Bar Code Age 1

User Guide

Bar Code Age 1 User Guide for Windows®

Edition 1
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Thanks to all who have provided suggestions and helpful comments for this User Guide and Bar Code Age.

Please email any suggestions for improvements to this User Guide and the program itself to support@lessoff.com.

Contents

Introduction

Welcome to Bar Code Age!

LESS-OFF Bar Code Age is the state-of-the-art bar code software that provides a variety of powerful features and it is easy to use. Bar Code Age gives you new tools that help achieve good, sellable graphics without the need to become a bar code expert. Bar Code Age was designed to be so intuitive and elegant that anyone could use it - yet sophisticated enough for the world's leading professionals.

Enjoy using it.

Chapter 1: Getting Started

About this User Guide

This is the User Guide for the Bar Code Age software. It is the definitive documentation for the human interface and the concept of operations of the software.
Here is what the User Guide contains:

Chapter 1, "Getting started", describes all chapters of this guide and specifies minimum requirements and steps of the installation procedure for the software.

Chapter 2, "Quick Tour", is an informal presentation of some basic features of the Bar Code Age program. These include the serial number, the splash screen, and visual controls of the main window.

Chapter 3, "Understanding Data Matrix", introduces the fundamentals of the Data Matrix symbology: its basic characteristics, symbol structure, symbol sizes and capacities, and symbol dimensions.

Chapter 4, "How To", explains input methods and the user interface specific to each dialog window.

Chapter 5, "Reference", details the Toolbar buttons and commands with keyboard shortcuts in submenu groups. This chapter concludes with the error messages and problem resolution section.

Appendix A, "ASCII Codes (0 - 127)", lists standard numeric codes with hexadecimal values 00 - 7F.

Appendix B, "ASCII Codes (128 - 255)", lists standard numeric codes with hexadecimal values 80 - FF.

Near the back of this User Guide is a Glossary, which explains the technical jargon used, and a useful Index.

Please email support@lessoff.com reports of errors or misprints, and any suggested improvements to this User Guide and the Bar Code Age program itself.

Installation

Minimum requirements
Windows 95/98/Me/NT4/2000/XP/Vista,
8 MB of free hard disk space.

To install
1 Close any applications that are open.
2 Double-click the Setup icon, and then follow the on-screen instructions.

Chapter 2: Quick Tour

What Bar Code Age does for you

Bar Code Age is a fast, intelligent and easy-to-learn professional program which helps you encode, visualize and save your data as Data Matrix symbols in EPS files. The encapsulated PostScript (EPS) file format is a standard vector graphics format for exporting and importing PostScript language files. The EPS file format is used by applications on different platforms. The main purpose of the EPS file is to be included, or "encapsulated", in another PostScript file. The device-independent nature of the PostScript language makes it an excellent interchange format in a variety of heterogeneous environments.

Bar Code Age analyzes your data and lets you select an Error Checking and Correcting (ECC) algorithm. Representation of encodable data can be previewed and you can produce truly professional images of the symbols, rivaling the highest quality of the world's leading publishers.

Bar Code Age includes sophisticated features for customizing the complete appearance of your images, checking your input for mistakes, and handling the complexities of the two-dimensional matrix symbology such as selection of symbol size, shape (square and rectangular symbol configurations) and hexadecimal (Hex) codes.

Bar Code Age lets you save symbol properties, generate series of symbols and add crop marks to your images. When you are proficient with Bar Code Age, you will realize that it is like having an intelligent assistant at your side, doing all the tedious work for you while you provide the creative input.

Running for the first time

Serial number
On Windows, double-click the icon of a shortcut to Bar Code Age on your desktop. Bar Code Age will then ask for your serial number. Your serial number can be found on the packaging, in a license certificate or in an email from LESS-OFF. Type your serial number in carefully and then click OK. Bar Code Age will run.

Splash screen
A pretty Bar Code Age graphic appears for a few seconds. Should you want to skip this splash screen at a later date, turn off Display splash screen in the Set > Preferences dialog.

Note: Turn off an option by removing the check mark from a check box. You can clear a check box by clicking it, or by selecting it and then pressing the SPACEBAR.

Working with the Main Window
You can change the size and shape of the window or move it to another location on your desktop. To change the size of the main window, position the mouse pointer over the window edge you want to stretch or shrink, and drag the edge to the new location with the sizing pointer. To move the window, drag the title bar.
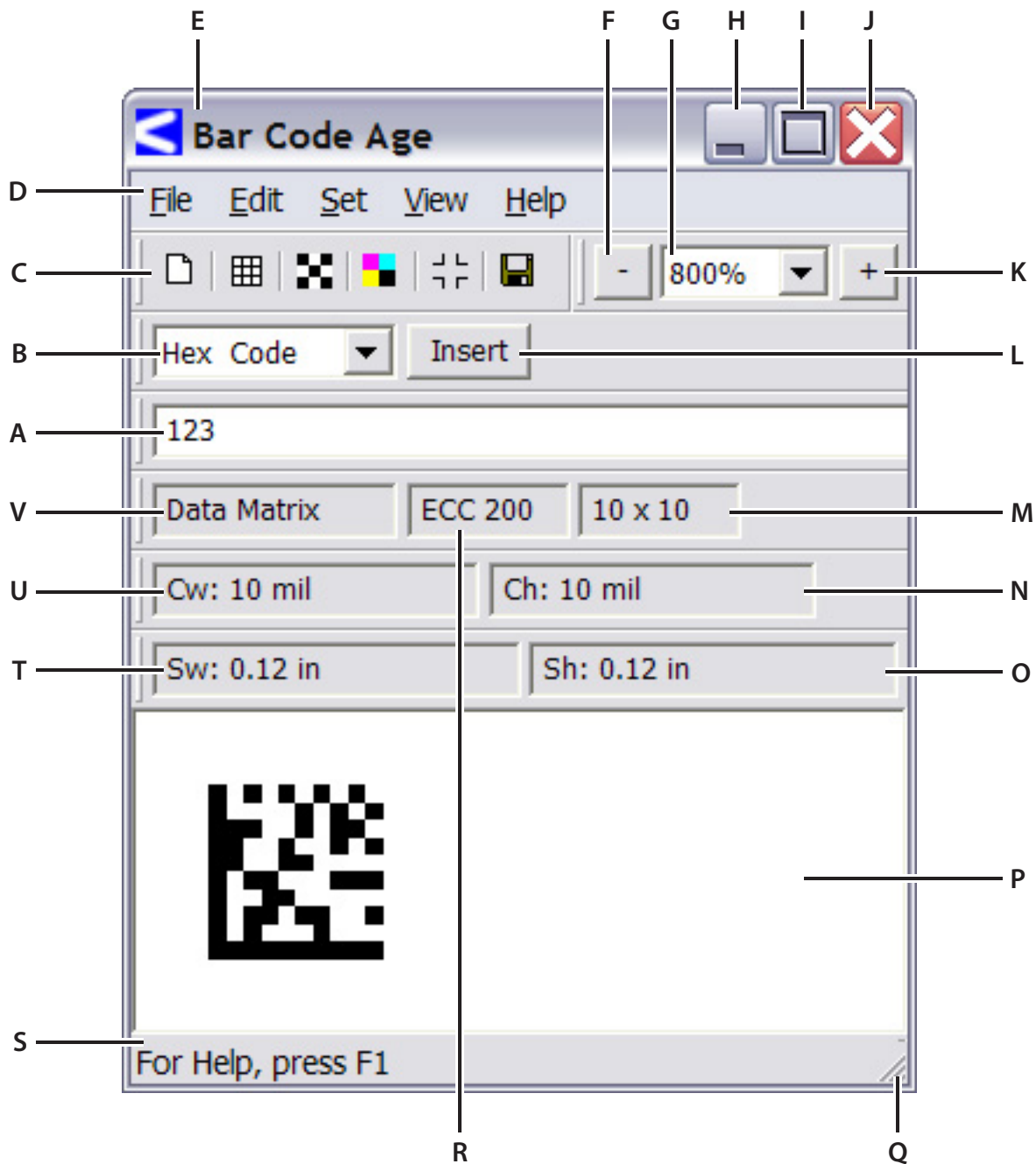
Main Window

A. Data Box.	**L.** Insert ASCII.
B. ASCII Codes.	**M.** Symbol Size (Row x Col).
C. Toolbar.	**N.** Cell Height (Ch).
D. Menus.	**O.** Symbol Height (Sh).
E. Title Bar.	**P.** Preview.
F. Zoom Out.	**Q.** Resize.
G. Zoom to Percent.	**R.** ECC Level.
H. Minimize.	**S.** Status Bar.
I. Maximize.	**T.** Symbol Width (Sw).
J. Close.	**U.** Cell Width (Cw).
K. Zoom In.	**V.** Symbology.

Bands and Grippers

Each internal toolbar in Bar Code Age is called a band. The raised edge of a band is called a gripper. Grippers allow you to "slide" bands horizontal and vertical positions.
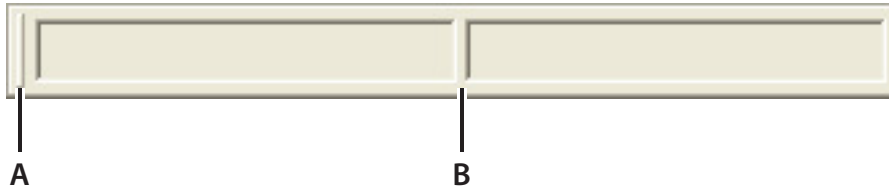

A. Gripper. B. Band.

**ToolTips and Status Bar messages**

When the mouse is positioned on a band control (a button, a list box, a text box) for a certain interval of time, text is displayed in a little ToolTip box next to the control and the Status Bar displays a string that Bar Code Age supplies dynamically. Each menu command can have a prompt string that appears in the Status Bar when the command is highlighted.

More fun things

Because Bar Code Age is so highly customizable, your main window could be quite different. You can use the View menu to show or hide the Bar Code Age bands and the Status Bar.
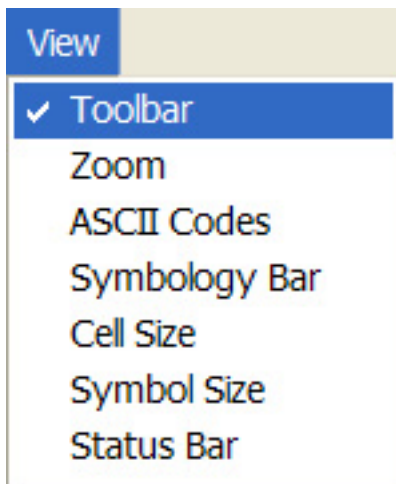
A check mark next to an item on this submenu means that the corresponding toolbar is currently displayed. Any item from the above list that does not have a check mark next to it means that the corresponding band is hidden.
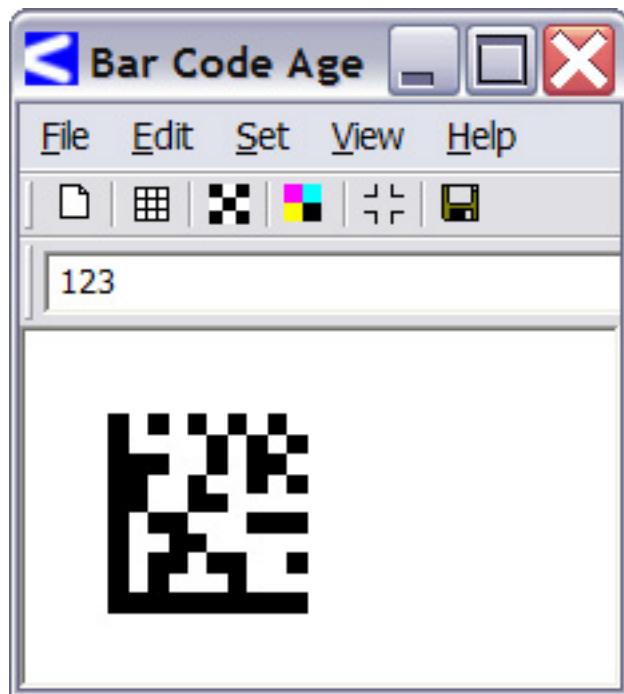
A mini Bar Code Age main window.

Saving a main window configuration

Bar Code Age lets you save your main window configuration, including the window size and visibility of bands and the status bar. This lets you quickly create new graphics using these saved parameters.

Choose Set > Preferences, select "Remember" window size and toolbar enablement check box, and click OK.

What to do next

If you understand the symbology known as Data Matrix you can skip the next chapter.

Chapter 3: Understanding Data Matrix

Basic Features

Data Matrix is a two-dimensional matrix symbology with two types of error checking and correcting (ECC) algorithms: ECC 000 - 140 (convolutional) and ECC 200 (Reed-Solomon).

The basic characteristics of Data Matrix are:
- Encodable character set: all 256 ASCII characters (values 0 - 255).
- Symbol size in modules not including quiet zone (rows by columns):

ECC 000 - 140:	9 by 9	to	49 by 49
	Odd numbers of rows and columns;		
ECC 200:	10 by 10	to	144 by 144
	Even numbers of rows and columns.		

- Maximum number of data characters per ECC200 symbol of maximum size:
  - **1** Numeric data: 3116 digits;
  - **2** Alphanumeric data: 2335 characters;
  - **3** 8-bit byte data: 1556 characters.
- Selectable error correction:

ECC 000 - 140:	Four levels of convolutional error correction, and the option to use only error detection;
ECC 200:	Reed-Solomon error correction.

- Orientation independence.
- Reflectance reversal: Symbols can be marked to appear as dark on light or light on dark.
- Rectangular ECC 200 symbols: Six rectangular formats are available.
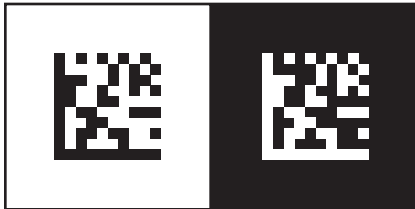
(dark on light) ECC200 (light on dark)

Rectangular ECC200

Chapter 4: How To

Input Methods

Entering Data

Bar Code Age can helpfully validate your data and identify the variety of different characters to be encoded.

To enter data into the data box make sure the insertion point is visible in the data box (if the insertion point is not visible in the data box, click an insertion point inside the data box) and do one of the following:

- Simply type your data.

- Choose Edit > Paste or press Ctrl+V (Windows) to paste your data.

- Right-click the data box and then choose Paste from the context menu that appears.

Inserting Special Characters

Bar Code Age lets you insert all 256 ASCII codes with decimal values 0 - 255 (hexadecimal 00 - FF). See Appendix A and Appendix B for more information about ASCII Character Codes.

Use the following procedure to insert an ASCII code into the data box.

1 Click an insertion point inside the data box where you want an ASCII code to be inserted.

2 Select an ASCII code from the ASCII Codes drop-down menu.

3 Click on the Insert button.

Notice that an ASCII code is represented by four characters ~XX~ where XX is a couple of hexadecimal digits for all ASCII codes from 00 to FF (See the table in Appendix A and Appendix B).
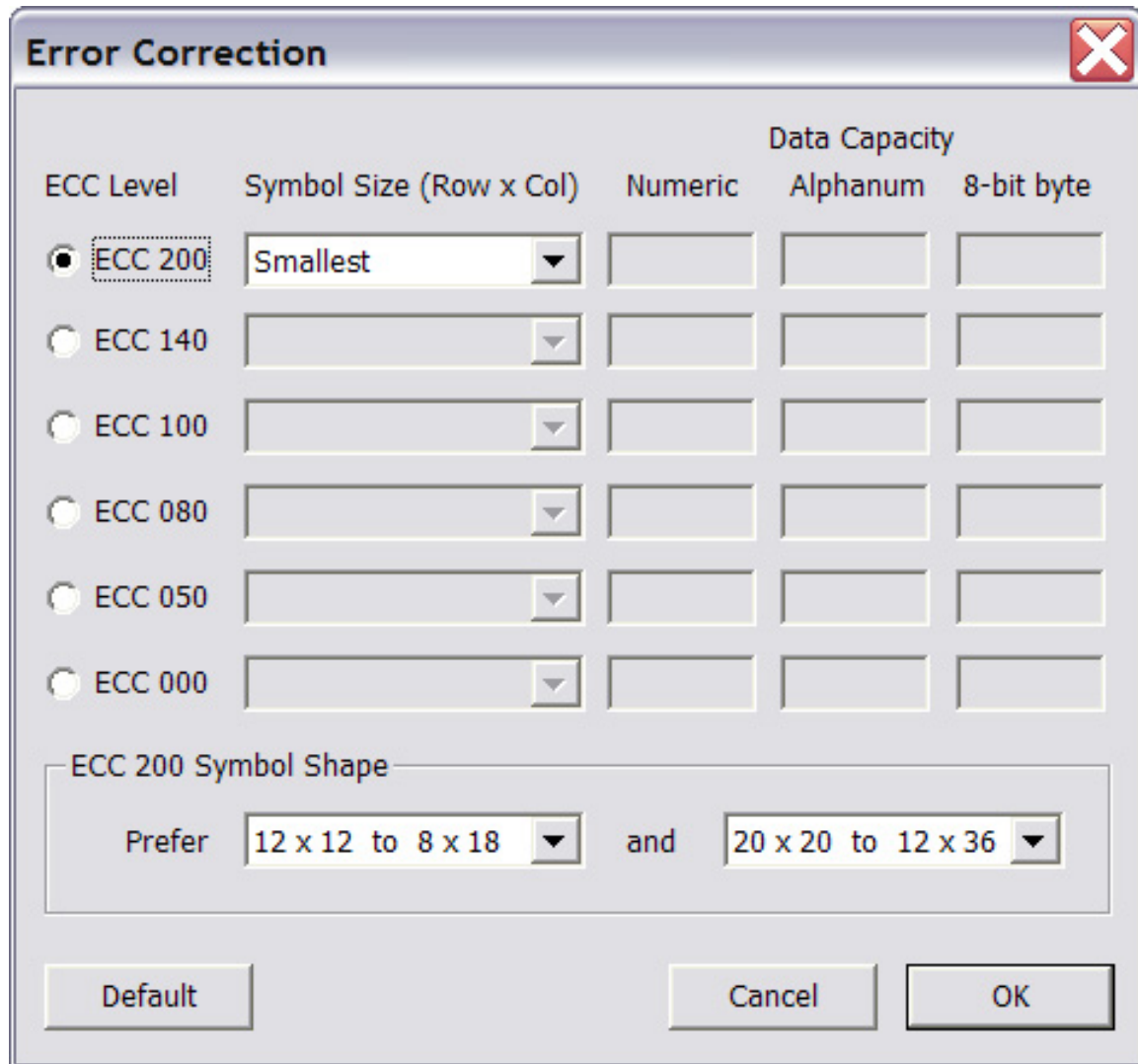
Editing Data

Bar Code Age supports common Edit options for the data box such as Undo, Cut, Copy, Paste, Delete, and Select All. To undo a previous action, choose Edit > Undo or press Ctrl+Z. To cut a selection from your data, choose Edit > Cut or press Ctrl+X. To copy a selection, choose Edit > Copy or press Ctrl+C. To paste from the clipboard, choose Edit > Paste or press Ctrl+V. To select all text in the data box, right-click the data box and then choose Select All from the context menu that appears. You can also right-click the data box and then choose Undo, Cut, Copy, Paste, or Delete from the context menu that is displayed. Some of the Bar Code Age editing commands require that you first highlight or select a block of characters and then issue a command that affects that block of characters. You can select characters using either the mouse or the keyboard. The basic technique for selecting with the mouse is simply to move the pointer to the beginning of the desired selection, press the left button, and then drag over the characters that you want to select. To cancel the selection, click at any position in the data box.

Error Correction

Bar Code Age provides integrated controls for changing ECC Level, size and shape of Data Matrix symbols in the Error Correction dialog box.

Choose Set > Error Correction or press Ctrl+E to open the Error Correction dialog box.

This dialog lists all standard ECC Levels, sizes and shapes of Data Matrix symbols and their respective max numbers of data characters (that can be encoded) for numeric, alphanumeric, and 8-bit byte data. Smallest options for symbol size try to fit your data into the smallest possible number of rows and columns. If your data does not fill the data capacity of the symbol, pad bits shall be added to fill out the remaining data capacity of the symbol. To get the smallest matrix size, choose Smallest from the Symbol Size menu.

Dimensions

Bar Code Age lets you change dimensions of Data Matrix symbols, including X-Dimension and Quiet zone in the Dimensions dialog box.

Choose Set > Dimensions or press Ctrl+D to open the Dimensions dialog box.

In this dialog, X-Dimension is a nominal width of a module, Cell width is X-Dimension adjusted for horizontal print growth or shrinkage, and Cell height is X-Dimension adjusted for vertical print gain or loss.

Dimensions can be specified and displayed in different units, including points, mils, inches, millimeters, centimeters, or microns. Units can be synchronized for selected dimensions. Check boxes can be used to select dimensions. Check marks indicate selected dimensions.

Quiet zone can be increased up to 2x. Symbol width and height can be displayed with or without quiet zone.

Colors

The Bar Code Age color workflow revolves around the Colors dialog. The colors you see on your monitor do not reflect the actual printed colors. When you specify color values, you are describing the simulated appearance of the color for your monitor and your printer. Monitors and printers have different gamut limitations. To get consistent and predictable color, you need to know printing requirements before you start working on a Bar Code Age graphics.

Choose Set > Colors or press Ctrl+L to open the Colors dialog box.
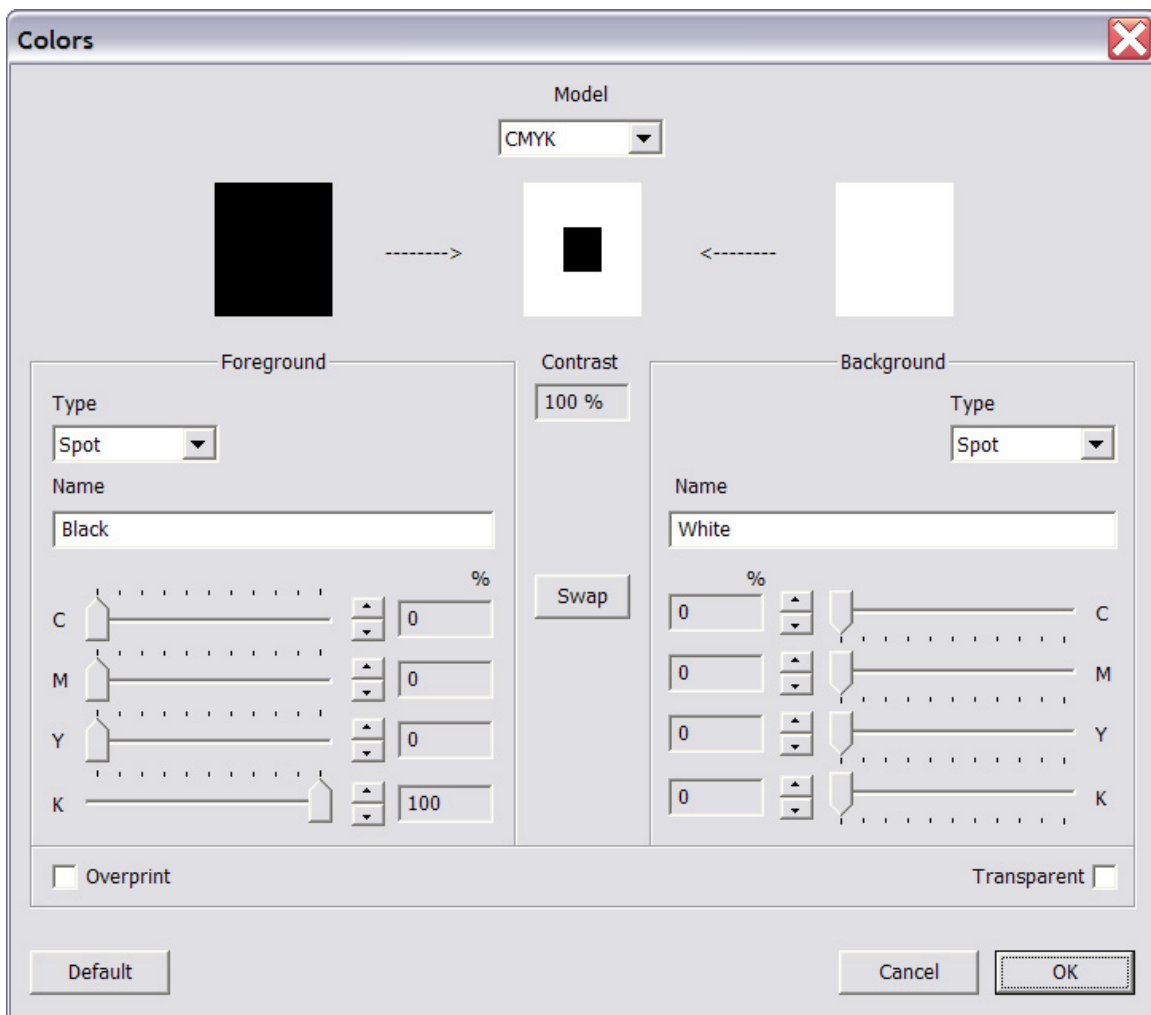
In this dialog window, you define the color space for your graphics. You specify color type, name, and color percentages for the background and the foreground (values are exchangeable). Quiet zone is always in the background. To remove the background and create transparent graphics, select the Transparent check box. Your prepress service providers may suggest ways for you to increase quality and avoid color problems.
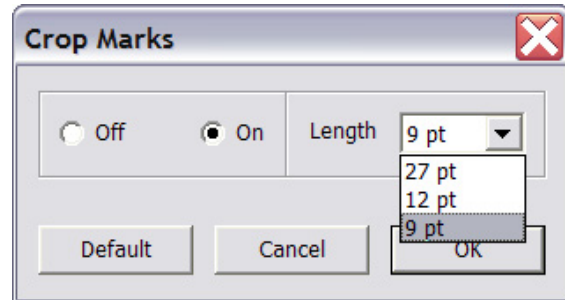
Crop Marks

You can set crop marks in Bar Code Age by using the Crop Marks dialog. It provides three choices for the length of crop marks.

Choose Set > Crop Marks or press Ctrl+M to open the Crop Marks dialog box.
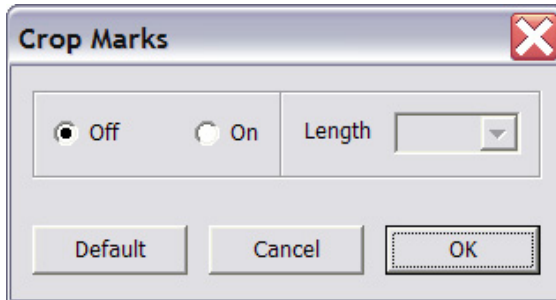
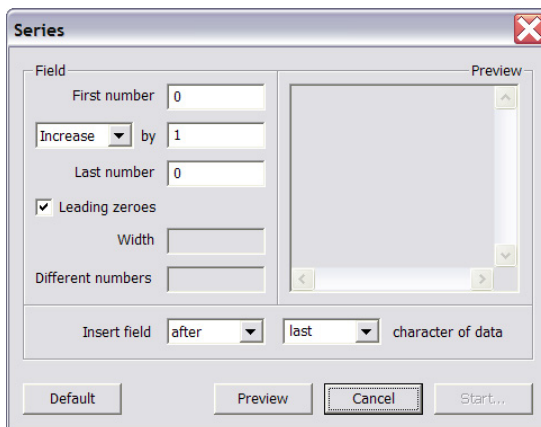*Crop marks off.*   *Crop marks on.*

In Bar Code Age, the crop marks are the pairs of lines at each corner of the quiet zone. Crop marks define where the image is trimmed after it is printed. The crop marks indicate the quiet zone. Changing the quiet zone moves the crop marks farther from, or closer to, the image.

Series

In this part of the chapter, you'll learn how to create series of Bar Code Age graphics. You can use the Series dialog to specify a numeric field for Bar Code Age to generate a number of symbols and save them in series of files. Choose Set > Series or press Ctrl+R to open the Series dialog box. In the Field section of the Series dialog, you define the numeric field. In the Insert Field section, you specify the point of insertion for the numeric field. In the Preview section, you can visualize your data characters with the numeric field. To define a numeric field, enter numbers between 0 and 9999 into the First number, the Increase/Decrease by, and the Last number text boxes. The Increase by option requires the First number to be less than the Last number. The Decrease by option requires the First number to be greater than the Last number. To add leading zeroes to the numeric field values, select the Leading zeroes check box. You can see the width of the numeric field with or without leading zeroes in the Width box. The Different numbers box displays the total number of different values in the numeric field. The numeric field can be inserted before or after the first, the last, or any other character of your data. In most cases, you must preview the series. If a preview is too long, this step is skipped to save your time. To save the series, click the Start button.

The file names for the series are based on the values of the numeric field.

Data File

You can use a data file with Bar Code Age to manage multiple strings of data characters. The data file is a simple text file (.txt) where each line can contain no more than one data string to be encoded into one symbol. To open a data file, choose Set > Data File or press Ctrl+F, select the data file and click Open. To save the files generated from the data file, in the Save dialog navigate to a folder where you want to save them and click the Save button. The file names are loosely based on the line numbers of the corresponding data strings in the data file (empty lines are skipped).

Preferences

The Bar Code Age default startup options can be changed in the Preferences dialog box.

To open the Preferences dialog box, press Ctrl+P or choose Set > Preferences.
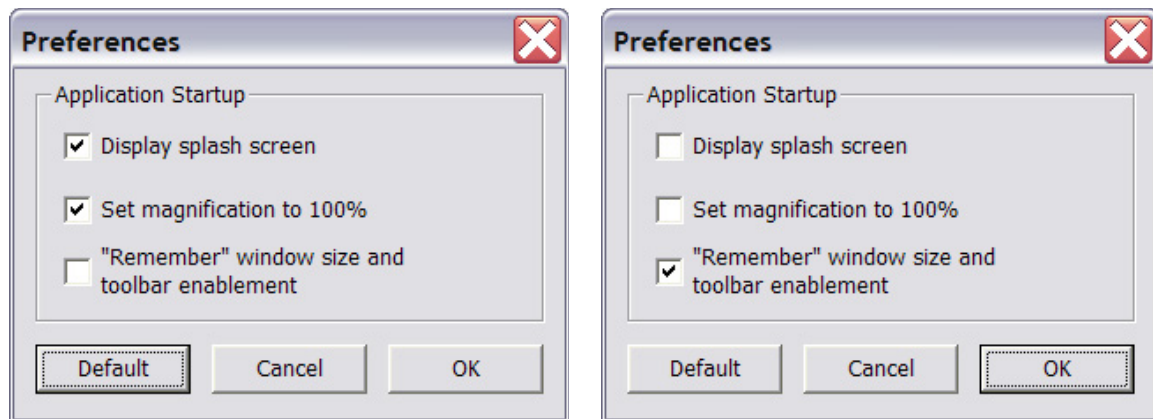
Default selection.   *Try this selection.*

Upon opening Bar Code Age, it can skip the splash screen, restore the degree of magnification, the main window size, and the View options for toolbars.

New

To create a new Bar Code Age document with default settings, choose File > New or press Ctrl+N.

Open

To open a Bar Code Age graphic file, choose File > Open (or drag the file icon and drop it on main window).

Save

To save a Bar Code Age graphic as a file, choose File > Save or press Ctrl+S (or click the Toolbar ![save] button).

Magnification

Bar Code Age displays the percentage of the preview's actual size in the Zoom to Percent drop down menu. To enlarge the preview, click the Zoom In (+) button. To reduce the preview, click the Zoom Out (-) button.

Summary

Choose View > Summary to see the summary of Bar Code Age settings.
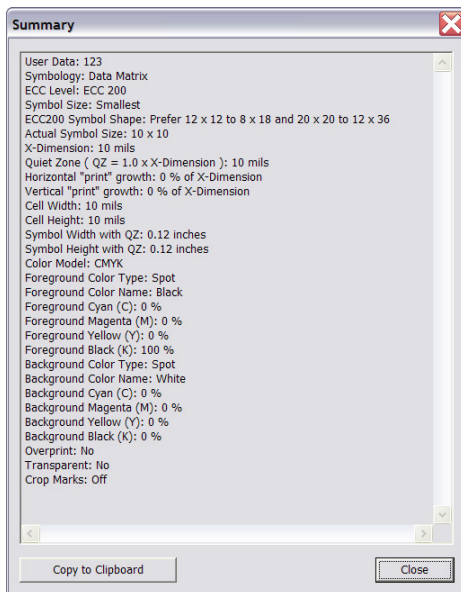
To save these settings for future reference, click the Copy to Clipboard button and paste them into a text file.

Templates

Bar Code Age templates are in the Template folder, their names and data begin with the word "Template".

Exit

Choose File > Exit, or press Alt+F4, or click the Close button to quit the Bar Code Age application.

Chapter 5: Reference

Toolbar

The Toolbar consists of six horizontally arranged graphical buttons. When you click a toolbar button with the mouse, the toolbar button sends a command message, as menus and keyboard shortcuts do.

A. New. B. ECC. C. Dimensions. D. Colors. E. Crop Marks. F. Save.

Click the A button to create a new Bar Code Age document with default settings.
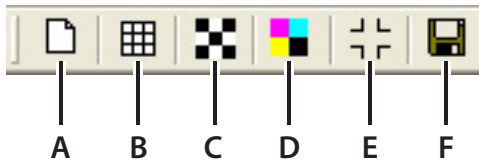Click the B button to open the Error Correction dialog box.
Click the C button to open the Dimensions dialog box.
Click the D button to open the Colors dialog box.
Click the E button to open the Crop Marks dialog box.
Click the F button to save Bar Code Age graphics.

Keyboard shortcuts (Windows)

File Menu		Edit Menu		Set Menu	
Command	**Shortcut**	**Command**	**Shortcut**	**Command**	**Shortcut**
New	Ctrl+N	Undo	Ctrl+Z	Error Correction	Ctrl+E
Open	Ctrl+O	Cut	Ctrl+X	Dimensions	Ctrl+D
Save	Ctrl+S	Copy	Ctrl+C	Colors	Ctrl+L
		Paste	Ctrl+V	Crop Marks	Ctrl+M
				Series	Ctrl+R
				Data File	Ctrl+F
				Preferences	Ctrl+P

Keyboard shortcuts can speed up the process of creating your graphics, making it quicker and easier to work with edit controls and dialog boxes.

Errors

In Bar Code Age, you can view an error message again even after closing the message. Choose View > Error. Bar Code Age error messages are quite self-explanatory and designed to help you with problem resolutions. If you get stuck and the answer is not in this User Guide, choose Help > Missing Links > Technical Support.

Appendix A: ASCII Codes (0 -127)

Hexadecimal code values 00 - 7F

ASCII
The American Standard Code for Information Interchange.

Dec	Hex	Code	Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char
0	00	NUL	32	20		64	40	@	96	60	`
1	01	SOH	33	21	!	65	41	A	97	61	a
2	02	STX	34	22	"	66	42	B	98	62	b
3	03	ETX	35	23	#	67	43	C	99	63	c
4	04	EOT	36	24	$	68	44	D	100	64	d
5	05	ENQ	37	25	%	69	45	E	101	65	e
6	06	ACK	38	26	&	70	46	F	102	66	f
7	07	BEL	39	27	`	71	47	G	103	67	g
8	08	BS	40	28	(	72	48	H	104	68	h
9	09	HT	41	29	)	73	49	I	105	69	i
10	0A	LF	42	2A	*	74	4A	J	106	6A	j
11	0B	VT	43	2B	+	75	4B	K	107	6B	k
12	0C	FF	44	2C	,	76	4C	L	108	6C	l
13	0D	CR	45	2D	-	77	4D	M	109	6D	m
14	0E	SO	46	2E	.	78	4E	N	110	6E	n
15	0F	SI	47	2F	/	79	4F	O	111	6F	o
16	10	DLE	48	30	0	80	50	P	112	70	p
17	11	DC1	49	31	1	81	51	Q	113	71	q
18	12	DC2	50	32	2	82	52	R	114	72	r
19	13	DC3	51	33	3	83	53	S	115	73	s
20	14	DC4	52	34	4	84	54	T	116	74	t
21	15	NAK	53	35	5	85	55	U	117	75	u
22	16	SYN	54	36	6	86	56	V	118	76	v
23	17	ETB	55	37	7	87	57	W	119	77	w
24	18	CAN	56	38	8	88	58	X	120	78	x
25	19	EM	57	39	9	89	59	Y	121	79	y
26	1A	SUB	58	3A	:	90	5A	Z	122	7A	z
27	1B	ESC	59	3B	;	91	5B	[	123	7B	{
28	1C	FS	60	3C	<	92	5C	\	124	7C	|
29	1D	GS	61	3D	=	93	5D	]	125	7D	}
30	1E	RS	62	3E	>	94	5E	^	126	7E	~
31	1F	US	63	3F	?	95	5F	_	127	7F	⌂

Appendix B: ASCII Codes (128 - 255)

Hexadecimal code values 80 - FF

ASCII
The American Standard Code for Information Interchange.

Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char
128	80	Ç	160	A0	á	192	C0	└	224	E0	α
129	81	ü	161	A1	í	193	C1	┴	225	E1	β
130	82	é	162	A2	ó	194	C2	┬	226	E2	Γ
131	83	â	163	A3	ú	195	C3	├	227	E3	∏
132	84	ä	164	A4	ñ	196	C4	─	228	E4	Σ
133	85	à	165	A5	Ñ	197	C5	┼	229	E5	σ
134	86	å	166	A6	ª	198	C6	╞	230	E6	µ
135	87	ç	167	A7	º	199	C7	╟	231	E7	γ
136	88	ê	168	A8	¿	200	C8	╚	232	E8	Φ
137	89	ë	169	A9	⌐	201	C9	╔	233	E9	θ
138	8A	è	170	AA	¬	202	CA	╩	234	EA	Ω
139	8B	ï	171	AB	½	203	CB	╦	235	EB	δ
140	8C	î	172	AC	¼	204	CC	╠	236	EC	∞
141	8D	ì	173	AD	¡	205	CD	═	237	ED	Φ
142	8E	Ä	174	AE	«	206	CE	╬	238	EE	∈
143	8F	Å	175	AF	»	207	CF	╧	239	EF	∩
144	90	É	176	B0	░	208	D0	╨	240	F0	≡
145	91	æ	177	B1	▒	209	D1	╤	241	F1	±
146	92	Æ	178	B2	▓	210	D2	╥	242	F2	≥
147	93	ô	179	B3	│	211	D3	╙	243	F3	≤
148	94	ö	180	B4	┤	212	D4	╘	244	F4	⌠
149	95	ò	181	B5	╡	213	D5	╒	245	F5	⌡
150	96	û	182	B6	╢	214	D6	╓	246	F6	÷
151	97	ù	183	B7	╖	215	D7	╫	247	F7	≈
152	98	ÿ	184	B8	╕	216	D8	╪	248	F8	°
153	99	Ö	185	B9	╣	217	D9	┘	249	F9	•
154	9A	Ü	186	BA	║	218	DA	┌	250	FA	·
155	9B	¢	187	BB	╗	219	DB	█	251	FB	√
156	9C	£	188	BC	╝	220	DC	▄	252	FC	ⁿ
157	9D	¥	189	BD	╜	221	DD	▌	253	FD	²
158	9E	P_t	190	BE	╛	222	DE	▐	254	FE	■
159	9F	ƒ	191	BF	┐	223	DF	▀	255	FF	

Glossary:

Contrast — In this User Guide, 'contrast' means reflectance difference between the background and the foreground colors.

Crop Marks — Cross-hairs used in Bar Code Age to pinpoint the corners of the quiet zone.

ECC (**Error Checking and Correcting**) — A rather sophisticated coding technique that can convert an unreliable symbol into error-free and reliable data.
ECC 200 Data Matrix Symbols use Reed-Solomon codes. ECC 000-140 Data Matrix Symbols use convolutional codes. Reed-Solomon codes are a class of very effective and widely used cyclic codes, named after their inventors. Reed-Solomon codes demonstrate a very strong error-correction capability, especially against the burst errors and random-like errors. They are particularly effective in a large number of error-control scenarios. A second important error-control technique in Data Matrix is that of convolutional coding. Convolutional codes are designed so that their decoding can be performed in some structured and simplified way.

EPS (**Encapsulated PostScript**) — A standard vector graphics file format mainly used in professional publishing.

Module — The square shape in the matrix symbology.

Print growth — The increase in module width or height as a result of the reproduction and printing processes. Equivalent to print gain.

Print shrinkage — The decrease in module width or height as a result of the reproduction and printing processes. Equivalent to print loss.

Quiet zone — A clear region which surrounds a bar code symbol.
In Data Matrix, quiet zone with dark and light modules together form a complete scannable entity.

Symbology — A particular class of bar codes; a specified procedure of encoding and depicting data in a machine readable form.
Some symbologies use elements in one dimension. Some symbologies are two-dimensional.
Composite symbologies use a linear and a two-dimensional component within a composite symbol.

Two-Dimensional Symbology — Symbols with vertically and horizontally arranged modules, which are read by machines; a specified procedure of data encodation and placement in a two-dimensional symbol.
Two-dimensional symbols employ error detection and correction that can recover data from damage such as erasures and misdecoded symbol characters.

X-Dimension — The nominal width of a module.

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