IBM

Quick Reference

Postal Bar Code Fonts

Program Number 5799-DGX (RPQ 8A5043)

This quick reference describes the IBM RPQ (Request for Price Quotation) for POSTNET Bar Code fonts. These fonts can be used with Print Services Facility[1] for the following 240-pel (dot-per-inch) nonimpact printers:

IBM 3800 Printing Subsystem Model 3
IBM 3800 Printing Subsystem Model 6
IBM 3800 Printing Subsystem Model 8
IBM 3812 Page Printer Model 2
IBM 3816 Page Printer Model 1D
IBM 3816 Page Printer Model 1S
IBM 3820 Page Printer
IBM 3825 Page Printer
IBM 3827 Page Printer
IBM 3828 Advanced Function MICR Printer
IBM 3835 Page Printer
IBM 3900 Advanced Function Printer

The 300-pel Postal bar code fonts can be printed on the IBM LaserPrinter 4028 Model AS1 and Model NS1.

The Postal Bar Code Font RPQ provides fonts that conform to U.S. Postal Service (USPS) specifications, commonly called "Postal fonts." The fonts include three bar code families that are recognized by the USPS:

- ZIP[2]+4[2] font
- ZIP+4 semi-condensed
- Facing Identification Marking (FIM)
- Business Reply Bar

Postal Bar Code fonts are provided in three formats in the following environments:

- Bounded-box 240-pel format is used by PSF/MVS, PSF/VM, and PSF/VSE to print on the IBM 3812, 3816, 3820, 3825, 3828, and 3900 printers. This format is used by PSF/VM only to print on the IBM 3800 printers.
- Unbounded-box 240-pel format is used by PSF/MVS and PSF/VSE to print on the IBM 3800 printers.
- Bounded-box 300-pel format is used by PSF/MVS, PSF/VM, and PSF/VSE to print on the IBM 4028 LaserPrinter.

  Note: Because the 3800 cannot print characters with a height greater than 0.5 inch, the FIM and the Business Reply bar, which exceed this limit, cannot be printed on the 3800. The ZIP+4 bar code is provided as a 12-point font.

Before You Begin: As a forms designer, you might consider information from the following sources:

- USPS specifications found in USPS Publication 25: *A Guide to Business Mail Preparation* and the USPS *Domestic Mail Manual*.
- IBM printer specifications for printable areas on a form are found in *Advanced Function Printing: Printer Information*, G544-3290.
- Bar code width specifications:

  Some printers may have minimum stroke width specifications for bar code printing. The ZIP+4 POSTNET bar code is designed with 5-pel bars (0.021 inches) for 240-pel printers and 6-pel bars (0.020 inches) for 300-pel printers. Refer to your printer publication for more information.

Printer Certification: The following printers are certified for the 9-digit and the 11 digit delivery point barcode for the bottom right and the address block positions. 11 digit delivery point barcodes are used for sorting delivery sequence.

Printer	Certification Number
IBM 3812-2	9107200088
IBM 3816-1D	9107200087
IBM 3816-1S	9111900138

1 Print Services Facility and PSF are trademarks of the IBM Corporation.

2 ZIP and ZIP+4 are trademarks of the United States Postal System.

IBM 3820-1	9107200086
IBM 3825-1	9107200085
IBM 3827-1	9109400127
IBM 3828-1	9107200084
IBM 3835-1	9107200089
IBM 3900-1	9107200083
IBM 4028-NS1	9109400126

For satisfactory scanning, you may want to consider the following:

- Optical reader performance
- Application program differences
- Supplies and customer environments

The program directory for this RPQ contains instructions for installing the POSTNET bar code fonts, but it does not contain any information on the application programming considerations for using them.

Programming Considerations

In all ZIP codes the Postal Service requires a start character, the multi-digit ZIP code characters, a check digit, and an end character. The ZIP field has 8 characters, ZIP+4 field 12 characters, and the ZIP+4+2 field 14 characters.

For example, the actual characters printed for ZIP+4 must be:

```
* 1 2 3 4 5 6 7 8 9 C *
| |               | | |
| |               | | ---- Frame bar (X'FA')
| |               | ------ Modulus 10 check digit
| |               -------- Last zip code digit
| ---------------------- First zip code digit
------------------------ Frame bar (X'FA')
```

The first and last characters are at hex code point X'FA' (code page T1001301). All other characters are printed using their respective code points (0 = X'FO', 1 = X'F1', and so on).

The modulus 10 check digit is calculated by adding all of the zip code values and subtracting the sum from the next highest multiple of 10. For example, the zip code 803019191 adds up to 32. When this is subtracted from the next highest multiple of 10, which is 40, the result is 8. Therefore the check digit is 8.

The check digit must be calculated for every zip code. This can be done by a simple subroutine in the application program. Complete zip code information, including the check digit, can also be stored in a data base of names and addresses. The check digit cannot be calculated in the Advanced Function Printing page definition.

The Postal Service has announced plans to expand to an 11-digit ZIP code format called Delivery Point Bar Code (DPBC) in the near future. It is anticipated that the font provided in this RPQ will be valid to use in printing this bar code string also. You must include code in your application that generates the 14-character string required for this format. That string is:

```
Frame bar
11 digits of ZIP Code
Modulus 10 check digit
Frame bar
```

The check digit is calculated in the same way as described in the procedure above. For example, if the sum of the digits were 46, with the next highest multiple being 50, then the check digit would be 4. The application program must calculate the check digit.

For complete information on the Postal Service bar code requirements, contact your local post office and ask for publication 25, *A Guide to Business Mail Preparation* or the *Domestic Mail Manual*.

Technical Information

Table 1 shows the character sets, code page, and coded fonts that are shipped with the POSTNET Bar Code Font RPQ.

The character set, code page, and coded font names are the same for 240-pel and 300-pel. **n** is equal to 0, 1, or 2 for variations when referencing format and orientation.

Table 1. POSTNET Bar Code Fonts

Font Name	Character Set	Code Page	Coded Font
ZIP+4 POSTNET bar code	CnBPOSBN	T1001301	XnBPBN
	CnBPOSBO	T1001301	XnBPBO
Facing Identification Mark	C0BPOS91	T1001302	X0BP91
Business Reply Bar	C0BPOSA0	T1001303	X0BPA0

Design Considerations

There are two POSTNET bar code designs for each resolution: 240-pel and 300-pel. The bar widths and heights are identical. Table 2 shows the difference in the bar-to-bar spacing and the amount of white space between each bar.

Table 2. Design for POSTNET Bar Code Fonts

Type Family	Bar Length	Bar Width	Bar Spacing
ZIP+4 POSTNET (240-pel)	Short Bar: 12 pels=0.05 in. Tall Bar: 30 pels=0.125 in.	5 pels=0.0208 in.	10 pels=0.0417 in.[3] 11 pels=0.0458 in.[4]
ZIP+4 POSTNET (300-pel)	Short Bar: 15 pels=0.05 in. Tall Bar: 38 pels=0.127 in.	6 pels=0.0200 in.	13 pels=0.0433 in.[3] 14 pels=0.0467 in.[4]
FIM (240-pel)	150 pels=0.625 in.	7 pels=0.292 in.	Match to USPS
FIM (300-Pel)	188 pels=0.627 in.	10 pels=0.0033 in.	Match to USPS
Business Reply (240-pel)	144 pels=0.60 in.	18 pels=0.075 in.	Set equal to bar width
Business Reply (300-pel)	180 pels=0.60 in.	23 pels=0.077 in.	Set equal to bar width

Note: [3] semi-condensed spacing (CnBPOSBN) [4] medium spacing (CnBPOSB0)

Character Set Attributes

Table 3 and Table 4 show the character set attributes for the 240-pel and 300-pel POSTNET Bar Code fonts.

Table 3. Character Set Attributes for 240-Pel POSTNET Bar Code Fonts

Character Set	Point Size	Additional Attributes	Descriptive Name	Line Space	Figure Space	Word Space	Em Space
CnBPOSB0	12	semi-condensed	postal bar code	40	55	55	55
CnBPOSBN	12		postal bar code	40	50	50	50
C0BPOS91	45		postal FIM	150	125	125	125
C0BPOSA0	11		postal reply	36	144	144	144

Table 4. Character Set Attributes for 300-Pel POSTNET Bar Code Fonts

Character Set	Point Size	Additional Attributes	Descriptive Name	Line Space	Figure Space	Word Space	Em Space
C0BPOSB0	12	semi-condensed	postal bar code	880	1400	1400	1400
C0BPOSBN	12		postal bar code	880	1300	1300	1300
C0BPOS91	45		postal FIM	1002	853	853	853
C0BPOSA0	11		postal reply	1004	3927	3927	3927

Code Pages: Three code pages are shipped with the Postal Bar Code font RPQ:

T1001301	Zip + 4 POSTNET Bar Code
T1001302	Facing Identification Marks
T1001303	Business Reply Bar

The contents of each code page follow.

Table 5. Contents of Code Page T1001301: Zip + 4 POSTNET Bar Code

Character Identifier	Character Graphic	Code Point	Graphic Character Description
DD01Z000		F1	Decimal One
DD02Z000		F2	Decimal Two
DD03Z000		F3	Decimal Three
DD04Z000		F4	Decimal Four
DD05Z000		F5	Decimal Five
DD06Z000		F6	Decimal Six
DD07Z000		F7	Decimal Seven
DD08Z000		F8	Decimal Eight
DD09Z000		F9	Decimal Nine
DD00Z000		F0	Decimal Zero
DS00Z000		FA	Frame Bar
SP010000		40	Space

Table 6. Contents of Code Page T1001302: Facing Identification Marks

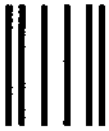
Character Identifier	Character Graphic	Code Point	Graphic Character Description
DS01Z000		BB	Facing Identification Mark A
DS02Z000		CB	Facing Identification Mark B
DS03Z000		DB	Facing Identification Mark C
DS04Z000		EB	Facing Identification Mark D
SP010000		40	Space

Table 7. Contents of Code Page T1001303: Business Reply Bar

Character Identifier	Character Graphic	Code Point	Graphic Character Description
DS05Z000		77	Business Reply Bar
SP010000		40	Space

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This edition applies to the POSTNET Bar Code Font RPQ Version 1.0 until otherwise indicated in new editions or Technical Newsletters. Be sure to use the correct edition for the level of the product.

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