Print Gap for 4-ply copies<br>P2 = 5 : Print Gap for 5-ply copies<br>P2 = 6 : Print Gap for 6-ply copies<br>P2 = 7 : Print Gap for 7-ply copies<br>P2 = 8 : Print Gap for 8-ply copies [1]<br>P2 = 9 : Print Gap for 9-ply copies [1] |

[1] PRINTER TYPE 1

**Table 7: HP Graphics Mode**

| Escape Sequence | Mnemonic | Function |
| --- | --- | --- |
| ESC * r P1 A | PFRG | Prepare For Raster Graphics<br>P1 = 0:    print raster data at leftmost position<br>P1 = 1:    print raster data at current position |
| ESC * b P1 X | TGHO | Temporary Graphics Horizontal Offset (one line)<br>P1 = pixels (1/90 inch) value 0...32767, div. by 8 |
| ESC * b P1 Y | TGVO | Temporary Graphics Vertical Offset (one line)<br>P1 = pixels (1/90 inch) value 0...32767 |
| ESC * r P1 S<br>*Rugged Writer* | RGW | Raster Graphic Width<br>P1 = number of pixel (rounded up to next eighth) |
| ESC * t P1 R<br>*Rugged Writer* | RGD | Raster Graphic Density<br>P1 = 0...90:        90 DPI (default)<br>P1 = 91,>91:        180 DPI |
| ESC * b P1 W data | TORGR | Transfer One Raster Graphic Row<br>P1 = number off byte in one row (0...128)<br>data = binary data string for one raster row |
| ESC * r B | RGC | Raster Graphics Complete |

**Table 8: HP Large Character Printing**

| Escape Sequence | Mnemonic | Function |
| --- | --- | --- |
| ESC * c P1 M | LCS | Large Character Size<br>P1 = character size (1...28) |
| ESC * c P1 C | LCHSC | Large Character Horizontal Start Column<br>P1 = start column (position determined by CPI) |
| ESC * c P1 X | LCHPO | Large Character Horizontal Position Offset<br>P1 = horizontal position offset (1/90 inch) |
| ESC * c P1 N | LCNTAB | Large Character to Next TAB Position |
| ESC * c < *text* > Z | PLCS | Print Large Character String<br>*text* = string printed as large character<br>- all symbols of code table IBM 437<br>- different sizes in one line must be<br>  in a combined ESC-sequence |

**Table 9: HP 2934-A compatible Barcode Printing**

| Escape Sequence | Mnemonic | Function |
| --- | --- | --- |
| ESC * z P1 V | BCTS | Barcode Type Selection<br>P1 = 0: Code 39 (default)<br>P1 = 1: Industrial 2 of 5<br>P1 = 2: Matrix 2 of 5<br>P1 = 3: User defined code<br>P1 = 4: Interleave 2 of 5 |
| ESC * z P1 Q | BCHM | Barcode Header Mode<br>P1 = 0: Barcode without header<br>P1 = 1: Barcode with header |
| ESC * z P1 H | BCH | Barcode Height<br>P1 = 0: height correspond to LPI<br>P1 = 0.5...9: height in 1/10 inch (step 0.5)<br>default is 6 (0.6 inch) |
| ESC * z P1 C | BCHSC | Barcode Horizontal Start Column<br>P1 = start column (determined by CPI) |
| ESC * z P1 X | BCHPO | Barcode Horizontal Position Offset<br>P1 = horizontal position offset (1/90") |
| ESC * z P1 r P2 s P3 t P4 U | BCPDE | Barcode Print Density (1/90 inch)<br>Pn = 1...9, (step 0.5)<br>P1 = wide bar width (default 5)<br>P2 = narrow bar width (default 2)<br>P3 = wide space width (default 5)<br>P4 = narrow space width (default 2) |
| ESC * z < data > Z | BCPDA | Barcode Print Data<br>data = contents of the label |

Conventions for HP 2934-A compatible Barcode Printing:

- Multiple Barcodes in one line must be programmed in a single ESC-sequence.
- First define label print specification:

ESC * z P1 v P2 r P3 s P4 t P4 u P5 H

- Second define label position, content and start printing:

ESC * z P1 c < data > Z

Table 10: Native Control Codes for Barcode Printing

| Escape Sequence | Mnemonic | Function |
| --- | --- | --- |
| ESC [ ; P2 ; P3 ; P4 ; P5 ; P6 ; P7 *SP* z<br>*Native Command* | BH | Barcode Header<br>P2: Barcode type<br>P3: Height of Barcode<br>P4: Width of thin bars<br>P5: Width of thin gaps<br>P6: Ratio width to thin<br>P7: Uni-/Bidirectional print |
| ESC [ ? 0 h<br>*Native Command* | SMBC | Set Mode Barcode |
| ESC [ ? 0 l<br>*Native Command* | RMBC | Reset Mode Barcode |

**Table 11: Not supported Control Codes of the original HP 2934-A Printer**

| Escape Sequence | Mnemonic | Function |
|---|---|---|
| ESC f | | Modem disconnect |
| ESC z | | Printer Selftest |
| ESC & l <count> W <data> | | Programming VFC |
| ESC ( *Par* | | Designate Primary Symbol Set |
| ESC ) *Par* | | Designate Secondary Symbol Set |
| | | *Par* = 0 A:   Math Symbols |
| | | *Par* = 0 M:   Math Symbols |
| | | *Par* = 1 K:   Katakana |
| | | *Par* = 8 K:   Kana 8 |

**Table 12: Not supported Control Codes of the original HP 2235 Printer**

| Escape Sequence | Mnemonic | Function |
|---|---|---|
| ESC & k P1 V | | View Mode |
| ESC & l P1 E | | Set Top Margin |
| ESC ( *Par* | | Designate Primary Symbol Set |
| ESC ) *Par* | | Designate Secondary Symbol Set |
| | | *Par* = 0 X:   Download Character Set |
| | | |
| ESC ( P1 X | | Set RAM to Primary Font |
| ESC * c P1 E | | Set Character Code |
| ESC * c 0 F | | Clear RAM Font |
| ESC * c 3 F | | Delete a Character in RAM |
| ESC * c 6 F | | Copy ROM to RAM |
| ESC ( s P1 W | | Download one Character |
| ESC ) s P1 W | | Define New Font |

| Hex Code | Format | Page |
|---|---|---|
| 00 | Null | 3 |
| 05 | Enquire | 3 |
| 06 | Acknowledge | 3 |
| 08 | Backspace | 3 |
| 09 | Horizontal Tab | 3 |
| 0A | Line Feed | 3 |
| 0B | Vertical Tab | 3 |
| 0C | Form Feed | 3 |
| 0D | Carriage Return | 3 |
| 0E | Invoke Secondary Symbol Set | 3 |
| 0F | Invoke Primary Symbol Set | 3 |
| 11 | XON | 3 |
| 13 | XOFF | 3 |
| 1B | Escape | 3 |
| 20 | Space | 3 |
| 7F | Delete | 3 |
| 1B 31 | Set Horizontal Tab at Current | 8 |
| 1B 32 | Clear Horizontal Tab at Current | 8 |
| 1B 33 | Clear all Horizontal Tab | 8 |
| 1B 34 | Set Left Margin at Current | 8 |
| 1B 35 | Set Right Margin a Current | 8 |
| 1B 39 | Clear all Margins | 8 |
| 1B 3D | Half Line Feed | 6 |
| 1B 3F | Serial I/O Status Request | 4 |
| 1B 45 | Reset to Initial State | 4 |
| 1B 49 | Horizontal Tab | 4 |
| 1B 59 | Display Mode ON | 4 |
| 1B 59 | Display Mode OFF | 4 |
| 1B 6F | Transfer of the OFF-Line State | 4 |
| 1B 28 *Par* | Designate Primary Symbol Set | 10 |
| 1B 29 *Par* | Designate Secondary Symbol Set | 10 |
| 1B 26 61 $P_1$ 43 | Set Horizontal Position in Columns | 8 |
| 1B 26 61 $P_1$ 48 | Set Horizontal Position in Decipoint | 8 |
| 1B 26 61 $P_1$ 4C | Set Left Margin at Absolute Column | 8 |
| 1B 26 61 $P_1$ 4D | Set Right Margin at Absolute Column | 8 |

| | | |
|---|---|---|
| 1B 26 61 $P_1$ 52 | Set Vertical POSition in Lines | 6 |
| 1B 26 61 $P_1$ 54 | Set Horizontal TAB at Position | 8 |
| 1B 26 61 $P_1$ 55 | Clear Horizontal TAB at Position | 8 |
| 1B 26 61 $P_1$ 56 | Set Vertical POSition in Decipoints | 6 |
| 1B 26 64 40 | Underline ON | 13 |
| 1B 26 64 44 | Underline OFF | 13 |
| 1B 26 6B $P_1$ 45 | Display Enhancement Control | 13 |
| 1B 26 6B $P_1$ 46 | Shift In / Shift Out Control | 4 |
| 1B 26 6B $P_1$ 47 | Line Termination Mode | 5 |
| 1B 26 6B $P_1$ 48 | Horizontal Motion Index | 11 |
| 1B 26 6B $P_1$ 53 | Horizontal Character Pitch | 11 |
| 1B 26 6C $P_1$ 43 | Vertical Motion Index | 6 |
| 1B 26 6C $P_1$ 44 | Set Line Spacing | 6 |
| 1B 26 6C $P_1$ 46 | Set Text Length | 6 |
| 1B 26 6C $P_1$ 47 | Select Paper Output | 5 |
| 1B 26 6C $P_1$ 48 | Select Paper Source | 5 |
| 1B 26 6C $P_1$ 4A | Auto Centering and Justification | 9 |
| 1B 26 6C $P_1$ 4C | Perforation Skip Mode | 6 |
| 1B 26 6C $P_1$ 4D | Vertical TAB Settings | 6 |
| 1B 26 6C $P_1$ 50 | Set Page Length | 6 |
| 1B 26 6C $P_1$ 52 | Clear Vertical TAB in Absolute Line | 6 |
| 1B 26 6C $P_1$ 56 | Select VFC Channel | 7 |
| 1B 26 6C $P_1$ 59 | Set Vertical TAB in Absolute Line | 6 |
| 1B 26 70 $P_1$ 58 | Display Mode ON for P1 Characters | 4 |
| 1B 26 73 $P_1$ 42 | Primary Character Style Bold | 12 |
| 1B 26 73 $P_1$ 43 | End Off Line Wraparound | 5 |
| 1B 28 73 $P_1$ 40 | Primary Default Set Designation | 11 |
| 1B 28 73 $P_1$ 48 | Primary Horizontal Character Pitch | 12 |
| 1B 28 73 $P_1$ 50 | Primary Proportional Character Pitch | 12 |
| 1B 28 73 $P_1$ 51 | Primary Print Quality | 11 |
| 1B 28 73 $P_1$ 53 | Primary Character Style Italic | 12 |
| 1B 28 73 $P_1$ 54 | Primary Character Set Typeface | 11 |
| 1B 28 73 $P_1$ 55 | Primary Character Style Sub/Superscript | 12 |
| 1B 28 73 $P_1$ 56 | Primary Character Height | 12 |
| 1B 29 73 $P_1$ 40 | Secondary Default Set Designation | 11 |
| 1B 29 73 $P_1$ 42 | Secondary Character Style Bold | 12 |
| 1B 29 73 $P_1$ 48 | Secondary Horizontal Character Pitch | 12 |
| 1B 29 73 $P_1$ 50 | Secondary Proportional Character Pitch | 12 |

| | | |
|---|---|---|
| 1B 29 73 $P_1$ 51 | Secondary Print Quality | 11 |
| 1B 29 73 $P_1$ 53 | Secondary Character Style Italic | 12 |
| 1B 29 73 $P_1$ 54 | Secondary Character Set Typeface | 11 |
| 1B 2A 62 $P_1$ 57 data | Transfer One Raster Graphics Row | 15 |
| 1B 2A 62 $P_1$ 58 | Temporary Graphics Horizontal Offset | 15 |
| 1B 2A 62 $P_1$ 59 | Temporary Graphics Vertical Offset | 15 |
| 1B 2A 63 $P_1$ 40 | Large Character Size | 16 |
| 1B 2A 63 $P_1$ 43 | Large Character Horizontal Start Column | 16 |
| 1B 2A 63 $P_1$ 4E | Large Character to Next TAB Position | 16 |
| 1B 2A 63 $P_1$ 58 | Large Character Horiz. Position Offset | 16 |
| 1B 2A 63 3C *Par* 3E 5A | Print Large Character String | 16 |
| 1B 2A 70 $P_1$ 58 | Set Horizontal POSition in Dots | 9 |
| 1B 2A 72 42 | Raster Graphics Complete | 15 |
| 1B 2A 72 4B | Return Model Number | 5 |
| 1B 2A 72 $P_1$ 41 | Prepare For Raster Graphics | 15 |
| 1B 2A 72 $P_1$ 53 | Raster Graphics Density | 15 |
| 1B 2A 74 $P_1$ 52 | Raster Graphic Width | 15 |
| 1B 2A 7A $P_1$ 43 | Barcode Horizontal Start Column | 17 |
| 1B 2A 7A $P_1$ 48 | Barcode Height | 17 |
| 1B 2A 7A $P_1$ 51 | Barcode Header Mode | 17 |
| 1B 2A 7A $P_1$ 56 | Barcode Type Selection | 17 |
| 1B 2A 7A $P_1$ 58 | Barcode Horizontal Position Offset | 17 |
| 1B 2A 7A $P_1$ 72 $P_2$ 73 $P_3$ 74 $P_4$ 55 | Barcode Print Density | 17 |
| 1B 2A 7A 3C *data* 3E 5A | Barcode Print Data | 17 |
| 1B 5B 3B $P_2$ 3B $P_3$ 3B $P_4$ 3B | Barcode Header | 18 |
| $\quad$ $P_5$ 3B $P_6$ 3B $P_7$ 20 7A | | |
| 1B 5B 3B $P_2$ 73 | AGC/PCC Procedure | 14 |
| 1B 5B 3F 30 68 | Set Mode Barcode | 18 |
| 1B 5B 3F 30 6C | Reset Mode Barcode | 18 |
| 1B 5B $P_1$ 3B $P_2$ 20 42 | Graphic Size Modification | 14 |
| 1B 5B $P_1$ 3B $P_2$ 20 72 | Select Macro and Change Emulation | 14 |
| 1B 5B $P_1$ 3B $P_2$ 78 | Select Font and Character Pitch | 13 |
| 1B 5E 11 | Primary Status Request | 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 | 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 |