







# ELFRING FONTS INC











## BAR CODE 2 OF 5 INTERLEAVED

This package includes 25 bar code 2 of 5 interleaved fonts in TrueType and PostScript formats, a Windows utility, Bar25i.exe, to help make your bar codes, and Visual Basic macros for Excel, Access, and Word. Bar code 2 of 5 Interleaved is a high density numeric bar code format. There are five basic versions of bar code 2 of 5 interleaved fonts in this set: standard 2 of 5 interleaved, standard 2 of 5 interleaved with bearer bars, human readable 2 of 5 interleaved, human readable 2 of 5 interleaved with bearer bars, and ITF-14. This bar code font set includes:

<b>Bar Code 25 Interleaved</b>	<b>Bar Code 25 Interleaved Human Readable</b>
	 0 1 2 3 4 5 6 7 8 9
<b>Bar Code 25 Interleaved with bearer bars</b>	<b>Bar Code 25 Interleaved Human Readable / bearer bars</b>
	 0 1 2 3 4 5 6 7 8 9
<b>ITF-14 Open Box</b>	<b>ITF-14 Closed Box</b>
 0 0 7 1 4 5 6 9 0 0 1 7 3 5	 0 0 7 1 4 5 6 9 0 0 1 7 3 5

The five bar code font sets in this package include:

Typeface Name	Bar 25i b	Bar 25i c	Bar 25i d	Bar 25i e	Bar 25i f
Bar Code 25 Interleaved					
Typeface Name	Bar 25i b HR	Bar 25i c HR	Bar 25i d HR	Bar 25i e HR	Bar 25i f HR
Bar Code 25 Interleaved Human Readable	 0 0 0 0 1	 0 0 0 0 1	 0 0 0 0 1	 0 0 0 0 1	 0 0 0 0 1
Typeface Name	Bearer 25i b	Bearer 25i c	Bearer 25i d	Bearer 25i e	Bearer 25i f
Bar Code 25 Interleaved Bearer Bars					

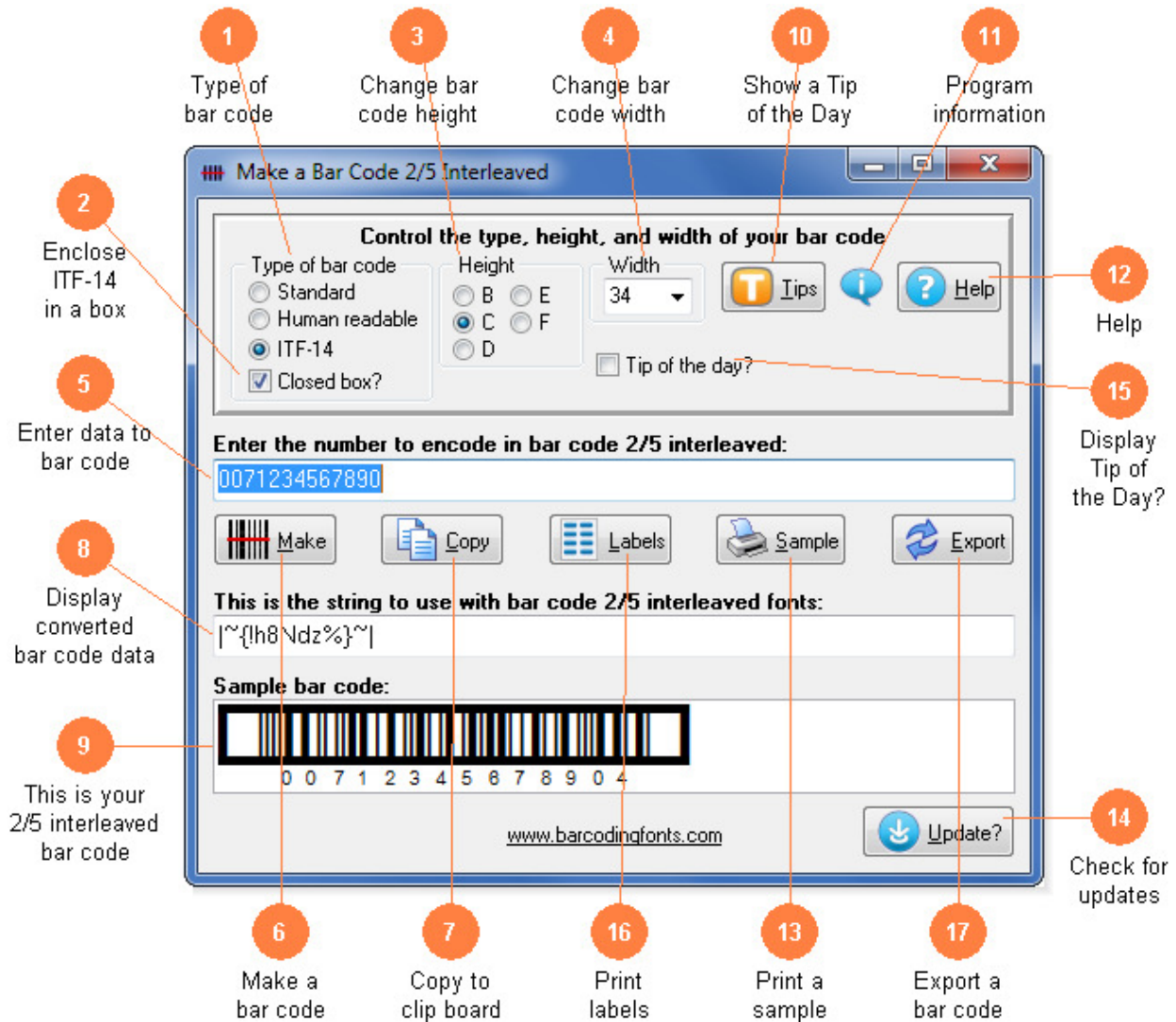
Typeface Name	Bearer 25i b HR	Bearer 25i c HR	Bearer 25i d HR	Bearer 25i e HR	Bearer 25i f HR
Bar Code 25 Interleaved Bearer Bars Human Readable	 0 0 0 1	 0 0 0 1	 0 0 0 1	 0 0 0 1	 0 0 0 1
Typeface Name	ITF14 b	ITF14 c	ITF14 d	ITF14 e	ITF14 f
ITF-14	 0 0 7 1	 0 0 7 1	 0 0 7 1	 0 0 7 1	 0 0 7 1

## INSTALLATION

Please use our Barcod25.exe program to install this package and font set in Windows. The fonts will be installed into your Windows fonts folder automatically. Our bar code utility program, Bar25.exe, documentation, and matching files will also be installed. The bar code fonts will appear in all Windows font menus. You can select any one of the bar code just as you normally select any other font in your application. For help in building bar codes, run the Bar25.exe utility program. To access the utility program or the documentation, click on Start, Programs, Bar Code 25 Interleaved, and select the program or documentation item you want to view.

## BAR25 UTILITY PROGRAM

This utility converts your data into an actual bar code. Use this utility to build 2 of 5 interleaved or ITF-14 bar codes and then to copy and paste them into other Windows programs for printing. Bar codes can be copied into your word processor for label printing, or into a desktop publishing program to put a bar code on your packaging. You can also export a copy of your bar code in bmp, gif, jpg, or png formats. These bar code fonts are compatible with virtually any Windows program. For programs like Excel and Access see the package documentation for details on using our Visual Basic macros directly inside of those programs.



- 1) Select the type of bar code 2 of 5 interleaved to create. Standard bar codes must have an even number of digits and just display bar code patterns. Human readable bar codes must also have an even number of digits and display bar code patterns with bar code data below. ITF-14 bar codes are 14 digits long, have bear bars, and are often placed in a black outline box.
- 2) If checked the entire ITF-14 bar code will be enclosed in a box.
- 3) Modify the height of a bar code without changing the width. Bar codes can range from .25 to 1 or more inches in height.
- 4) Scale the bar code width up or down by increasing or decreasing the point size.
- 5) Type in the number you want to bar code here. You must have an even number of digits in your bar code. Our program will add the Start and Stop characters and translate your numbers into a bar code string.
- 6) Click this button to make a bar code from your number. You will see a sample of the bar code in the bottom window.

- 7) Copy your completed 2 of 5 interleaved bar code to the Windows clip board. (*The Windows clip board is invisible- don't worry about where it is or how it works.*) You can then paste this bar code directly into virtually any Windows program by pressing Ctrl-V or using the Edit, Paste menu in that program.
- 8) This is the string of characters to use with our bar code fonts. Note you can not just type in the 2 of 5 interleaved bar code fonts. Your bar code number is converted into a data string and this data string must be used with our bar code fonts.
- 9) This is a sample of what your bar code will look like. Note that Windows screen resolution is fairly low, so the bar code displayed may not exactly match what will be printed.
- 10) Display the next program Tip of the Day. From this display you can page forwards or backwards through the list of all available tips.
- 11) Display program and contact information including the version number of this software.
- 12) Launch the Windows Help application. The Help form will give you detailed answers to most questions about the program.
- 13) Print a sample page of your 2 of 5 interleaved bar code to see just what it will look like. This sample page shows you your bar code in a number of different sizes.
- 14) Check the web for a program update. You must have an active internet connection running. A web page will be displayed with information about the current version of this program and whether or not you need to update.
- 15) Display the next Tip of the Day on start up when checked.
- 16) Print a sheet of labels. Click to open a window to select your label size, and then launch your word processor with that label template. Paste the bar code into any label and add text or graphics.
- 17) Export a copy of your bar code in bmp, gif, jpg, or png formats. You can choose from four different resolutions. You can email this bar code or use it in your packaging.

## **USER ACCESSIBLE FILES**

In Windows Vista and Windows 7, plus all future versions of Windows, users are not allowed to access any files stored in the Programs folder. The Visual Basic macros, label templates, and sample Excel spread sheet are placed into a folder named "Bar25" in each user's Documents area. You can find these files as follows:

Windows XP: My Documents\Bar25

Vista: Libraries\Documents\ Bar25

Windows 7: Libraries\Documents\ Bar25

## BAR CODE 2 OF 5 INTERLEAVED

Bar Code 2 of 5 is a high density, self-checking bar code format. It achieves this high density printing by assigning a single bar code pattern to every *pair* of digits from 00 through 99. Thus, bar code 2 of 5 interleaved can not represent a single digit number like a 4. It can only represent a number with two digits, like 04. There are 102 bar code patterns in the font: a Start code, a Stop code, and 100 bar codes for the pairs of digits 00 through 99. (*You must use an even number of digits in your bar code. If the code contains an odd number of digits you must add a leading 0.*) Due to the nature of the Start and Stop codes, partial scans are possible with Bar Code 2 of 5 Interleaved. Three of the five versions of fonts in this set include bearer bars which prevent partial scans.

Maximum print density (*not including Start/Stop codes*) is 11.1 numbers/inch on 300 dpi printers, or 22.2 dpi on 600 dpi printers. All data for bar code 2 of 5 interleaved must be encoded. To encode a number, say 27, you look up the number 27 in the table below. The ASCII code next to that number is the character that must be used in the font to represent that pair of numbers.

**Table 1**  
**Bar Code 2 of 5 Interleaved ASCII Position vs Number Pair**

ASCII Pos	Char	Number Pair	ASCII Pos	Char	Number Pair	ASCII Pos	Char	Number Pair	ASCII Pos	Char	Number Pair
33	!	00	59	;	26	85	U	52	111	o	78
34	"	01	60	<	27	86	V	53	112	p	79
35	#	02	61	=	28	87	W	54	113	q	80
36	\$	03	62	>	29	88	X	55	114	r	81
37	%	04	63	?	30	89	Y	56	115	s	82
38	&	05	64	@	31	90	Z	57	116	t	83
39	'	06	65	A	32	91	[	58	117	u	84
40	(	07	66	B	33	92	\	59	118	v	85
41	)	08	67	C	34	93	]	60	119	w	86
42	*	09	68	D	35	94	^	61	120	x	87
43	+	10	69	E	36	95	_	62	121	y	88
44	,	11	70	F	37	96	`	63	122	z	89
45	-	12	71	G	38	97	a	64			
46	.	13	72	H	39	98	b	65	123	{	Start
47	/	14	73	I	40	99	c	66	125	}	Stop
48	0	15	74	J	41	100	d	67			
49	1	16	75	K	42	101	e	68	161 / 194	ı or Â	90
50	2	17	76	L	43	102	f	69	162 / 195	ç or Ã	91
51	3	18	77	M	44	103	g	70	163 / 196	£ or Ä	92
52	4	19	78	N	45	104	h	71	164 / 197	ä or Å	93
53	5	20	79	O	46	105	i	72	165 / 198	¥ or Æ	94
54	6	21	80	P	47	106	j	73	166 / 199	ı or Ç	95
55	7	22	81	Q	48	107	k	74	167 / 200	§ or È	96
56	8	23	82	R	49	108	l	75	168 / 201	¨ or É	97
57	9	24	83	S	50	109	m	76	169 / 202	© or Ê	98
58	:	25	84	T	51	110	n	77	170 / 203	ª or Ë	99

How do you encode a number into the correct characters for our bar code 2 of 5 interleaved font? If you want to use Access, Excel, or Word to print bar codes, see the documentation on our Visual Basic functions later in this manual. Or you can use our Bar25i program to do it automatically.

To manually encode the data 01234567, you need to convert the numbers into pairs. So break the number 01234567 up into pairs of digits first.

01234567 = 01, 23, 45, 67


Now look up those pairs of numbers in Table 1 to get their ASCII equivalents.

01234567 = 01, 23, 45, 67 = "8Nd


Finally, add the Start character to the beginning of the string, and the Stop character at the end of the string.

01234567 = 01, 23, 45, 67 = "8Nd = {"8Nd}

So the actual string to print using our bar code 2 of 5 interleaved font is {"8Nd}. This becomes the bar code:

{01234567} = {"8Nd} =  0 1 2 3 4 5 6 7

To encode the number 96572510 you follow the same methods:

96572510 = 96, 57, 25, 10 = \$Z:+ = {\$Z:+}  9 6 5 7 2 5 1 0

## BAR CODE 2 OF 5 INTERLEAVED CHECKSUM

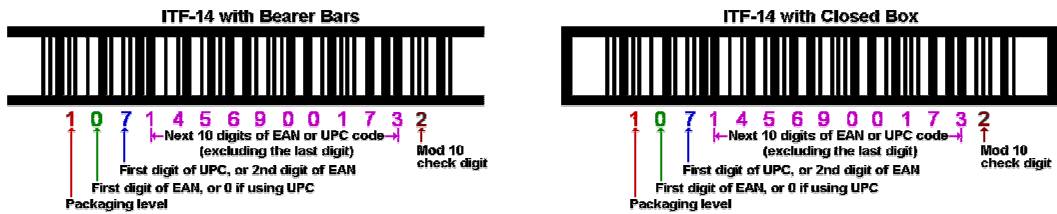
Bar code 2 of 5 Interleaved does offer an optional checksum, which is rarely used. The checksum consists of a single digit, modulo 10 number. All bar code 2 of 5 interleaved codes must contain an even number of digits, since each bar code pattern encodes two digits. So if you want to add a checksum, which is a single digit, you must start with an *odd* number of data digits. To calculate a checksum:

- 1) Start with an odd number of data digits
- 2) Assign an alternating weighting factor of 3, 1, 3, 1, ... starting from the right or least significant digit.
- 3) Multiply each digit times its weighting factor (either a 3 or a 1) and sum the result.
- 4) The checksum digit is the number which, when added to the sum, makes the sum an even multiple of 10.

For example, if you want to encode the data “01234” (*note the odd number of digits*) you multiply the least significant digit by 3, the next by 1, ... and sum these products. The result is 22. The checksum digit will be an 8, since  $8 + 22 = 30$ , which is evenly divisible by 10. So the complete bar code data would be “012348”.

<b>Data</b>	0	1	2	3	4	
<b>Weights</b>	3	1	3	1	3	
<b>Product</b>	0	1	6	3	12	= 22

## ITF-14 BAR CODES



ITF-14 bar codes are 14 digits long. The first digit is your packaging level. It indicates the package variant. For example, suppose you package the same product in two different cases and one case contains 10 items while the other case contains 12 items. You then assign 1 for the first case and 2 for the second. There is no standard mandating that how many items should be placed in the case. A 0 is typically used if there are no package levels. If you are encoding a UPC number your next digit is a 0. If you are encoding an EAN number this digit is the leading digit from your EAN code. The next digit is the first number of your UPC code or the 2<sup>nd</sup> number of your EAN code. Then grab the next 10 digits of either your UPC or EAN code, excluding the last digit. The final digit is a mod 10 checksum, calculated as shown below. You can build a quick ITF-14 bar code from your UPC-A bar code by adding two leading zeros. The checksum will remain the same in this case (assuming you start with two 0's). This is **not** the case in the example above!

**Checksums:** Checksums are calculated as follows. Take the 13 digit ITF number and assign the right-most digit an “odd” value. Next alternate even/odd assignments for the rest of the digits. Add all the odd position digits and multiply that sum by 3. Add to that first sum the sum of all the even position digits. The checksum is the smallest number that can be added to that sum to make it an even multiple of 10.

```
Data:           1 0 7 1 4 5 6 9 0 0 1 7 3
Position:       O E O E O E O E O E O E O
Odd sum:        1 + 7 + 4 + 6 + 0 + 1 + 3 = 22, 22 * 3 = 66
Even sum:       0 + 1 + 5 + 9 + 0 + 7 = 22
Sum odd+even:  66 + 22 = 88
Checksum:      2 (88 + 2 = 90, which is an even multiple of 10)
```

Encoding the data is done in the same way you do it for standard bar code 2 of 5 interleaved numbers:

```
UPC-A number:   714569001735
ITF-14 number:  1 + 0 + 71456900173 + 2 → 10714569001732
```

Data encoded:           +hNf!2A  
 Start and Stop pattern: {    }                   |~{    }~|  
 Data string:             {+hNf!2A}             |~{+hNf!2A}~|

## CONTROLLING BAR CODE HEIGHT AND WIDTH

The wide to narrow ratio for all bar code fonts *except* ITF-14 is 3.0. ITF-14 bar codes have a wide to narrow ratio of 2.5. The only way to vary this ratio is to purchase a different bar code set. This bar code 2 of 5 interleaved font set includes 5 different aspect ratios of each bar code: .5 (*b*), .75 (*c*), 1.0 (*d*), 1.5 (*e*), and 2.0 (*f*). (See *Chart 1*.) When you are building a bar code, start with the “d” version of the bar code font. Once you have the bar code length set to what you want, you can vary the bar code height, without changing the bar code length, by changing the font to the a, b, c, d, or e version. The “b” version will print a bar code of exactly the same length, but at .5 times the bar height. The “f” version will print a bar code of exactly the same length, but at 2 times the bar height. Maximum print density (*not including Start/Stop codes*) is 6.8 characters/inch (*13.6 digits*) on 300 dpi printers, or 13.6 CPI (*27.2 digits*) on 600 dpi printers. If you exceed this print density, your bar code scanner may not be able to read the bar codes you print.

## PRINTING SHEETS OF LABELS

This bar code font set adds the ability to print bar codes to other, existing Windows programs. It does not print bar code labels all by itself. It uses label templates to lay out label sheets in your existing word processor. A template tells your word processor how to arrange information to fit specific sheets of labels. Once you have a template you can use any word processor to build your own labels with bar codes. The bar codes do not have to be identical and you can also include other text or graphics on each label. Our utility will let you create a bar code and then automatically open up the label template of your choice in your word processor.

Just click on *Labels*, select a label size, and click *Print*. Your word processor will open and display the label template. Put the cursor in the first label and paste your bar code there. Adjust the size of the bar code to fit the label by changing the font name and point size.

This package includes label templates in RTF format (*compatible with virtually all word processors*) for most popular label styles. You can open any of these templates in your word processor to lay out a label. To locate these files using your word processor click on *Open* and then select the “Libraries\Documents” folder. Look for a new subfolder with the name: \Bar25.

Template	Label Size	Labels/Sheet
ef167.rtf	1.75 x 0.50	80
ef570.rtf	1.75 x 1.25	32
ef060.rtf	2.625 x 1.00	30
ef161.rtf	4.00 x 1.00	20
ef162.rtf	4.00 x 1.33	14
ef163.rtf	4.00 x 2.00	10



ef197.rtf	4.00 x 1.50	12
ef164.rtf	4.00 x 3.33	6

Our Bar25.exe utility also lets you use your own custom label template. See your word processor manual for details on how to create a template, or download one from your label supplier. Once you have your own custom template, save the template file (*in rich text format*) in the Libraries\Documents\Bar25 folder with the file name “custom.rtf”. Our Bar25.exe utility will directly access that template to let you easily print labels.

### EMBEDDING BAR CODE FONTS IN PDF FILES

The fonts in this bar code set are **not** embeddable. When you embed a font in a PDF document, you are actually distributing a copy of that font with every single PDF file you generate. Your PDF generator glues a copy of the bar code font to the end of each PDF file it builds. This font is then installed on every computer that views the PDF document.

Embeddable versions of these fonts are available, at additional cost. Pricing for this add-on font set is based on how many computers the embeddable fonts will be installed on and how many people will view the PDF files. When you purchase an embeddable add-on font set you receive a new version of these fonts, and the new fonts will embed in PDF files. You must contact Elfring Fonts to order an embeddable font set.

### VISUAL BASIC MACROS FOR ACCESS, EXCEL, AND WORD

This package contains Visual Basic macros that let you automatically build bar code 25 interleaved strings in Excel, Access, and indirectly in Word. These macros, and sample Excel spread sheets in both Excel 2003 and Excel 2010 formats, are located in a folder named Bar25 under your Libraries\Documents folder. (**Libraries\Documents\Bar25**)

**Table 2**

<b>Function</b>	<b>Details</b>
Bar25I(Text)	Converts the input text data into a complete bar code 2 of 5 interleaved. The function adds the Start code, breaks the data up into number pairs and converts them to single characters, and then puts the Stop code at the end. Non-numeric data is ignored. You must enter an even number of digits, or a leading zero will be added. This result must be formatted with one of the following typefaces: Bar 25i b, Bar 25i b HR, Bar 25i c, Bar 25i c HR, Bar 25i d, Bar 25i d HR, Bar 25i e, Bar 25i e HR, Bar 25i f, Bar 25i f HR,
Bar25Ics(Text)	Converts the input text data into a complete bar code 2 of 5 interleaved. The function adds the Start code, breaks the data up into number pairs and converts them to single characters, adds the checksum digit and then puts the Stop code at the end. Non-numeric data is ignored. You must enter an odd number of digits, or a leading zero will be added. This result must be formatted with one of the following typefaces: Bar 25i b, Bar 25i b HR, Bar 25i c, Bar 25i c HR, Bar 25i d, Bar 25i d HR, Bar 25i e, Bar 25i e HR, Bar 25i f, Bar 25i f HR,
BarITF14(Text)	Converts the input 13 or 14 digit number into ITF-14 format. The function adds the bounding box, Start code, breaks the data up into number pairs and converts them to single characters, adds the checksum digit and then puts the Stop code at the end. Non-numeric data is ignored. You must enter 13 or 14 digits. This result must be formatted with one of the following typefaces: ITF14 b, ITF14 c, ITF14 d, ITF14 e, or ITF14 f.

### **Warning!**

Unlike our utility program, *Bar25i*, these Visual Basic functions do **very** limited error checking. You must make sure that the data you send to the function is correct! If you send bad data, your bar codes may be unreadable or they may not encode the data you think they have. Please use the *Bar25i* utility program to verify that your data is correct before using these Visual Basic functions to mass produce bar codes.

### **Using Visual Basic Functions in Excel**

Open the spread sheet where you want to add bar code functions (*or create a new spread sheet*). Click on Tools, Macros, then Visual Basic Editor. In the Visual Basic Editor tool, click on File, Import File, and select the drive and user data folder. (Libraries\Documents\Bar25 or My Documents\Bar25) The Visual Basic file, **VBbar25i.bas**, should appear there. Select this file and open it. This will add a new function module, EFbar25i, to your spread sheet. This module is automatically saved along with your spread sheet and adds the macro functions shown in Table 2.

These bar code functions can be used in any formula or cell to build working bar codes. For example, if cell H9 is defined as a text cell (*Format, Cell, Number, Text*) and cell I9 has the formula, =Bar25I(H9), then any text entered in cell H9 will be converted into a bar code string in cell I9. Note that you also need to select the proper typeface for that bar code type, using Format, Cell, Font. See Chart 1 for applicable font names.

### **Using Visual Basic functions in Access**

Open the database where you want to add bar code functions (*or create a new database*). Under your database Objects, click on Modules, then click on the New icon at the top of the box. This will bring up the Visual Basic Editor tool. Click on File, Import File, and select the drive and user data folder where you installed our Bar Code 25 interleaved. (Libraries\Documents\Bar25 or My Documents\Bar25) The Visual Basic file, **VBbar25i.bas**, should appear there. Select this file and open it. This will add a new function module, EFbar25i, to your database. This module is automatically saved along with your database and adds the macro functions shown in Table 2.

Open the database you want to add bar code 2 of 5 functions to (*or create a new database*). Under your database Objects, click on Modules, then click on the New icon at the top of the box. This will bring up the Visual Basic Editor tool. Click on File, Import File, and select the drive and folder where you installed our Bar Code 2 of 5 interleaved package (*probably Bar25i*). The Visual Basic file **VBbar25i.bas** should appear there. Select this file and open it. This will add a new module, EFBAR25i, to your database. This module adds the two functions to your database and is saved along with it. Table 2 lists these functions.

These bar code functions can be used in a report to build working bar codes. To use these functions, pass data to them from your table fields and return the result by entering a formula =Bar25I([table.field]) in the control source field of the report. Note that you need to select the proper typeface for that bar code subset. See Chart 1 for a complete listing of font names.

## Using Visual Basic functions in Word

Word does not have the ability to directly use Visual Basic functions. You can, however, combine Word and Excel to print bar code 2 of 5 interleaved! The basic idea is to keep your data in Excel, and to have Excel format the data for bar code printing. You then do a mail merge in Word, selecting the formatted string from Excel as the data source.

Place your data in Excel in a specific column. Then apply one of our bar code functions to the data in that column, producing a second column that contains the formatted string. This second column is passed to Word in the mail merge. You must make sure to select the proper subset typeface for your mail merge field. See Chart 1 for a complete list of font names. Also note that the on-screen display of the bar code will not look correct. Only the data printed by the mail merge will be in the correct bar code 2 of 5 interleaved format.

## Glossary

**Application Program:** a computer program that performs useful work not related to the computer itself. Examples are word processors, spreadsheets, accounting systems, and engineering programs.

**ASCII:** American Standard Code for Information Interchange – a standard code for representing characters as numbers that is used on most microcomputers, computer terminals, and printers.

**Aspect ratio:** the ratio of height to width.

**Bearer bars:** lines above and below a bar code, used to prevent partial reads of the bar code.

**Character string:** a sequence of characters stored in a computer and treated as a single data item.

**Checksum:** a number that accompanies data transferred from one place to another and helps to ensure that the data was transferred correctly.

**Clipboard:** a holding area to which information can be copied in order to transfer it from one application to another.

**CPI:** characters per inch.

**DPI:** dots per inch: the number of pixels or printer dots per linear inch.

**Font:** a complete collection of characters, in a consistent style and size. This includes upper and lower case letters, numerals, punctuation, ligatures, and reference marks.

**ITF-14:** an implementation of the Global Trade Information Number (GTIN)

**Modulo:** a mathematical operation that gives the remainder when one number is divided by another.

**Pixels:** one of the individual dots that make up a graphical image.

**Radio button:** small circles in a dialog box, only one of which can be chosen at a time. Choosing any button with the mouse causes all the other buttons in the set to be cleared.

**Scalable:** able to be used on a large or small scale without major changes.

**Scalable font:** a font that can be used to print characters of any size. Many newer laser printers include scalable fonts.

**Symbology:** a method of representing information by printed characters.

**TrueType Font:** an outline typeface that can be scaled or sized to practically any size.

**Scanner:** a device that enables a computer to read printed or handwritten page.

**Start Code:** the leading character of a bar code that identifies what kind of bar code it is.

**Stop Code:** the last character of a bar code that tells the bar code reader when it has reached the end of the code.

**Utility:** a program that assists in the operation of a computer but does not do the main work for which the computer was bought.

**Visual Basic Function:** a small program written in Visual Basic and used in products like Excel, Access, or Word to help create bar codes.

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