ELFRING FONTS BAR CODES
EAN 8, EAN 13, & ISBN / BOOKLAND

This package includes ten EAN bar code fonts in scalable TrueType and PostScript formats, a Windows utility *(BarEAN)* to help you make bar codes, plus Visual Basic macros for Excel, Access, and Word. The EAN bar code may be used in 8 digit *(EAN 8),* 13 digit *(EAN 13)*, or Bookland *(an EAN 13 code with an optional 5 digit supplemental code)* formats.

EAN 8 bar codes are fairly simple to implement. Both EAN 13 and Bookland *(which is just a variation of EAN13)* are very complicated bar codes and require our utility, or a program of your own, to implement. All EAN bar codes require a checksum *(check digit)*. Each of these EAN bar codes comes in five different aspect ratios, allowing you to print bar codes with the same width but at different heights.

Table 1

Typeface Name	EAN a	EAN b	EAN c	EAN d	EAN e
EAN-13	2 923457 890247	2 923457 890247	2 923457 890247	2 923457 890247	2 923457 890247
Typeface Name	EAN a plain	EAN b plain	EAN c plain	EAN d plain	EAN e plain
EAN-13					
Typeface Name	EAN a	EAN b	EAN c	EAN d	EAN e
EAN-13	9 781568 302898 50995	9 781568 302898 50995	9 781568 302898 50995	9 781568 302898 50995	9 781568 302898 50995

INSTALLATION

Please use our BarcdEAN.exe program to install these TrueType fonts in Windows. The fonts will be installed into your Windows fonts folder automatically. Our bar code utility program, BarEAN, 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 BarEAN.exe utility program. To access the utility program or the documentation, click on Start, Programs, EAN Bar Codes, and select the program or documentation item you want to view.

BAREAN UTILITY PROGRAM

The BarEAN utility program was automatically added to your system when you ran our install program. You can access the BarEAN utility from the Desktop icon, or by clicking on: Start, Programs, Elfring EAN Bar Codes, Utility program. This program lets you enter your data and build a bar code. You can print a sample page of the resulting bar code, transfer that bar code to another Windows program, or export the bar code as a bmp, gif, jpg, or png file.
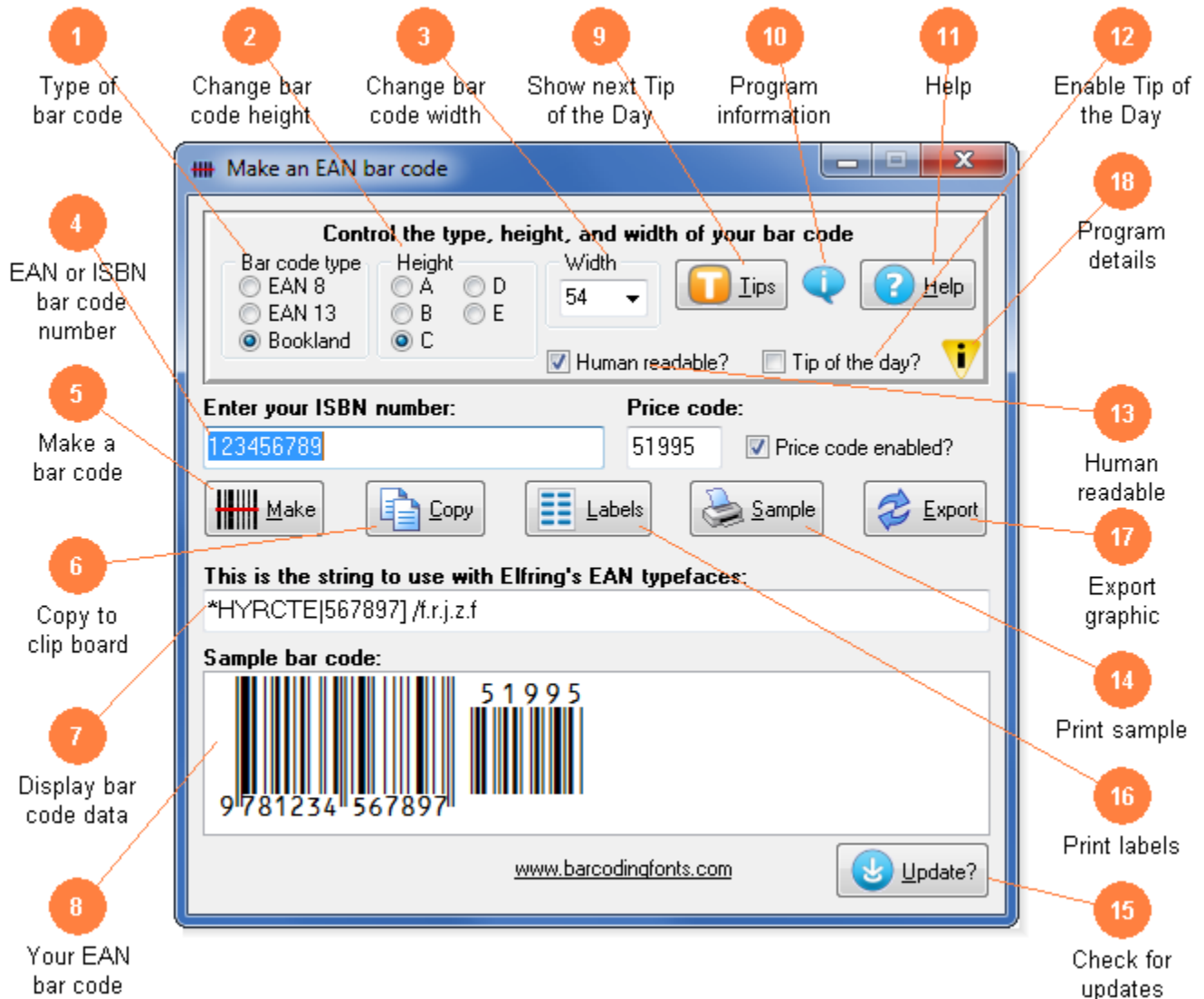
This utility converts your EAN bar code numbers or ISBN number into an EAN bar code. Use this utility to build EAN or Bookland bar codes and then to copy and paste them into other Windows programs for printing. Or export your bar code to a graphic bmp, gif, jpg, or png file. Click on any orange circle above to view a description of exactly what that control does. Bar codes can be copied into Word for label printing, or into a desktop publishing program to display a bar code on your packaging. 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) **Type of bar code.** Select the type of EAN bar code to create. EAN-8 bar codes are 8 digits long. EAN-13 bar codes are 13 digits long and are used on virtually every retail product sold in Europe. Bookland bar codes are built from your ISBN number and are used on all books. All EAN-13 bar

code numbers must be specially assigned by EAN International. An optional price code may follow your Bookland bar code

(2)   **Change bar code height.** Change the height of an EAN bar code without changing the width. EAN bar codes can range from .25 to 1 inch in height.

(3)   **Change bar code width.** Scale the bar code width up or down by increasing or decreasing the point size. EAN-13 bar codes should be about 1.5 inches wide.

(4)   **EAN or ISBN bar code number.** Type in your EAN-8, EAN-13, or ISBN number here. Our program will calculate the checksum for you, or verify yours if you enter all 13 digits.

(5)   **Make a bar code.** Click this button to make an EAN or Bookland bar code from your number.

(6)   **Copy to clip board.** Copy your completed 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.

(7)   **Display bar code data.** This is the string of characters to use with our bar code fonts. Note you can not just type in the EAN bar code fonts. Your EAN or Bookland bar code number is converted into a data string and this data string must be used with our EAN bar code fonts.

(8)   **Your EAN bar code.** 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.

(9)   **Show next Tip of the Day.** Display the next program *Tip of the Day*. From this display you can page forwards or backwards through the list of all available tips.

(10) **Program information.** Display program and contact information including the version number of this software.

(11) **Help.** Launch the Windows Help application. The Help form will give you detailed answers to most questions about the program.

(12) **Enable Tip of the Day.** Display the next Tip of the Day on each start up when this is checked. Uncheck the box to stop this start up behavior.

(13) **Human readable.** When checked, the bar code will be human readable.

(14) **Print a sample.** Print a sample page of your EAN or Bookland bar code to see just what it will look like. This sample page shows you your bar code in a number of different sizes.

(15) **Check for updates.** 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.

(16) **Print labels.** Print a sheet of labels in your word processor. Select a label template and open it with your word processor, then paste your bar code on to any label.

(17) **Export graphic.** 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.

(18) **Program details.** Display this help screen.

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 "BarEAN" in each user's Documents area. You can find these files as follows:

Windows XP: My Documents\BarEAN

Vista: Libraries\Documents\ BarEAN

Windows 7:   Libraries\Documents\ BarEAN

EAN BAR CODES

This EAN bar code font set includes the following versions of the bar code font: EAN a, EAN b, EAN c, EAN d, and EAN e. Each bar code font can print EAN 8, EAN 13, and ISBN / Bookland bar codes. EAN bar codes always have a Start character, data, a guard bar, more data, a checksum, and a Stop character. The 5 digit supplemental bar code is a bit more complicated. . If you just want to print a few bar codes in your existing Windows programs, try our BarEAN utility program. *(Skip ahead to the BarEAN section.)* If you want to use Access, Excel, or Word to print bar codes, see the section on our Visual Basic functions.

EAN bar codes represent the numbers 0-9 with three different bar code patterns. Thus, the bar code patterns for a 0 in Tall A are different from the bar code patterns for a 0 in Tall B. Tall C bar code patterns are the inverse images of Tall A patterns. Bar code data is always encoded using two or three different bar code patterns *(Tall A & C for EAN 8, and Tall A, B, & C for EAN 13).* Table 2 identifies which ASCII characters represent the individual numbers 0-9 for each bar code pattern. Our bar code fonts include representations of the Tall A, B, and C bar code patterns, Start codes with leading numbers plus Start codes without a number, and Short A & B patterns for the 5 digit supplemental code.

Table 2

Start			Tall A			Tall B			Tall C			Short A			Short B	
Number	Character Position		Number	Character Position		Number	Character Position		Number	Character Position		Number	Character Position		Number	Character Position
0	!		0	A		0	Q		0	0		0	a		0	q
1	"		1	B		1	R		1	1		1	b		1	r
2	#		2	C		2	S		2	2		2	c		2	s
3	$		3	D		3	T		3	3		3	d		3	t
4	%		4	E		4	U		4	4		4	e		4	u
5	&		5	F		5	V		5	5		5	f		5	v
6	'		6	G		6	W		6	6		6	g		6	w
7	(		7	H		7	X		7	7		7	h		7	x
8	)		8	I		8	Y		8	8		8	i		8	y
9	*		9	J		9	Z		9	9		9	j		9	z
Start	[		Stop	]		Guard				Start 5	/		Space 5	.			

EAN 8

EAN 8 bar codes always begin with the *Start code* **[,** have 4 data characters using the Tall A characters *(numbers 0-9 are represented by ASCII characters A-J)*, a Guard Bar **|**, three more data characters and one checksum character using the Tall C characters *(numbers 0-9 are represented by ASCII characters 0-9)*, and a *Stop code* **]**. In Excel or Access use our Visual Basic function, EAN8(). So to make an EAN 8 bar code of the data "0923457", we calculate a checksum digit (4) and we encode:

Data:	09234574
Left/Right	0923 4574
Map characters	AJCD 4574
Plus Start, Stop, etc	[AJCD | 4574]
Complete string	[AJCD|4574]

Bar Code

EAN 8 checksums are calculated as follows. Assign the right-most digit an "odd" value, and then alternate even/odd assignments with the rest of the digits. Add all the odd position digits and multiply that by 3. Add to that 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:            0 9 2 3 4 5 7
Position:        O E O E O E O
Odd sum:         0 + 2 + 4 + 7 = 13, 13 * 3 = 39
Even sum:          9 + 3 + 5 = 17
Odd plus even:  17 + 39 = 56
Checksum:        4 (56 + 4 = 60, which is an even multiple of 10)
```

EAN 13

EAN 13 bar codes always begin with a special numbered *Start code*. This is just a Start character with a number from 0-9 printed to the left of the start pattern. The number represents the left-most digit of the bar code. *(Numbers 0-9 are represented by the sequential ASCII characters !-*)* **Note** that the Start Character does not actually encode any data. In Excel or Access use our Visual Basic function, EAN13().

The Start code is followed by 6 data characters using a *mixture* of the Tall A & B characters *(numbers 0-9 are represented by ASCII characters A-J and Q-Z respectively)*, a Guard Bar **|**, 5 more data characters and one checksum character using the Tall C characters *(numbers 0-9 are represented by ASCII characters 0-9)*, and a *Stop code* **]**.

An EAN 13 bar code has room for only 12 digits of bar coding data, but actually represents a 13-digit number. The 13th digit *(the left-most digit)* is encoded by using a pattern of different bar codes *(Tall A & B)* to represent five of the significant digits *(left side digits 11-7)* of the bar code. The right side of the bar code *(digits 6-1)* is encoded using Tall C. The 12th digit is always encoded in Tall A.

To make an EAN 13 bar code of the 12 digits of data "292345789024", we calculate a checksum digit (7) and we encode:

Position:	13 12 11 10 9 8 7 6 5 4 3 2 1
Data:	2 9 2 3 4 5 7 8 9 0 2 4 7

Start/Left/Right	2 9 23457 890247
Map characters	# J CTUFX 890247
Plus Start, Stop, etc	# J CTUFX | 890247]
Complete string	#JCTUFX|890247]

Bar Code

Note that the left digit group "23457" does not use just the Tall A or the Tall B characters to represent the number "23457". In this example, the 2 uses Tall A, 3 & 4 use Tall B, 5 uses Tall A, and 7 uses Tall B. The reason for this is that the 13th digit *(a "2")*, is encoded in the pattern of switching from the Tall A font to the Tall B font! To select the encoding for these 5 digits use Table 3. Look up the value of the 13th digit of your bar code in this table. That row in the table will tell you whether to use Tall A, or Tall B to encode each of the data digits 11 – 7. In our example, the 13th digit is a 2. From the table we see that Digit 11 should be encoded using Tall A, Digit 10 is Tall B, Digit 9 is Tall B, digit 8 is Tall A, and Digit 7 is Tall B. So Digit 11, *a "2"*, uses Tall A where a "2" is represented by the letter "C". Digit 10, a "3", uses Tall B where a "3" is represented by the letter "T". *(These values come from Table 1.)*

Table 3

Digit 13		Digit 11	Digit 10	Digit 9	Digit 8	Digit 7	
0		A	A	A	A	A	
1		A	B	A	B	B	
2		A	B	B	A	B	←
3		A	B	B	B	A	
4		B	A	A	B	B	
5		B	B	A	A	B	
6		B	B	B	A	A	
7		B	A	B	A	B	
8		B	A	B	B	A	
9		B	B	A	B	A	

EAN 13 checksums are calculated as follows. Assign the right-most digit an "odd" value, and then alternate even/odd assignments with the rest of the digits. Add all the odd position digits and multiply that by 3. Add to that 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:            2 9 2 3 4 5 7 8 9 0 2 4
Position:        E O E O E O E O E O E O
Odd sum:           9 + 3 + 5 + 8 + 0 + 4 = 29, 29 * 3 = 87
Even sum:        2 + 2 + 4 + 7 + 9 + 2 = 26
Odd plus even:   87 + 26 = 113
Checksum:        7 (113 + 7 = 120, which is an even multiple of 10)
```

Bookland bar codes are printed on the back of books. They have two parts: an ISBN number and the book price. Currently, Bookland bar codes always start with the number "978", followed by the left-most 9 digits of the ISBN number. *(The right-most digit of the ISBN number is a checksum and it is not used.)* As of January 1, 2007, all ISBN numbers will be 13 digits long and always start with 978, or when those numbers run out, 979. The main portion of a Bookland bar code is simply an EAN 13 bar code. This includes the "978" or "979" and the 10 digit ISBN number. The optional pricing information is carried in a 5 digit supplemental code, positioned to the right of the EAN 13 bar code. In Excel or Access use our Visual Basic function, Bookland() or BooklandnoSup().

As stated above, a Bookland bar code is actually composed of two separate bar codes. The first bar code is an EAN 13 bar code that represents the book's ISBN number. The second piece of the Bookland bar code is an optional 5 digit supplemental code. The first digit of the supplemental code indicates the currency the price is stated in. *(The number 5, for example, indicates the book is priced in US dollars.)* The next 4 digits show the price of the book. So a book that costs $12.95 would have a 5 digit supplemental code of "51295". Books priced at $99.99 or higher are encoded as "59999". Finally, if no price is stated for the book, a code of "90000" is used.

To make a Bookland bar code, you first have to convert your ISBN number and your pricing information into the proper format. Take your ISBN number and drop the right-most *(least significant)* digit. Place the numbers "978" before your ISBN number. So if your ISBN number was 1-56830-289-4, you drop the "4", add "978", and you get a number "978156830289". *(If you are using our BarEAN utility, you just enter the ISBN number. The utility figures out the rest.)* You encode this 12 digit number as a standard EAN 13 bar code. *(The checksum is the 13th digit.)* See the previous section on EAN 13 encoding for details.

*HYRFWI|302898] ➔
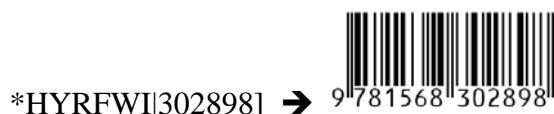
Next, translate your book price into a 5 digit supplemental code. If your book sells for $9.95 in US dollars, your supplemental number is 50995 *(5 for US dollars, and 0995 for the price)*. Finally, you need to calculate a parity pattern for this supplemental number. Assign the right-most digit an "odd" value, and then alternate even/odd assignments with the rest of the digits. Add all the odd position digits and multiply that sum by 3. Add all the even position digits and multiply that by 9. Add those two sums together. The parity pattern is the number in the units position *(or the remainder when you divide by 10)*.

```
Data:            5 0 9 9 5
Position:        O E O E O
Odd sum:         5 + 9 + 5 = 19, 19 * 3 = 57
Even sum:          0 + 9 = 9, 9 * 9 = 81
Odd plus even:   57 + 81 = 138
Parity Pattern:  8
```

The five digit supplemental code uses the Short A and Short B bar code patterns *(from Table 2)*. You select the bar code pattern *(Short A or B)* for each digit of the supplemental code by looking up the parity pattern you just calculated in Table 4. For the 5 digit supplemental code "50995" we calculated a

parity pattern of 8. Looking up the "8" in Table 4, we get a value of "ABAAB". That means the first *(left-most)* digit *(5)* is encoded in Short A, the "0" in Short B, the first "9" in Short A, the next "9" in Short A, and the final "5" in Short B.

Table 4

Number	Pattern
0	B B A A A
1	B A B A A
2	B A A B A
3	B A A A B
4	A B B A A
5	A A B B A
6	A A A B B
7	A B A B A
8	A B A A B ←
9	A A B A B

The last step is to put these bar code patterns together into a full five digit supplemental code. The supplemental code must be separated from the EAN13 bar code by a single space. It must have its own Start character, which is the "/", and every digit must be separated from its neighbor by a character delineator- the period, ".". For our example data *(50995, parity pattern 8)* this gives us the string:

/f.q.j.j.v ➔

To put this all together, add the two strings, placing a space between them. The result is:

*HYRFWI|302898] /f.q.j.j.v ➔
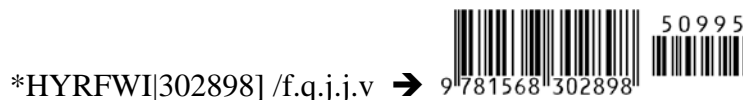
CONTROLLING BAR CODE HEIGHT AND WIDTH

This complete EAN bar code font set includes five different aspect ratios of each bar code: 0.25 *(A)*, 0.5 *(B)*, 0.75 *(C)*, 1.0 *(D)*, & 1.25 *(E)*. When you are building a bar code, start with the D version from our bar code fonts. 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 one of the A, B, C, D, or E versions. The B version will print a bar code of exactly the same length as the D, but at .75 times the bar height. The E version will print a bar code of exactly the same length as the D, but at 1.25 times the bar height.

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: \ BarEAN.

Table 5

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 BarEAN.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\BarEAN folder with the file name "custom.rtf". Our BarEAN.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 your 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 EAN bar code 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 BarEAN under your Libraries\Documents folder. (**Libraries\Documents\BarEAN**)

Table 6

Function	Details
EAN8(Number)	Converts the input 7 digit number into a complete EAN 8 bar code. The function adds the Start code, appends the data, calculates and adds the checksum, and puts the Stop code at the end. This result must be formatted with one of the following typefaces: EAN a, EAN b, EAN c, EAN d, EAN e. Non-numeric data is ignored. If less than 7 digits are supplied, all are replaced with zeros. Any digits past the seventh place are ignored.
EAN13(Number)	Converts the input 12 digit number into a complete EAN 13 bar code. The function adds the Start code, appends the data and guard bar, calculates and adds the checksum, and puts the Stop code at the end. This result must be formatted with one of the following typefaces: EAN a, EAN b, EAN c, EAN d, EAN e. Non-numeric data is ignored. If less than 12 digits are supplied, all are replaced with zeros. Any digits past the twelfth place are ignored.
Bookland(ISBN,Supplem)	Converts the input ISBN number into a complete Bookland bar code. The function converts the ISBN number into EAN 13 format and adds the 5 digit supplemental code to the end. This result must be formatted with one of the following typefaces: EAN a, EAN b, EAN c, EAN d, EAN e. Non-numeric data is ignored. If the ISBN number is less than 9 digits it will be replaced with zeros. Any digits past the ninth place are ignored. The supplemental code must be 5 digits long.
BooklandnoSup(ISBN)	Converts the input ISBN number into a Bookland bar code. The function converts the ISBN number into EAN 13 format. This result must be formatted with one of the following typefaces: EAN a, EAN b, EAN c, EAN d, EAN e. Non-numeric data is ignored.

Warning!

Unlike our utility program, *BarEAN*, 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 *BarEAN* 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\BarEAN or My Documents\BarEAN) The Visual Basic file, **VBbarEAN.bas,** should appear there. Select this file and open it. This will add a new function module, EFbarEAN, to your spread sheet. This module is automatically saved along with your spread sheet and adds the macro functions shown in Table 6.

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, =EAN13(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 Table 1 for applicable font names.

Using Visual Basic Functions in Access

Open the database where you want to add EAN 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 EAN Bar Codes. (Libraries\Documents\BarEAN or My Documents\BarEAN) The Visual Basic file, **VBbarEAN.bas,** should appear there. Select this file and open it. This will add a new function module, EFbarEAN, to your database. This module is automatically saved along with your database and adds the macro functions shown in Table 6.

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 in a report. You do this by entering a formula =EAN13 ([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 Table 1 for a complete listing of font names.

Using Visual Basic Functions in Word

While Word does have the ability to use Visual Basic functions in macros, you need to be a macro expert to use these functions. You can, however, combine Word and Excel to print EAN bar codes! 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. Now 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 Table 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 EAN bar code 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 the bar code height to bar code width.

Bookland: a universal bar code for books that converts a book's ISBN number into an EAN 13 bar code and adds a 5 digit supplemental code for the book price.

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: the number of characters a fixed width font will print per inch.

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

EAN: European Article Numbering, used on all retail product everywhere except the US and Canada.

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.

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

Parity pattern: a clever way of encoding extra data, like a checksum, in the individual characters of a bar code.

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.