

Reference

Using Barcode Wizard

Industry-standard formats

Bar coding is an automatic identification technology that allows data to be collected rapidly and with extreme accuracy. Barcode Wizard steps you through the process of creating your own bar codes for a wide range of industry-standard formats.

Barcode Wizard supports 18 industry-standard formats or symbologies:

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CodaBar

CodaBar is commonly used in libraries, blood banks, and the air parcel business. It is a variable length format that allows encoding of the following 20 characters: 0123456789-\$/+ABCD. The first and last digits of a CodaBar message must be A, B, C, or D, and the body of the message should not contain these characters.

Code 25

Code 25, also known as "Code 2 of 5", is a discrete, variable-length code format. It refers to the fact that there are two thick bars in a total of five bars for each encoded character. It is used primarily for inventory handling, identification of photo-finishing envelopes, airline ticketing, and baggage and cargo handling.

Code 39

Code 39 is the most popular format used in the non-retail world. It is used extensively in manufacturing, military, and health applications. This variable-length format will accept the following 44 characters: 0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ-.*\$/%. The asterisk (*) is used as the start/stop character and may not be used in the body of the message.

A check digit may also be added to provide an extra measure of security. Code 39 supports Modulo 43 and xxx-nnnnnnn-c check digit formats.

Code 128

Code 128 is a variable-length, high-density, alphanumeric format. It has 106 different bar and space patterns, and each pattern can have one of three different meanings, depending on which of the three different character sets is employed. One character set encodes all upper case and ASCII control characters; another encodes all uppercase and lowercase characters and the third set encodes numeric digit pairs 00 through 99. The character set that is employed is determined by the start character.

Code 128 also allows encoding of four function codes: FNC1, FNC2, FNC3, and FNC4. FNC1 is reserved for use in European Article Numbering (EAN). FNC2 is used to instruct a bar code reader to concatenate the message in a bar code symbol with the message in the text symbol. FNC3 is used to instruct a bar code reader to perform a reset. FNC4 is used in closed system applications.

A variation of Code 128 format is EAN 128. EAN 128 uses the same code set as Code 128 except that it does not allow function codes FNC2 to FNC4 to be used in a symbol and FNC1 is used as part of the start code in the symbol. An advanced option of Code 128 in Barcode Wizard permits you to enable or disable EAN 128 format.

EAN-8

The European Article Numbering (EAN) system is a European version of the Universal Product Code (UPC). EAN 8 encodes eight digits, consisting of two country-code digits, five data digits, and one check digit. In Barcode Wizard, you must enter no less and no more than seven digits; the eighth digit or the check digit will be automatically generated.

A supplemental two- or five-digit number, may be appended to the main bar code symbol. This is designed for use on publications and periodicals. This number will appear as an additional bar code on the right side of the main bar code.

EAN-13

EAN-13 is the European version of UPC (A), Uniform Product Code. The difference between EAN-13 and UPC (A) is that EAN-13 encodes a 13th digit into the parity pattern of the left six digits of a UPC (A) symbol. This 13th digit, combined with the 12th digit usually represent a country code.

A supplemental two- or five-digit number may be appended to the main bar code symbol. This is designed for use on publications and periodicals. This number will appear as an additional bar code on the right side of the main bar code.

FIM

Facing Identification Mark (FIM) patterns are another type of postal bar code used in automated mail processing by the U.S. Postal Service. FIM patterns are used for automatic facing and canceling of mail that does not contain a stamp or meter imprint such as business reply mail, penalty mail, etc.

There are four FIM patterns currently in use. FIM-A is used on courtesy reply mail that has been preprinted with POSTNET bar codes. FIM-B is used on business reply, penalty, and franked (government) mail that is not preprinted with POSTNET bar codes. FIM-C is used on business reply, penalty, and franked mail that has been preprinted with POSTNET bar codes. FIM-D indicates that postage is required. FIM patterns are placed in the upper right corner along the top edge, two inches in from the right edge of letters and cards.

ISBN

ISBN numbers are unique numbers that are printed on books. It is not a separate bar code type. ISBN numbers have a specific structure and are encoded using EAN-13 bar codes. The message is formed by a fixed three-digit country code of 978, followed by the 10-digit ISBN number. The 10th digit, or the check digit, is discarded.

ISSN

ISSN numbers are unique numbers that are printed on magazines and newspapers. It is not a separate bar code type. ISSN is an EAN-13 bar code with a 977 country code and a two-digit supplemental code. The two-digit supplemental code contains the issue number, i.e., January=01, February=02 etc.

ITF

ITF is a high-density, variable-length, numeric-only format. The bars and spaces are interleaved: the odd-position digits are encoded in the bars, and the even-position digits are encoded in the spaces. ITF is one of the most popular formats used by the shipping and warehouse industries.

Barcode Wizard allows up to 40 numeric digits to be entered.

ITF 14

ITF-14 is similar to the ITF format, with the exception that exactly 13 digits must be entered in Barcode Wizard. An optional five digits may be entered for the Add On bar code.

JAN-8

JAN-8 is the Japanese equivalent to EAN-8.

JAN-13

JAN-13 is the Japanese equivalent to EAN-13.

MSI Plessey

The MSI Plessey bar code is a variant of the Plessey bar code. It is a pulse-width modulated non-self checking code and is used in store shelf labeling primarily. It is a variable-length format that allows encoding of the following 10 characters: 0123456789. Each character consists of eight elements: four bars and four spaces.

Pharmacode

The Pharmacode is used for Online Security Control of the pharmaceutical packaging process. Large printing tolerances do not affect the readability of the code.

POSTNET

POSTNET bar codes are the symbols used to encode ZIP codes on U.S. mail. The Postal Service mail-handling process is

designed to be fully automated, and POSTNET bar codes provide the symbols that feed the automated equipment.

POSTNET symbols differ from other formats in that the individual bar height alternates, as opposed to the individual bar width. Each number is represented by a pattern of five bars. A single tall bar is used for the start and stop bars. POSTNET can be used for five-digit, nine-digit, and 11-digit Delivery Point Barcode. These codes are often used in conjunction with FIM bars which are found on the upper right corner of a mail piece such as Business Reply Mail.

UPC(A)

Uniform Product Code (UPC) symbols are used in retail applications. UPC(A) is a 12-digit format. The symbol consists of 11 data digits and one check digit. The first digit is a number-system digit that usually represents the type of product being identified. The following five digits are a manufacturers code, and the next five digits are used to identify a specific product.

UPC(E)

Like UPC(A), UPC(E) is used in retail applications; however, since the bar code is physically smaller, it is more suited to smaller items. UPC(E) is also called "zero-suppressed" because UPC(E) compresses a normal 12-digit UPC(A) code into a six-digit code. It suppresses the number-system digit, trailing digits in the manufacturers code, and leading zeros in the product identification part of the code.

{button ,AL('OVR Reference;',0,"Defaultoverview",,)} [Related Topics](#)

Adjusting industry-standard properties

Barcode Wizard uses whole printer pixels as a unit of measurement, i.e., it will find the closest values to these numbers when computing bar width. Adjusting the pixels may not change the bar width significantly on high-resolution printers, but it will make a difference on low-resolution printers.

For example, a 300-dpi printer cannot print a line 0.013 inches wide. The narrowest line possible on a 300-dpi printer is 0.133333 inches wide. Barcode Wizard allows you to adjust the bar width by reducing the number of pixels.

Guidelines for bar codes are provided by the IBCA (Industry Bar Code Alliance) at <http://www.mgfx.com/organs/ibca/guide/index.htm>.

{button ,AL('OVR Reference;',0,"Defaultoverview",)} Related Topics

Setting advanced options

Most of the advanced options in Barcode Wizard involve disabling check digits or enabling them in various formats. A check digit is used to check that the data is read correctly. Different formats apply different formulas to the encoded number to yield a single digit. That check digit is usually added to the end of the already encoded numbers.

The computer checks that the numbers were read correctly by comparing the check digit it calculates against the check digit it read.

Other advanced options dictate the appearance of the symbol, i.e., they attach a numeric prefix to the bar code, ignore spaces in the symbol, ignore brackets in the symbol, add bearer bars to the symbol, and so on.

{button ,AL('OVR Reference;',0,"Defaultoverview",)} [Related Topics](#)

Adjusting text properties

The number of text properties than can be adjusted for any one bar code is dependent on the format that is chosen, i.e., some options may not be available. Most of the options are self-explanatory, however, some of the terms may require further mention.

A "quiet zone" is the clear area (free from marks) before and after the bars and spaces. Reading the color and reflectance of the quiet zone establishes how the spaces will read and determines the difference between the spaces and the bars.

The "human-readable" is the data represented by the bars and spaces that is printed as text for people to read.

The "start code" is a unique character, indicating the start of the symbol; and the stop code is a unique character that indicates the end of a symbol.

{button ,AL('OVR Reference';0,"Defaultoverview",)} [Related Topics](#)

Enable to disable the check digit. The check digit is used to ensure that the data is read correctly.

Enable to use this variation of the check digit. "Library mod 10 method 1" is one of three check digit formats commonly used by libraries.

Enable to use this variation of the check digit. "Library mod 10 method 2" is one of three check digit formats commonly used by libraries.

Enable to use this variation of the check digit. "Library mod 10 switching to 9" is one of three check digit formats commonly used by libraries.

Provides a list of acceptable start characters. The start character indicates the beginning of the symbol, which allows the symbol to be scanned in either direction.

Provides a list of acceptable stop characters. The stop character indicates the end of the symbol, which allows the symbol to be scanned in either direction.

Enable to select the EAN-128 option. EAN-128 is a powerful variation of Code 128.

Enable to ignore the brackets in the bar code. This will allow the text to be grouped for clarity.

Enable to ignore the spaces in the bar code. This will allow the text to be grouped for clarity.

Enable to use the Mod 43 check digits. Mod 43 check digits is a format used by U.S. Customs for all Import/Export shipping.

Enable to use this special format option required by U.S. Customs. XXX is alphanumeric. NNNNNNN is numeric, and C is the check digit.

Enable when you do not want to use the 978 or 979 prefix with your bar code.

Enable to add the 978 prefix to your bar code. This allows an EAN-13 code to be generated from the ISBN number.

Enable to add the 979 prefix to your bar code. This allows an EAN-13 code to be generated from the ISBN number.

Enable when you do not want to use the 977 prefix with your bar code.

Enable to add the 977 prefix to your bar code. This allows an EAN-13 code to be generated from the ISSN number.

Enable when you do not want the bearer bars displayed in the bar code. The bearer bars are thick lines that surround the bar code.

Enable to display bearer bars on the top and bottom of the bar code. The bearer bars are thick lines that surround the bar code.

Enable to frame the bar code with bearer bars. The bearer bars are thick lines that surround the bar code.

Enable to use this variation of automatically calculating the check digit.

Enable to display an "N" to the left of the bars when the system character "3" is used. The system character "3" is assigned to the NDC (National Drug Code) and HRI (National Health Related Items Code).

Provides a list of industry-standard formats that are available for bar codes.

Specifies the number assigned to the bar code.

Provides a sample of the industry-standard format selected.

Specifies the Federation of Automated Coding Technologies (FACT) data identifier.

Shows the check digit that is automatically generated. The check digit is used to ensure that the data is read correctly.

Specifies an additional two or five digits to be used for the add-on bar code.

Enable to select Face Identification Marking (FIM) type A. FIM A indicates postage required, prebarcoded.

Enable to select Face Identification Marking (FIM) type B. FIM B indicates postage prepaid, no bar code exits.

Enable to select Face Identification Marking (FIM) type C. FIM C indicates postage prepaid, prebarcoded.

Enable to select Face Identification Marking (FIM) type D. FIM D indicates postage required, no bar code exits.

Opens a dialog box for advanced options.

Specifies the height of the bars. The height is measured from the bottom of the text to the top of the bars.

Specifies the amount of bar width reduction in pixels. The bar width reduction is subtracted from the bar width. Reducing the bar width allows you to compensate for print gain.

Specifies the amount of magnification to be applied to the entire image. Specifying 200% causes the image to be printed at twice its size.

Provides a list of printer resolutions in dots per inch (dpi). Choose the setting that will describe the final output.

Indicates the width of the symbol from the left edge of the left-most bar to the right edge of the right-most bar. It does not include quiet zones. The value cannot be edited.

Provides a list of measurement units.

Specifies the proportion between wide bars and spaces, and narrow bars and spaces. The wider, or larger, the ratio, the wider the bar code symbol will be.

Provides a list of alignment choices. The human-readable text will be aligned with the bar code as chosen.

Enable to vertically center the system and check digits on the bar code symbol. The system digit appears before the bar code symbol, and the check digit appears after the bar code symbol.

Provides a list of available fonts.

Specifies the size of the font.

Provides a list of the available font weights.

Enable to print text with the bar code symbol. The human-readable text is the data represented by the bars and spaces printed as text for people to read.

Enable to print the text associated with the add-on bar code. Add-on bar codes are not applicable to all bar code formats.

Enable to print asterisks before and after the bar code text. Asterisks are not applicable to all bar code formats.

Enable to print Federation of Automated Coding Technologies (FACT) data. FACT Data Identifiers are used to identify the kind of item to which the following data refers.

Enable to print the quiet zone marks. The quiet zone is the clear area (free from marks) before and after the bars and spaces.

Enable to print the start and stop characters. The start character indicates the beginning of the symbol. The stop character indicates the end of the symbol.

Enable to print the human-readable text above the bar code symbol.

Enable to print the add-on text at the bottom of the add-on bar code. The text is printed on top of the bar code by default.

