Graphical Label Designer for the IBMi

Version 4.0

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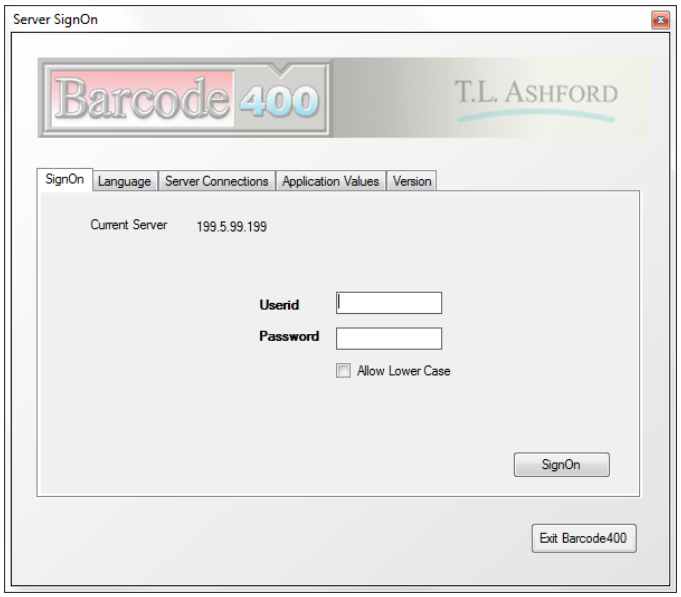
Quick Start

Start the Graphical Label Designer

In Windows, click Start, All Programs, T.L. Ashford and Associates, Barcode400 and then click Barcode400 Graphical Interface. Or, click the Barcode400 icon on the Windows desktop. The Server Signon screen will appear.

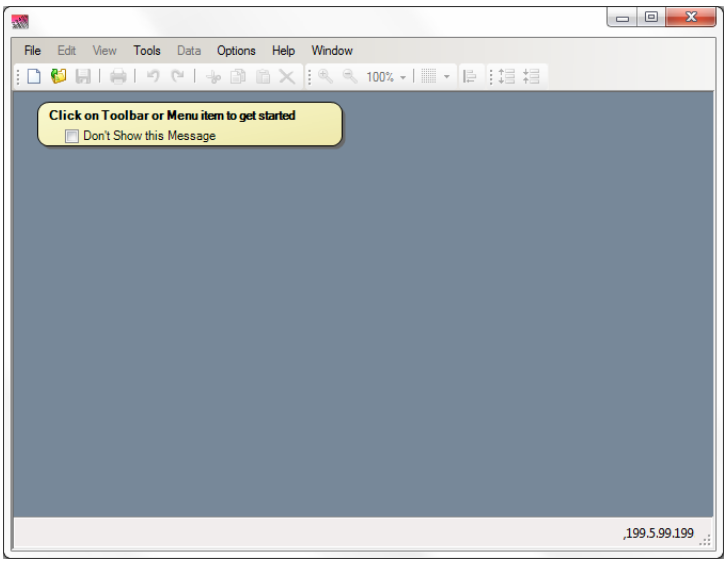
Server SignOn

To design and print bar code labels, a user must Sign On to the Barcode400 Designer. First-time users will need to create a server connection. *See Add Server*



At the SignOn Screen, enter the user's IBMi Userid and Password.

Click SignOn. The Barcode400 Work with Label Formats screen will appear.



Creating a Label Format

This Quick Start guide will illustrate the steps necessary to create the label shown below using the Graphical Label Design software.

This sample label will use five types of objects: alpha fields, barcodes, graphics (logos), rectangles and lines. All information on the label will be static data.

There are eight steps needed to create and print this sample label.

Step 1. Create a New Label Format

Step 2. Place the words Birthday Cake on the Label.

Step 3. Place a UPC-A barcode on the Label.

Step 4. Place the Cake graphic on the label.

Step 5. Place the Rectangle on the label.

Step 6. Place the Line on the label.

Step 7. Save the Label

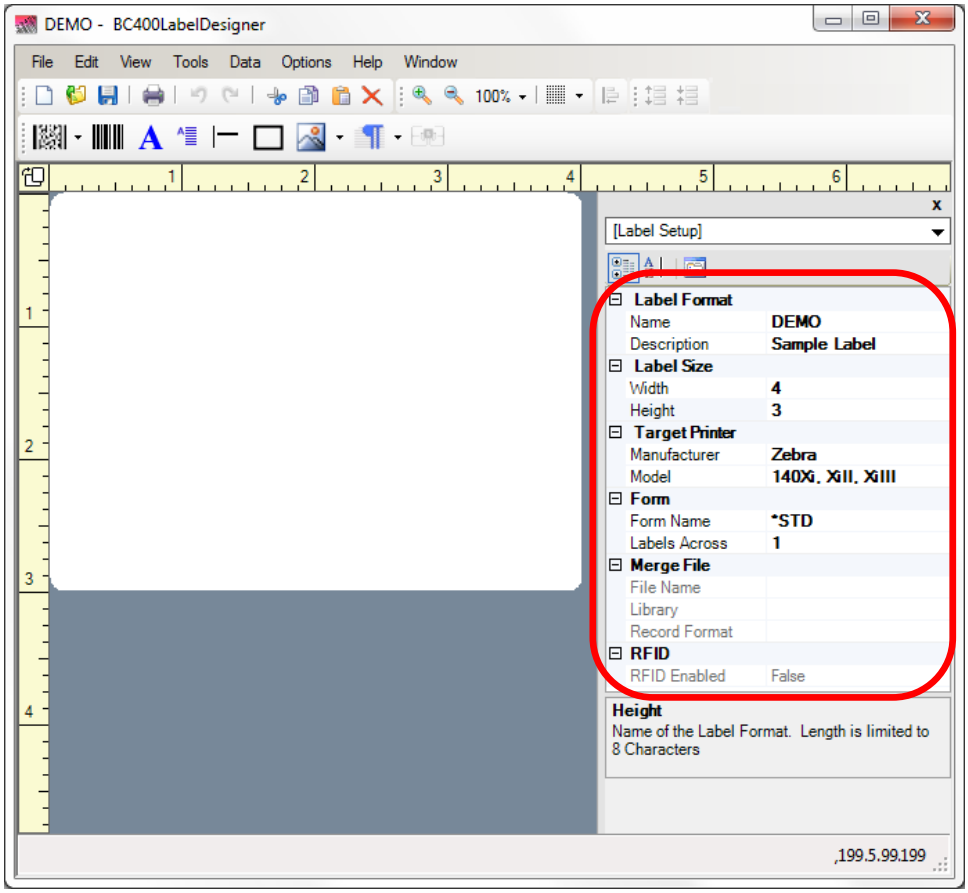
Step 8. Print a Test Label

Turn to the following page to begin

Step 1. - Create a New Label Format

The Work with Label Formats window is displayed after logging on.

Click - A new blank Label Design will display.



For this sample, in the Properties Dialogbox on the right, change the following fields:

Label Format

Name - Change to DEMO
Description - Change to Sample Label

Label Size

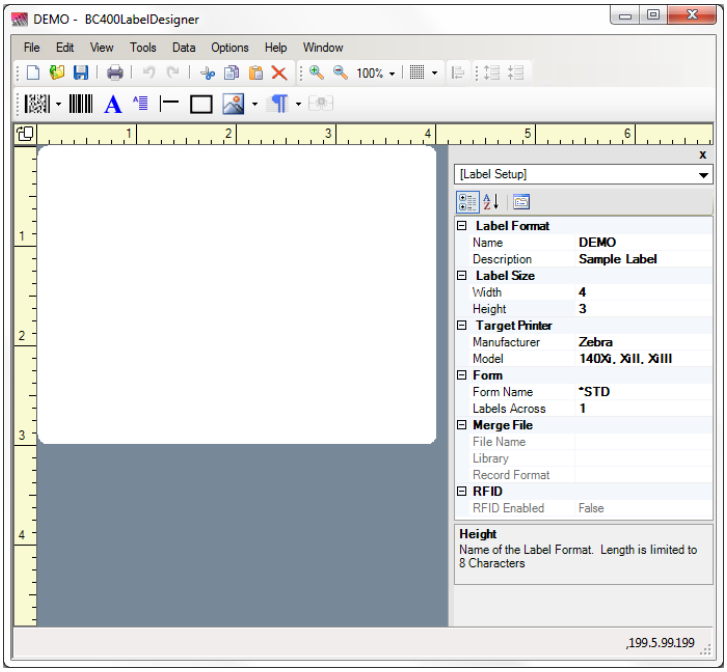
Width – Change to 4
Height – Change to 3
(Values are in inches)

Target Printer

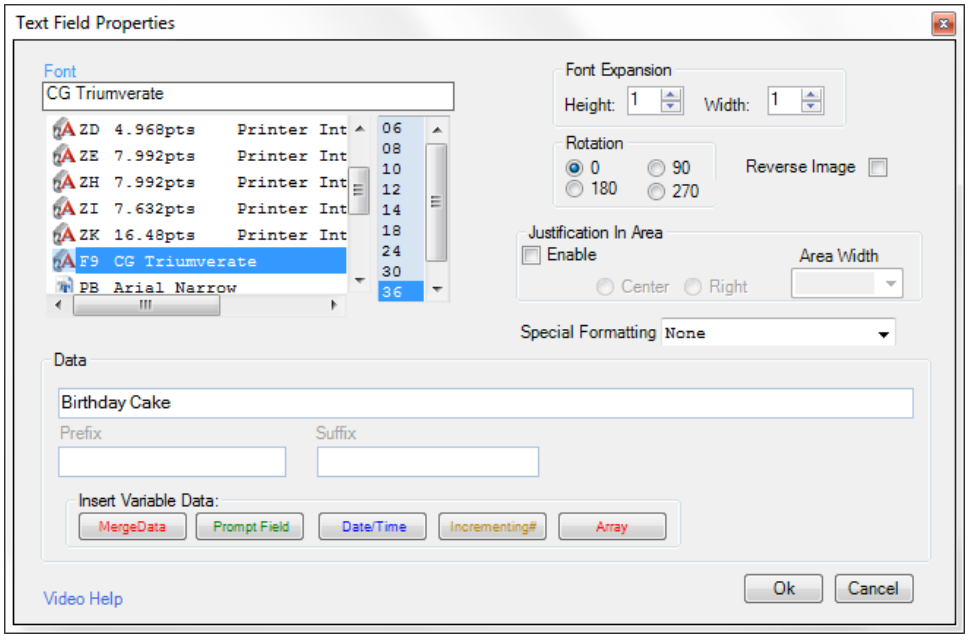
Manufacturer – Zebra
Model – 140XiII, XiIII, XiIV

Step 2. – Add Text

This step will place the words ‘Birthday Cake’ and a ‘$6.99’ price on the new label.



Click to create a new Text Field. The Text Field Properties window will display.

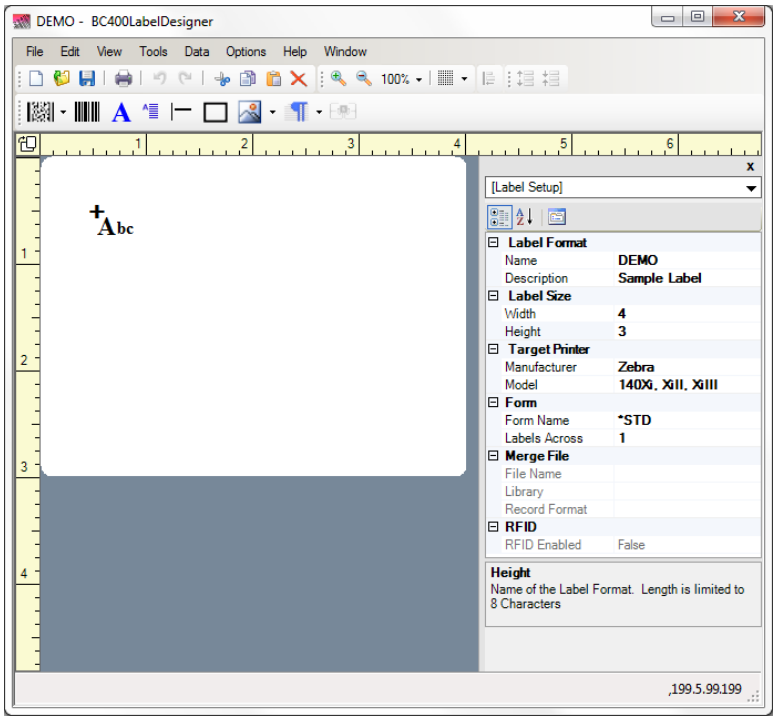


Type Birthday Cake in the Data Field.

Select the ‘F909 -36 pt. CG Triumvirate’ font from the drop-down list.

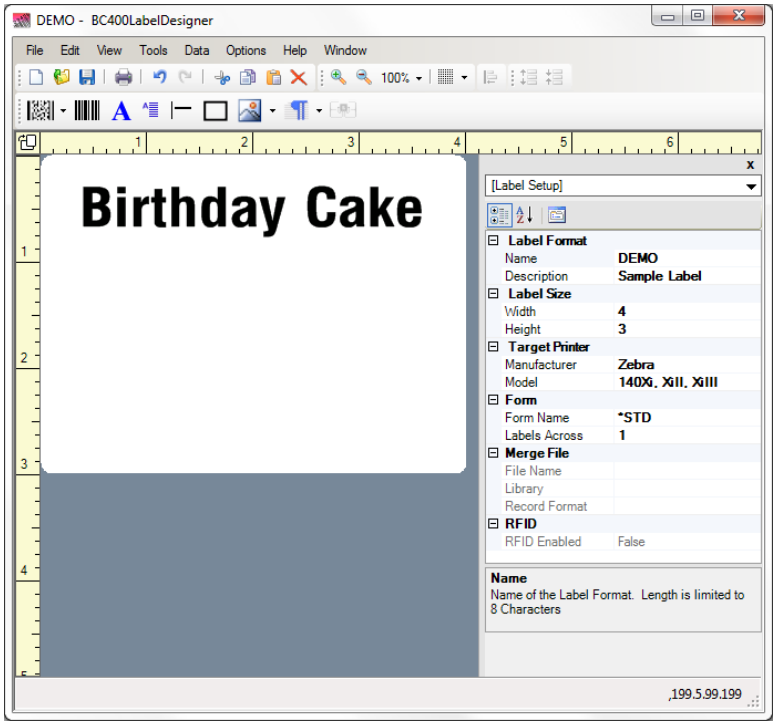
Click OK.

The cursor will display as +ABC indicating a Text Field.



Position the cursor to the desired location.
Click to place.

'Birthday Cake' appears on the label in the 36pt. font style.



Use the same method to place the text “$6.99” on the label.

Click the Add Text Object button again.

Type $6.99 in the Data Field.

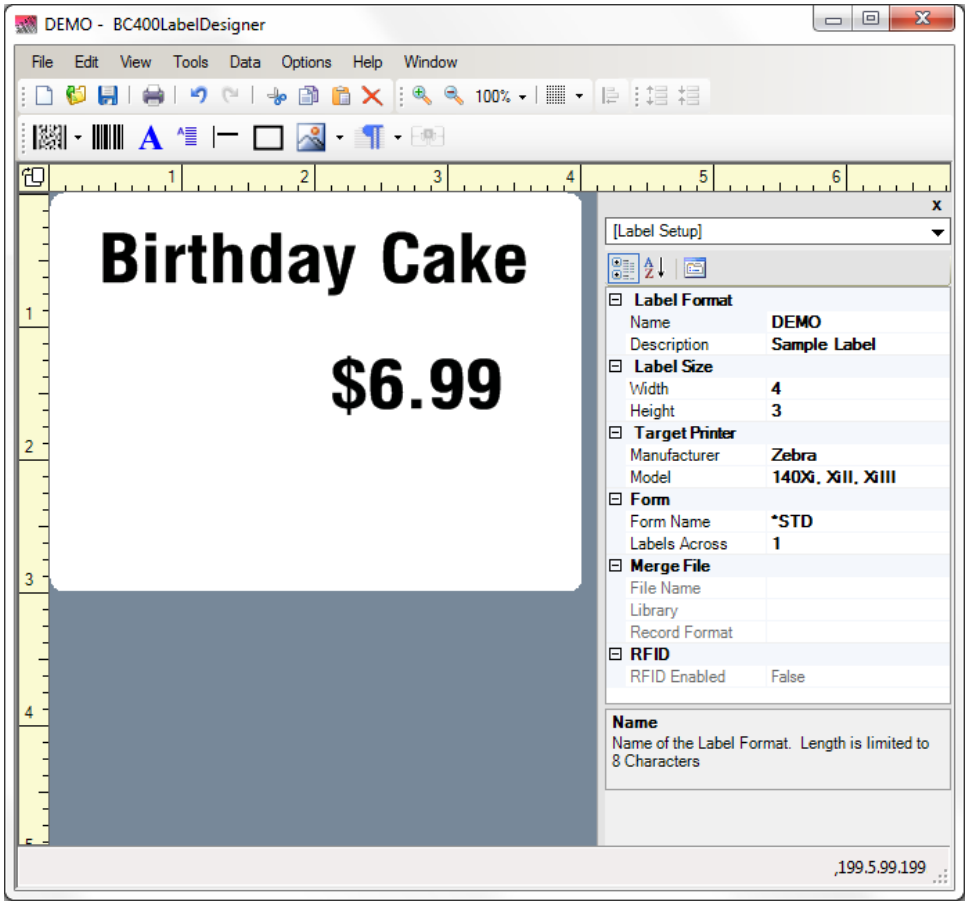
Select the ‘F909 - 36 pt. CG Triumvirate’ font.

Click OK

Position the Cursor to the desired location.

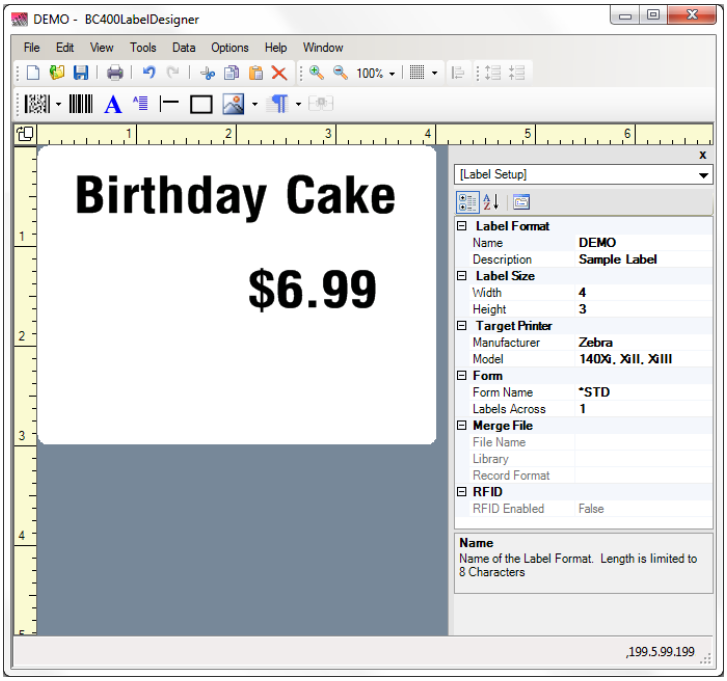
Click to place.

Both text objects now appear on the label in the desired positions.



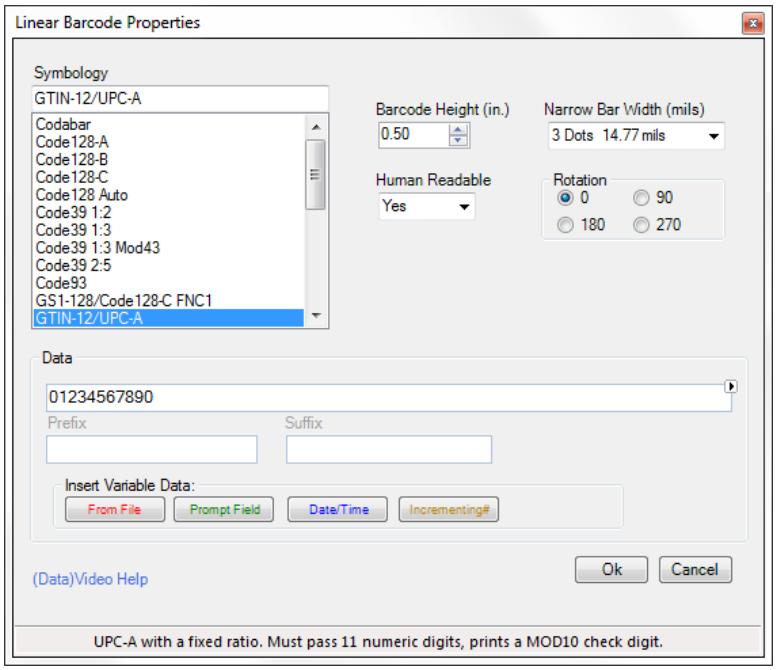
Step 3. – Add a Barcode

This step will place the UPC-A retail barcode on the label



Click to create a new Barcode Object.

A new Barcode Properties window will display.

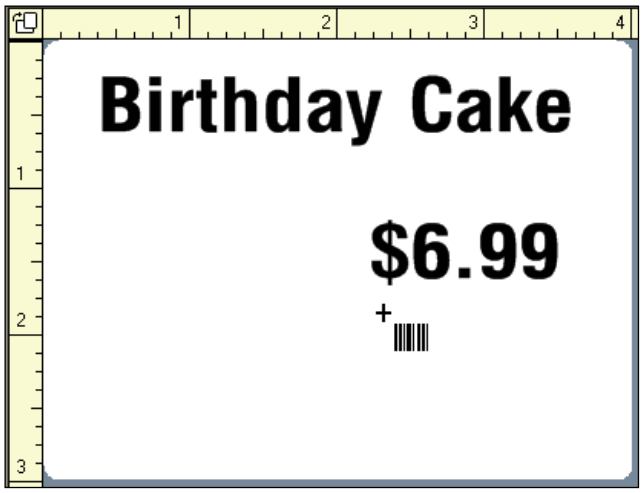


Type 01234567890 in the Data field. In this case, UPC-A requires 11 digits.

From the Symbology List, select UPC-A.

Click OK.

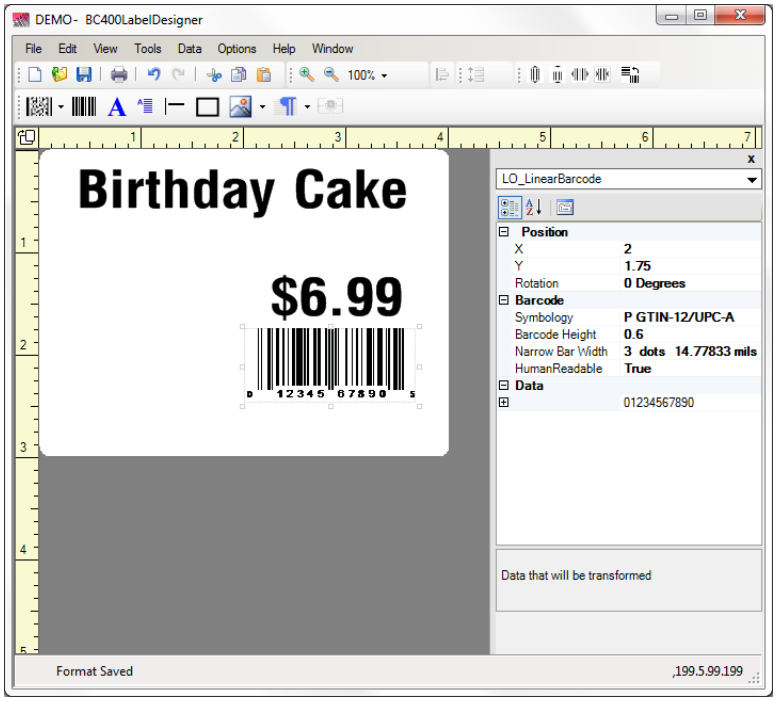
The cursor will display as a barcode, indicating a barcode object.



Position the cursor to the desired location.

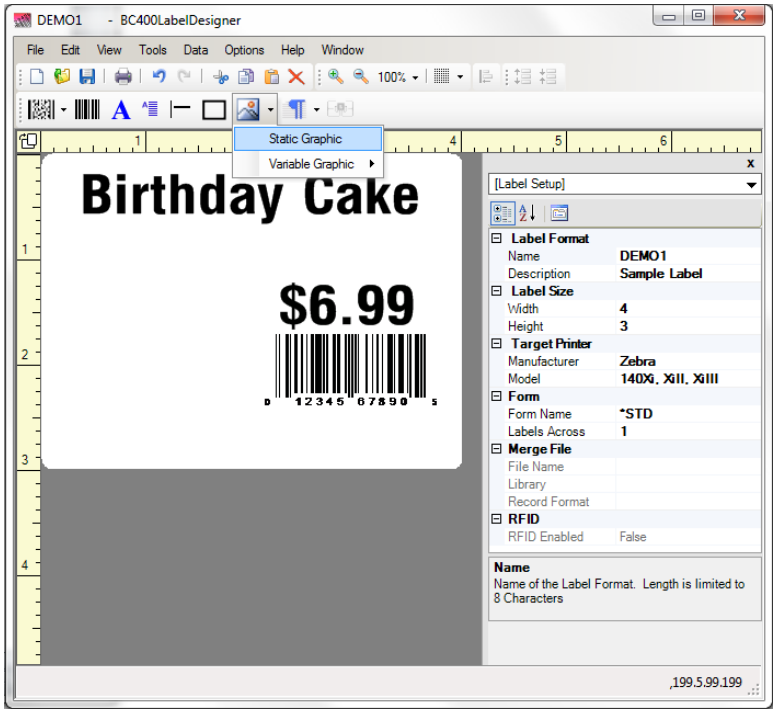
Click to place.

The UPC-A barcode now appears on the label.

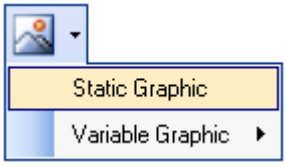


Step 4. – Add a Graphic

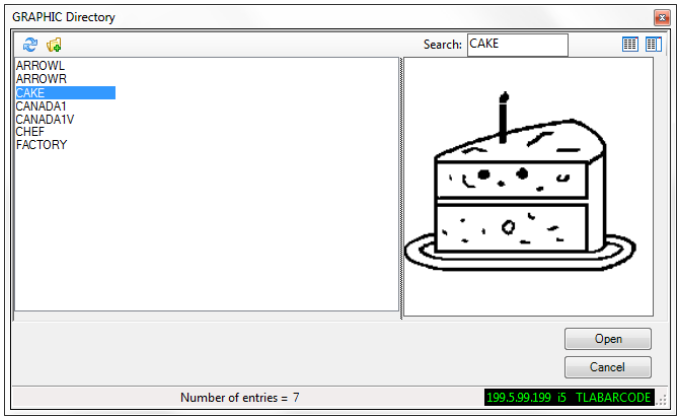
This step will place the Cake graphic on the label.



Click to add a graphic. The Add Graphic options will display.



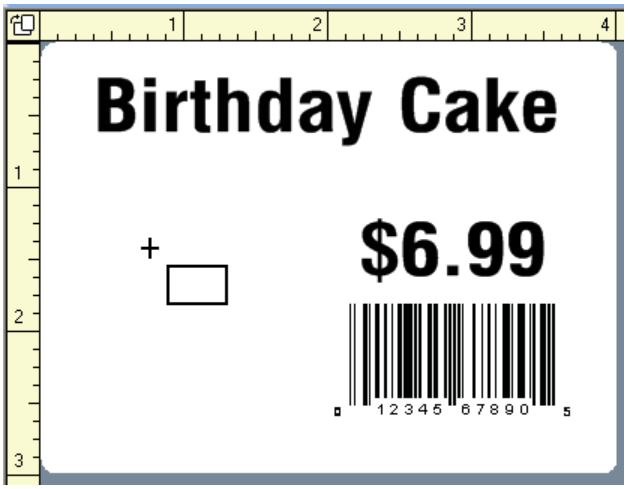
Select Static Graphic. The Graphic Directory will display.



Select Cake from the Graphic directory.

Click Open.

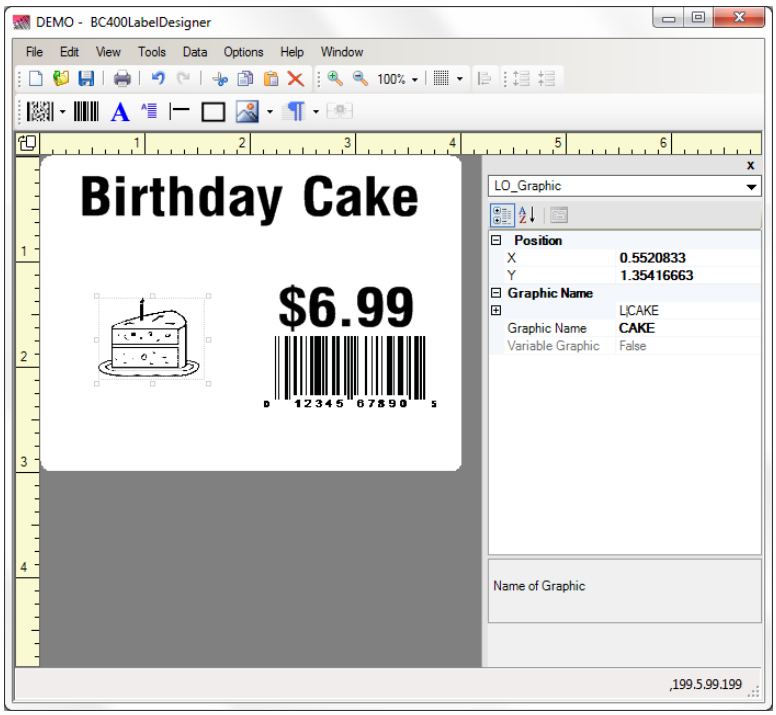
The graphic cursor will display.



Position the cursor to the desired location.

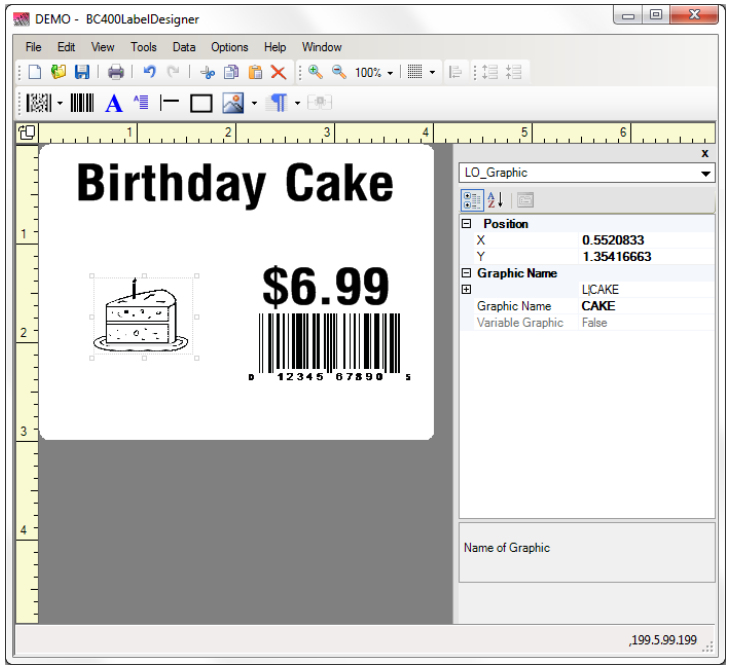
Click to place.

The Cake logo now appears on the label.

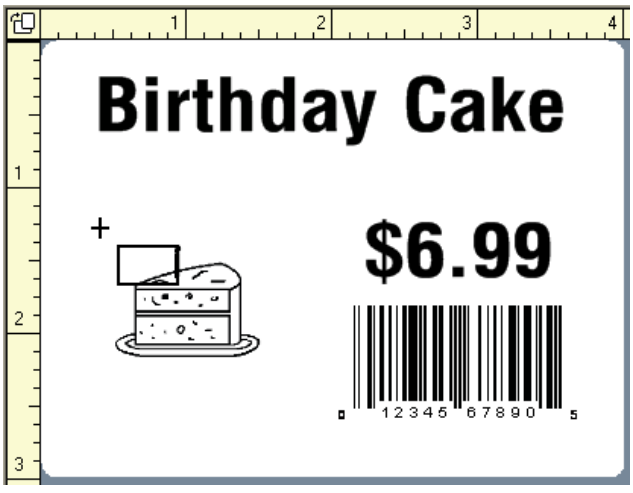


Step 5. - Add a Rectangle

This step will place a rectangle on the label.



Click to add a rectangle. A crosshairs (+) cursor will now appear on the screen.



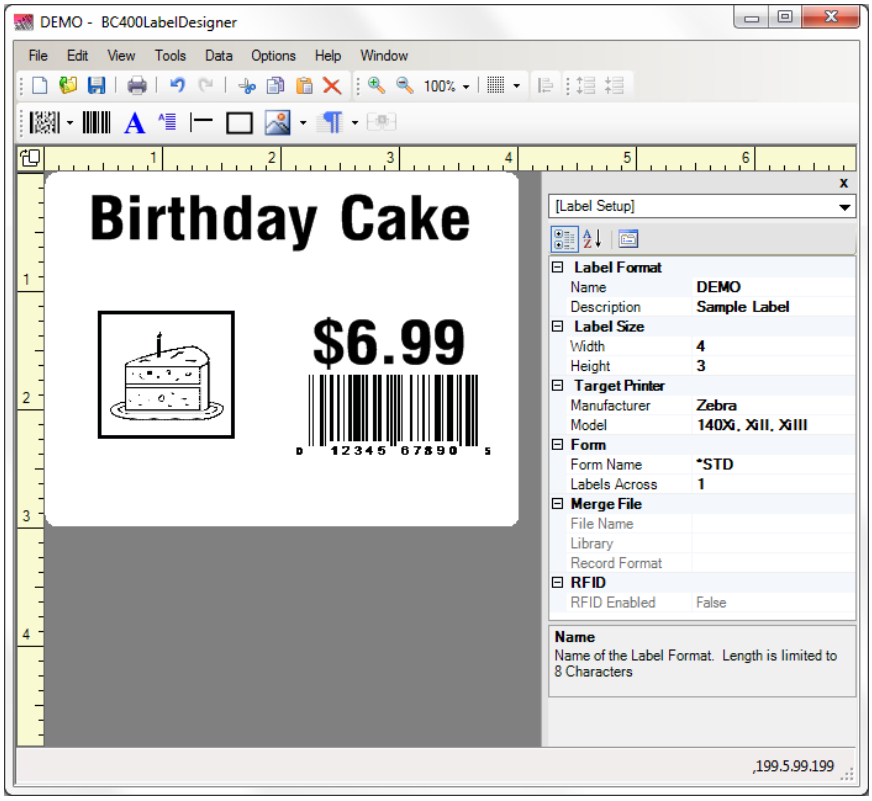
Position the crosshairs at the starting position of the rectangle.

Press and hold the left-mouse button.

Move the mouse diagonally to draw a rectangle.

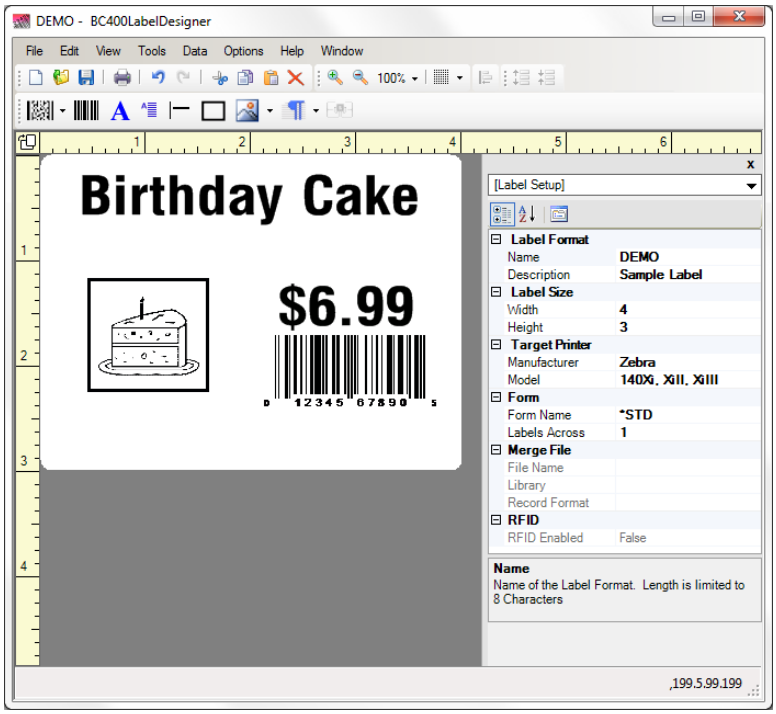
Release mouse button when finished.

The rectangle now appears on the label.

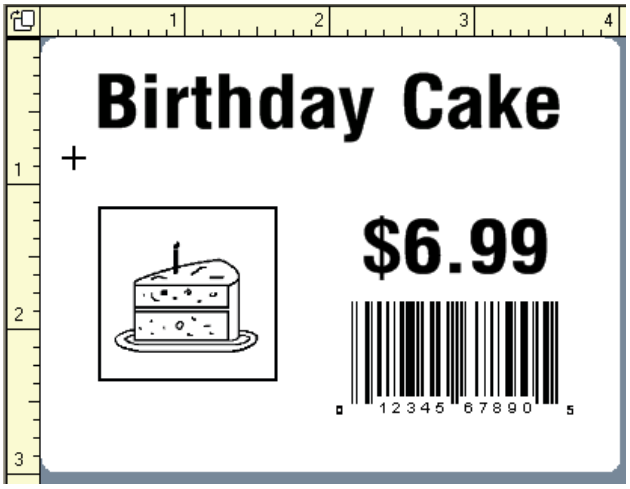


Step 6. - Add a Line

This step will draw a line on the label.



Click - A crosshairs cursor will appear on the screen.



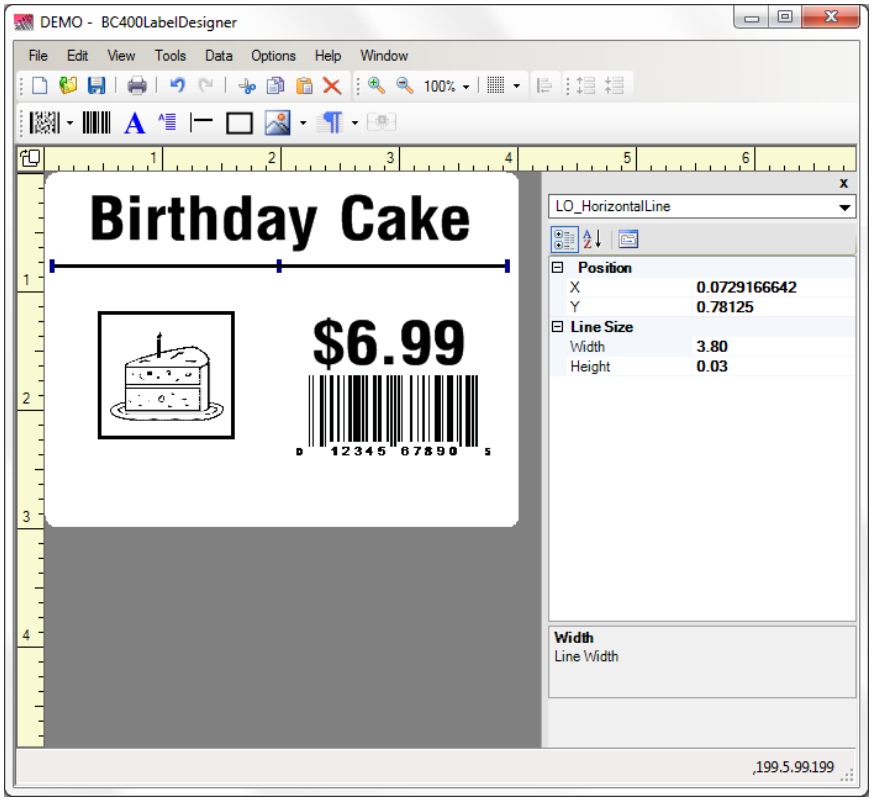
Position the crosshairs at the starting position of the line.

Press and hold the left-mouse button.

Move the mouse horizontally or vertically to draw a line.

Release mouse button when finished.

The line now appears on the label.



Step 7. - Save the Label

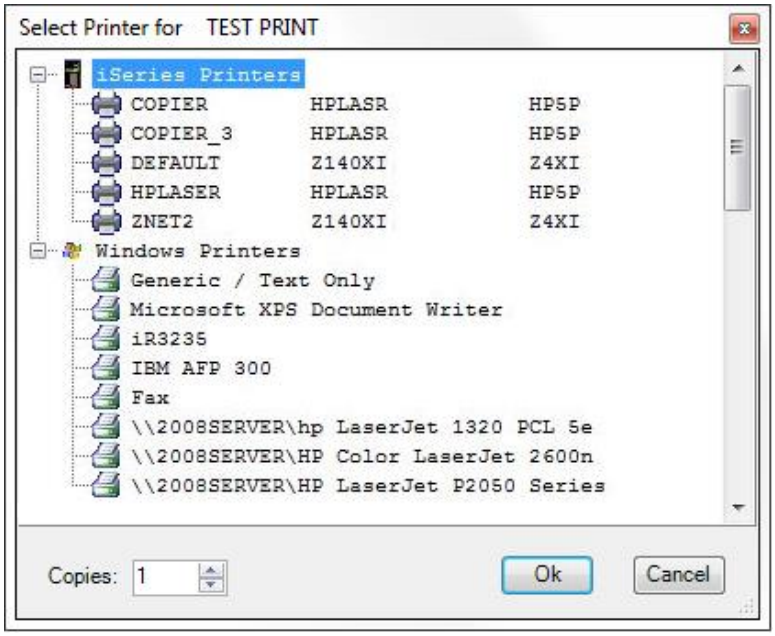
To save the currently open label design at any time, click the Save Icon on the Toolbar, or select File> *Save Label Format*.

'Format Saved' will display in the status bar (lower-left corner).

Step 8. - Test Print

To print a test label, click on the Test Print Icon , or Select File> Test Print.

The Select Printer window will display.



Select either a local Windows printer or an iSeries printer from the list.

Select the number of copies to print.

Click OK.

***NOTE**: iSeries printers must be configured in Barcode400 on the iSeries in the Utility Menu under Printer Configuration.*

QUICK TROUBLESHOOOTING - If the label does not print, confirm the printer is connected properly and the iSeries outque is active. Otherwise, contact T.L. Ashford Technical Support 800.541.4893

1. Overview

Barcode400 is a bar code label design and printing application for the IBMi mid-range computer systems. The Graphical Label Designer allows users to create new or edit existing labels on the IBMi, via the PC, in a Windows desktop publishing environment.

The Designer creates custom label layouts referred to as “Label Formats”. Each label format is stored on the IBMi (not the PC) under a unique user-assigned name.

1.1 Using this Manual

This manual details barcode label design using Barcode400’s Graphical Label Designer, including creating a label format, adding design elements (text, barcodes, graphics, lines, etc.), integrating various data, and printing formats using diverse printing methods.

The book is intended for both beginning and experienced users, who will creating and printing barcode labels. Users do NOT need programming experience.

The manual covers:

Format Design – Create and edit label layouts

Label Elements – Add and change various objects on the format

Format Options – Copy, Delete, Rename, and Save formats

Label Printing – Produce labels from Test Print

Graphics / Overlays – Add and use static and variable images and watermarks

Merged Data – Retrieve and use data from an IBMi database file

Incrementing Numbers – Create and use a control number

Paragraphs - Add and use static and variable blocks of text

Printing Labels – Producing formats from menu options or applications

Supported Printers – Lists printer types and the programs to call

1.2 Helper Guide

Throughout the manual, you may encounter these Helper icons.

Note – Reminders to give you a heads up or helpful tip.

Quick Troubleshooting – These notices can resolve potential minor issues.

Warning – Please read these caution messages before performing an action.

1.3 Requirements

Requirements for the installation and operation of the Barcode400 Graphical Interface:

IBMi:

OS/400 Version 5.3 or higher

PC Hardware:

IBM-Compatible PC

Intel or AMD DualCore
2 GB Available RAM, (4 GB preferred)
196 MB of free Hard Drive space

PC Software:

Operating System

Windows XP Home	(XP Service Pack 2 is required by .Net Framework Version 2)
Windows XP Professional	(XP Service Pack 2 is required by .Net Framework Version 2)
Windows 7 (32 and 64-bit)	
Windows 8 (32 and 64-bit)	

Web Services

Microsoft .Net Framework – Version 2.0.5 & 3.5
Java – Build 1.5 or newer

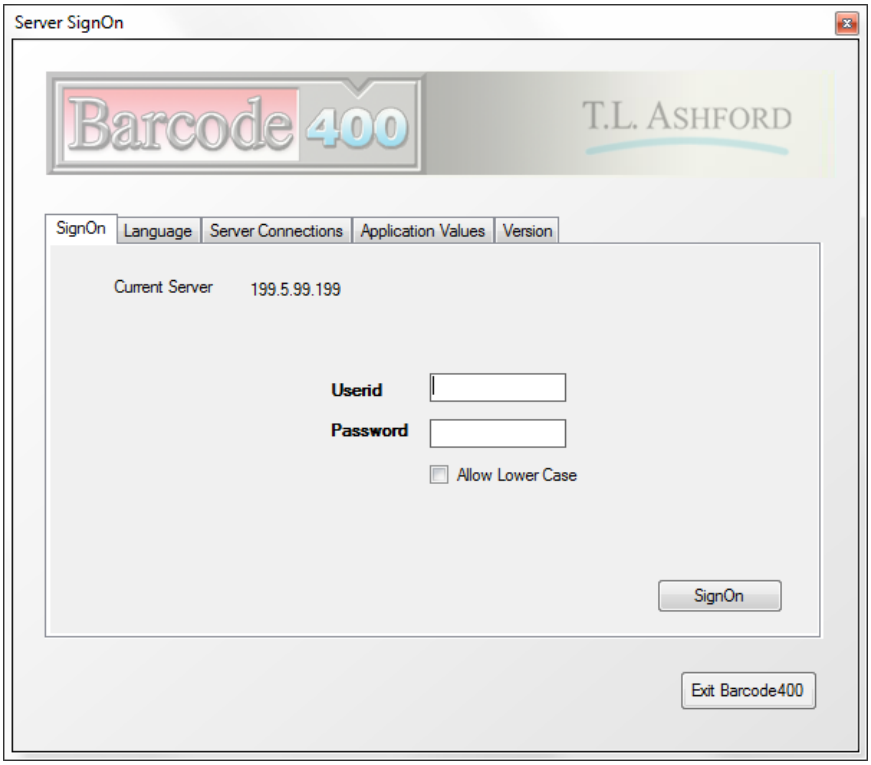
2. Starting the Graphical Label Designer

Before designing and printing bar code labels, a user must Sign On to the Barcode400 Designer. In Windows, click Start, All Programs, T.L. Ashford and Associates, Barcode400 then Barcode4001 Graphical Interface.

The Server Signon screen will appear.

2.1 Server SignOn

First-time users will need to create a server connection. *See Add Server if not listed.*



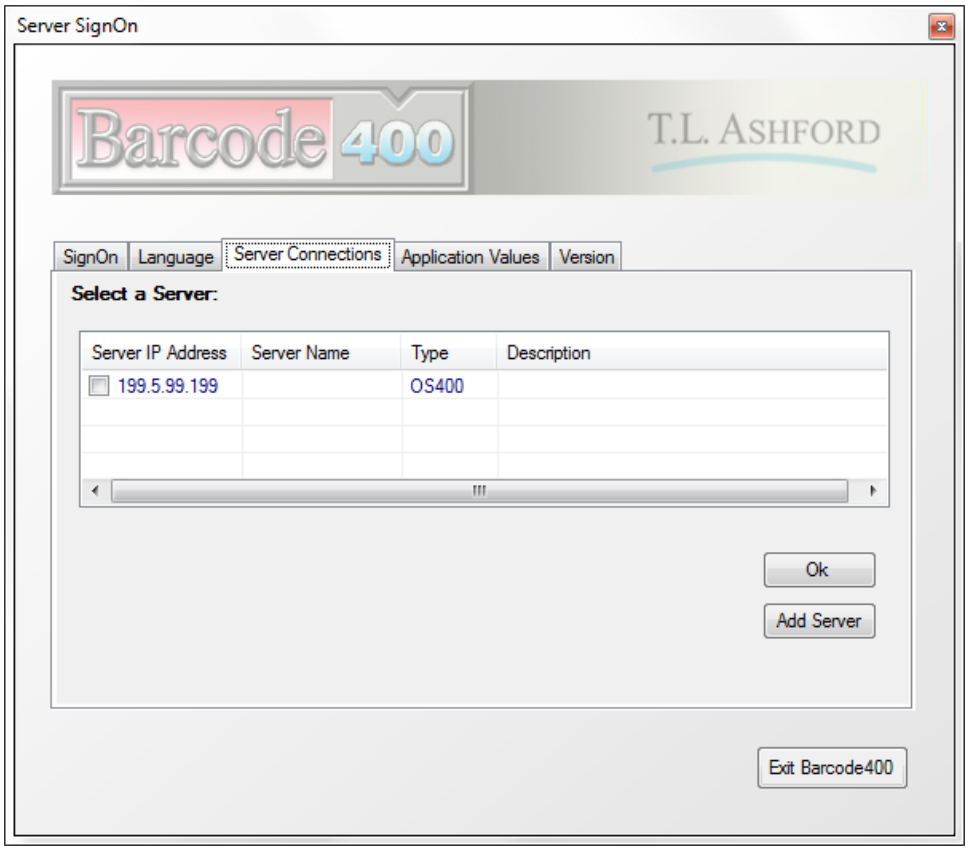
At the SignOn Screen, enter the iSeries Userid and Password.

Click SignOn.

***NOTE**: If you do not have an iSeries Userid, contact a System Administrator.*

2.2 Server Connections

Barcode400 connects to one server at a time, but multiple servers can be defined. Server Connections are set on the Server Signon window under **Server Connections.**



Select the Server Connections tab on the Server SignOn screen.

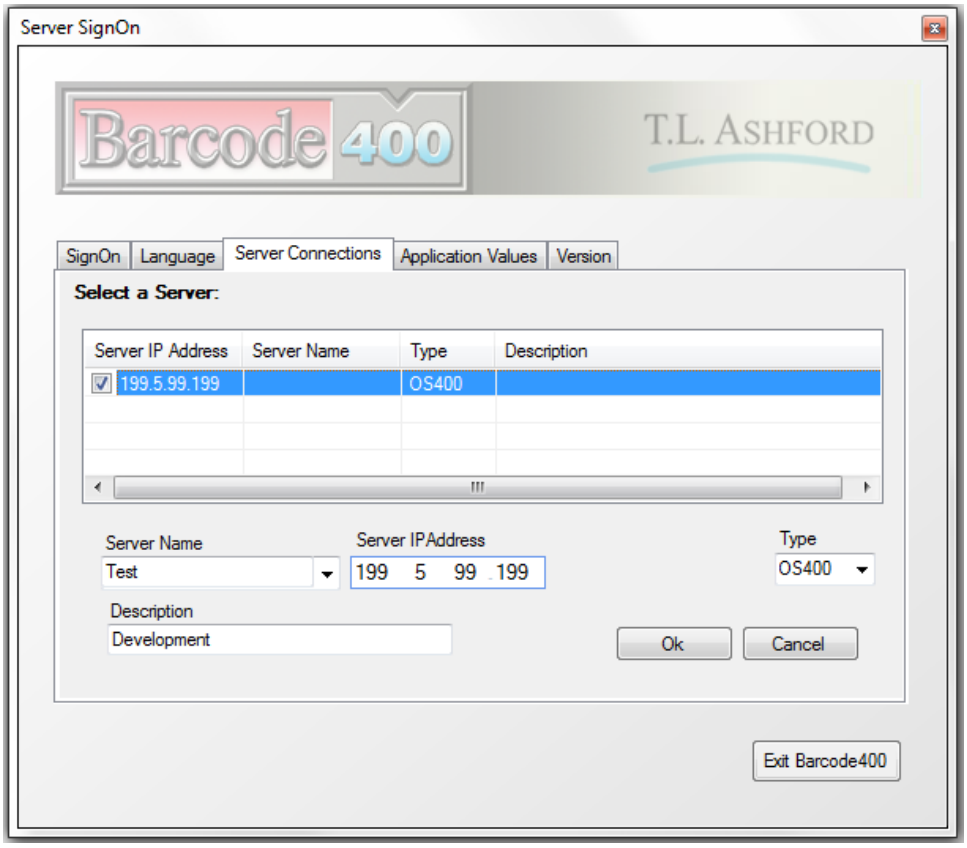
Check the desired Server Connection.

Click OK.

***NOTE**: Duplicate IP addresses will only be listed once.*

Add Server to the Server Connections List

From the Server SignOn Screen, select Server Connections then click Add Server.



Enter the iSeries IP address (Mandatory).

Enter or Select the Server Name (Optional).

Server Type defaults to OS400.

Enter a Description, if desired (Optional).

Click OK.

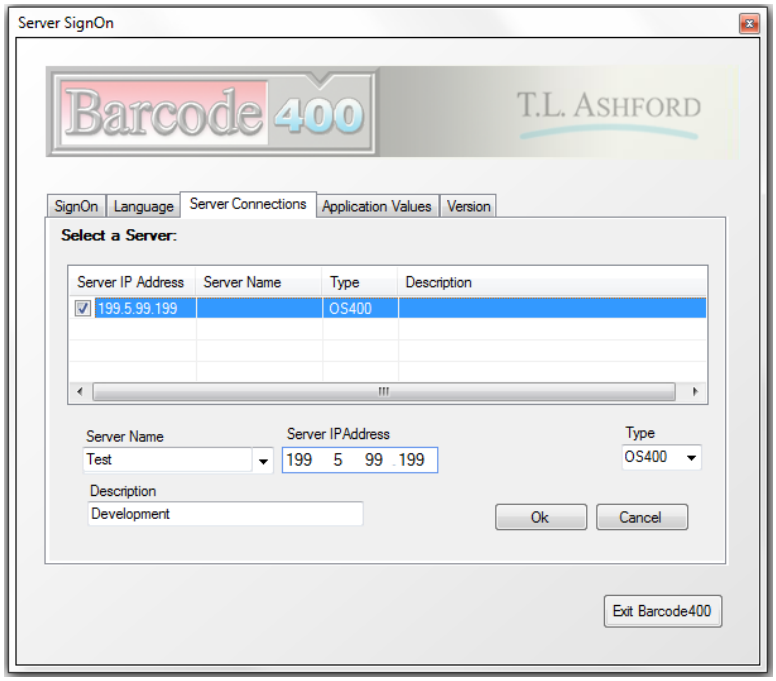
The new connection will be added to the Server List. Check the appropriate box to select the new server.

You can now sign on.

Modify a Server Connection

Under Server Connections, right-click or double-click on the Server to be changed.

Select Edit.



Make desired changes to Server setting.

Click OK to save changes.

Delete Server Connection

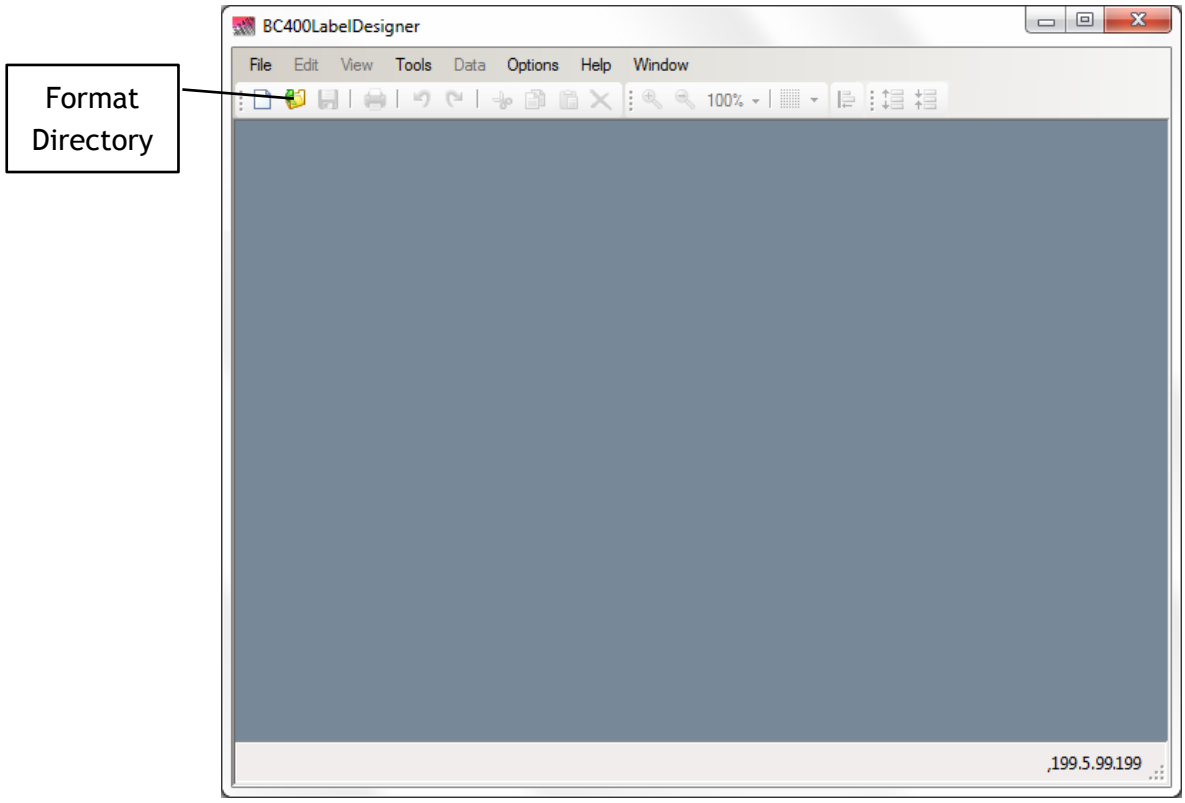
Under Server Connections, right-click or double-click on the server to be deleted.

Select Delete.

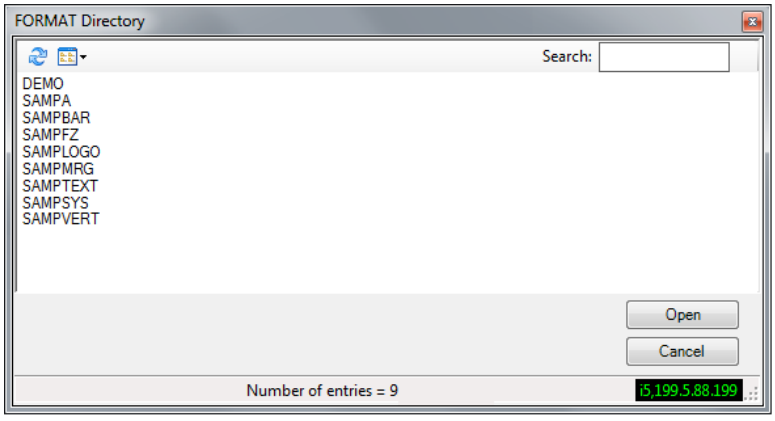
Click OK to confirm Delete.

3. Label Directory

To view available labels, click the Format Directory button in the Toolbar.



The Format Directory will display.



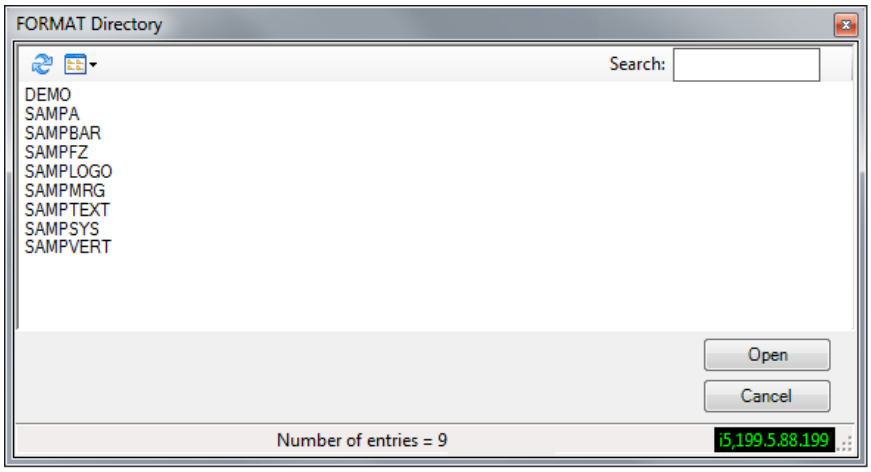
The directory will display the formats from the iSeries the GUI is currently connected to.

You can Edit, Copy, Rename and Delete any of the formats listed. If directory exceeds the display area, you can scroll-right or use the Search window to locate a format.

Click Cancel to close.

3.1 Edit an Existing Label

An existing label format can edited from the Format Directory. Highlight to select the label format to be edited.



Click **Open**.

3.2 Save Label Format

The Label Format can be saved to the iSeries anytime during the design process.

Click the **Save** button **i**n the Toolbar.

or

Click **File** in the Menubar. Then, click **Save Label Format**.

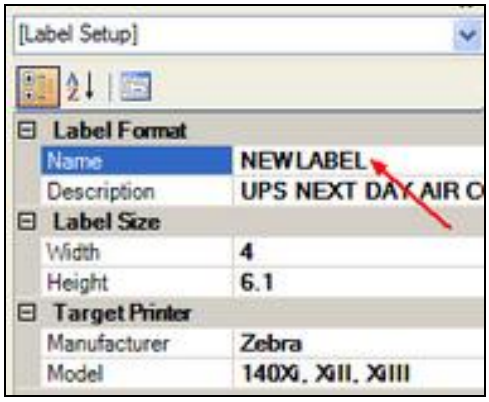
The current label format will save and remain open.

'Format Saved' will appear in the lower-left of the Design screen.

3.3 Save Label As… in Edit Mode

It is also possible to **Save As…** a label format, while editing. This will allow you to save the format under a new name.

Click anywhere in white space on the label. This will display the Properties Panel.



Click in the Label Format Name box in the Label Properties Panel, on the right.

Enter new label name*, then click **Save**.
**New name must be 8-bytes or less.*

The new label name is saved in the Label Directory.

3.4 Close Format

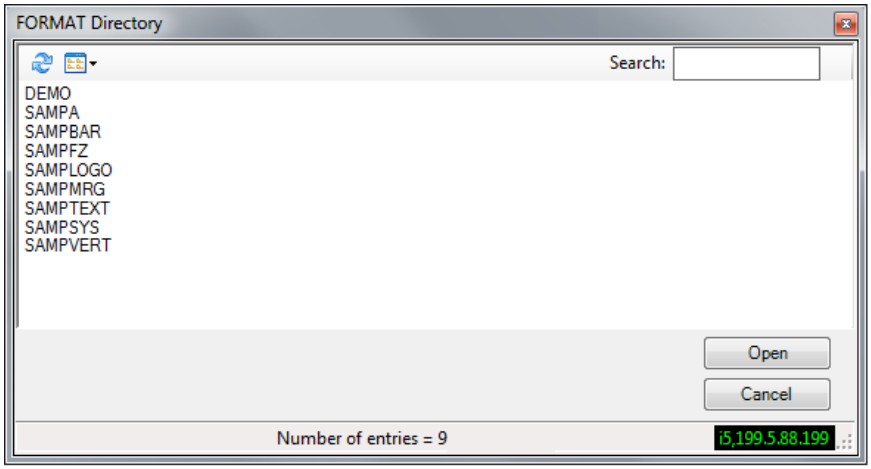
Close will end the design session for the currently selected label.

Click **File** in the Menubar.
>Close Current Label Format.

The software will prompt to save changes to the format. Click **Yes** or **No** to continue.

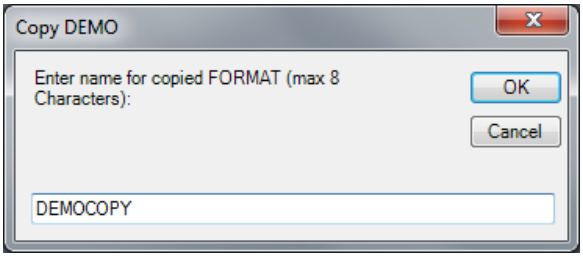
3.5 Copy Label Format

Click the Format Directory button in the Toolbar.



In the Format Directory, right-click the format to be copied.

Select **Copy**.

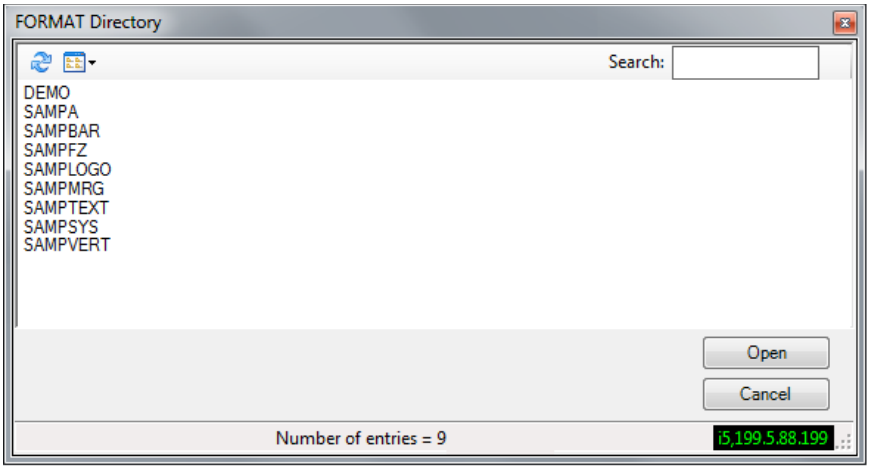


Enter new format name*. Click **OK**.

**New name must be 8-bytes or less.*

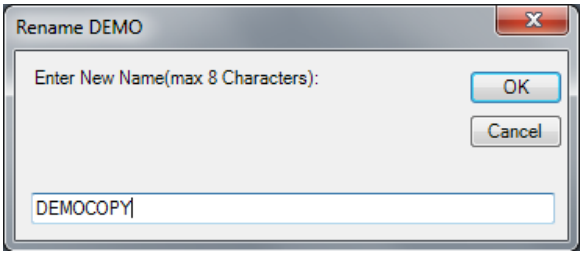
3.6 Rename Label Format

Click the Format Directory button in the Toolbar.



In the format directory, right-click on the format to be renamed.

Select **Rename**.



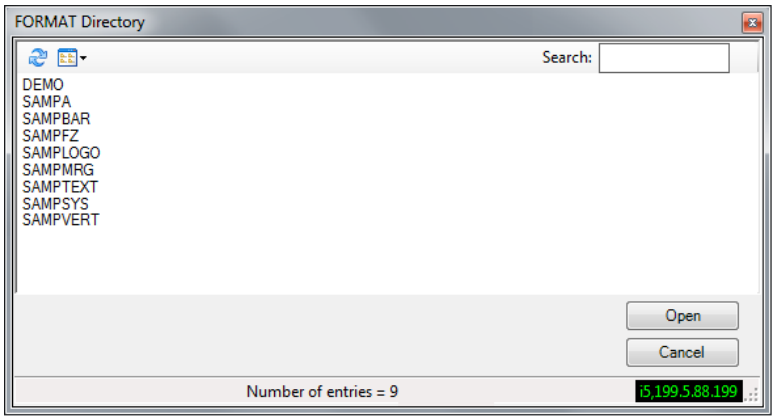
Enter new format name. Click **OK**.

**New name must be 8-bytes or less.*

3.7 Delete Label Format

WARNING! *Deleting a label format from the Graphical Designer's Label Directory will also remove the format from the iSeries.*

Click the Format Directory button in the Toolbar.



In the format directory, right-click on the format to be deleted.

Select **Delete**.

Click OK to confirm Delete.

4. Label Design

Labels are created by placing objects on a Label Format.

4.1 Label Objects

Each object on a label format has its own properties and may have a data source.

There are nine types of objects:

Text
Multi-Line Text
Bar Codes
Lines
Rectangles
Graphics
Overlays (HP/AFP-Compatible Printers Only)
Stored Paragraphs
RFID (Radio Frequency Identification)

Objects may consist of static or variable data.

Static data is data that remains the same each time a label prints.

Variable data is data that may change each time a label prints and utilizes a Data Source.

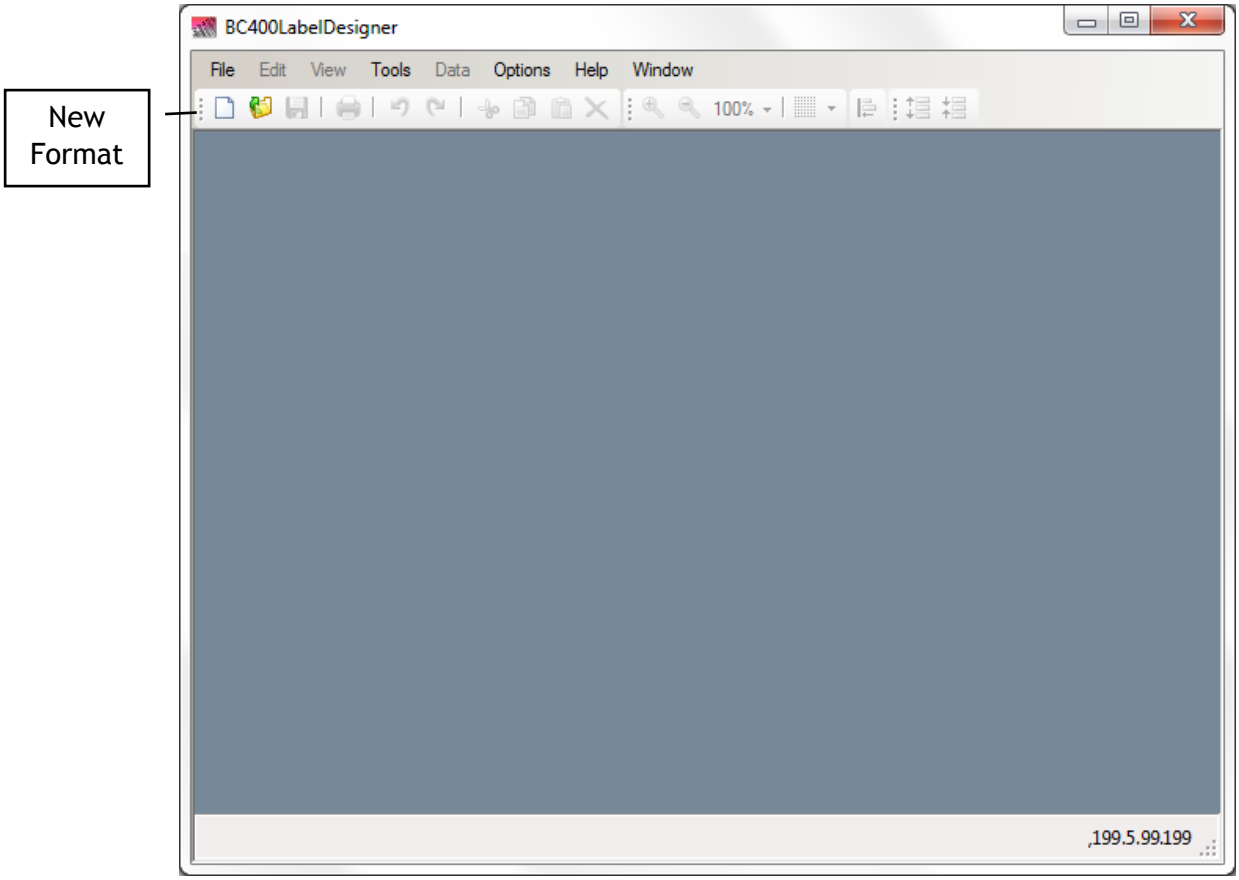
4.2 Data Sources

Variable data can come from a variety of sources:

Merge data is retrieved from an iSeries file *(physical, logical, structure or program).*
Prompted data is entered by the user at print time via prompts added to the label.
Incrementing Numbers are numbers defined within Barcode400 to serialize labels.
System Date/Time are values retrieved from the iSeries at print time.
Arrays are data files structured by byte position not fields.

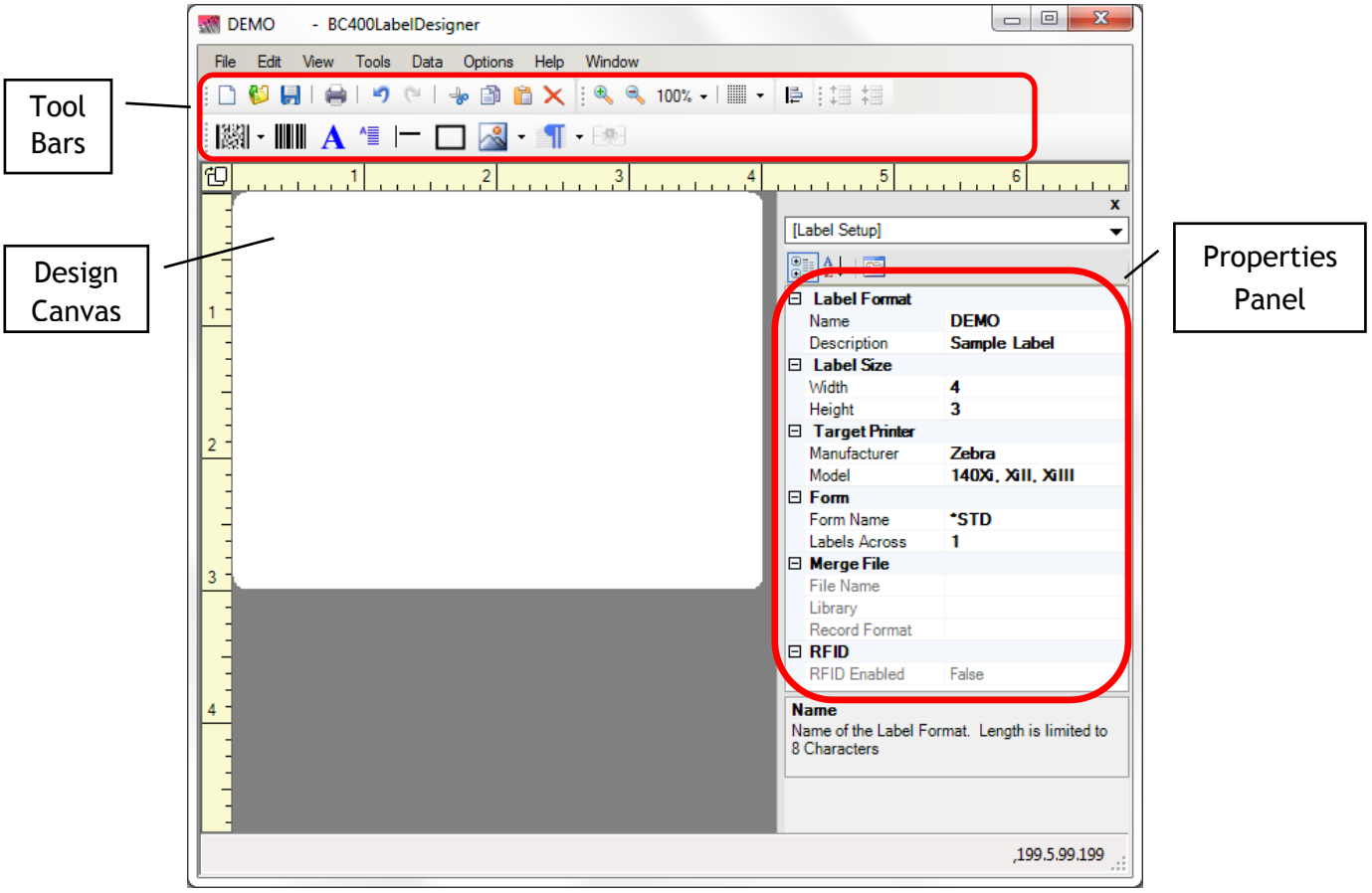
4.3 Create New Label Format

To create a new label format, click



or Select File> Create New Label Format.

A new label will open in the Design window, as shown below.



Toolbars – These shortcuts allow the user to add new objects or perform edit functions.

Design Canvas – This is the work area as defined by the Label Size.

Properties Panel – Displays the settings for the format or a highlighted object.

4.4 Toolbars

At the top of the Design Window are several toolbars for adding and editing label objects, as well as formatting functions.

Object Toolbar

Object Toolbar

To add an Object to the Label Design, select the appropriate button (barcode, text, lines, rectangles, graphics, stored paragraphs or RFID) from the Toolbar.

Objects can also be added by selecting Edit > Add New Label Object.

Two-Dimensional Barcode – Add a Static or Variable 2D Barcode Symbol.

Linear Barcode - Add a Static or Variable Linear Barcode.

Text - Add a Text Object with Static or Variable Data.

Multi-Line – Add a Multi-Line Text Object with Static and/or Variable Data

Line - Draw a Horizontal or Vertical line.

Rectangle – Draw a Rectangle.

Graphic - Add a Static or Variable Logo.

Stored Paragraph – Add, Create or Modify a Paragraph.

RFID - Encode an RFID SmartTag. (Additional Feature)

Edit Toolbars

Edit Toolbars are specific to type of object being created or edited, such as text fields, barcode fields, multi-line text fields, or paragraphs.

When any standard text is highlighted, this toolbar will appear.

Text Edit Toolbar

Increase Font Height – Click to make text taller.

Decrease Font Height - Click to make text shorter.

Increase Font Width - Click to make text wider.

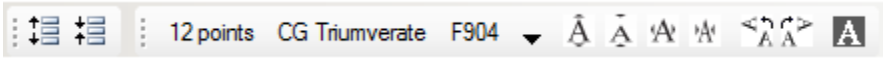
Decrease Font Width - Click to make text narrower.

Rotate Text Left - Click to turn text object 90’ to the left.

Rotate Text Right - Click to turn text object 90’ to the right.

Reverse Image – Invert white text on a black background *(See Reverse Image)*.

When any Multi-Line Text object is high-lighted, this toolbar will appear. Note that the options are the same, except for two additions.



Multi-Line Text Edit Toolbar

Increase Line Spacing – Click to insert more space between the lines of text.

Decrease Line Spacing - Click to decrease the space between the lines of text.

Barcode objects have their own set. Highlight a barcode for this toolbar to appear.

Barcode Edit Toolbar

Increase Bar Height – Click to make the bars taller.

Decrease Bar Height - Click to make the bars shorter.

Increase Barcode Width - Click to make symbol wider.

Decrease Barcode Width - Click to make symbol narrower.

Rotate Barcode Left – Click to turn the barcode to the left 90’.

Rotate Barcode Right – Click to turn the barcode to the right 90’.

Function Toolbar

Many of the Graphical Designer’s menu functions are available directly from this toolbar.

Function Toolbar

New Format - Click to create a new empty label.

Open Label Directory – Click to open/edit an existing label format.

Save - Click to save the currently open label.

Test Print - Click to print a Test Label to a selected printer.

Undo – Click to backtrack the last action taken.

Redo – Click to repeat the last action taken.

Cut – Click to remove the highlight object(s) and store them in the Clipboard.

Copy – Click to copy the highlight object(s) and store them in the Clipboard.

Paste - Click to place object(s) stored in the Clipboard on the label.

Delete – Click to remove the highlight object(s) from the label.

Zoom – Click to change the view magnification (50-500%).

Grid – Click to enable, disable or alter the Designer Dot Grid

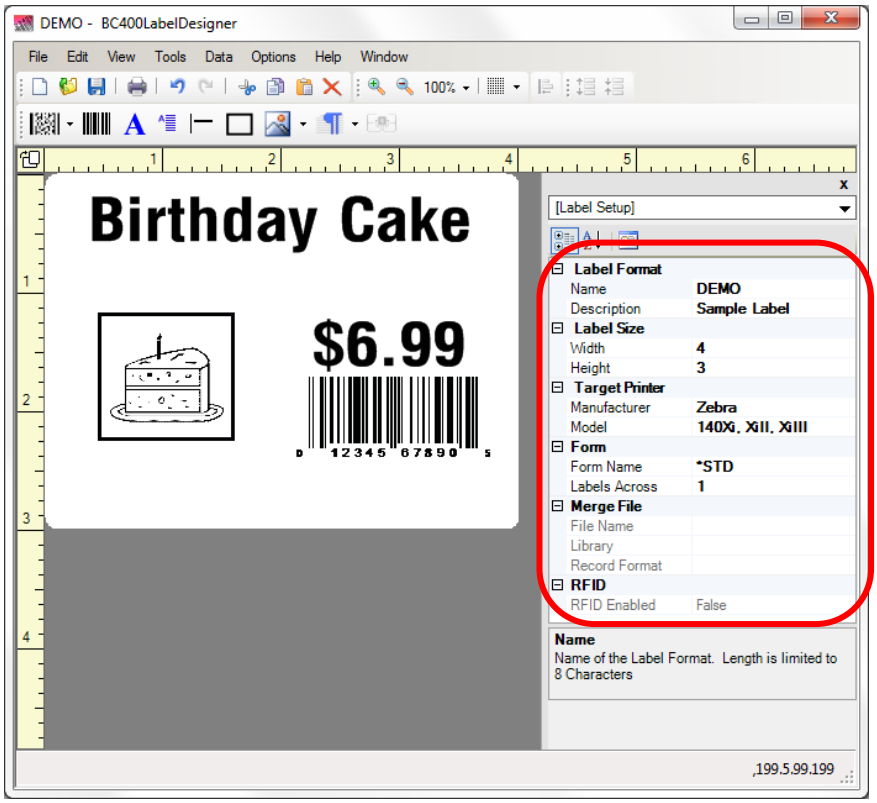
4.5 Properties Panel

During the design process, the Properties Panel will display the properties of a highlighted object on the format. If an object is not highlighted, Barcode400 displays the properties of the label itself in the Properties Panel to the right of the Design Canvas.

Label Properties Panel

These properties affect the entire label design. To display, click on the label canvas area.

The Label Properties will appear in the grid to the right.



Click on a property, then enter or select a new value. The format will automatically update to reflect the change.

The Label Name, Description, Size, Target Printer Manufacturer and Model, as well as Form Type, Labels Across and Data Source can be updated from the properties grid.

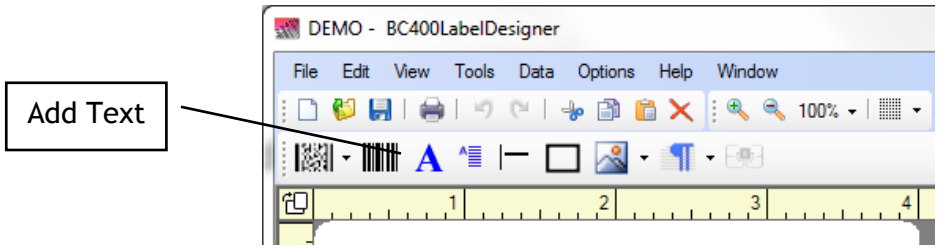
4.6 Text Objects

Text may consist of the following Data Sources:

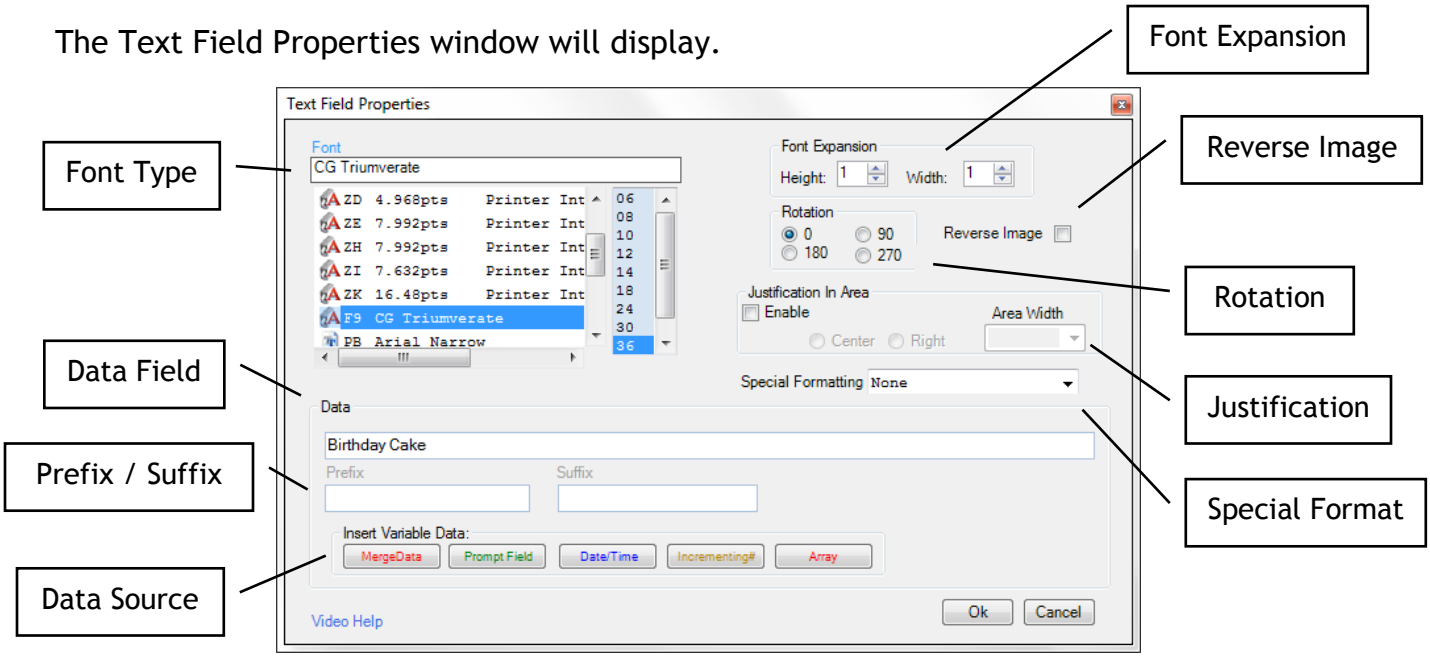
- Static Data
- Merge Data
- Prompted Data
- System Date/Time
- Incrementing Numbers

Add Text

Click to Add Text Object



The Text Field Properties window will display.



Insert data into the Data field. Static Data can be entered directly by typing in the desired text. Variable Data can be entered by selecting a Data Source from the Insert Variable Data Toolbar.

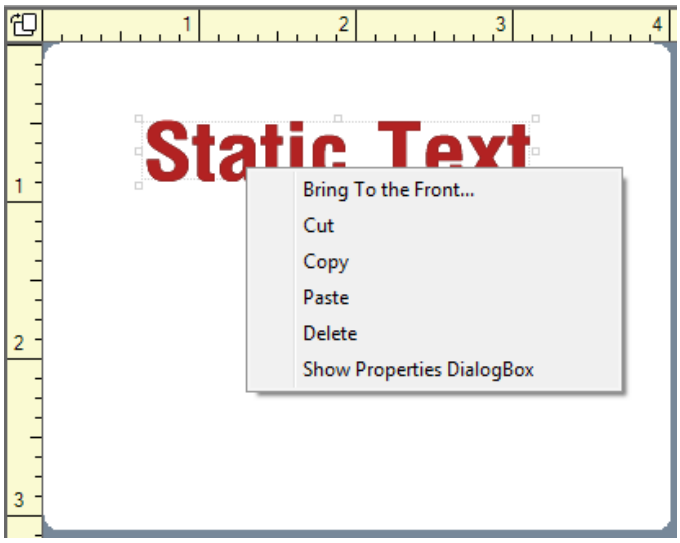
Click **OK** to place the text object on the label.

Modify Text

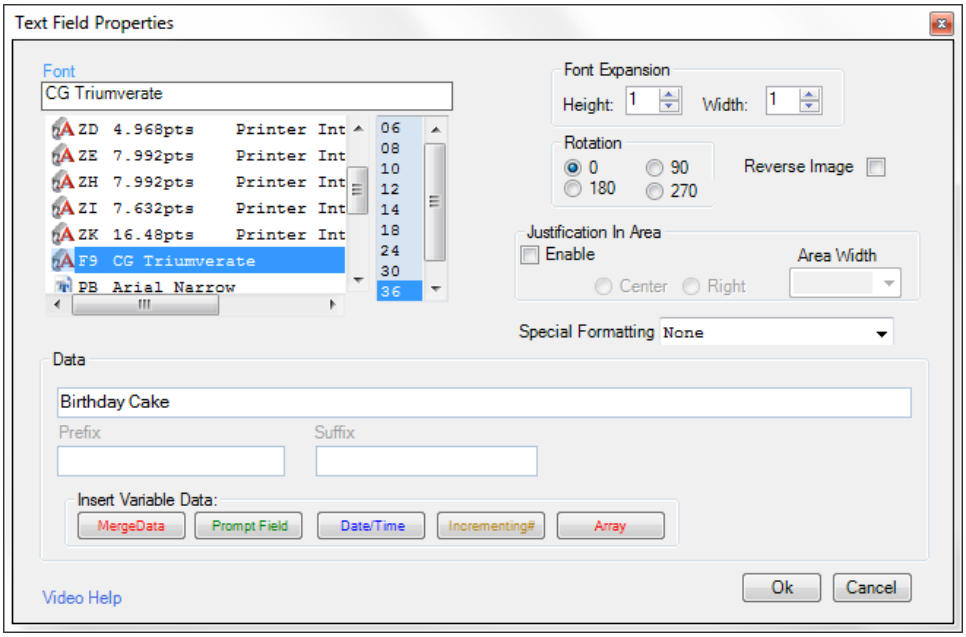
Text Objects are modified using the Text Field Properties Dialogbox or the Text Field Properties Panel.

Text Field Properties Dialogbox

To access the Text Field Properties, right-click on the Text Object and select Show Properties Dialogbox, or double-click on the Text Object.



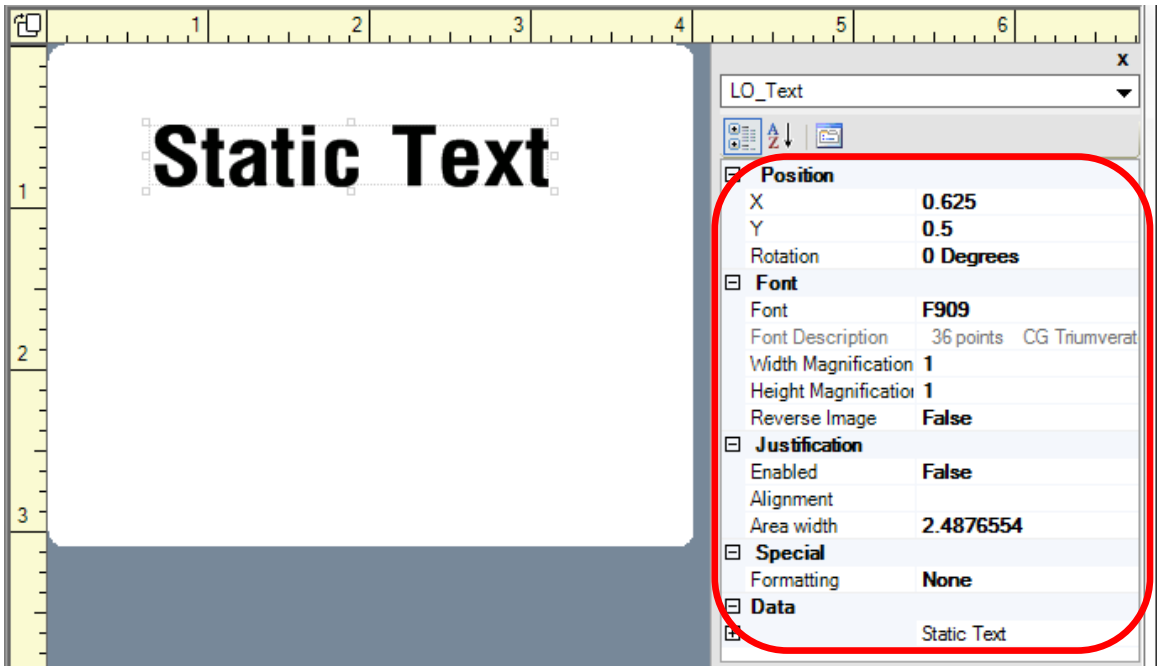
The Text Field Properties window will display.



Text Field Properties Panel

Or, single-click on the Text Object. The Text Field Properties appear in the Properties Panel to the right. Click on a property to update its value, either from a drop-box or manual entry.

The text field will automatically update.



Properties for Text Objects:

Position (X = Over, Y = Down) – Object's starting position.
Rotation – Orientation of the text field.
Font – Letter type or style.
Font Expansion (Width and Height) – Text size multiplier.
Reverse Image – Inverted white text on black background.
Justification – Text alignment and field length.
Special Formatting – Special check digit functions.
Data or Data Source – Static data or variable field.

Details for these properties are on the following pages.

Font Overview

Barcode400 supports printer resident fonts and downloadable True Type fonts.

Printer Resident Fonts

These fonts are created by the printer manufacturer and delivered as a standard option on the printer. Printer resident fonts vary from printer manufacturer to printer manufacturer, and sometimes from model to model.

True Type Fonts

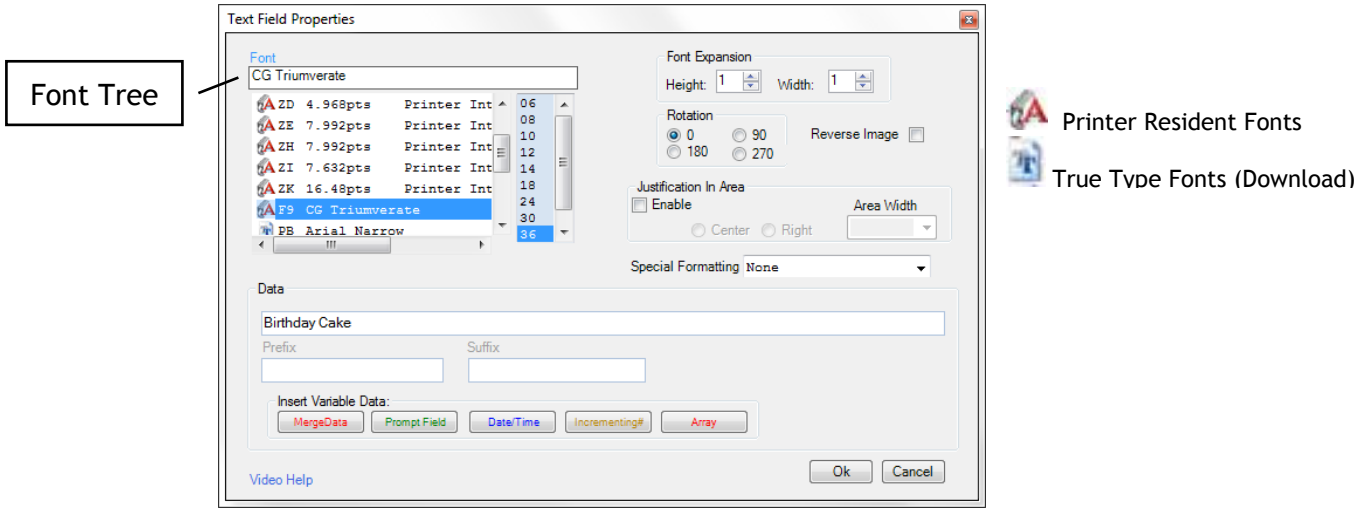
True Type fonts do NOT reside on a printer when the printer is delivered and must be downloaded to the printer.

Barcode400 can download True Type fonts to the printer, provided that the printer has the necessary memory. True Type fonts are supported on the following printer brands: Zebra, Datamax/Oneil, Monarch, IBM and Printronix.

These fonts can be downloaded to the printer using the Font Installation program included with the iSeries software. True Type fonts only need to be downloaded once and remain stored on the printer for future use.

Font Selection

Fonts can be selected or changed in the Text Properties Dialogbox or Properties Panel.

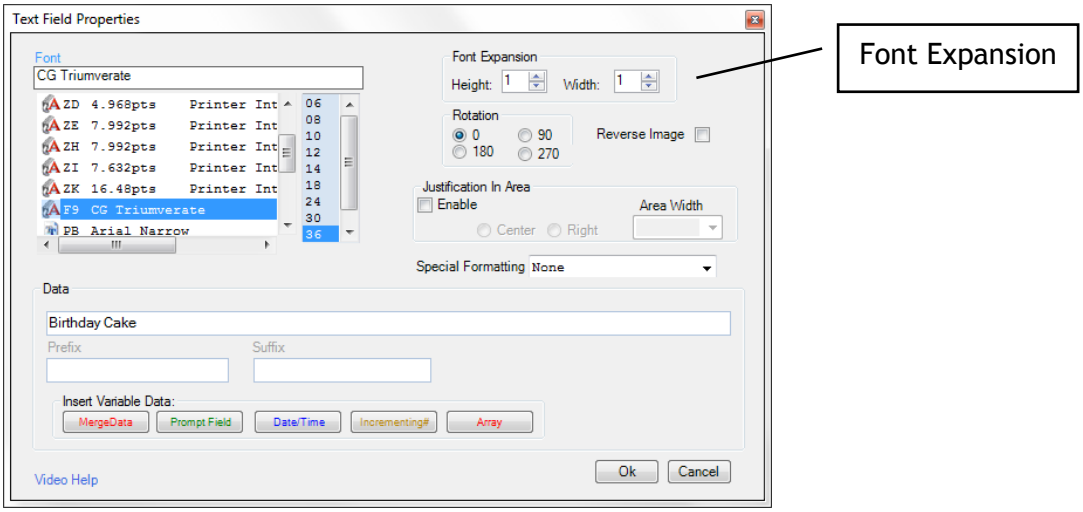


The available fonts displays on the upper-left. The Font Tree is determined by the format's Target Printer. Click on a font from the tree to select.

Font Expansion

Font Expansion allows for a greater variety of font sizes by multiplying the font's base height and width values.

Font Expansion can be selected or changed in the Text Properties Dialogbox or the Text Properties Panel.

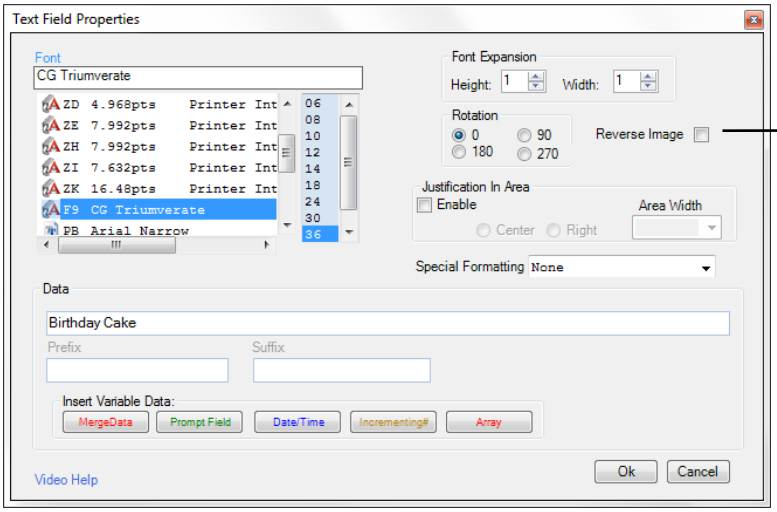


In the Font Expansion box, select the desired Height and Width expansion by setting the up and down arrows from 1-9. Each font defaults to Height and Width of 1.

Reverse Image

Reverse Image is when characters appear in white on a black background. Reverse image can be applied only to a text field.

REVERSE IMAGE



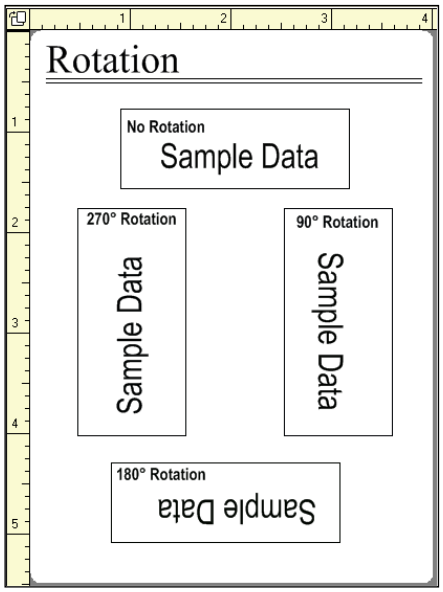
Reverse Image

Click the check box to turn on Reverse Image.

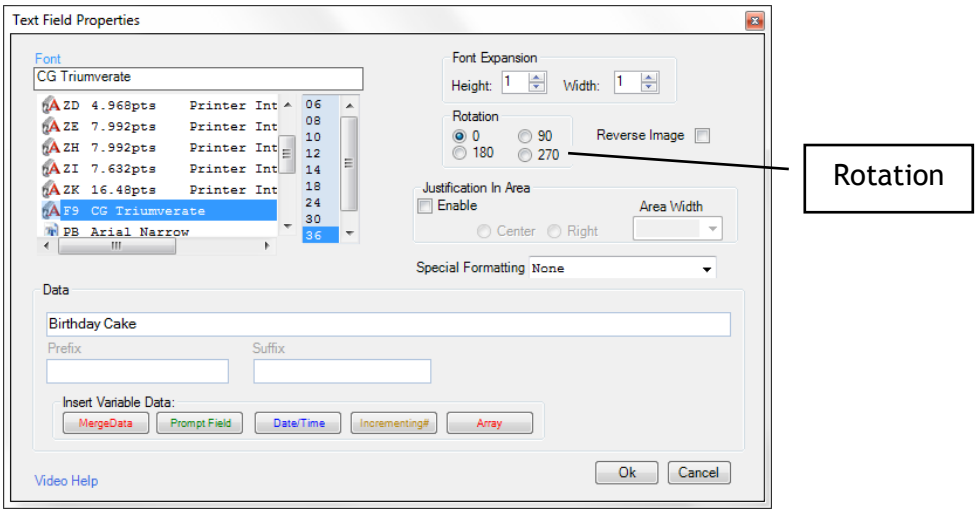
NOTE: *Not all fonts support Reverse Image.*

Rotate Text

Text can be rotated at 0, 90, 180, or 270 degrees using the Rotation feature in the Text Properties DialogBox or the Text Properties Panel.



***NOTE**: Due to potential text alignment issues, 90 degrees is recommended over 270 degrees, when designing a rotated label format.*

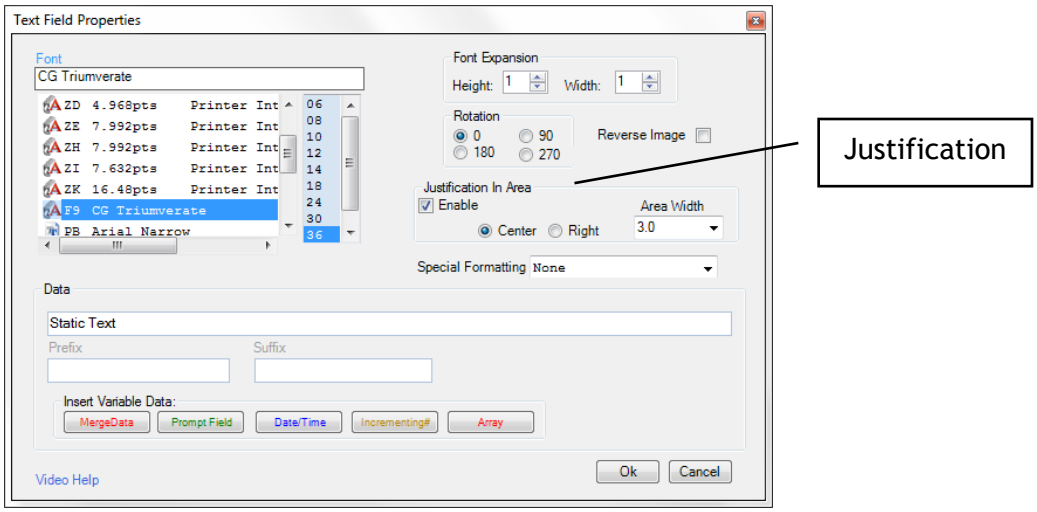


Select the desired Rotation. Click OK

Justification

The Justification in Area option will format text data and justify left, right or center within a set area based on width.

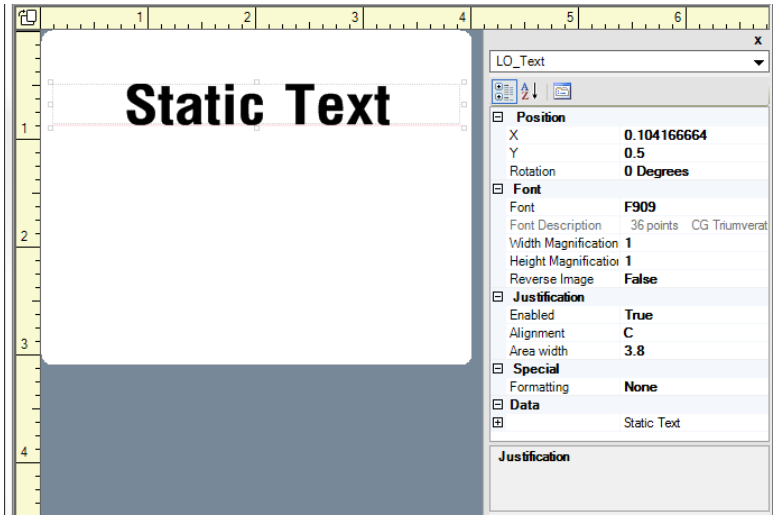
By default, all text objects with a 0 or 90 degree rotation are Left justified. Any other option will require Enabling the Justification option. Click the Check Box to Enable.



Once enabled, check the Center or Right option. The data will center or right-justify within the Area Width determined, as opposed to the width of the entire format.

Area Width sets the size of the field in tenths of inches. This allows for fields to be organized into columns or restrict field size within the format borders.

In the example, a 3.8” Area Width was set to Center on a 4” label format. Note the field’s boundary shows the full 3.8” area indicated with the text centered.



Special Formatting

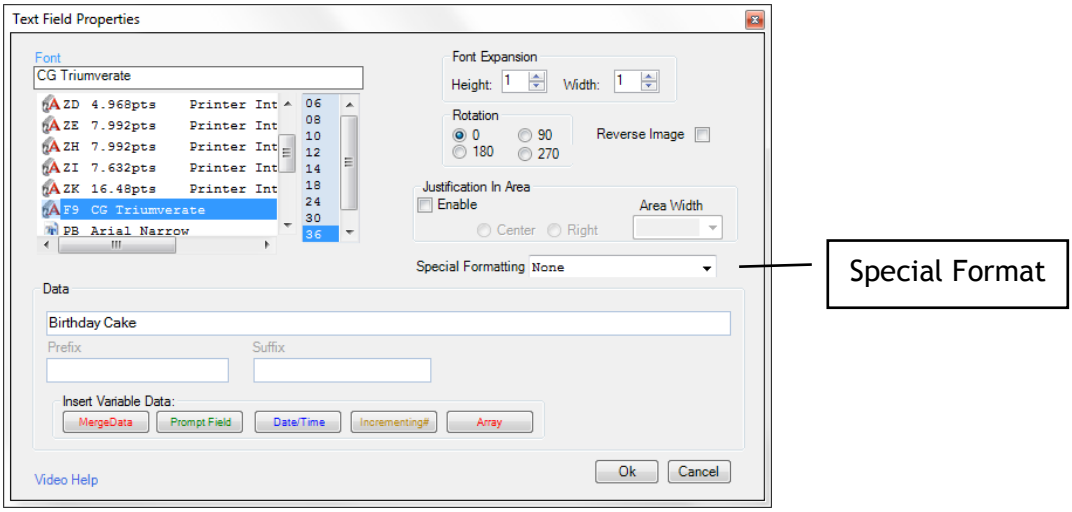
Special Formatting will format a text field to include spaces and even add a human readable check digit as part of a compliance requirement.

Barcode400 can format data according to these specifications:

UCC/SSCC-18 (GS-1 / SSCC-18 Serial Shipping Container)
UPC/SCC (GTIN-14 / UPC Container)
UPS (United Parcel Service Ground Tracker)

Special formatting can be applied only to a text entry field.

Text can be any combination of constant data, merge fields, prompted fields and incrementing numbers. The data to be printed must comply with the specifications outlined in the next section.



Click the Special Formatting drop down arrow. Select desired format option.

Click OK.

(*See Specifications on the following page*).

Special Formatting Specifications

This page details the Special Formatting text options.

GS1 or UCC/SSCC

19 digits must be passed in the data. Barcode400 will print a total of 20 digits spaced according to UCC/SSCC specifications. The 20th digit is a Mod10 check digit.

Data = 0001234567123456789
Prints = 00 0 1234567 123456789 3*

*The ( ) were created separately.

GTIN or UPC/SCC

13 digits must be passed in the data. Barcode400 will print a total of 14 digits spaced according to UPC/SCC specifications. The 14th digit is a Mod10 check digit.

Data = 1001234567890
Prints = 1 0012345 67890 2

UPS Ground Tracker

17 characters must be passed in the data. Barcode400 will print a total of 18 digits spaced according to UPS specifications. The 18th digit is a Mod10 check digit.

Data = 1Z1235E0031234567
Prints = 1Z 123 5E0 03 1234 5671

Extended Characters

Extended characters are values that may not appear on the keyboard but can be inserted into the Data Line, Prefix or Suffix.

Click in the Data section of the Properties DialogBox.

Click on the button in the right corner of the Data line.

Select Extended Characters.

The Extended Character Chart will appear.

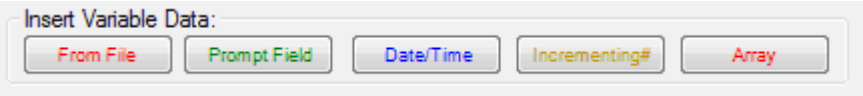
Select the desired character. The character will appear in the Data section.

Click to close Extended Characters window.

Data Source

Static Data can be entered directly by typing in the desired text.

Variable Data can be entered by selecting from the Insert Variable Data Toolbar.



- **From File** – Merged Data
- **Prompt Field** – Operator Prompted Data
- **Date / Time** – iSeries System Data
- **Incrementing #** - Control number / Counters
- **Array** – Structured Merge Data

See Data Sources for more detailed information.

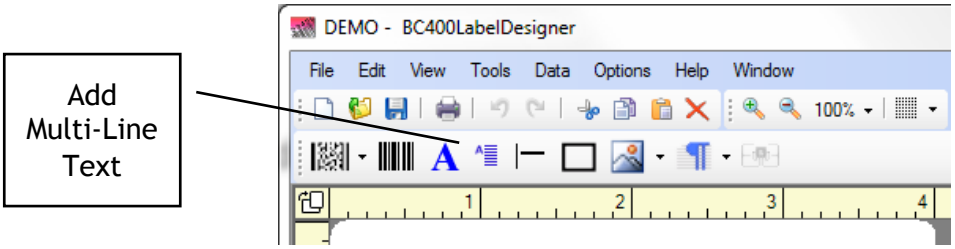
4.7 Multi-Line Text Objects

Multi-Line Text Objects allow several values to be incorporated into a single label object (Ex. Shipping Address). They may consist of the following Data Sources:

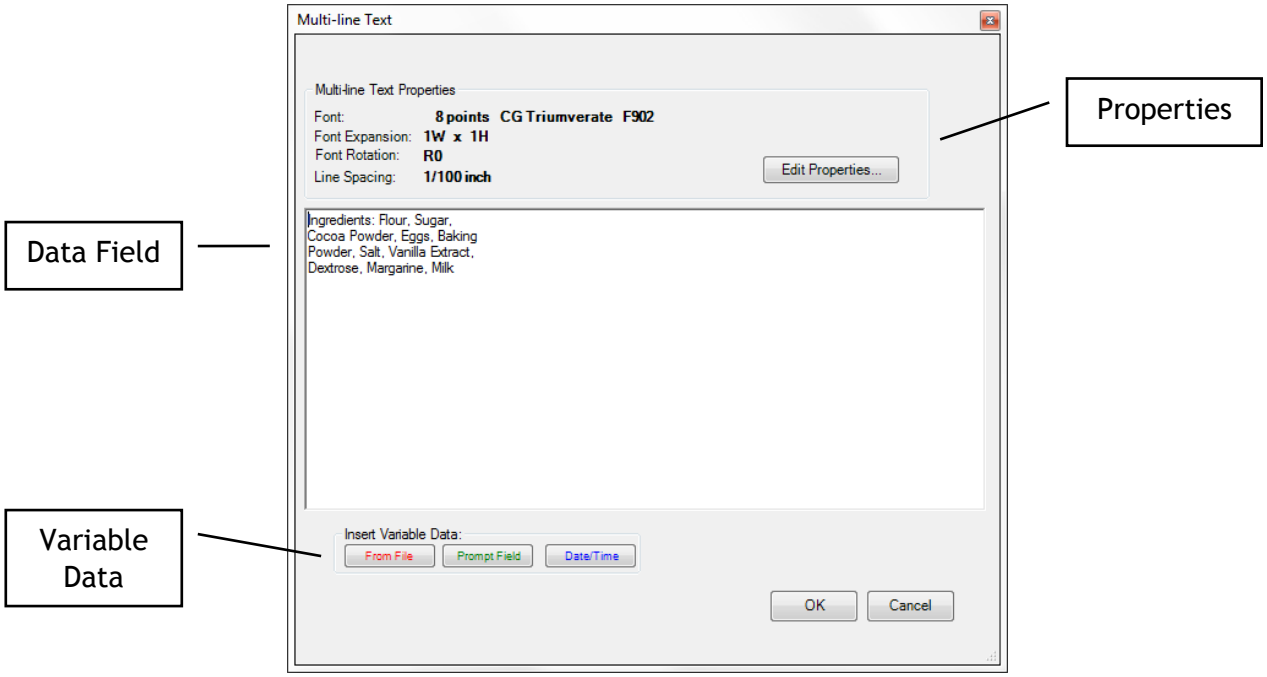
- Static Data
- Merge Data
- Prompted Data
- System Date/Time

Add Multi-Line Text

Click to Add a Multi-Line Text Object



The Multi-Line Text Field Properties window will display.



Insert data into the Data field. Static Data can be entered directly by typing in the desired text. Variable Data can be entered by selecting from the Variable Data Toolbar.

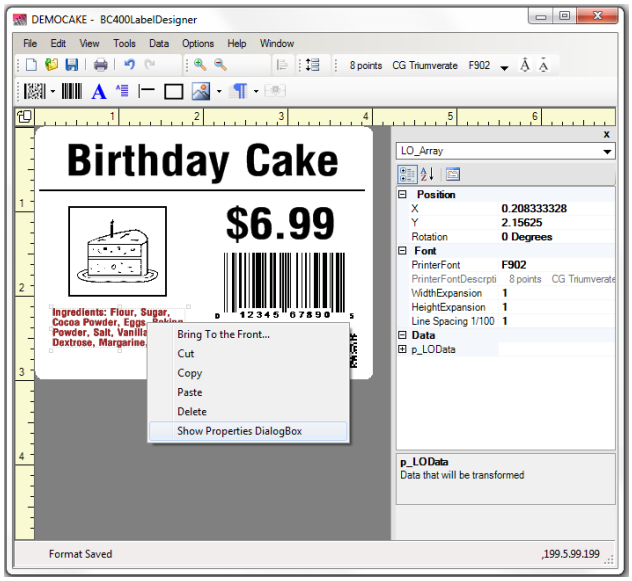
Click **OK** to place the text object on the label.

Modify Text

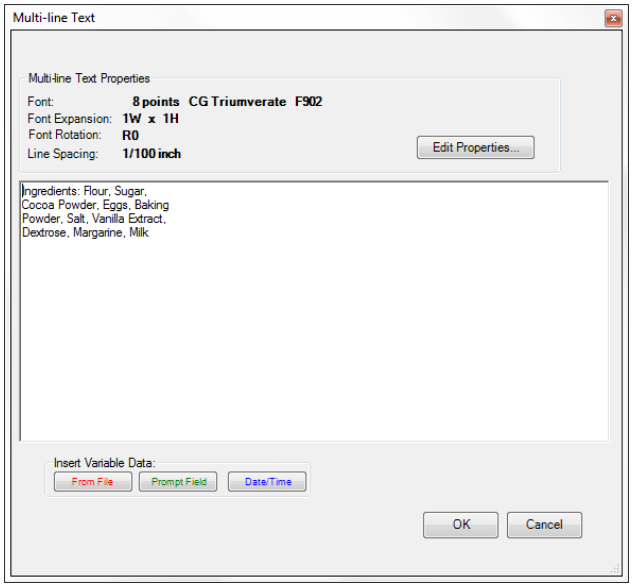
Multi-Line Text Objects are modified using the Multi-Line Text Field Properties Dialogbox or the Multi-Line Text Field Properties Panel.

Multi-Line Text Field Properties Dialogbox

To access the Multi-Line Text Field Properties, right-click on the Multi-Line Text Object and select Show Properties Dialogbox, or double-click on the Multi-Line Text Object.



The Multi-Line Text Field Properties window will display.

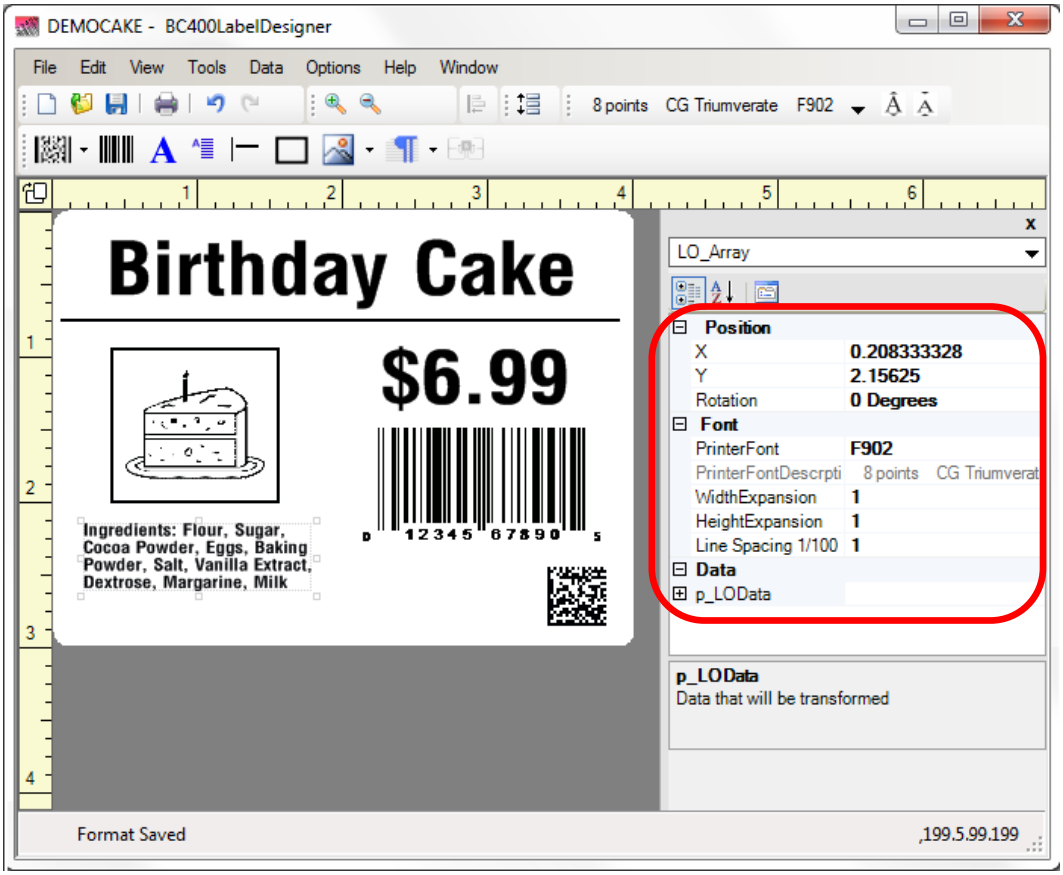


Multi-Line Text Field Properties Panel

Or, single-click on the Multi-Line Text Object.

The Multi-Line Text Field Properties appear in the Properties Panel to the right. Click on a property to update its value, either from a drop-box or manual entry.

The multi-line text field on the label will automatically update.



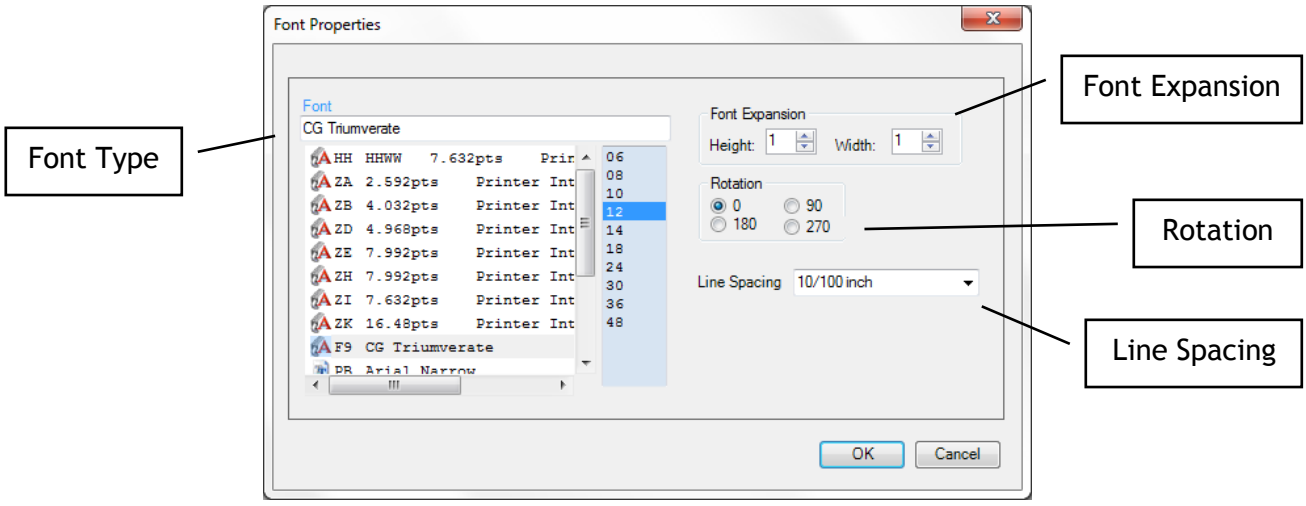
Properties for Multi-Line Text Objects:

Position (X = Over, Y = Down) – Object's starting position.
Rotation – Object's orientation.
Font Type – Letter type or style.
Font Expansion (Width and Height) – Text size multiplier.
Line Spacing – Sets the amount of dots between each line.
Data or Data Source – Static data or variable field.

Multi-Line Font Selection

Fonts can be selected in the Multi-Line Text Properties Dialogbox or Properties Panel.

In the Properties Dialogbox, click the Edit Properties button. The properties will display.



As with Text Objects, a font must be selected from a drop-box. The font options are based on the Target Printer.

***NOTE**: The font selected will be used for all of the text in the same Multi-Line object.*

Multi-line Objects also have a Line Spacing option which determines the distance between each line in 1/100th of inches.

Data Source

Static Data can be entered directly by typing in the desired text. Variable Data can be entered by selecting from the Insert Variable Data Toolbar.

- **From File** – Merged Data
- **Prompt Field** – Operator Prompted Data
- **Date / Time** – iSeries System Data

See Data Sources for more detailed information.

4.8 Linear Bar Codes

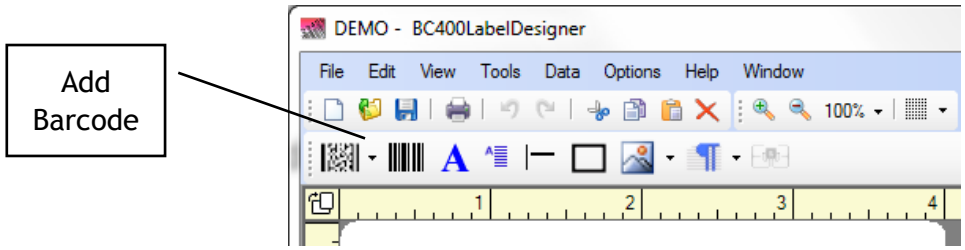
Bar Codes may consist of:

- Static Data
- Merge Data
- Incrementing Numbers
- System Date/Time
- Prompted Data

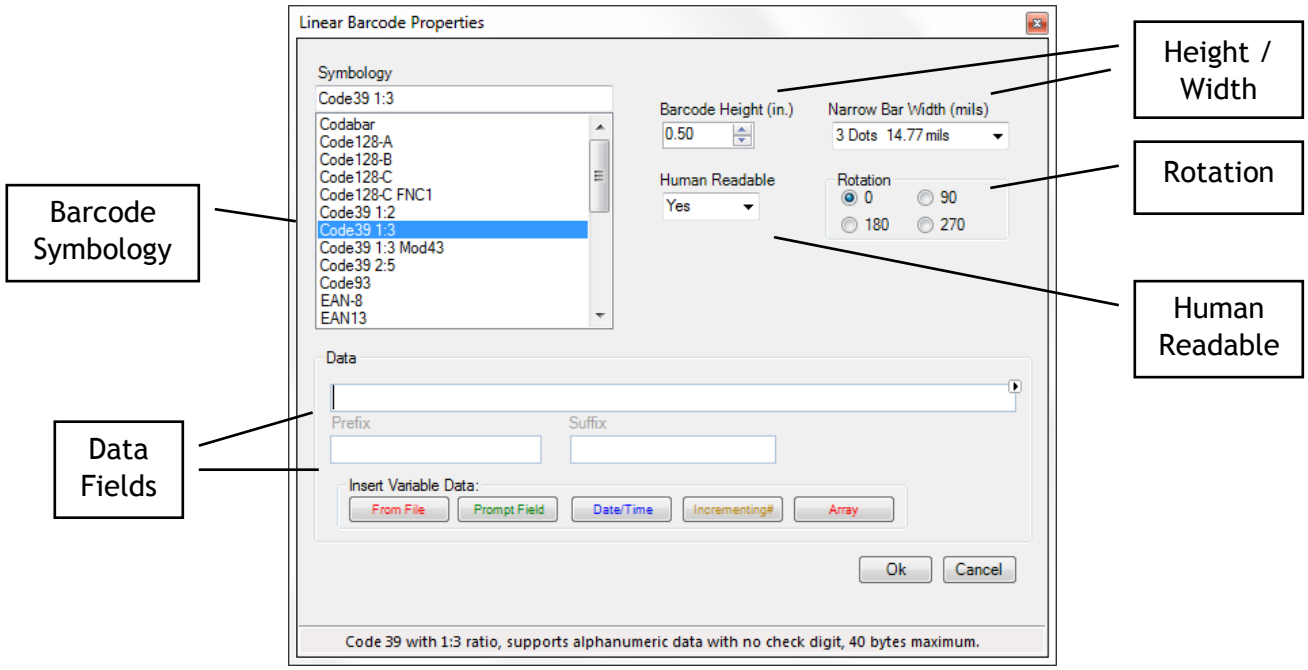
Barcode400 distinguishes between linear 1-Dimensional bar codes and 2-Dimensional bar codes. (*See 2-Dimensional Bar Codes*)

Add Linear Bar Code

Click to add a **Linear Barcode.**



The Barcode Properties will display.



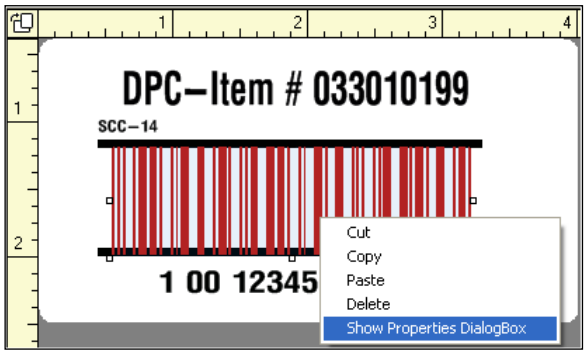
Insert data into the Data field, Prefix and Suffix fields. Static Data can be entered directly by typing in the desired text. Click **OK** to place the Barcode Object on the label.

Modify Linear Barcode Properties

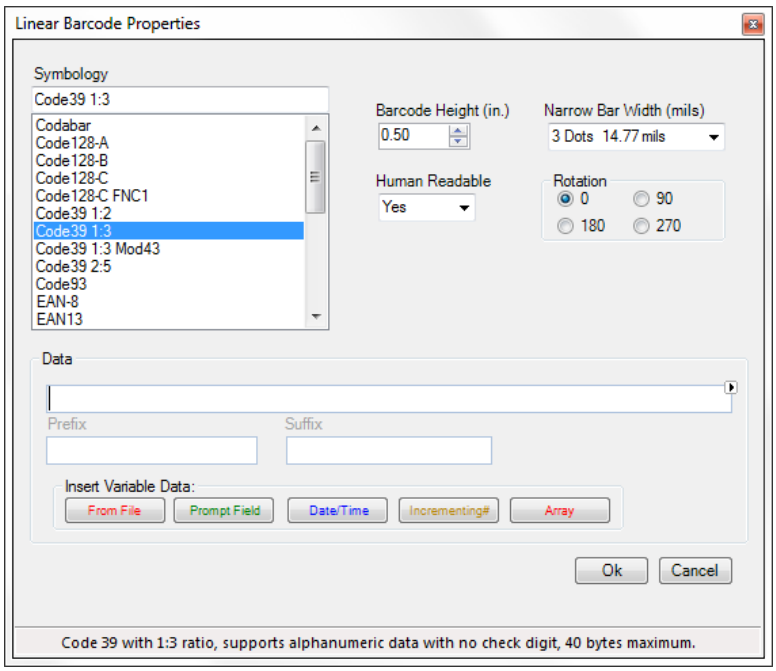
Bar Code Properties are adjusted using the Barcode Properties Dialogbox or the Bar Code Properties Panel.

Bar Code Properties Dialogbox

To access the Properties Dialogbox, right-click on the Bar Code Object and select Show Properties Dialogbox, or double-click on the Bar Code Object.



The Bar Code Field Properties window will display.

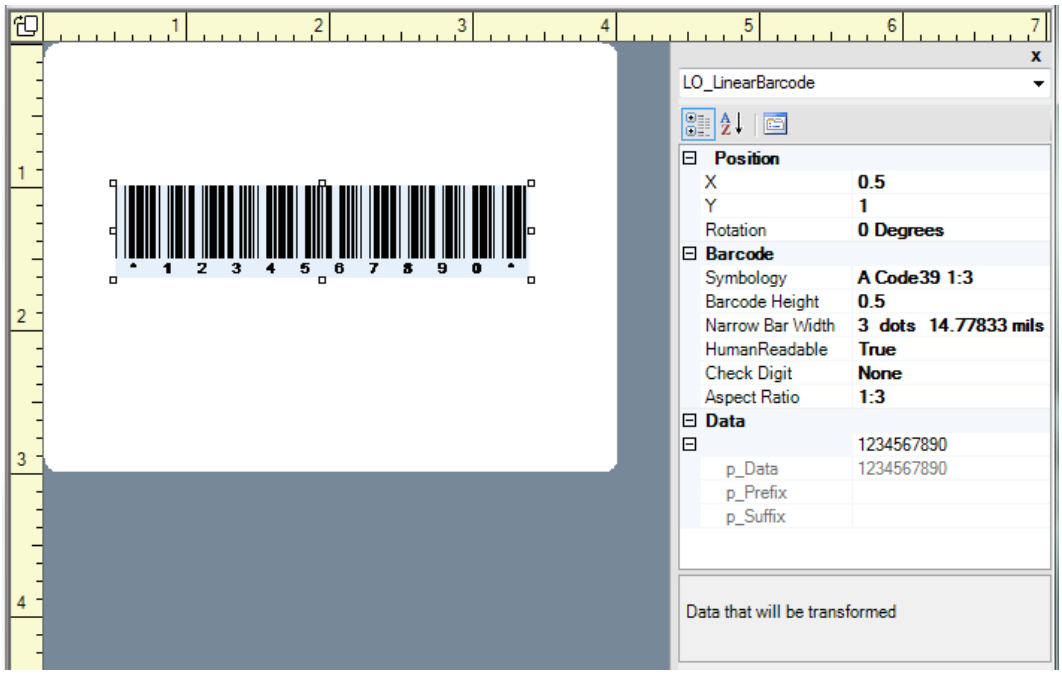


QUICK TROUBLESHOOTING - If the barcode displays a Red X after being placed on the label, this is a warning of a potential error based on the barcode's type and data. Confirm that the type and amount of data being encoded meets the barcode's requirements.

Bar Code Properties Panel

Single-click on the Barcode Object. The Barcode Field Properties appear in the Properties Panel to the right. Click on a property to update its value, either from a drop-box or manual entry.

The barcode will automatically update.



Properties for Barcode Objects:

Position (X = Over, Y = Down) – Object's starting position.
Rotation (0, 90, 180 or 270 degrees) – Object's orientation.
Symbology - Barcode types, listed by type.
Barcode Height - Bar height in tenths of inches.
Narrow Bar Width - Bar width in dots, increases overall symbol width.
Human Readable - Turn on or off the text beneath the bars.
Check Digit - Security value added to the end of the symbol.
Aspect Ratio - Narrow to wide bar size ratio.
Data or Data Source – Static data or variable field.

These values are detailed on the following pages.

***NOTE**: Not all options will be available for all barcode symbologies.*

Bar Code Symbology Overview

Bar Code symbology is set in the Bar Code Properties DialogBox or the Bar Code Properties Panel. The symbology is the method bars and spaces are structured to encode data into a bar code. Some bar code symbologies require specific types or amounts of data.

Supported Linear Symbologies

Barcode400 supports the following linear symbologies.

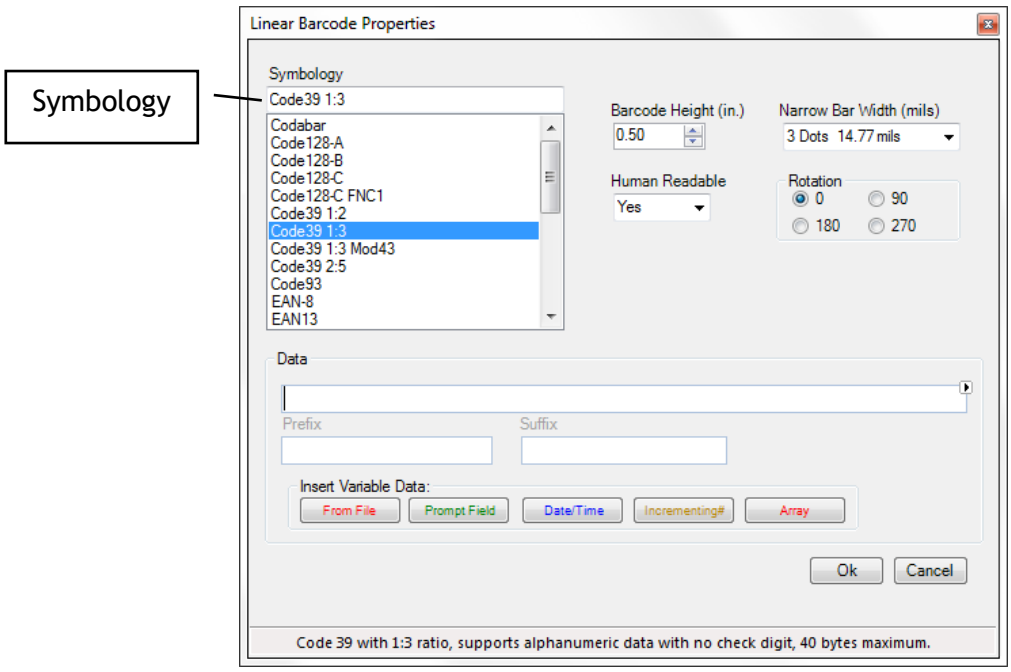
Type	Description	Check Digit	Data	Length
A	Code 39 (1:3 ratio)	None	Alpha	1-40
Q	Code 39 (2:5 ratio)	None	Alpha	1-40
Y	Code 39 (1:2 ratio)	None	Alpha	1-40
2	Code 93	None	Alpha	1-100
0	Code 128 Subset A	None	Alpha	1-40
Z	Code 128 Subset B	None	Alpha	1-40
1	Code 128 Subset C	None	Numeric	2-40
f	Code 128 Subset C w / FNC1	Mod103	Numeric	2-40
W	Code 128 Subset C / SSCC-18	Mod10/Mod103	Numeric	19
u	Code 128 Subset C / UPS	Mod10	Alpha	17
F	MSI	None	Numeric	14
M	Plessey	None	0-9, A-F	100
#	Postnet	None	Numeric	9
D	Codabar	None	Numeric	1-100
U	EAN-8	Mod10	Numeric	7
T	EAN-13	Mod10	Numeric	12
3	HIBC (Code 39)	Mod43	Alpha	1-40
K	Interleaved 2 of 5 (1:3 ratio)	None	Numeric	2-40
r	Interleaved 2 of 5 (1:2 ratio)	None	Numeric	2-40
a	Interleaved 2 of 5 (1:3 ratio)	Mod10	Numeric	2-40
i	Interleaved 2 of 5 (2:5 ratio)	None	Numeric	2-40
P	UPC-A	Mod10	Numeric	11
R	UPC-E / E1	Mod10	Numeric	10
b	UPC-2 Digit Addendum	None	Numeric	2
c	UPC-5 Digit Addendum	None	Numeric	5
9	UPC Container (SCC / GTIN-14)	Mod10	Numeric	13

***NOTE**: Barcode400's iSeries Designer supports some additional, older legacy symbologies not shown in the Graphical Designer's barcode list.*

For more details on the symbologies listed, *See Appendix A*.

Linear Bar Code Symbology

To select a bar code symbology, click to add a new Bar Code Object or right-click an existing Bar Code Object > Select Show Properties DialogBox or double-click on it.

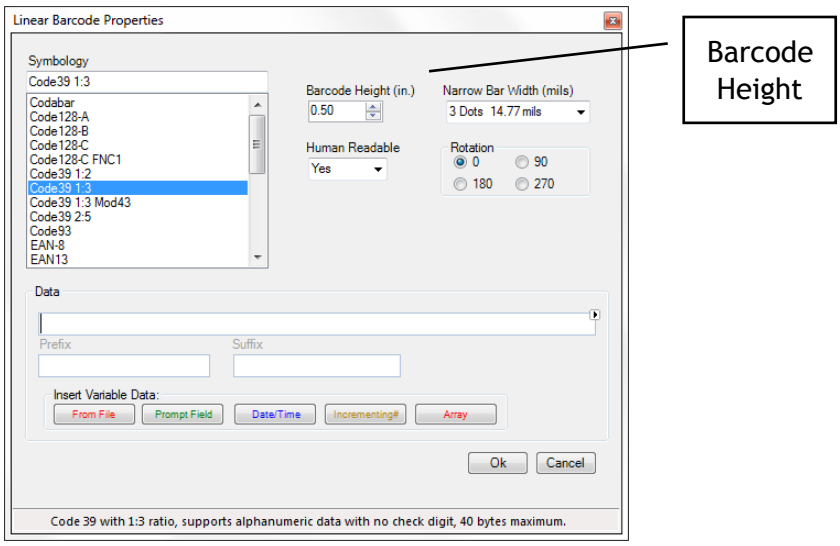


The available bar code symbologies displays on the upper left.

Click the scroll bar to display bar code types, and then select the symbology. Notice the description at the bottom of the Properties Box with a description of the bar code type.

Bar Code Height

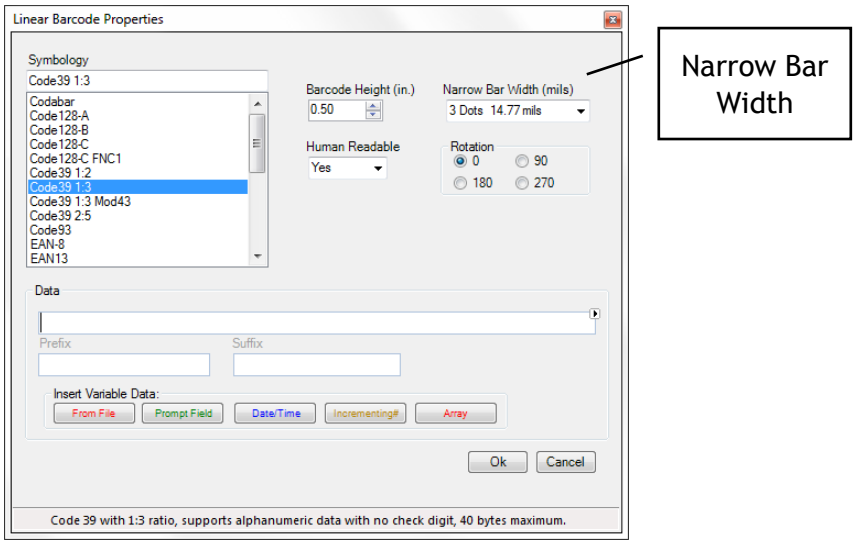
Bar Code Height is set in the Bar Code Properties DialogBox or the Bar Code Properties Panel. Bar Code height increments are made in tenths of an inch.



Select the desired bar code height (*in inches and tenths of inches*).

Bar Code Width

Bar Code Width refers to the width of the narrowest bar in a bar code. The widths of all other bars are based on this value. It is measured in mil (1/1000th of inch) and also referred to as the X-dimension. *(Also See Ratio)*.



Select the desired bar code width (*in dots*).

Human Readable

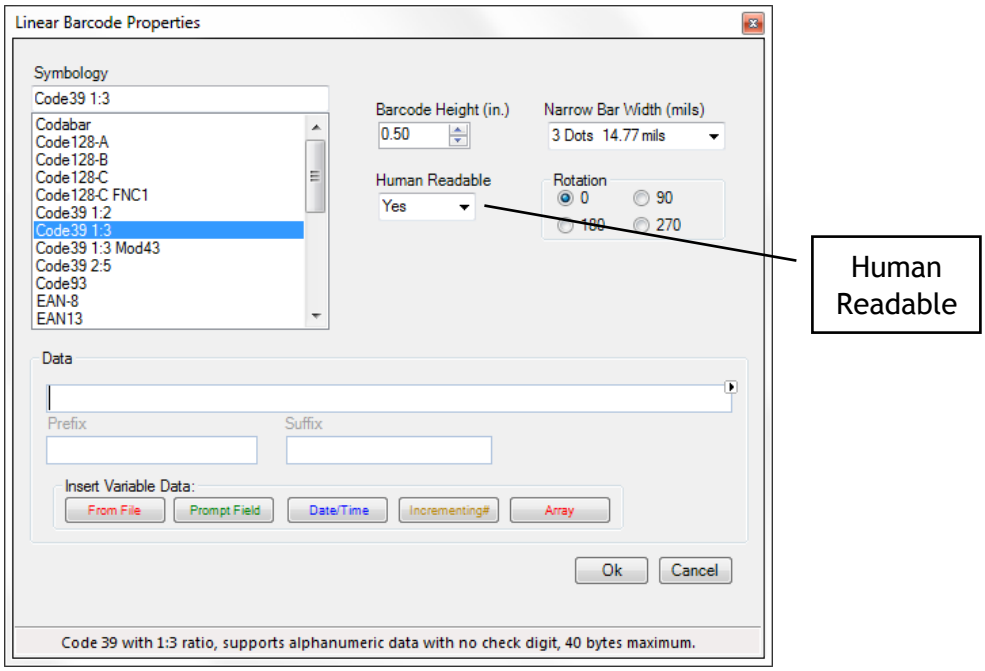
Selecting Human Readable for a bar code will cause the data being encoded in the bar code to also print as text.

When selecting Human Readable, the human readable text will print directly below the bar code in a default font based on the printer brand and the size of the barcode.

If the human readable is required in a different location, font type or size, select NO for this option, but place the "human readable" on the label as a separate Text Object.

***NOTE**: UCC/SCC, UPC/SCC, and UPS compliance labels require specially formatted human readable text. In these instances, select NO for human readable. (See Special Formatting)*

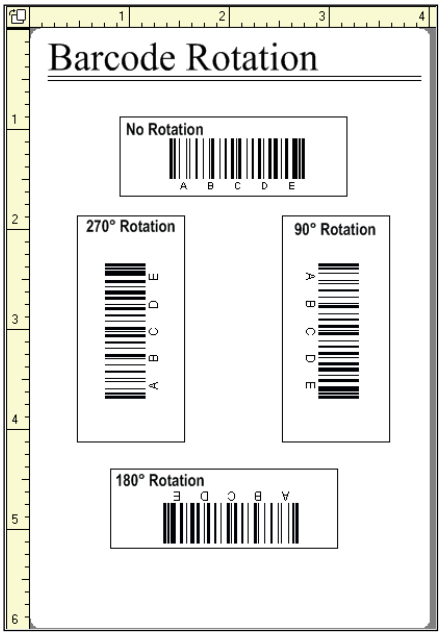
This option can be set in the Barcode Properties DialogBox or Bar Code Properties Panel.



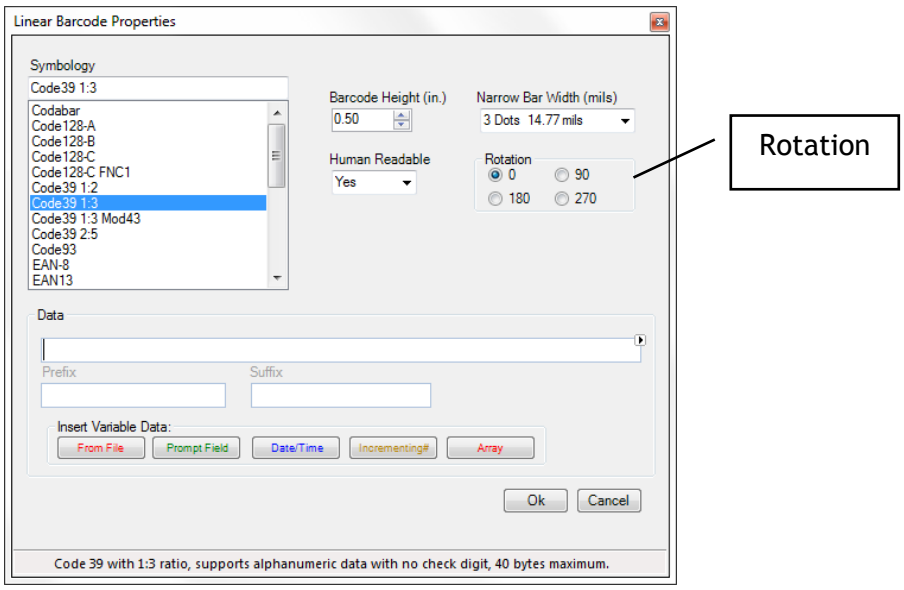
Select Human Readable **Yes** or **No**.

Bar Code Rotation

Bar Codes can be rotated 0, 90, 180, or 270 degrees using the Rotation feature in the Barcode Properties DialogBox or the Bar Code Properties Panel.



Select the desired rotation.



***NOTE**: Barcodes can scan from any orientation. The data will always read the same.*

Check Digit

Barcode400 supports check digit function for barcodes. Check digits are calculations performed in a bar code to help ensure the integrity of the encoded data.

Some bar codes automatically contain check digits, for instance, the UPC-A or Code128 UCC Shipping Container Code will not have a Check Digit option.

Types of Check Digits

There are two primary Check Digit types.

Code 39 (3 of 9) bar code has an optional Modulus 43 (or Mod43) check digit.

Interleaved 2 of 5 and Code128 bar code symbologies support an optional Modulus 10 (Mod10) check digit.

Code128 also has an internal Mod103 self-test, but does NOT add any data to the barcode.

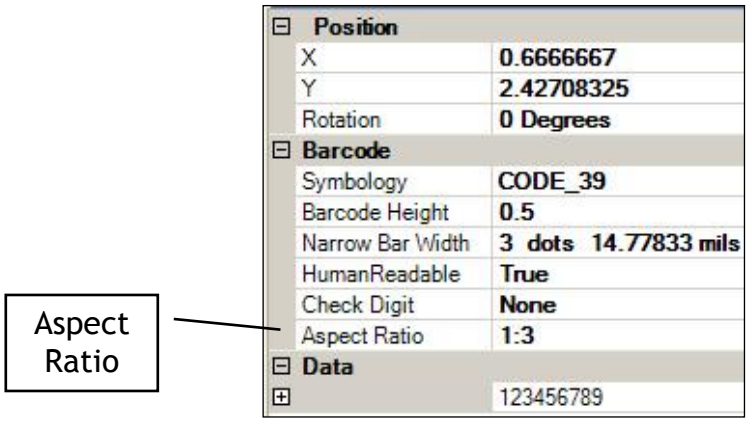
***NOTE**: If you do NOT see the Check Digit type listed, the Bar Code Symbology does not support a Check Digit.*

Ratio

The Bar Code ratio refers to the difference between the width of the narrowest bar in the bar code (***See Bar Code Width***) and the widest bar.

Only the Interleaved 2 of 5 and Code 39 symbologies have variable ratios which can be set dependent upon the symbology selected.

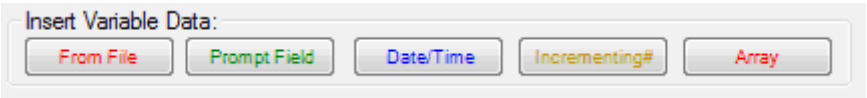
The ratio can also be set in the Bar Code Properties DialogBox.



Data Source

Static Data can be entered directly by typing in the desired text.

Variable Data can be entered by selecting from the Insert Variable Data Toolbar.



- **From File** – Merged Data
- **Prompt Field** – Operator Prompted Data
- **Date / Time** – iSeries System Data
- **Incrementing #** - Control number / Counters
- **Array** - Structure Merged Data

See Data Sources for more detailed information.

4.9 2-Dimensional Bar Codes

With the need to produce more data in a smaller space, developers created symbologies that combine multiple fields into a structure that uses less space, yet maintain integrity.

By using matrixes or image patterns, barcodes could be scanned vertically as well as horizontally and allow more information to be stored.

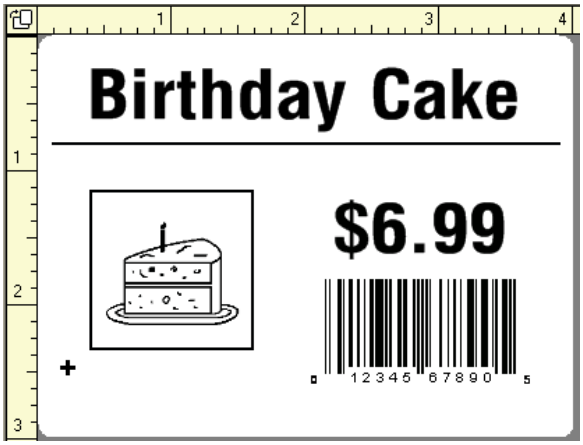
Adding a 2-Dimensional Bar Code

Click the Add 2-Dimensional Bar Code button in the toolbar.

Select the type of 2-Dimensional Barcode.

The specific 2-Dimensional Bar Code properties will display. Consult the following pages for details of each symbology. Once completed, click OK.

The crosshairs cursor will appear.



Position the cursor to place the 2-Dimensional bar code and then click.

The completed 2-Dimensional bar code will appear on the label.

Supported 2-Dimensional Bar Code Symbologies

Barcode400's Graphical Label Designer supports the most popular 2-dimensional symbols.

Name	Type	Data	Length
Data Matrix	Q	Alpha	1-2,335
PDF-417	E	Alpha	1-1,100
QR Code	q	Alpha	1-2,900
UPS Maxicode	X	Alpha	84-100

Data Source

Static Data can be entered directly by typing in the desired text. Variable Data can be entered by selecting from the Insert Variable Data Toolbar.

- **From File** – Merged Data
- **Prompt Field** – Operator Prompted Data
- **Date / Time** – iSeries System Data

See Data Sources for more details.

Data Matrix Properties

Data Matrix may consist of

- Static Data
- Merge Data
- System Date/Time
- Prompted Data

Data Matrix Properties

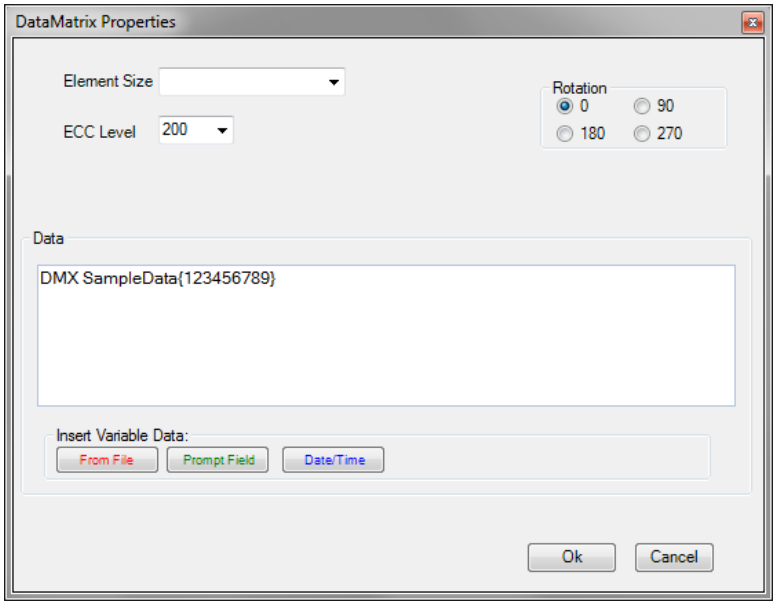
- Element Size (affects overall size of the bar code)
- ECC (Error Correction Capability) Level
- Rotation - rotates the Data Matrix symbol to 90, 180 or 270 degrees.
- Data – Content to be encoded inside the symbol. Data can be combined from various sources both constant and variable.

***NOTE**: All data to be encoded must be surrounded by { }. Any data residing outside of { } is considered user documentation or comment.*

Bar Code Properties Dialogbox

Right-click on the Data Matrix bar code object.

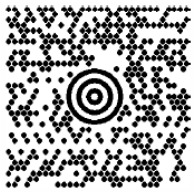
Select Show Properties DialogBox.



Maxicode Properties

Maxicode may consist of

- Static Data
- Merge Data
- System Date/Time
- Prompted Data



Maxicode Properties

Unlike other two-dimensional bar codes, UPS Maxicode has a rigid data structure.

The specific list of data fields are set in an exact order to more efficiently perform the function of automatically sorting parcels for shipping.

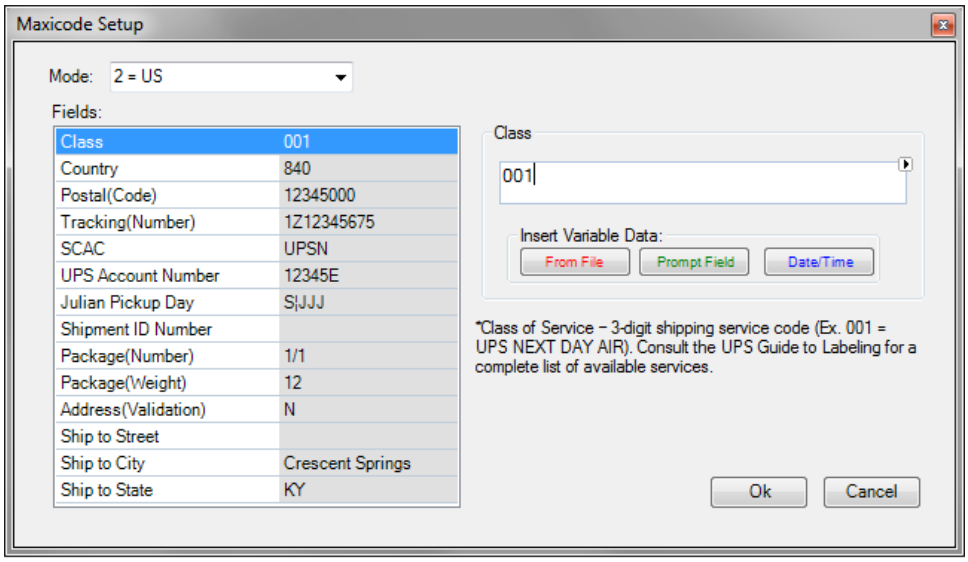
• Mode	Maxicodes are either Mode 2 (Domestic) or 3 for (International)	
• Class	3-digit Service Code	*(Ex. 001 = Next Day Air)*
• Country	3-digit Destination	*(Ex. 840 = United States)*
• Postal Code	9-digit Postal Code	*(6 digits for International)*
• Tracking Number	10-digit Parcel Number	*(Including a static 1Z prefix)*
• SCAC	4-digit Carrier Code	*(Defaults to 'UPSN')*
• UPS Account	5-digit Shipper ID#	
• Julian Pickup	3-digit day of the year	
• Shipment ID	**Optional** Consignment Number	
• Package Number	3-digit / 3-digit Package of Number	
• Package Weight	3-digit weight in kilos	(*Rounded up)*
• Address Validation	(Y/N) Address verified	*(Defaults to 'N')*
• Street	**Optional** Street Name and Number	
• City	1-25 character City Name	
• State	2-character State Abbreviation	

For more details on the United Parcel Service requirements for the Maxicode, consult the UPS Guide to Labeling or contact a UPS representative.

Bar Code Properties Dialogbox

Right-click on the Maxicode bar code object.

Select Show Properties DialogBox.



***NOTE**: The Tracking Number must include a static 1Z prefixing any data (Ex: 1ZM¦10). The Shipment ID Number and Street Address are optional fields. They are not required.*

PDF-417 Properties

PDF-417s may consist of

- Constants
- Merge Data
- System Date/Time
- Prompted Data

PDF-417 Properties

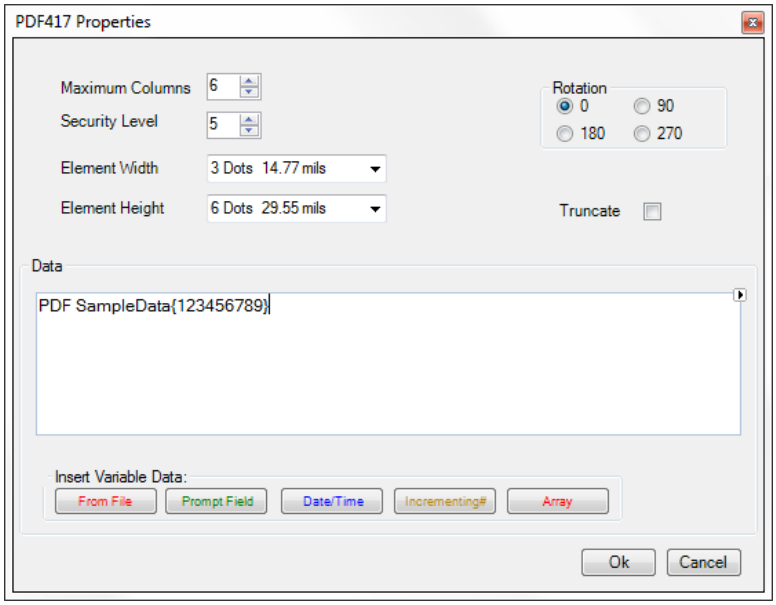
- Maximum Columns - indicates the number of columns to encode the PDF symbol. Increasing the number of columns will produce a wider, but shorter bar code.
- Security Level – To minimize encoding errors, PDF-417 encodes the data in the symbol redundantly. The level of security is the number of times the data is repeated and compared inside the symbol.
- Rotation - rotates the PDF symbol to 90, 180 or 270 degrees.
- Element Width - width of the narrow bar expressed in dots. Increasing the element width will increase the width of the PDF symbol.
- Element Height - height of the row expressed in dots. Increasing the element height will increase the height of the PDF symbol.
- Truncate - omits the right row indicators and the stop pattern will be reduced to one module width bar.
- Data – Content to be encoded inside the symbol. Data can be combined from various sources both constant and variable.

***NOTE**: All data to be encoded must be surrounded by { }. Any data residing outside of { } is considered user documentation or comment. More than one set of { } may be needed and can be used to organize data.*

Bar Code Properties Dialogbox

Right-click on the PDF-417 bar code object.

Select Show Properties DialogBox.



QR Code Properties

QR Codes may consist of

- Constants
- Merge Data
- System Date/Time
- Prompted Data

QR Code Properties

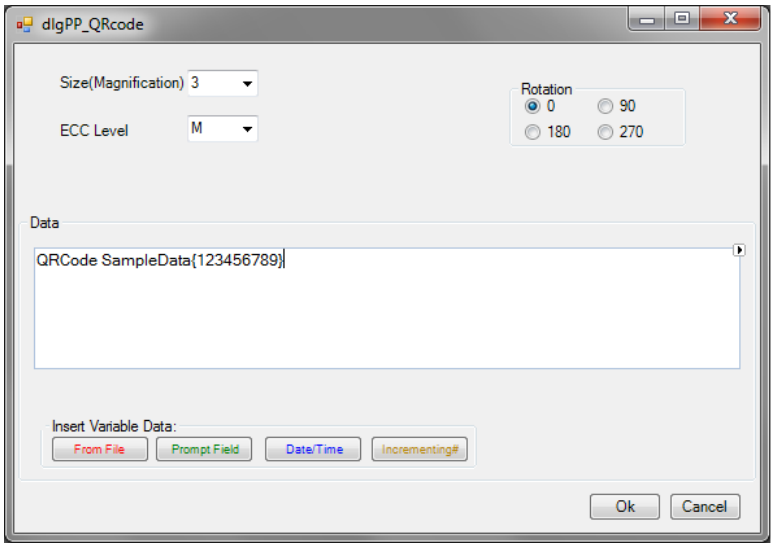
- Size (Magnification) - indicates the size of the elements (boxes) that comprise the symbol. Increasing this value will increase the overall size of the symbol.
- ECC Level – Sets the Error Correction level of the symbol. Defaults to M.
- Rotation - rotates the PDF symbol to 90, 180 or 270 degrees.
- Data – Content to be encoded inside the symbol. Data can be combined from various sources both constant and variable.

NOTE: *All data to be encoded must be surrounded by { }. Any data residing outside of { } is considered user documentation or comment.*

Bar Code Properties Dialogbox

Right-click on the QR Code object.

Select Show Properties DialogBox.



Special Characters

Special Characters are values for non-English characters and functions that are often required in a 2-dimensional bar code. Functions do not scan as traditional characters.

Insert Special Character (PDF-417, Data Matrix, QR Code)

Click in the data section of the Properties DialogBox for the bar code.

Click on the button in the right corner of the Data line.

Select Extended Characters.

Double click the desired special character. The selected character will appear in the Data section.

Click to close Extended Characters window.

Insert Special Character (Maxicode)

Click on the field to be edited in the Properties DialogBox for the bar code.

In the field prompt, click the button in the right corner of the Data line.

Select Extended Characters

Double click the desired special character. The selected character will appear in the Data section.

Click to close Extended Characters window.

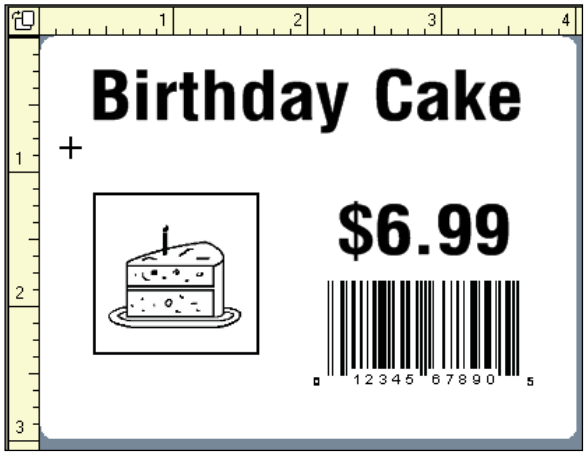
NOTE: In order for Special Characters to be encoded, they must be enclosed within { }.

4.10 Lines

Horizontal and vertical lines can be drawn directly onto a label format. The user determines length, position and thickness.

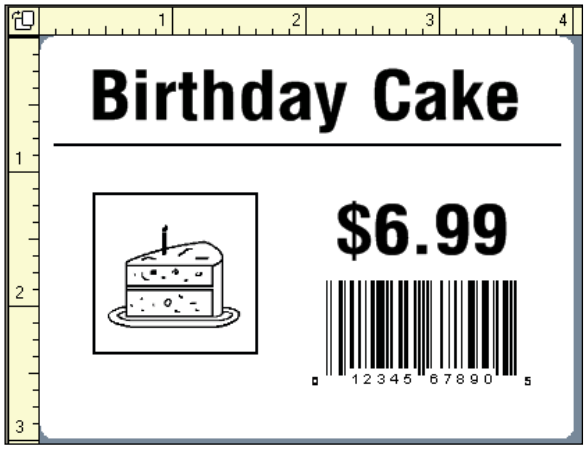
Add Line

Click in the Toolbar. The crosshairs will appear.



Move the crosshairs cursor (+) to the starting position.

Click and hold, then drag to draw line horizontally or vertically.

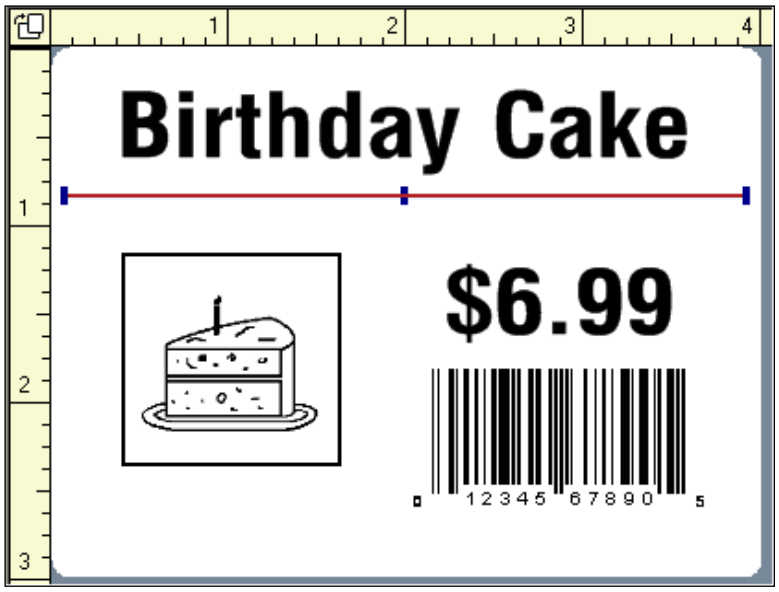


Release the mouse button to complete the line.

***NOTE**: Lines can only be drawn horizontal and vertical.*

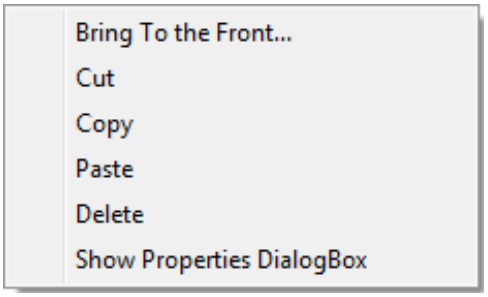
Change Line Properties

Click on the line to highlight it.



Use the Pull bars to adjust the line length and thickness. Also, by holding down the mouse button, the line can be dragged to a new position.

Right-click on the line and a pop-up menu appears.



From this pop-up, a line can be Cut and Paste as well as Copied or Deleted.

4.11 Rectangles

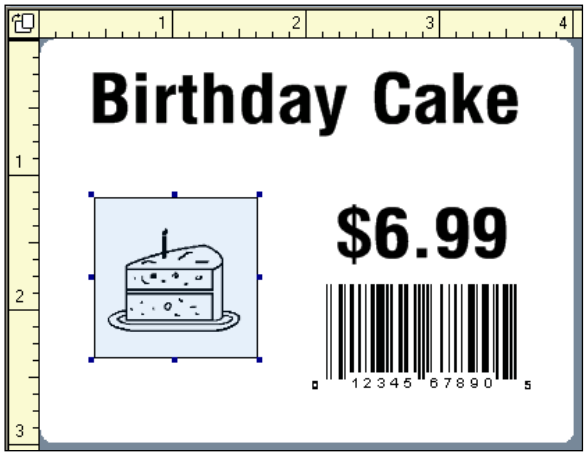
Rectangles can be drawn directly onto the label format. The user can determine height, width, position and line thickness.

Add Rectangle

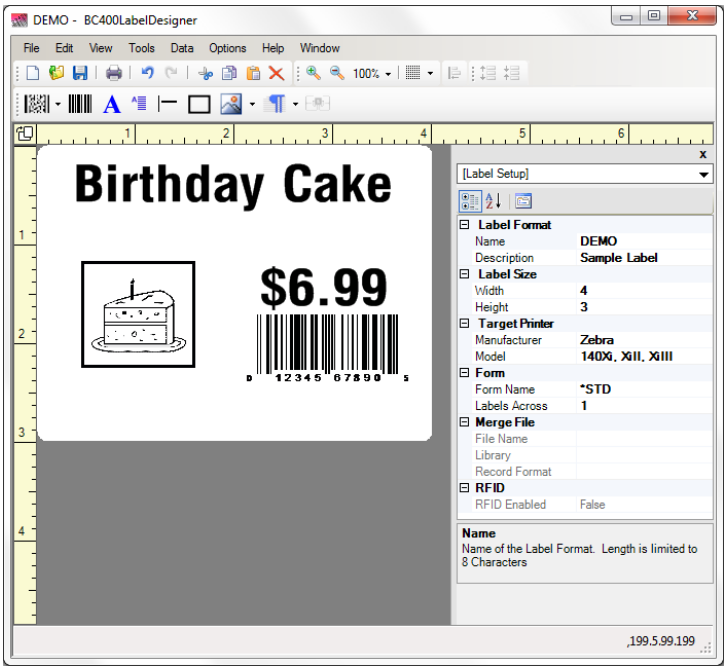
Click in the Toolbar.

Move the cursor, now appearing as crosshairs (+), onto the label.

Click and hold, then drag to draw a rectangle or box.

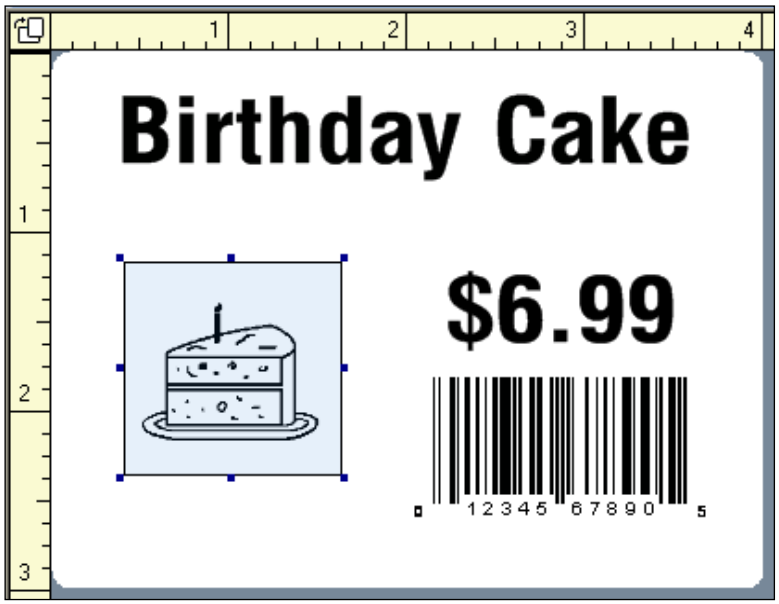


Release the mouse button to complete the rectangle.



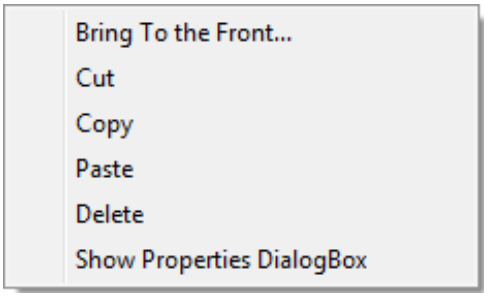
Change Rectangle Properties

Click on the rectangle to highlight.



Use the pull bars to adjust the box height and width.

Right-click on the line and the pop-up menu appears.



Click on the Show Properties DialogBox to change the Line Thickness, as well as the box's dimensions and position.

Also from this pop-up, a rectangle can be Cut and Paste as well as Copied or Deleted.

4.12 Graphics

Graphics may appear as

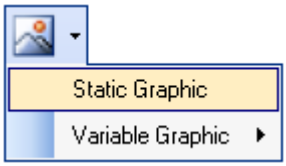
- Static Data
- Merge data
- Prompted data

Graphics must be imported before being used on label formats. *(See Import Graphic)* Once imported, graphics are stored in the Graphic directory within Barcode400. This means any graphic once transferred into the software is available for use on any label.

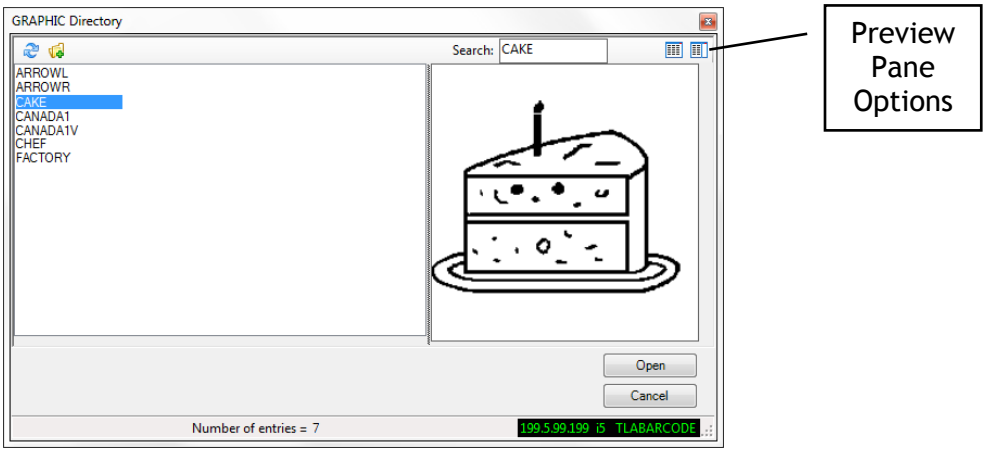
Add Static Graphic

Click to Add Graphic Object.

The Add Graphic Menu will open.



Select Static Graphic and the Graphics Directory will display.



Select the image desired. Note the thumbnail image on the right for confirmation.

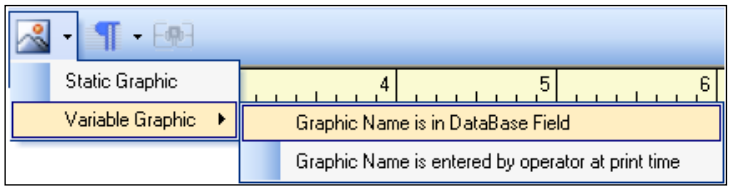
Click **Open** and place graphic on format.

***NOTE**: Graphics cannot be rotated on the label format after transfer. Upload the image to the iSeries in the desired rotation first.*

Add Variable Graphic

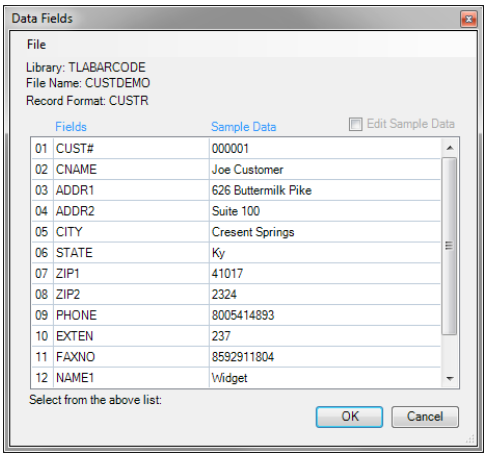
Click to Add Graphic Object.

The Add Graphic Menu will open.

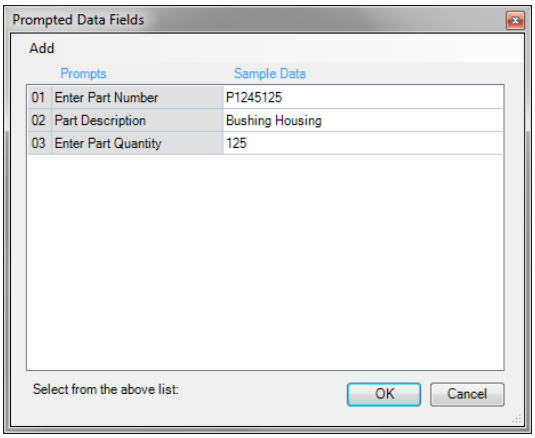


Select Variable Graphic, then either Graphic Name is in Database Field or Entered by Operator at Print).

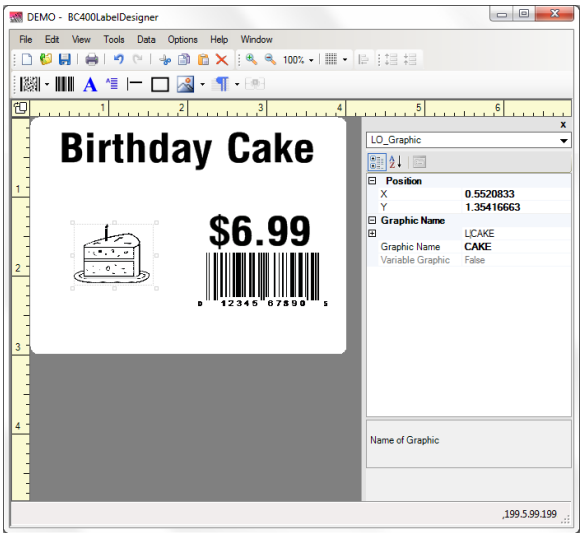
Select either a Database Field or an Operator Prompt which will supply the graphic name.



or

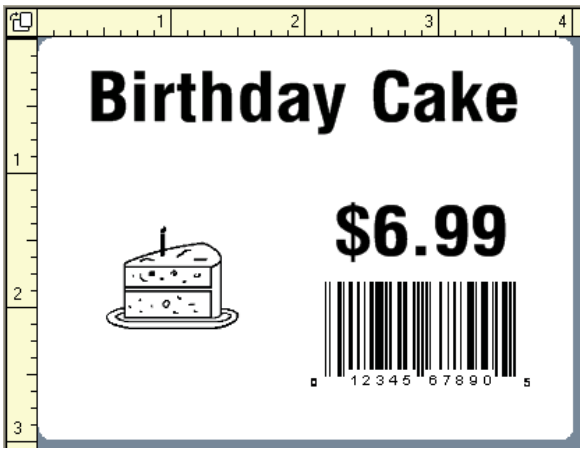


If there is a logo name in the Sample Data, that graphic will appear on the format.



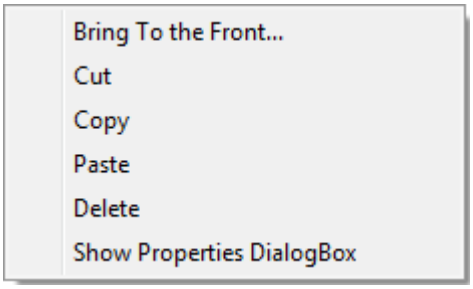
***NOTE**: If the sample data is not an existing logo name, you will be prompted to select one.*

Change Graphic Properties



Click on the Graphic and hold the left mouse button to drag the image to a new position.

Also, right-click on the Graphic and the pop-up menu appears.



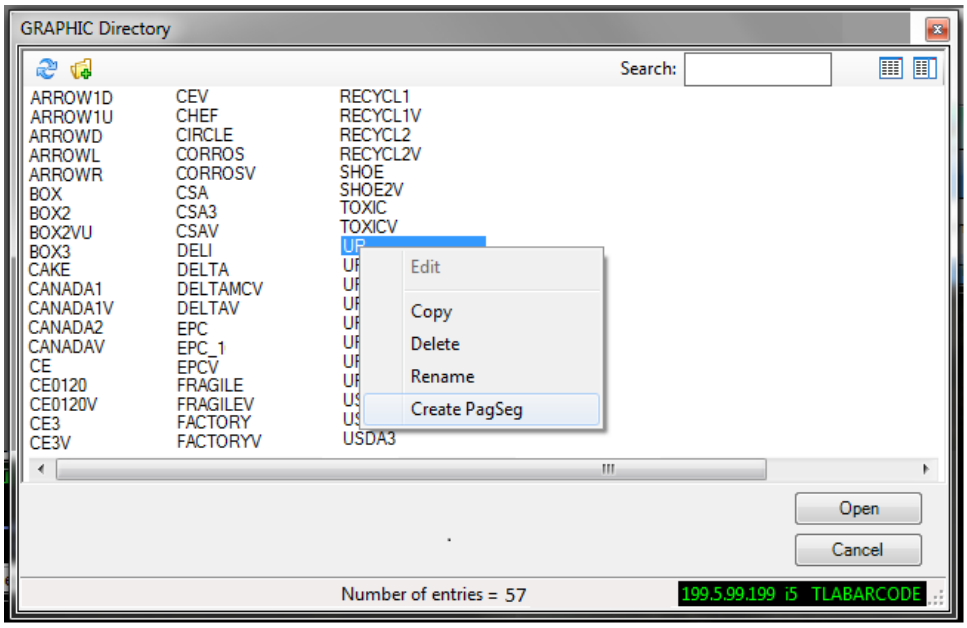
From this pop-up, a Graphic can be Cut and Paste as well as Copied or Deleted.

Properties for Graphic Objects:

Position (X = Over, Y = Down) – Starting position of the graphic image.
Expansion (Width and Height) – Height and Width Multiplier
Rotation – Orientation of the graphic. Defaults to 0 degrees.
Graphic or Data Source – Name of the image or variable field.

Adding HP/AFP-Compatible Graphics (Page Segments)

Logos printed on an HP/AFP-Compatible label must be converted to Page Segments. Any image currently in the logo directory can be converted to an HP/AFP-Compatible format.



In the Graphic Directory, right-click on the image to be converted. Click Create **PagSeg**. Be sure the format's Target Printer is set to **HP**, otherwise this option will not display.

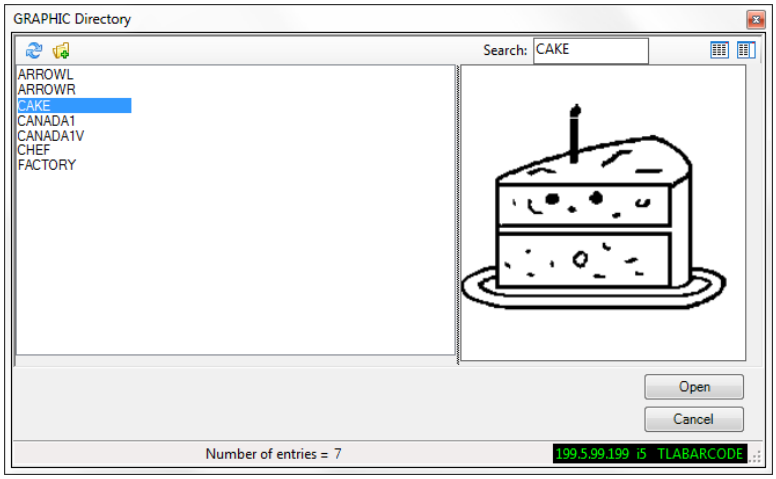
The converted image can now be added on the label.

***NOTE**: If this option is NOT available, contact your T.L. Ashford and Associates Sales Representative for information.*

Graphic Directory

Click while editing or click Tools> Work with Graphics.

The Graphic Directory will appear and display the available graphics. These images can be placed on any label, but also can be copied, renamed or deleted.



Copying Graphics

Click Tools from MenuBar, then Work With Graphics.
>In the Graphic Directory, right-click on the Graphic and select Copy.

Enter the name of the Copy. The new Graphic will be added to the directory.

NOTE: Graphic names can be up to 8 characters.

Deleting Graphics

Click Tools from MenuBar, then Work With Graphics.
>In the Graphic Directory, right-click on the Graphic and select Delete.

***WARNING**: Deleting a Graphic will affect any and all formats using the Graphic. Confirm before removing any Graphic from the Graphic directory.*

Renaming Graphics

Click Tools from MenuBar, then Work With Graphics.
>In the Graphic Directory, right-click on the Graphic and select Rename.

At the prompt, enter the Graphic's new name. Click OK.

***NOTE**: Renaming a Graphic will affect any and all formats using the original Graphic name. Confirm before renaming any Graphics from the Graphic directory.*

Import Graphic

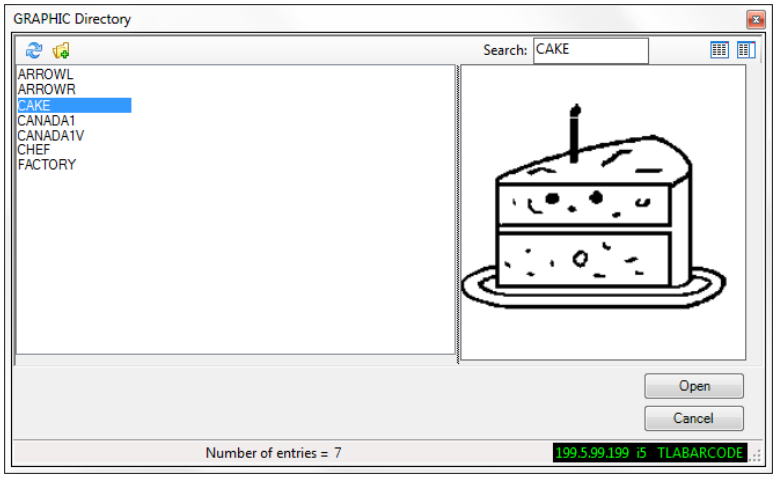
Before placing a graphic on a label format, the graphic must be imported from the local PC or network into the Barcode400 Labeling Software on the iSeries.

Click Tools from the Menu Bar
>Work with Graphics

or

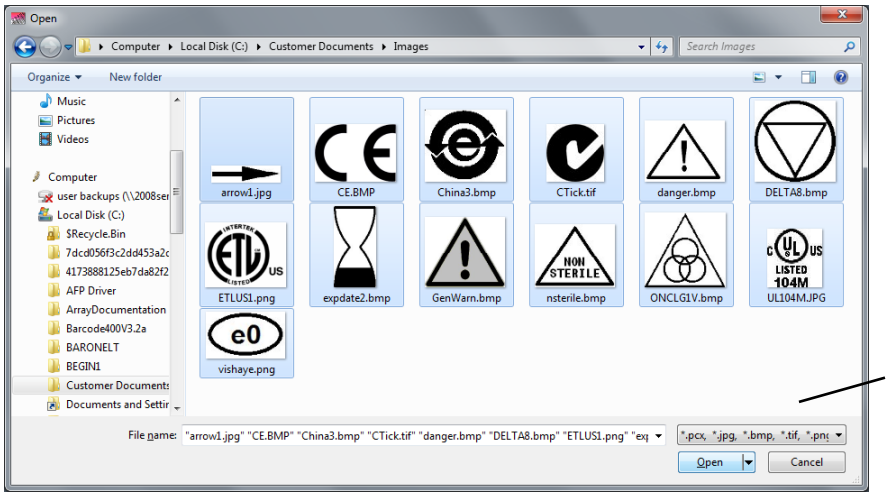
Click to open the Graphic Directory.

The current Graphic Directory will display.



Click the Add Graphic to Server button.

Browse the PC or Network to locate the Graphic(s) to be imported.



Allowed Image File Types
.pcx, .jpg, .gif, .tif, .png, .bmp

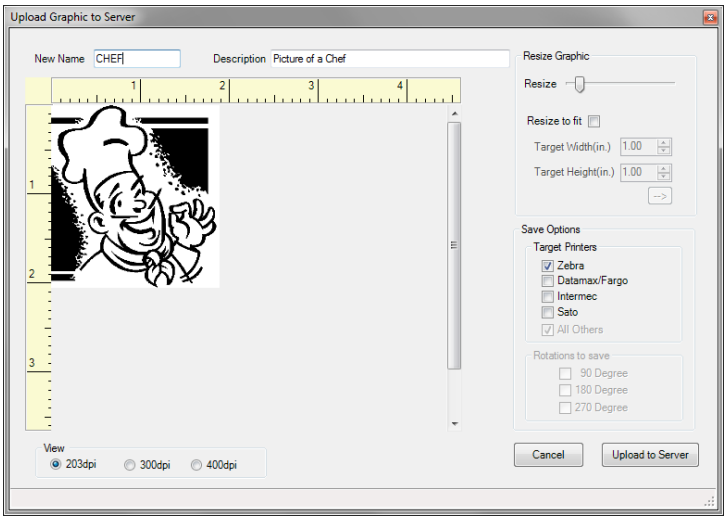
Select the image to be transferred.

Or

Use the mouse button plus the CTRL or SHIFT keys to select multiple images to retrieve.

Click **Open**.

The Upload Graphics to Server window will appear with the selected image(s).



When uploading a single image, notice the Upload Graphic to Server options.

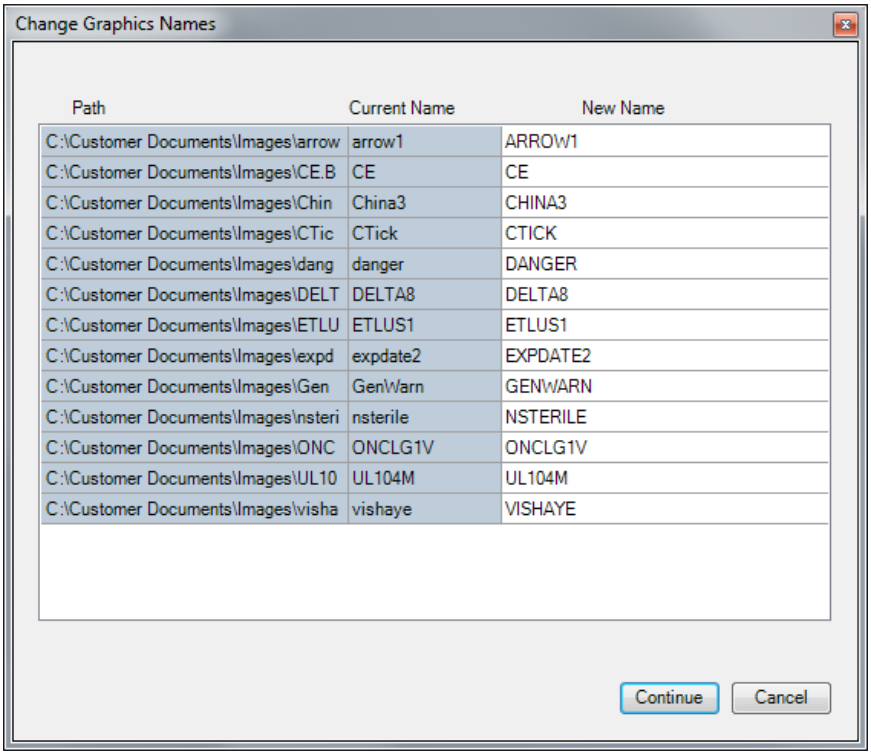
- Graphic name can be changed before graphic is uploaded to the iSeries (The name must be 8 bytes or shorter otherwise it will be truncated). Enter at New Name.
- Description of graphic to be transferred (Optional).

- Resize bar. Drag left to make graphic smaller. Drag right to make graphic larger.
- Resize to fit. If checked, Target Width and Target Height must be specified. The aspect ratio will remain locked.
- Target Width and Target Height, used in conjunction with the Resize to Fit button, will size graphic to height and width specified. The aspect ratio is NOT locked.

***NOTE**: If the Resize slide is used after Resize to Fit, the graphic's aspect ratio is reset.*

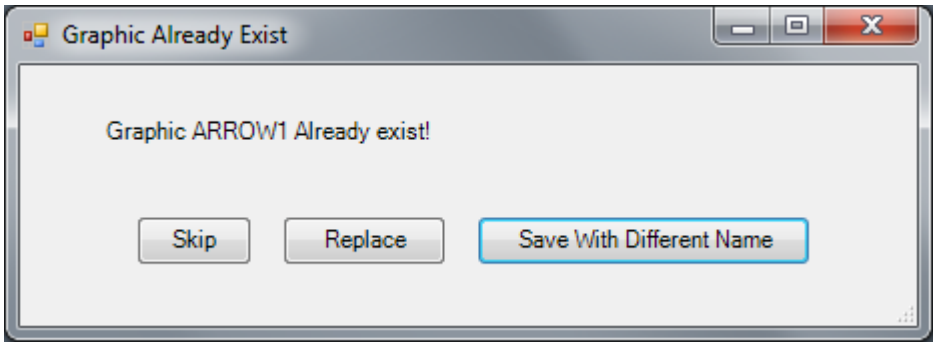
- Target Printers. If the graphic will be printed on any of the brands listed, all of those printer(s) **must** be checked; otherwise the image may not print.
- Rotation* allows for the image to be rotated **prior** to upload. The Rotation box must be checked if the graphic is to be printed at 90, 180, or 270 degrees.
- View. Displays the printable image at 203, 300, or 400 dpi (dots per inch). The image is displayed as it will print at the selected dpi. Please note this option on affects how the image is displayed. It will not alter the actual DPI density.

When retrieving multiple images, Barcode400 will prompt to rename images before uploading, however Barcode400 will use default Graphic to Server Options for all images.



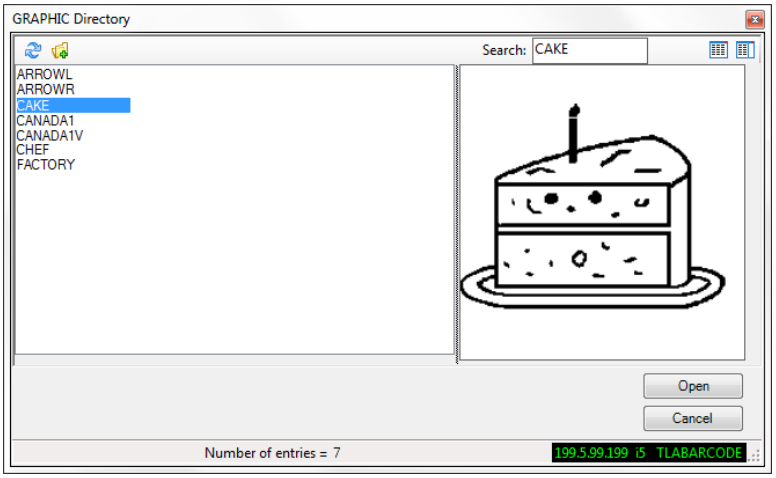
Click Continue.

If an image already exists on the IBMi with the same name, the following pop-up appears.



The new image can be set to Replace the original or a Different Name can be set or Skip to cancel the transfer of that image.

Click Upload to Server. The image now appears in the Graphic Directory. If you do not see it listed, click the Refresh icon.



4.13 Overlays

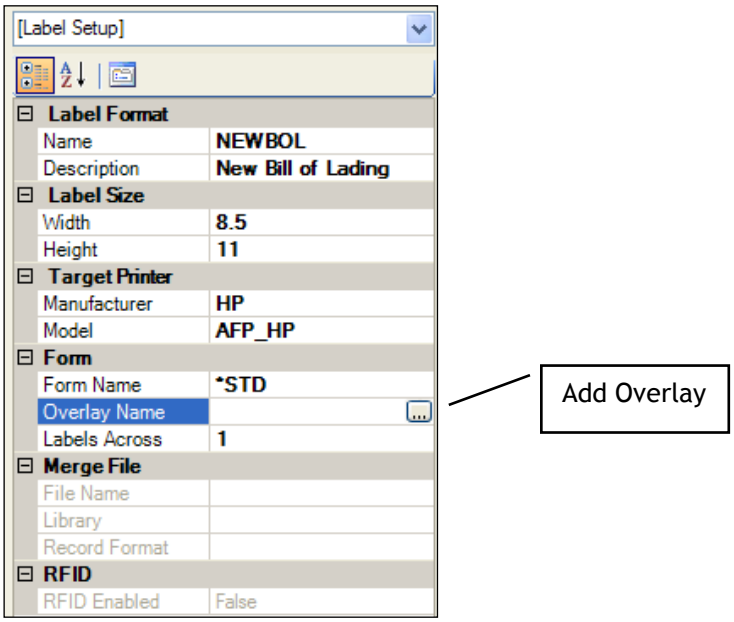
An overlay is a template created from an image or document. It can be placed on a label design for HP/AFP-compatible printer and create the effect of a pre-printed form.

Existing documents (.doc, .docx, .pdf) and graphics can be placed on a label using the Barcode400 Overlay Transfer Software. Contact a Sales Representative for information.

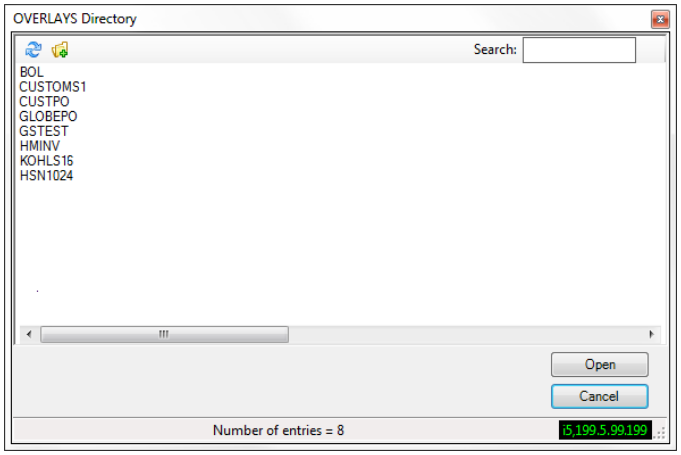
Adding an Overlay

This option is only available for AFP/HP-Compatible printers. To add a document or image that will function as an overlay; set the Target Printer of the label design to HP.

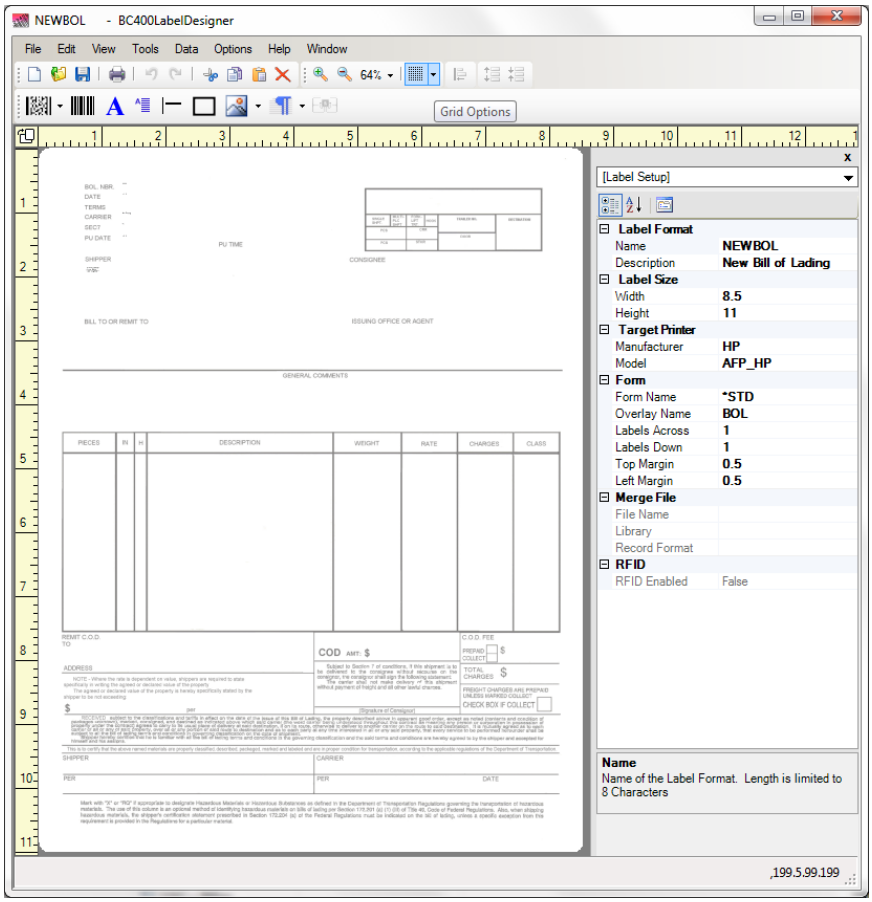
In the Label Properties Panel, click on the option for Overlay Name.



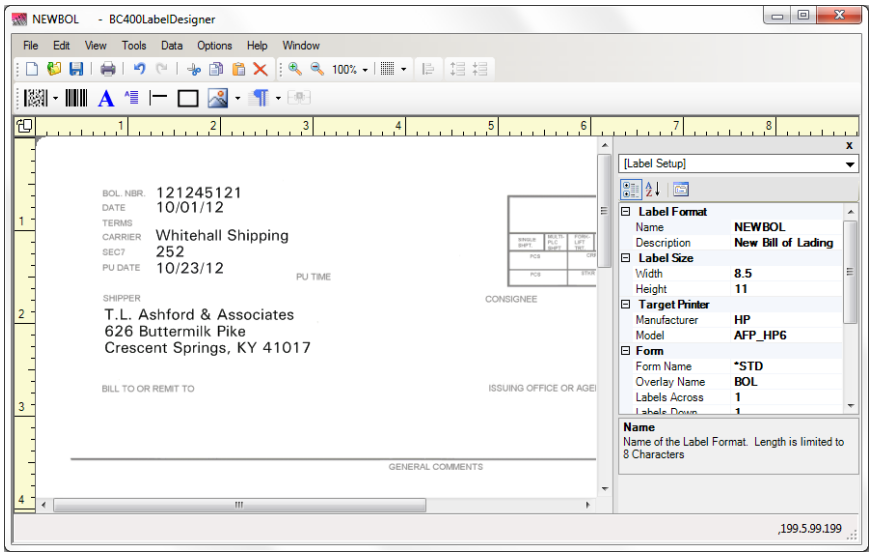
Click on the symbol to add an overlay. This option ONLY appears if the Target Printer is set to HP. The Overlay directory now appears.



Select an existing Overlay from the Directory and click Open.



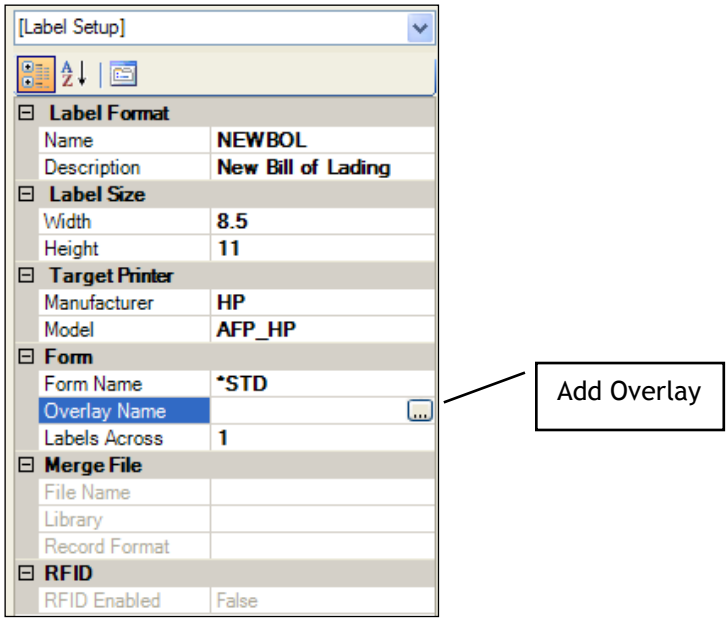
The overlay will appear on the format.



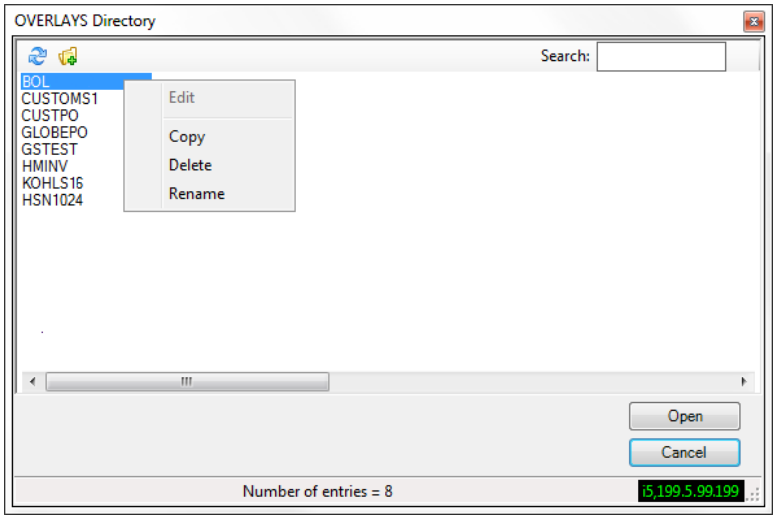
You can now add other elements to the format (text, barcodes, etc.). Though it appears as a watermark, when printed the overlay merges seamlessly into the label.

Overlay Directory

The list of available overlays can only be displayed while editing an HP label format.



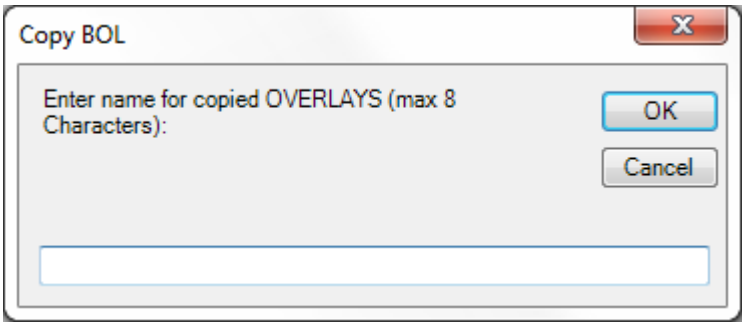
In the format's Properties Panel, click Overlay Name. The Overlay Directory will display.



You can also Search for a specific Overlay by name.

Copying an Overlay

Click Overlay Name in the label Properties Panel.
>In the Overlay Directory, right-click on the Overlay and select Copy.

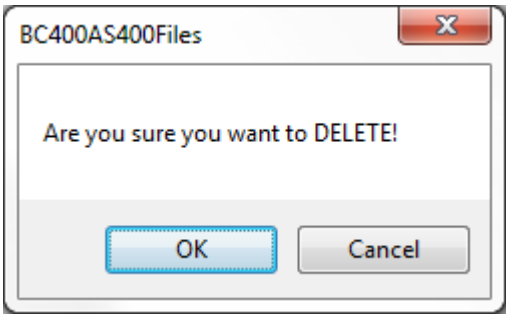


Enter the name of the copy. The name cannot exceed 8 characters.

Click OK.

Deleting an Overlay

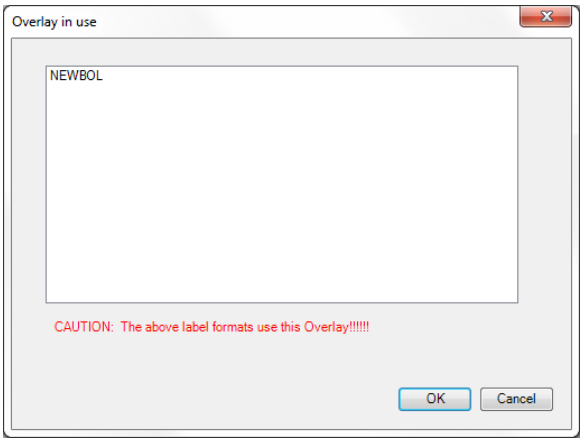
Click Overlay Name in the label Properties Panel.
>In the Overlay Directory, right-click on the Overlay and select Delete.



If you still wish to remove the overlay, click OK. Otherwise, click Cancel.

Renaming an Overlay

Click Overlay Name in the label Properties Panel.
>In the Overlay Directory, right-click on the Overlay and select Rename.



If the Overlay is currently in use by any format(s), they will display in the above window. This means that those formats will have to be updated to use the renamed Overlay.

Should you wish to continue, enter the new name. The name cannot exceed 8 characters.

Click OK or click Cancel to keep the existing Overlay name.

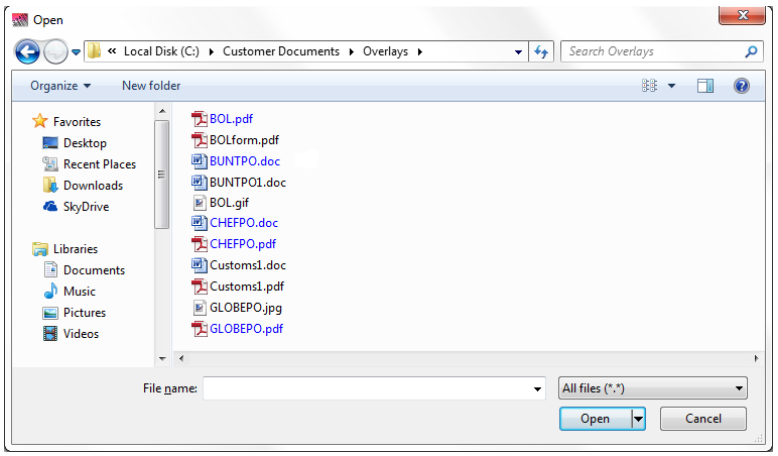
Creating an Overlay

To create a new overlay, you can import an Adobe Acrobat file (.pdf), Word document (.doc, .docx), or graphic (.bmp, .gif, .jpg, .tif, .png, and .pcx).

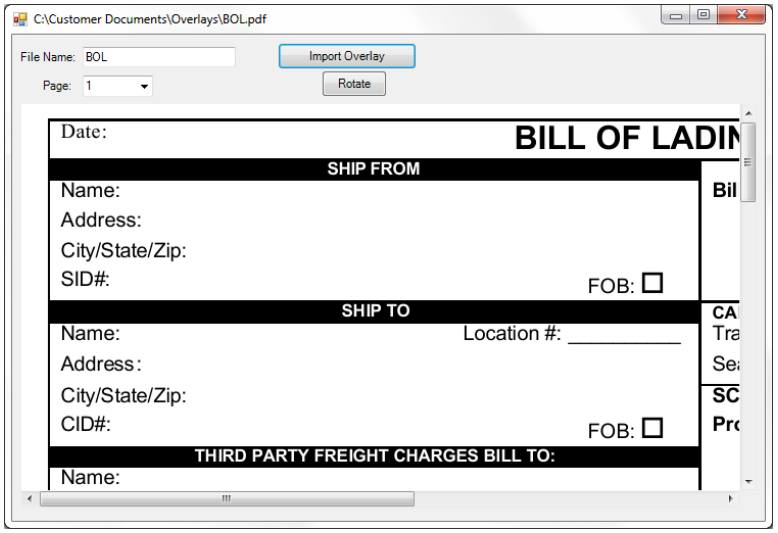
In the Label Properties Panel, click on the option for Overlay Name. Click on the symbol to add an overlay.

From the Overlay Directory, click on the Add icon button, and then browse for the document or image, to be used for the overlay.

***NOTE**: If the Add Overlay is grayed out, you do not have the optional Overlay Transfer Module. Contact a T.L. Ashford and Associates Sales Representative.*

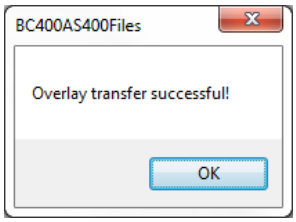


Click Open to Retrieve. The image or document will appear.

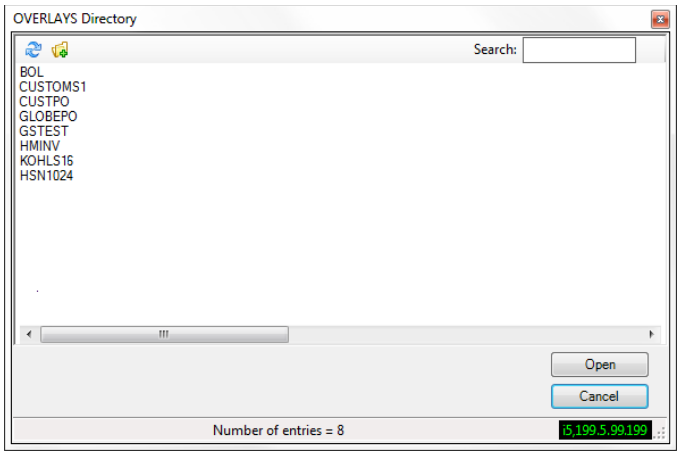


You can rename an overlay in the File Name box or even select a specific page from a larger document. Also, the image can be rotated, but must be before transferred.

Click **Transfer File** to create the overlay. Overlay names must not exceed 8 characters and should not contain any special characters. Once the overlay image transfer is successful, you will receive the following confirmation.



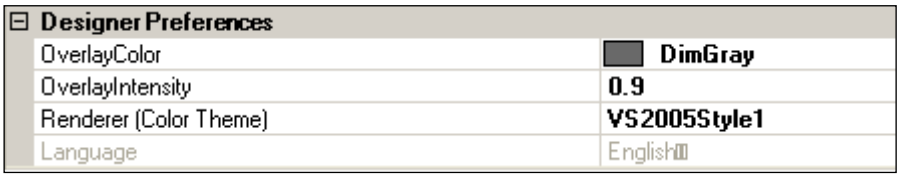
Click OK.



The new overlay will now appear in the directory and can be added to the format(s). If it does not appear, click the Refresh icon.

Overlay Options

Settings for Overlays can be adjusted under the Barcode400 Global Values menu. Click on the Options Menu, and then select Global Values.



Under Designer Preferences, you can adjust the Overlay Color and Intensity. This affects the overlay's watermark effect on screen to aid in design. The overlay will still appear in black at full intensity when printed.

4.14 Stored Paragraphs

Stored Paragraphs are blocks of text placed on a label as a single object. Paragraphs could be detailed instructions, material lists, warnings, etc. They may appear as:

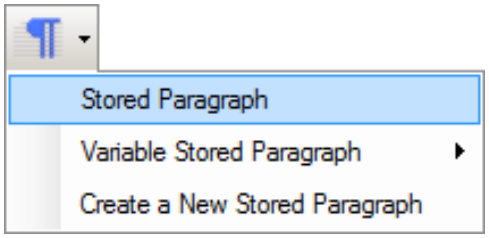
- Static Data
- Merge data
- Prompted data

Stored Paragraphs must be created, either in the GUI Designer or in Barcode400's green screen designer under Option 7 (Paragraph Maintenance).

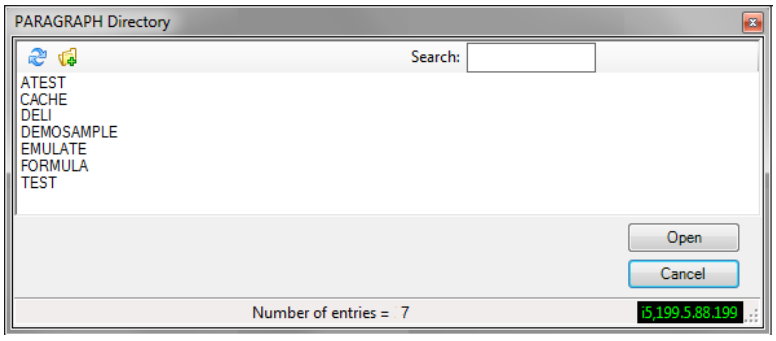
Add a Static Stored Paragraph

Click to Add a Store Paragraph.

The Add Stored Paragraph Menu will open.

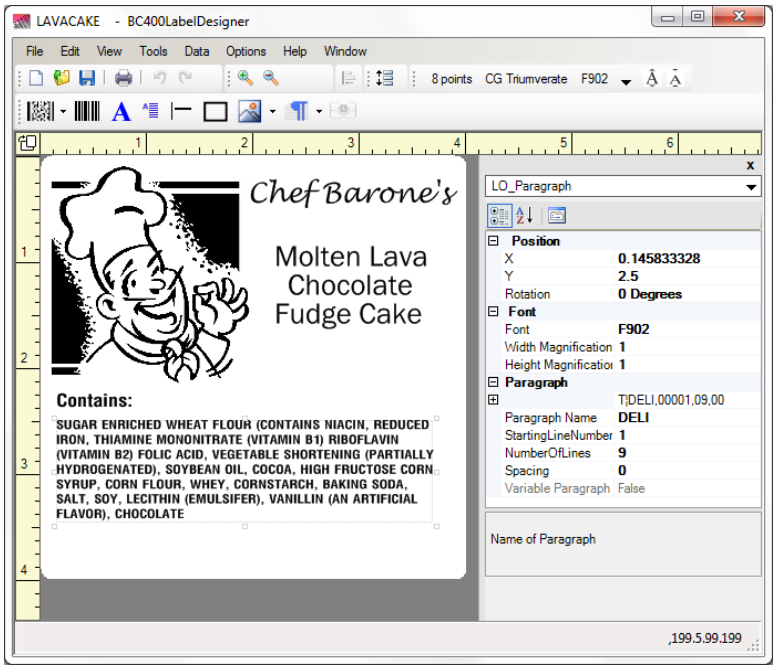


Select Stored Paragraph. The Paragraph Directory will display.



Any Stored Paragraph listed in the Directory can be Edited, Copied or Deleted.

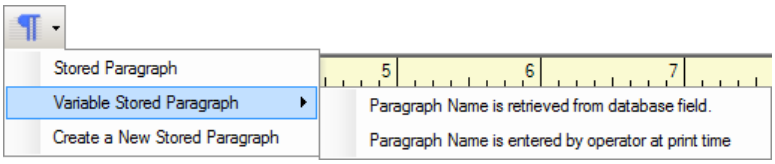
Select the Stored Paragraph and click **Open** to place the Paragraph on the format.



Add a Variable Stored Paragraph

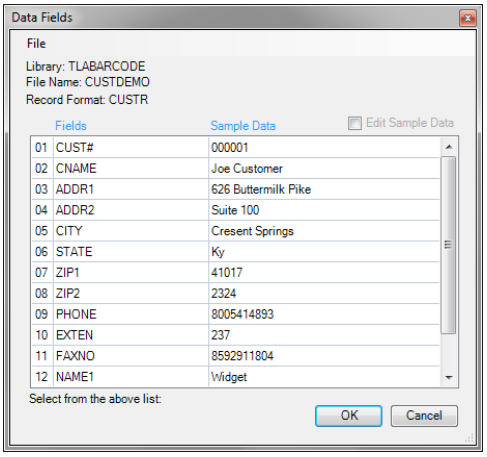
Click to Add a Stored Paragraph.

The Add Stored Paragraph Menu will open.

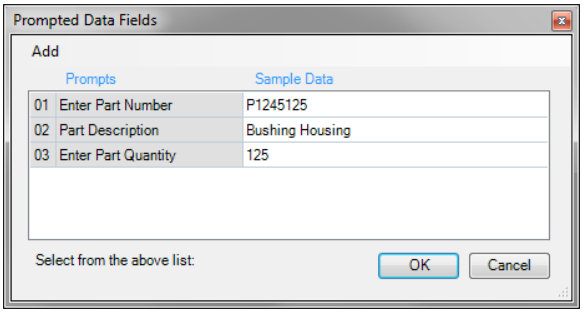


Select Variable Stored Paragraph, then either Paragraph Name is in Database Field or Paragraph Name is Entered by Operator at Print to place on label.

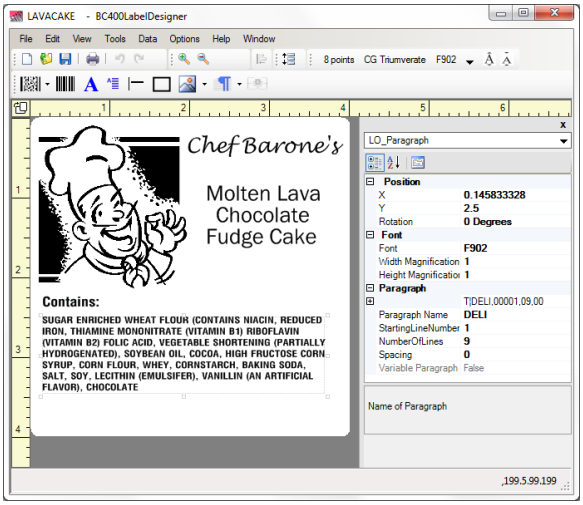
Select a Database Field or Operator Prompt which will supply the Stored Paragraph name.



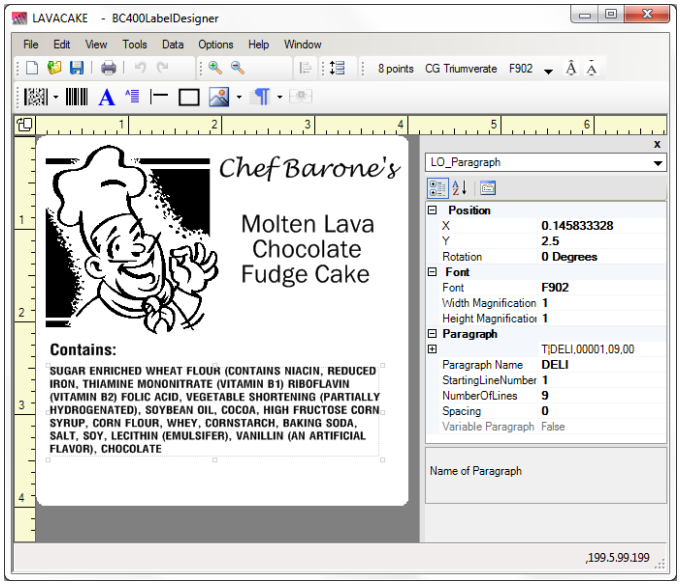
or



If there is a Stored Paragraph name in the Sample Data, that Stored Paragraph will appear on the format as well as Test Print.

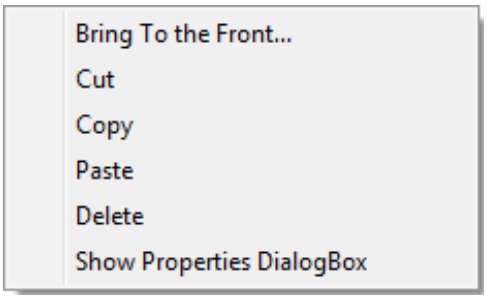


Change Stored Paragraph Properties



Click on the Stored Paragraph and hold the left mouse button to drag it to a new position.

Also, right-click on the Stored Paragraph and the pop-up menu appears.



From this pop-up, a Stored Paragraph can be Cut and Paste as well as Copied or Deleted.

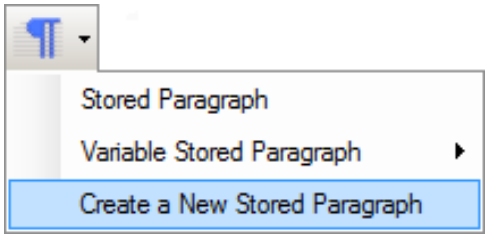
Properties for Stored Paragraph Objects:

Position (X = Over, Y = Down) - The starting print position of the paragraph.
Rotation - Sets the orientation of the paragraph
Font - Determined which letter style will be used.
Font Expansion (Width and Height) - Sets the height and width font multipliers.
Stored Paragraph Name or Data Source - Name of the paragraph or variable field.
Starting Line - Indicates the first line from the paragraph to start from.
Number of Lines - Determines how many lines from the paragraph will appear.
Spacing - Determines how many dots between each line.

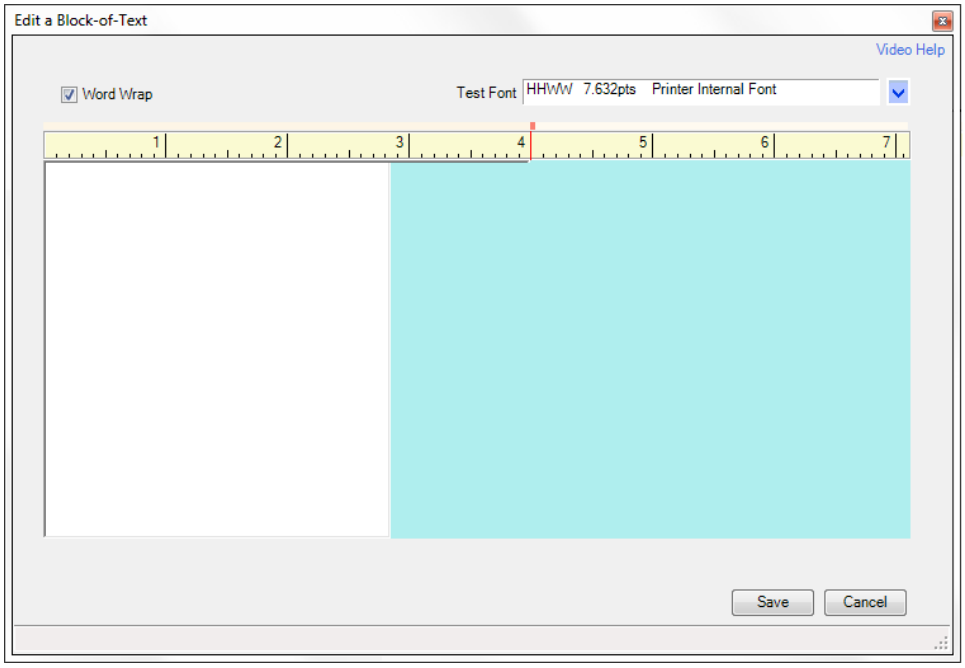
Create New Stored Paragraph

Click the Paragraph icon

Click Create a New Stored Paragraph.



The Edit a Stored Paragraph screen will appear.

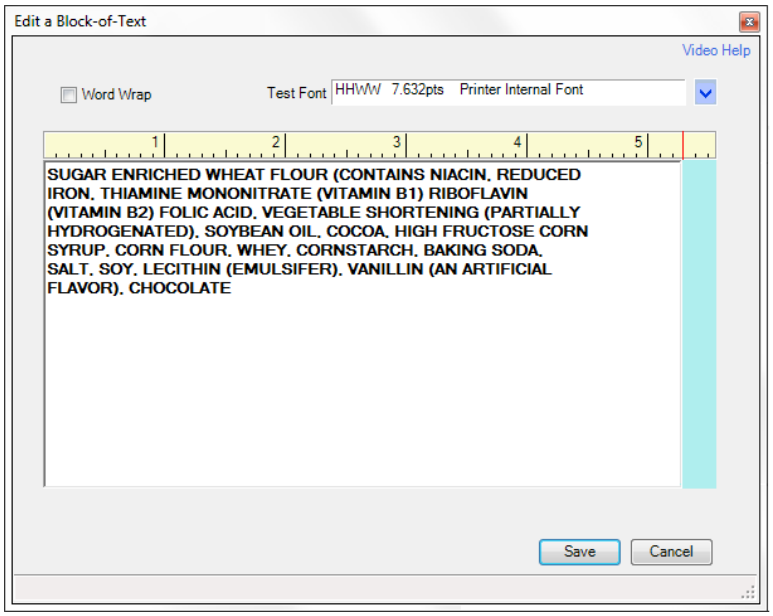


Word Wrap will force the text to wrap to the next line once it reaches the margin. The margin is shown by the Ruler Margin (red line). Check the box to Wrap.

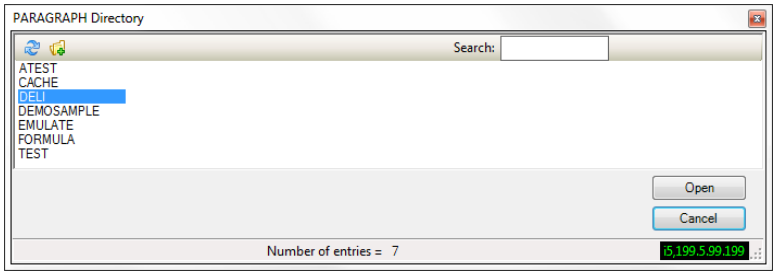
The **Ruler Margin** can be adjusted by holding down the left mouse button and dragging the line left or right. Word Wrap MUST be checked to adjust.

Select the Font Size from the Font Menu in the upper-right. Fonts listed are dependent upon the label's Target Printer.

Enter text in the Text Design Area. Once complete, click Save.



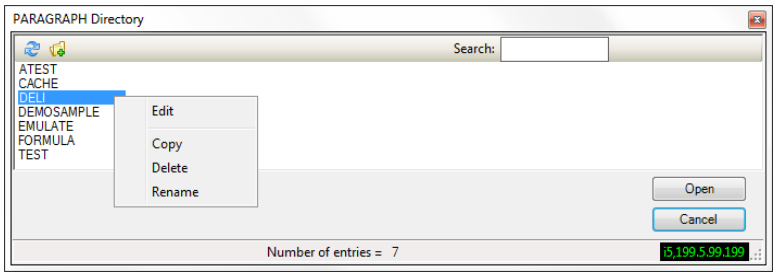
When prompted, enter the Stored Paragraph's name. Names can be up to 10 characters. Once the Stored Paragraph is saved, it will be added to the Paragraph Directory.



Select the new Stored Paragraph to add it to the label design.

Editing Stored Paragraph

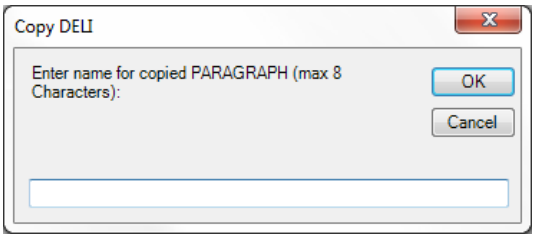
Click Tools from MenuBar, and then Work With Paragraphs.
>In the Paragraph Directory, right-click on the Paragraph and select Edit.



***NOTE**: Any changes to the Stored Paragraph will affect ALL formats using that Paragraph. If you need to make a variation, make a copy first under a new name.*

Copying Stored Paragraph

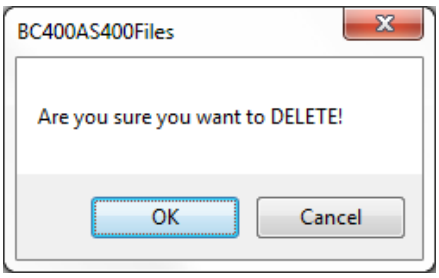
Click Tools from MenuBar, and then Work With Paragraphs.
>In the Paragraph Directory, right-click on the Paragraph and select Copy.



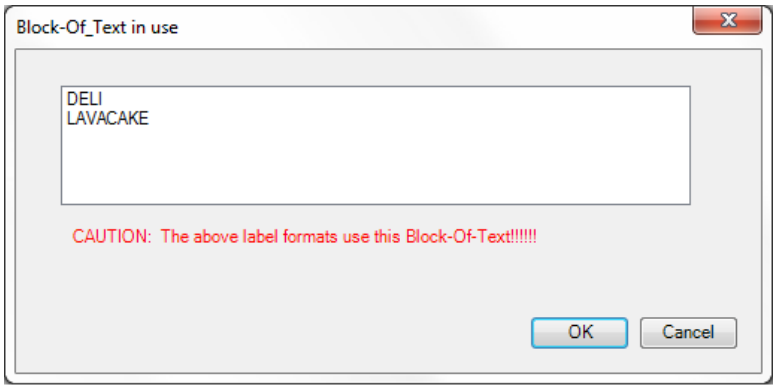
When prompted, enter the new Stored Paragraph's name. Names can be up to 10 characters. Once the new paragraph is saved, it will be added to the directory.

Deleting Stored Paragraph

Click Tools from MenuBar, and then Work With Paragraphs.
>In the Paragraph Directory, right-click on the Paragraph and select Delete.



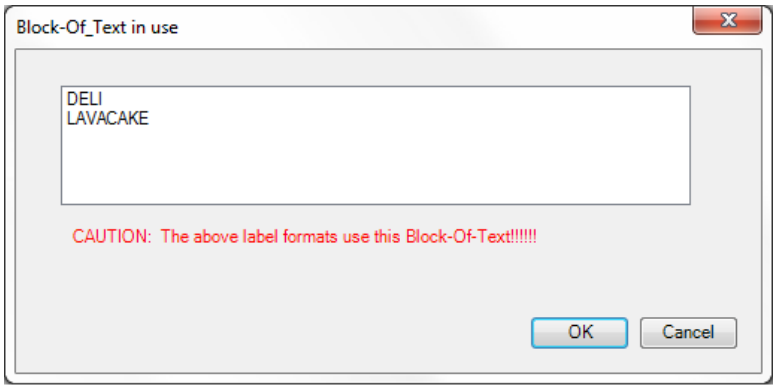
WARNING: *Deleting a Stored Paragraph will affect any and all formats using the Stored Paragraph. Confirm before removing any Stored Paragraph from the Paragraph directory.*



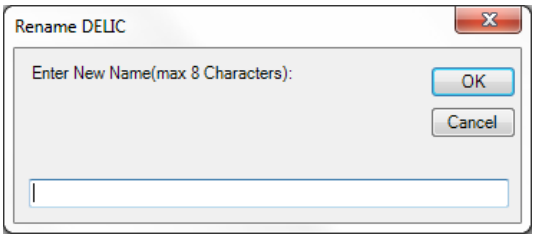
Renaming Stored Paragraph

Click Tools from MenuBar, and then Work With Paragraphs.
>In the Paragraph Directory, right-click on the Paragraph and select Rename.

***NOTE**: Renaming a Stored Paragraph will affect any and all formats using the original Stored Paragraph's name. Confirm before renaming any Stored Paragraphs from the Paragraph directory.*



When prompted, enter the Stored Paragraph's name. Names can be up to 10 characters. Once the Stored Paragraph is saved, it will be added to the Paragraph Directory.

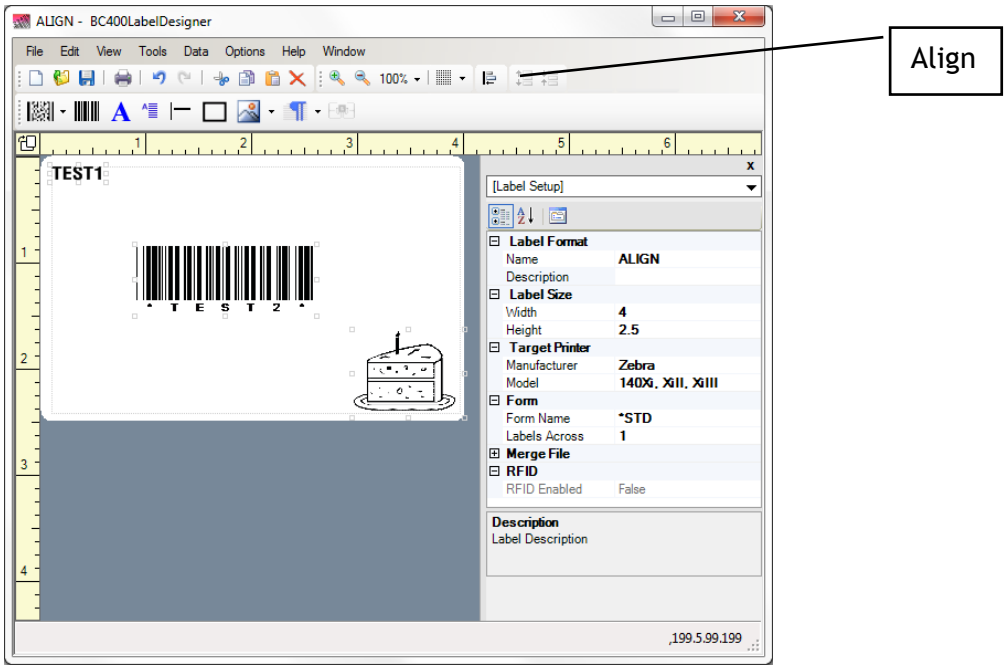


Click OK.

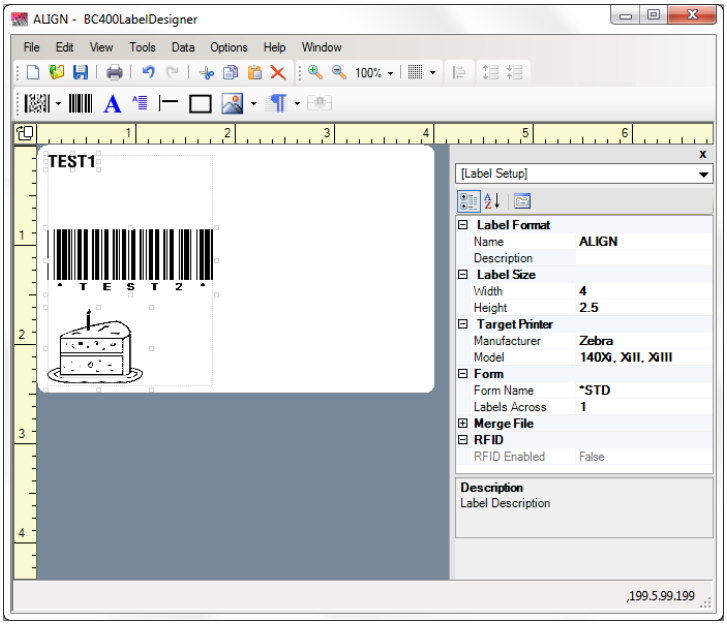
4.15 Align

Elements on a format can be uniformly aligned horizontally. First, highlight a group of at least two objects, by drawing a box around them with the mouse.

In this example, the Test1 Text, Test2 Barcode and Cake graphic have been highlighted. Note that Align now available.



By clicking the Align Button , the highlighted objects align themselves to the Left-most object's vertical position.



5. Data Sources

Data Sources are accessed to create variable objects on a label. The Data Source determines what data will be used and from where. Data can be accessed by merging fields from an iSeries file. Labels can be serialized using incrementing numbers. The iSeries system date and/or time can be used, or prompts can be created where users enter data at print time.

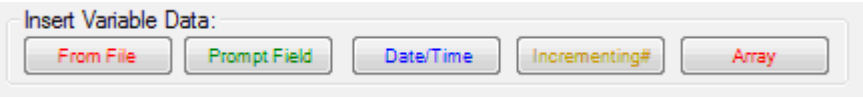
Data Sources are accessed by displaying the object's properties.

Properties Dialogbox

Right-click on the object.

>Show Properties DialogBox.

In the lower-left of the Properties Dialogbox, the Variable Data options will display.



- **From File** – Merged Data Fields
- **Prompt Field** – Operator Prompted Data
- **Date / Time** – iSeries System Data
- **Incrementing #** - Control number / Counters
- **Array** - Structured Merged Data

***NOTE**: Not all object types support all data sources; see specific object types to confirm.*

5.1 Merge Data

Merge Data are fields retrieved from an iSeries file and then 'merged' into a label. Barcode400 can use either Physical files (PF), Logical files (LF) or DDS Source files (DS). The data contained or passed within these fields can be placed on a format as text, bar codes, graphics, stored paragraphs and incrementing numbers.

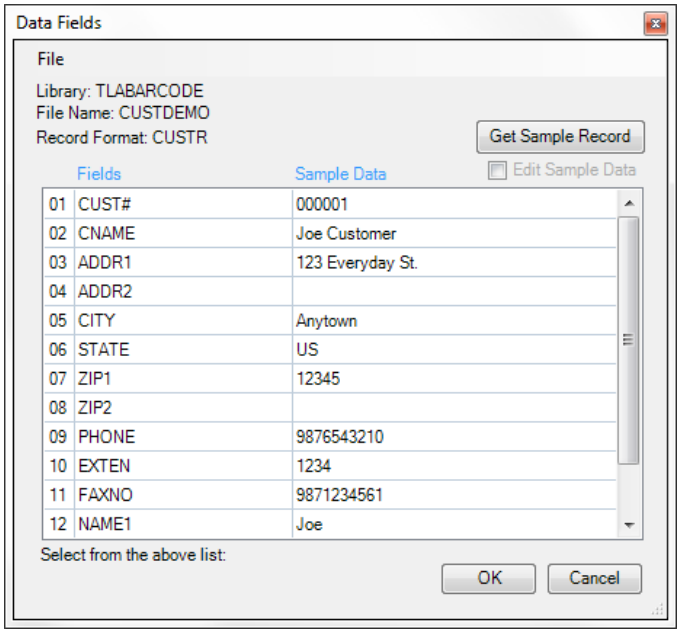
Merge files structures must be retrieved into the Barcode400 software prior to placing fields on a label format.

***NOTE**: DDS and Data Files are never updated by Barcode400.*

Adding a Merge Field

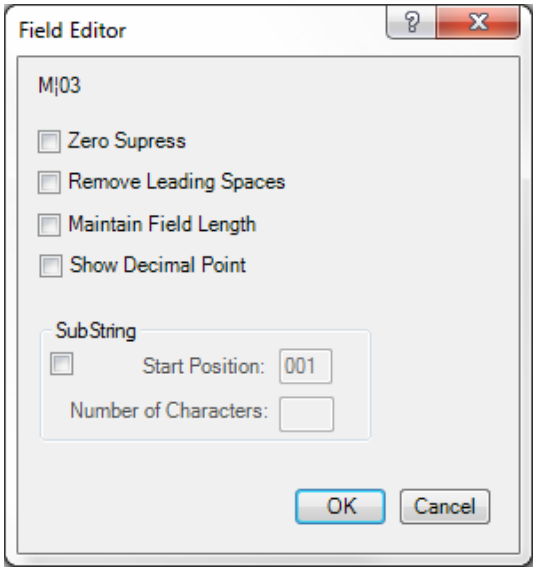
Click the From File button from the object's Properties DialogBox.

***NOTE**: The first time a merge field is placed on a label, the software will list available files (Data Descriptions). If the desired file is not in the list, see Retrieve Merge File.*



Click on the desired field, enter your changes then click **OK**.

The Field Editor options will appear.



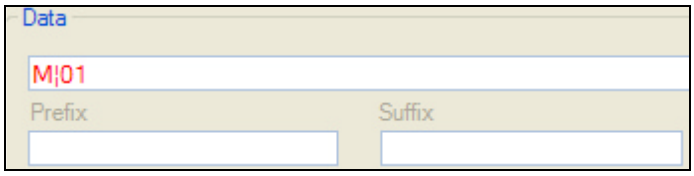
The following field editing options are available.

- **Zero Suppress** will convert any leading zeros in a field to blanks.
  (Ex. M¦01<Z> when Field 1 = '00001' will print as ' 1')
- **Remove Leading Spaces** will cause all leading (left hand) spaces to be removed. The data will be left justified.
  (Ex. M¦01<R> when Field 1 = ' John Doe' will print as 'John Doe')
- **Maintain Field Length** will retain any leading or trailing spaces with the field.
  (Ex. M¦01<M> when Field 1 = 'Joe ' will print as 'Joe ')
- **Show Decimal Point** will add a numeric decimal point. Field must be defined in the file or program with decimal positions.
  (Ex. M¦01<D> when Field 1 = '101.1' will print as '101.1' as opposed to '1011')
- **SubString** allows for portions of the field to be used. Start Position indicates the byte within the field to start and Number of Characters is the number of bytes to include beginning with the Start Position.
  (Ex. M¦01<?001,005?> when Merge Field 1 = 'Steel Coils' will print as 'Steel')

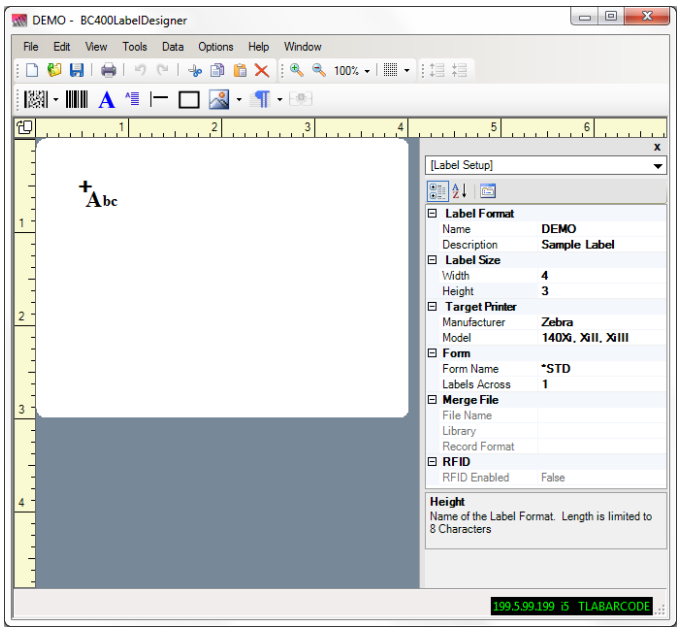
These Field Options can be used in any combination and applied to each merge field to meet the user's needs.

Select the desired option(s). Click **OK**.

The DATA LINE will display the selected field prefaced by M¦ indicating a field (Ex: M¦01) was selected from the file.

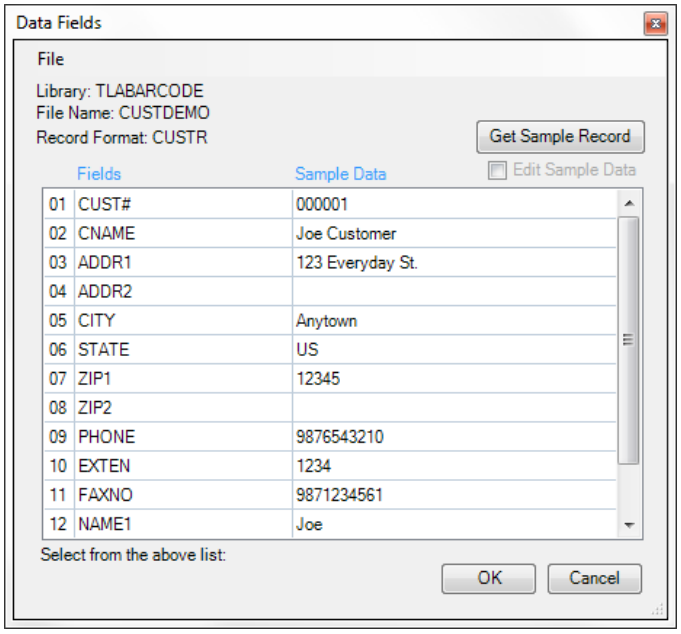


Click **OK** and place the object on the label format.

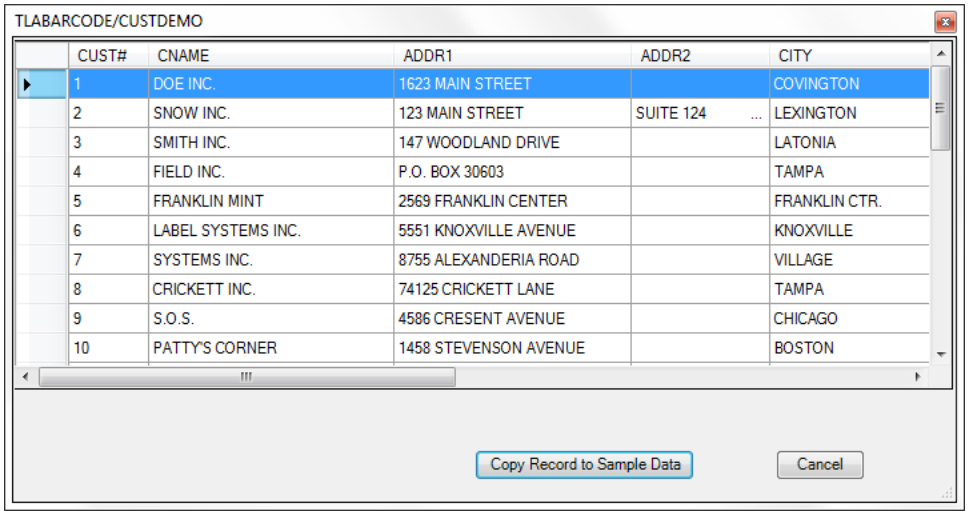


Sample Data

Barcode400 does NOT use active IBMi file data on the format design, but rather a sample record is created when the DDS is first retrieved into the software.



Click Get Sample Record.

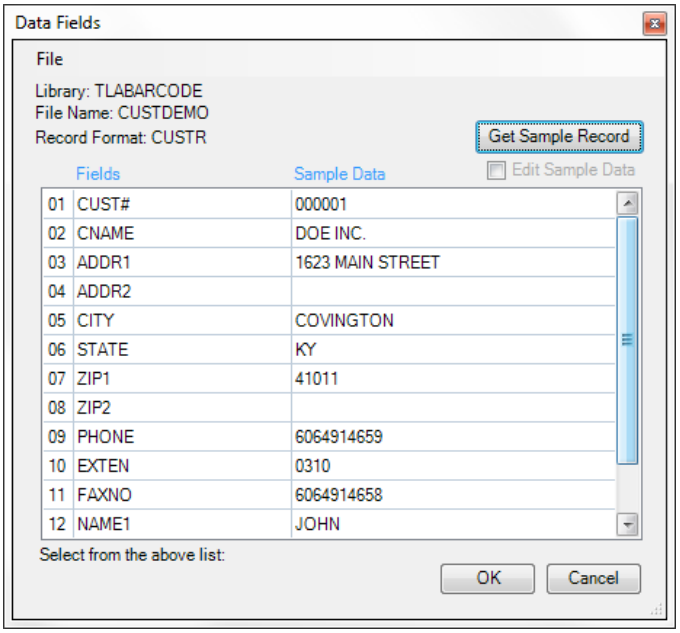


Select a File Record to function as your Sample Data. This will not affect the actual file.

***NOTE**: If the file does NOT contain any records, Barcode400 will auto-fill the Sample Data Record or it can be edited manually.*

Click Record to Sample Data to continue.

The selected record will now populate the Sample Data Record.



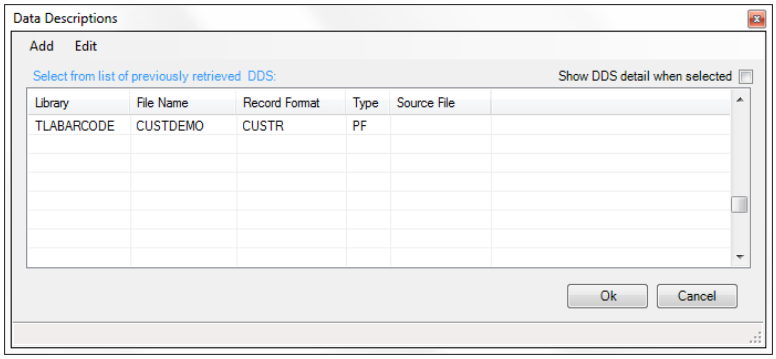
Barcode400 also allows you to the Edit Sample Data record. This will NOT affect your actual file data. Just check the Edit Sample Data box and make any needed changes.

Click **OK** to Update.

***NOTE**: The same Sample Data Record will be used for any format using the same Merge File. Any user using that Merge File on a format can edit its Sample Data Record.*

Merge Directory

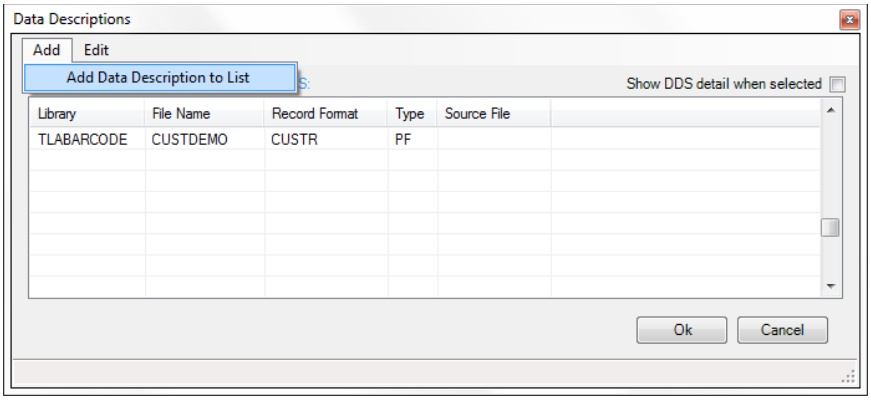
To display the current list of available Data Descriptions, you must have either an existing label or a new label open in Edit Mode. Click Data in the Menubar, then Select Data Source. The Data Descriptions will appear.



Retrieve Merge File

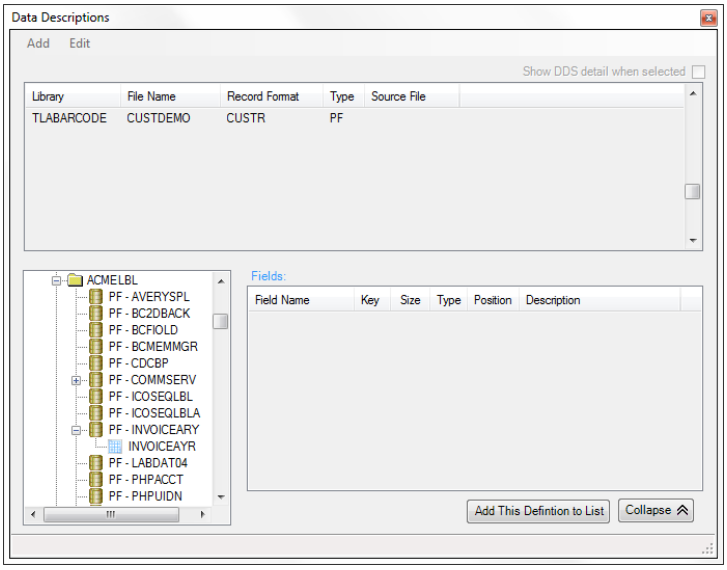
Retrieving a Merge File makes a file available to be used with all label formats. The DDS needs to be retrieved only once, unless the file definition is changed. If the file definition is changed on the iSeries, it will be necessary to refresh the File.

Click **Data**, Select Data Source. The Data Description directory will appear.



Click **Add**, Add Data Description to List.

The Data Description Details will appear.

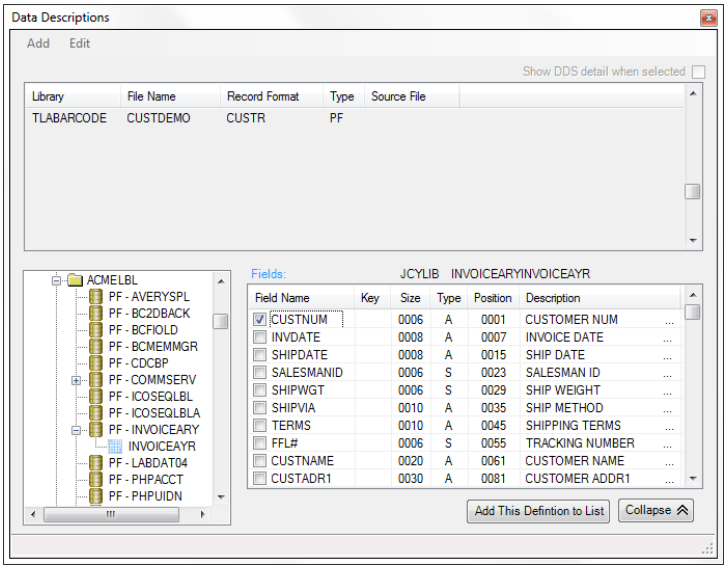


Browse the iSeries directory and select the desired iSeries library. In the example, the ACMELBL library was selected. The available files contained in the library are displayed.

Select desired physical file, logical file, or DDS source file. In the example, the INVOICEARY file was selected. The Record Format(s) for this file will display.

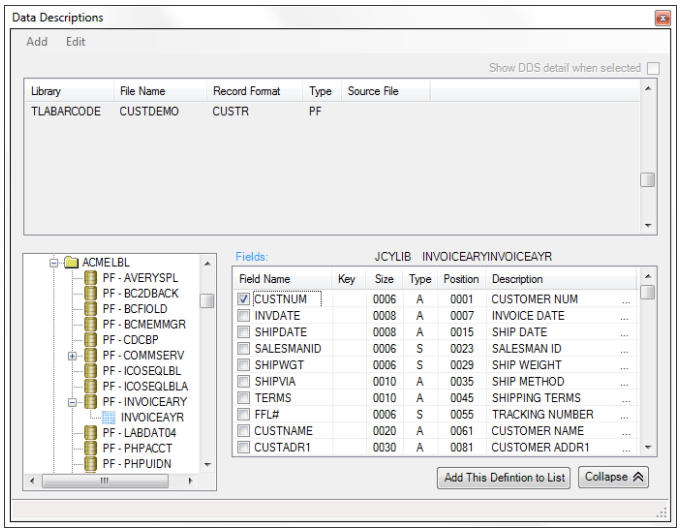
Select the Record Format. In the example above, INVOICEAYR was selected under the INVOICEARY file.

The fields contained within the file will be displayed.



If the file is keyed (indexed), a Descriptive field must be selected. Keys are displayed under the Key column.

Select **1** field to be the Descriptive field by clicking the check box next to the field name. Any Key Field (K1, etc.) cannot be the Descriptive field.



In the example, CUSTNUM was selected to be the Descriptive field.

***NOTE**: The Descriptive field is only used when printing from Option 1 (Create/Edit) or 2 (Print) within the Barcode400 software on the iSeries.*

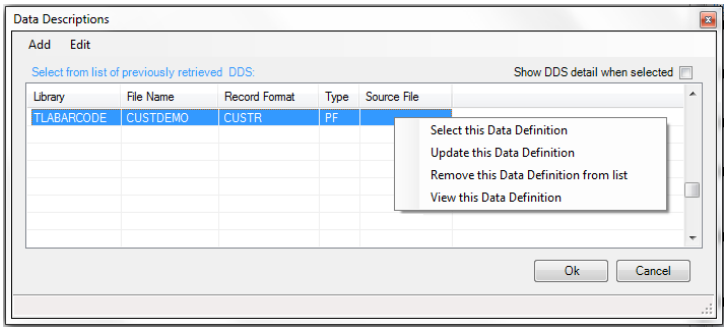
Click **Add This Definition to List** to complete the function.

QUICK TROUBLESHOOTING - If you receive an error, the DDS may exceed Barcode400 requirements. It must contain no more than 99 fields, 8 key fields, and a unique record format name.

Update Data Description

If a Merge File has recently been moved or changed, it will be necessary to update or refresh the Data Description.

From the Merge Directory, right-click the Data Description. The menu options will appear.



Select Update This Data Definition. The iSeries will confirm the Data Description's location and updates the description before returning to the directory.

Remove a Data Description

If a Merge File is no longer needed, it can be removed from the Merge Directory.

From the Merge Directory, right click on the Merge File. Click Remove This Data Definition from List.

Or click on the Mergefile, Edit then Remove DDS.

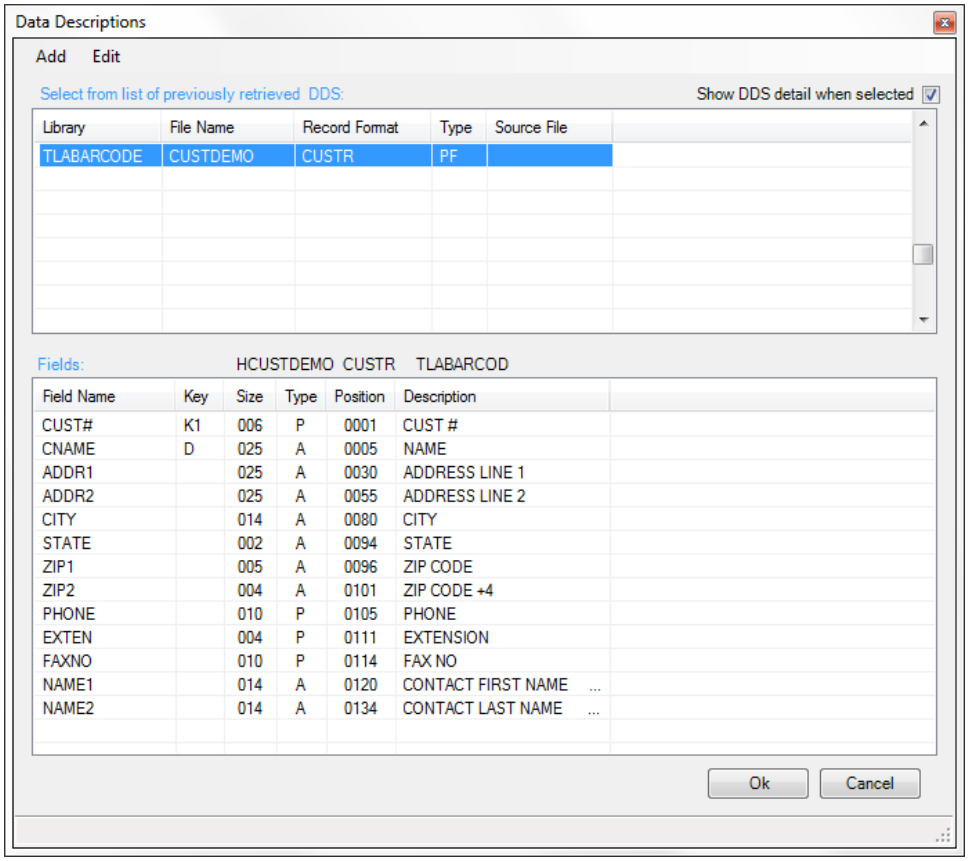
***WARNING**: Removing the Data Description may affect existing labels. Confirm that formats DO NOT use this DDS before deleting it.*

View the Data Description

To view the details of a Data Description, right-click on the Data Description. Now, click View this Data Description.

Or click on the Mergefile, Edit then View DDS.

The details of the Merge will display, including field name, description, length and type.



Click OK or Cancel to exit.

5.2 Incrementing Numbers

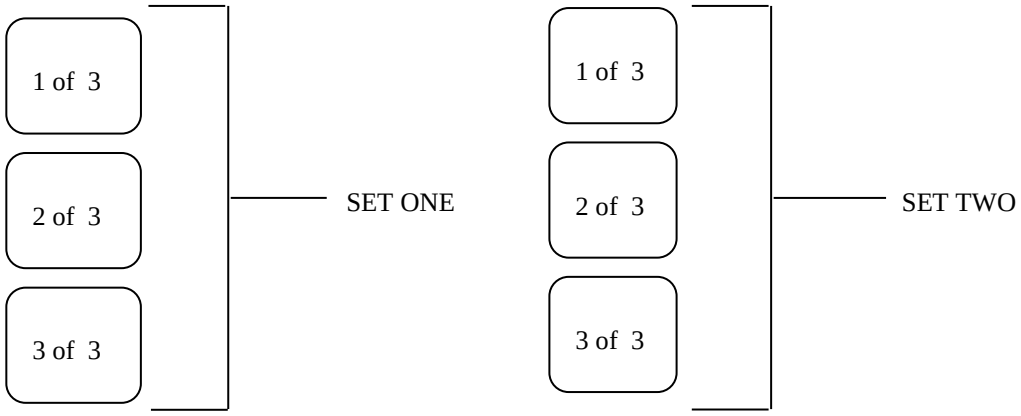
An incrementing number is a variable configured in the software that produces serialized values. This could be used if the label required a box count. Incrementing numbers can be placed on a label format as text or bar code (Not available for two-dimensional barcodes).

An incrementing number must first be created. See *Create Incrementing Number*.

When using an incrementing number on the label format, the user, at print time, will be prompted for HOW MANY SETS and THE NUMBER OF LABELS PER SET to print.

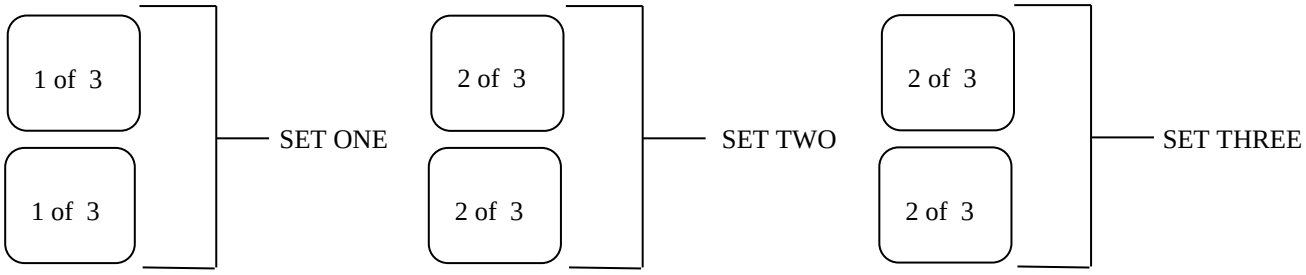
Incrementing within a set of labels - C¦

Example: Print **TWO SETS** of labels with **THREE LABELS PERSET**. A total of 6 labels will print. In this example, the number counts up, and hen begins again on the next set.



Incrementing after each set of labels - R¦

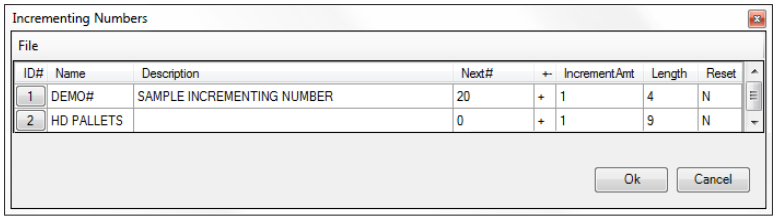
Example: Print **THREE SETS** of labels with **TWO LABELS PERSET**. A total of 6 labels will print. In this example, the number repeats, then increments for the next set.



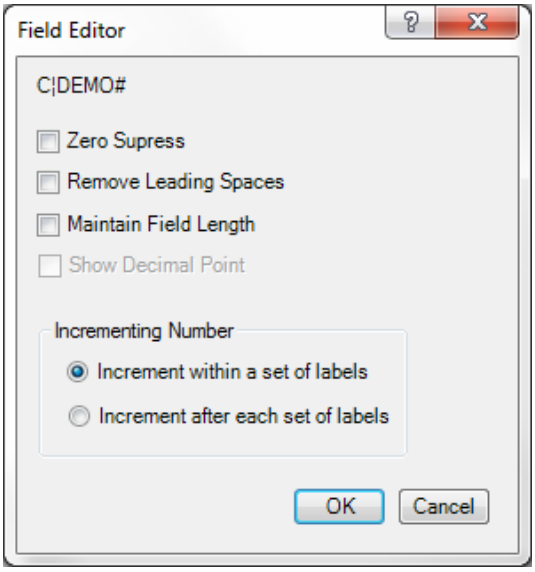
Add an Incrementing#

To use an incrementing number, add or edit a Text Object or Barcode Object.

Click the Incrementing# button from the object's Properties DialogBox.



Select the desired incrementing number.



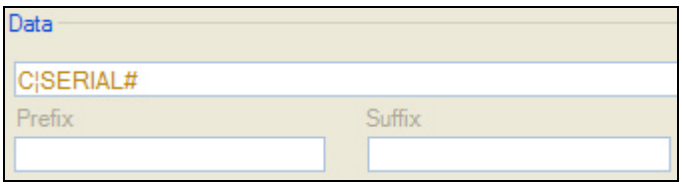
Select Field Editing Options, if desired.

The following field editing options are available.

- **Zero Suppress** will convert any leading zeros from a numeric field to blanks.
  (Ex. M¦01<Z> when Field 1 = '00001' will print as ' 1')
- **Remove Leading Spaces** will cause all leading (left hand) spaces to be removed. The data will be left justified.
  (Ex. M¦01<R> when Field 1 = ' 1' will print as '1')
- **Maintain Field Length** will retain any leading or trailing spaces with the field.
- Select increment within a set of labels (see preceding explanation of C¦).
- Select increment after each set of labels (see preceding explanation of R¦).

Click OK to continue.

The Incrementing Number now appears in the Data Line of the Text or Barcode object.



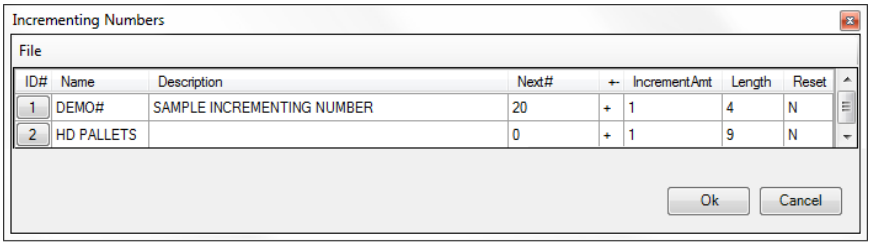
The DATA LINE will display the selected incrementing number prefaced by a C¦ (increment within a set of labels) or R¦ (increment after each set of labels).

NOTE: *Incrementing numbers CANNOT share the Data Line with any other object or value. Use the prefix and suffix fields for additional constants or variables.*

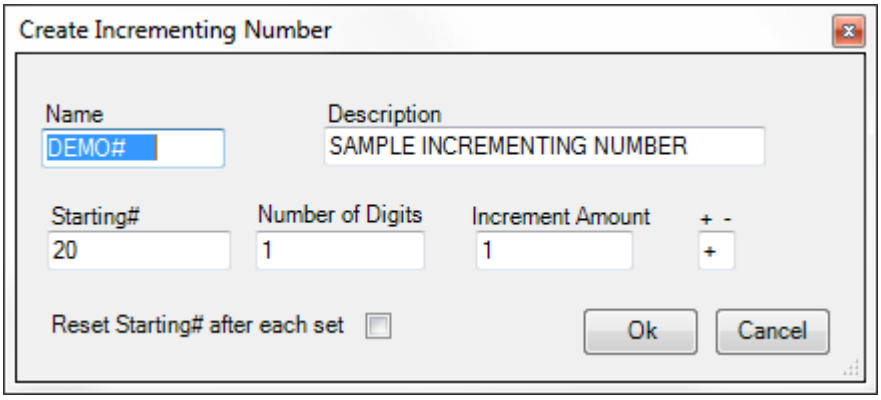
Click OK and place data on label format.

Create Incrementing Number

In the Menubar, click Tools in the Menubar> Work with Incrementing Numbers...



Click Edit > Create Incrementing Number



Define the Incrementing Number properties.

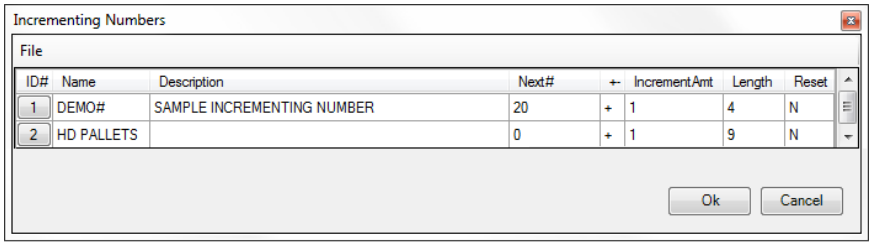
- **Name** – Can be up to 10 characters.
- **Description** – Describes function of the incrementing number. Not mandatory.
- **Starting #** - This will be the NEXT value used when printing.
- **Number of Digits** - The number of places. For example, a value of 3 would allow the number to increment to a maximum of 999 before restarting.
- **Increment Amount** – How much the number will count up or down each time.
- **+** or **-** determines if the number increments or decrements (count up or down).
- **Reset Starting# After Each Set** – If the checked, the number will reset the Starting# value to **1** when a new set of labels is printed.

NOTE: The reset value is recommended when printed a set of labels that count product (1 of 6, 2 of 6, etc.). If the label will produce a continuous serial number, best to leave it unchecked.

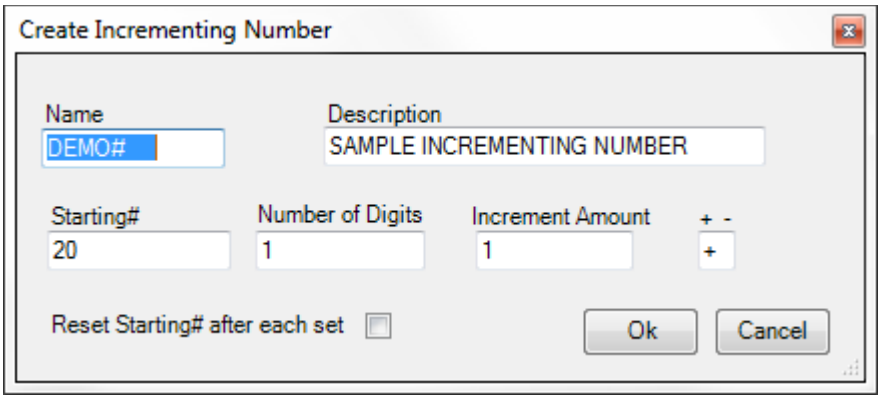
Click **OK**.

Editing Incrementing#'s

From the Incrementing Number directory, select the incrementing number then select the File menu or right-click for options.



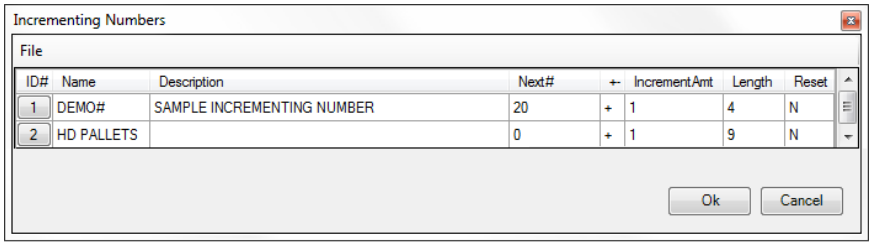
Click Edit Selected Number. The Create Incrementing Number screen will display.



Make the needed changes, and then click OK.

Delete Incrementing#'s

At any time, you can delete an incrementing number.



From the Incrementing Number directory, select the incrementing number then select the File menu or right-click for options.

Click Delete Selected Number.

Click OK to confirm and delete.

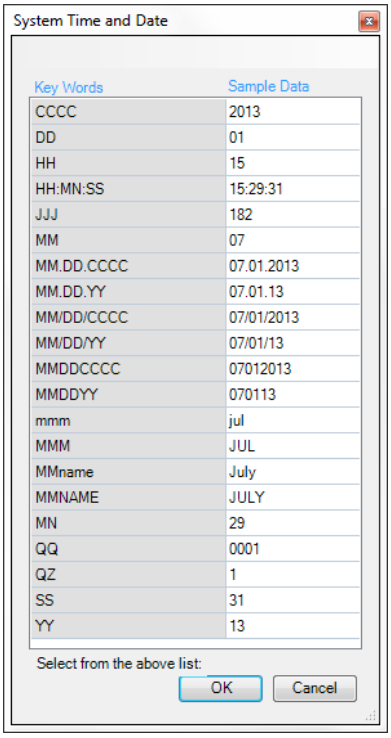
5.3 System Date/Time

System data refers to time and date values maintained by the iSeries. The current value will appear on the label at the time the labels are generated.

Add a System Date/Time Field

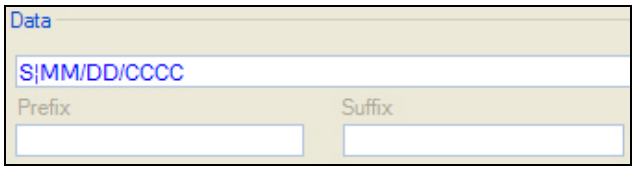
Add or Edit a text or barcode object. Click the

button in the objects Properties Dialogbox.



Click on the desired keyword (formatted data). Then, click OK.

The DATA LINE will display the selected keyword prefaced by an S¦ indicating System Data. In this example, month/day/century has been selected.



Click **OK** and place data on label format.

***NOTE**: Current PC date/time values will appear in GUI, but iSeries date/time values will be used when printing. This is not the same as a Real Time feature on the printer.*

5.4 Prompt Fields

Prompt fields are created so the operator, at print time, will be prompted for data to be printed on the label. Prompt Fields are unique to each format that uses them.

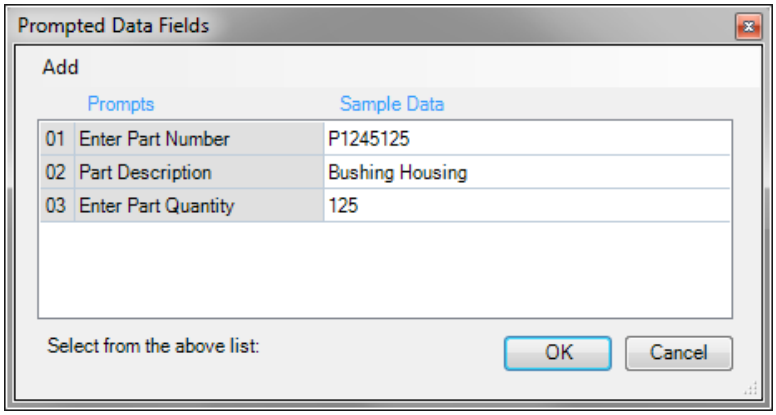
Prompt fields are only available if printing is executed from the Barcode400 label printing functions within the green screen designer or the Interactive Label Printing feature.

NOTE: Barcode400 does NOT condition the data from these prompts.

Add a Prompted Field

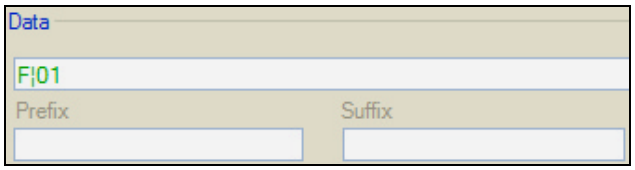
Click the

button in the object's Properties DialogBox.



Select the desired prompt. If there are no prompts available or if a new prompt is needed, see *Create a Prompted Field* on the following page.

Click OK.

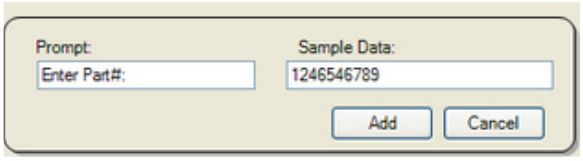


The DATA LINE will display the selected prompt prefaced by F¦ indicating that prompt number **01** was selected.

Click **OK** and place the field on the label format.

Create a Prompted Field

If a desired prompt does not appear, Click **Add**.
>Add New Prompt and Sample Data

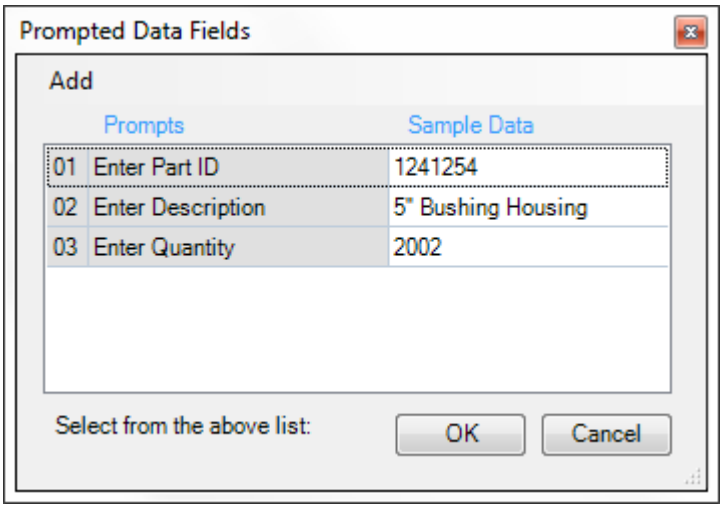


Enter desired prompt as it will appear and sample data to appear on screen.

Click **Add**. The new prompt will appear in the Prompted Data Fields.

Edit a Prompted Field

Click on the **Data Menu**.
>Select Setup Prompts for Prompted Data



Right-click on the Prompt, then select Edit.

Delete a Prompted Field

If a prompt needs to be removed, click on the **Data Menu**.
>Select Setup Prompts for Prompted Data

Right-click on the Prompt, then select Delete.

WARNING! *Any object using this prompt must be removed or edited before printing.*

5.5 Arrays

An Array is another form of merged data, but they are retrieved by byte position not by field number. Data from an array can be used in text, bar codes, graphics, stored paragraphs and incrementing numbers.

Arrays are retrieved from an iSeries file, and then merged into a label. Barcode400 refers to these files as Merge Files; either Physical (PF), Logical (LF) or DDS Source files (DS).

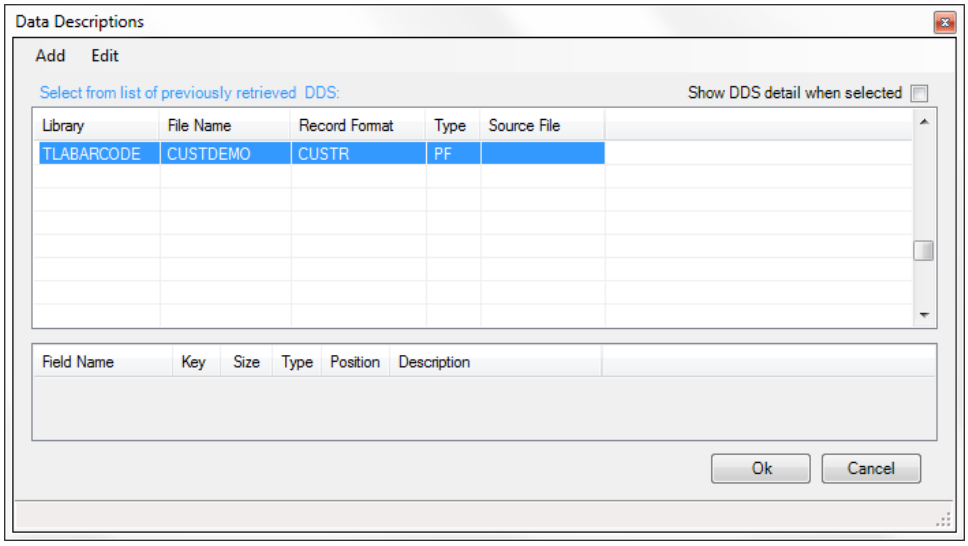
The merge file structures used must be retrieved into the Barcode400 software prior to placing an array on a label format.

Add an Array

Click the

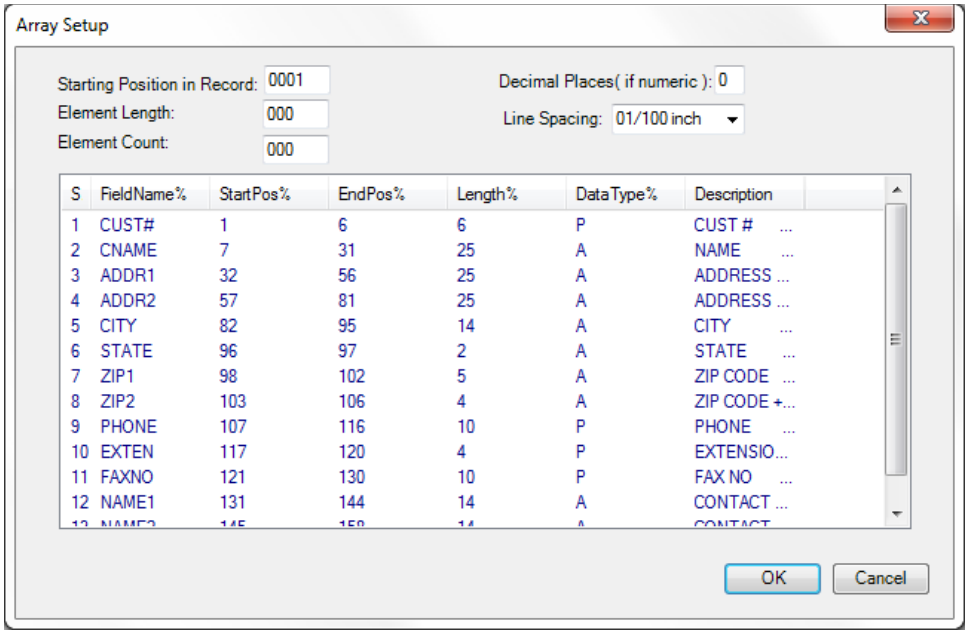
button in the object's Properties DialogBox.

The Data Descriptions window will display.



Select the file from the Data Description list and click OK.

The Array Setup window appears.



Unlike Merge Data, which pulls in specific fields, Arrays allow data from any part of the file record to be used. They can be used to combine multiple fields into one object.

In this screen, fill in the four-digit Starting Position of the first byte to read.

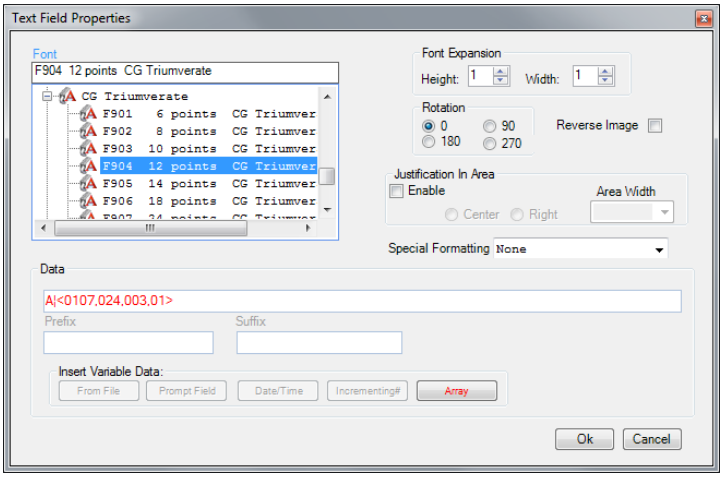
Select the Element Length by entering the three-digit value of how many characters to read from the record.

The Element Count is how times the Element Length is read; each count on its own line.

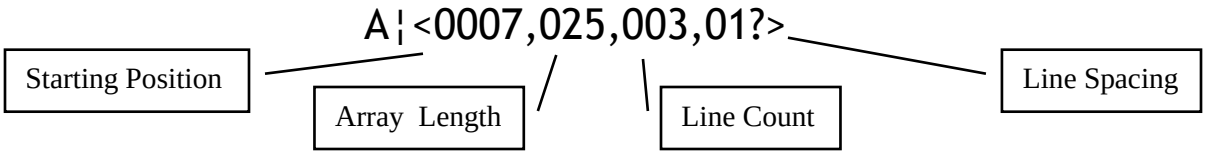
Decimal Places determine the number of decimals to display if fields in the array are numeric. All decimal fields will display the same number of decimal places.

Line Spacing is how many dots (in 1/100th of inches) is the next line below the last.

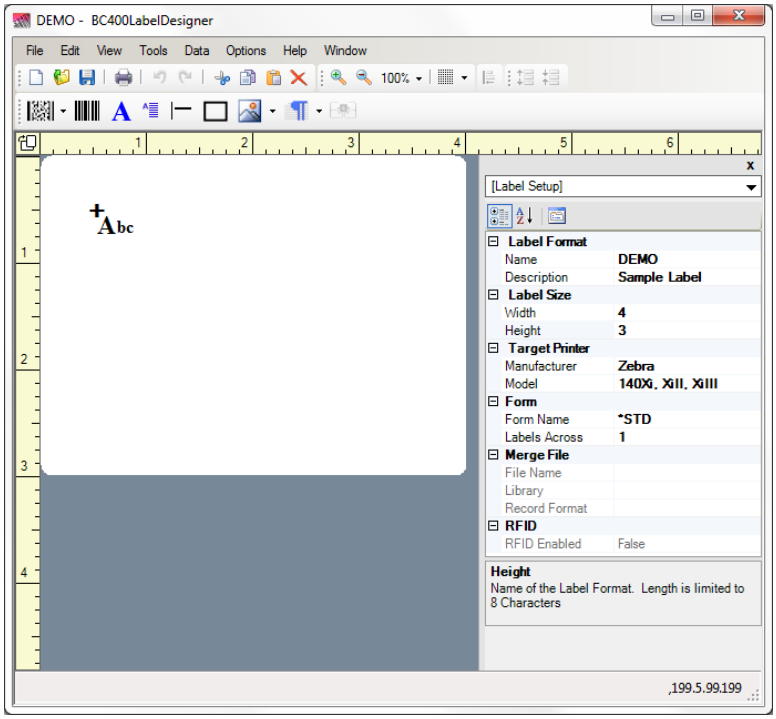
Once the values are populated, click OK. The Array appears in the Data Field.



Notice the A¦ reference.

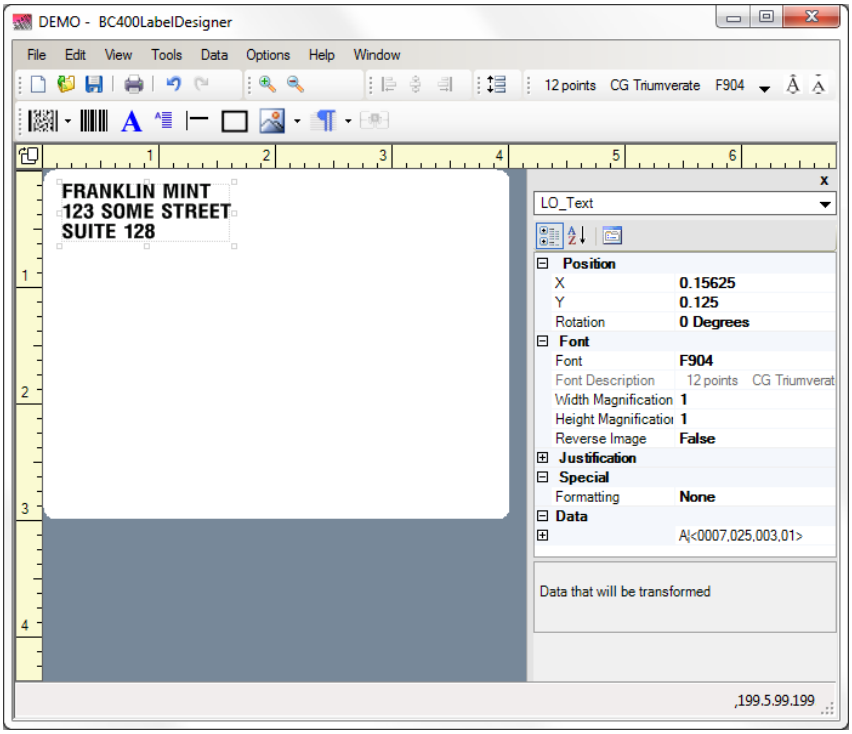


Click OK to continue. The **Abc** icon will appear on the workspace.



Position the cursor, then left-click to place the Array object on the label.

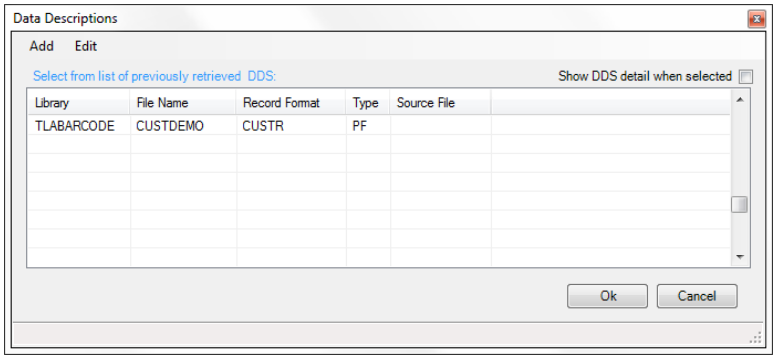
The Array item now appears on the screen.



Notice this single array object is creates three lines of data; each line is 25 bytes long and is retrieved starting at position 0007 from the merge file record.

Merge Directory

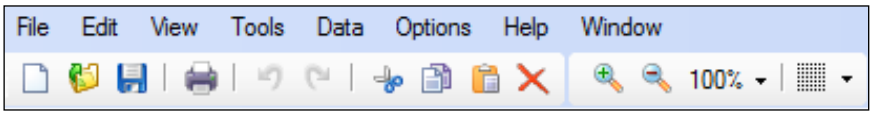
To display the current list of available Data Descriptions, you must have either an existing label or a new label open in Edit Mode. Click Data in the Menubar, and then Select Data Source. The Data Descriptions will appear.



To Retrieve, Update, or Remove a DDS, see Chapter 5.1 (Merge Data)

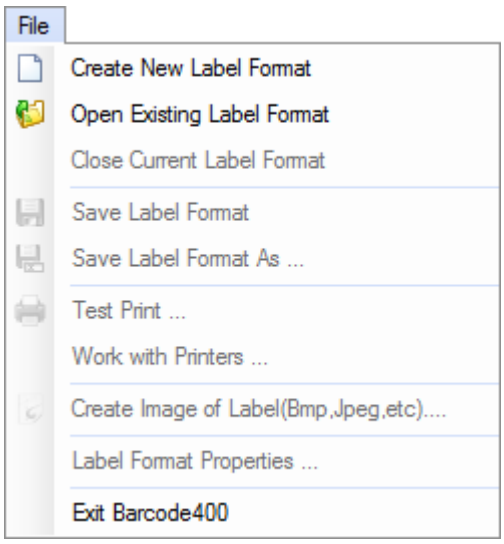
6. Menu Bar

At the top of the work screen is the Menu Bar. This bar may be locked at the top of the Window or it can be dragged out to form a pop-up menu.



6.1 File Menu

This menu includes functions relating to the label format; Create, Open, Close, Save Options as well as Format Properties and Test Print. Also, the user can Exit Barcode400.



Create New Label Format

Opens a new blank label format. Initial settings are based on the Application Values.

Open Existing Label Format

Opens the Label Format Directory, in order to edit an existing format.

Close Current Label Format

Closes out the label format being actively edited. The user will be prompted to save the format before exiting.

Save Label Format

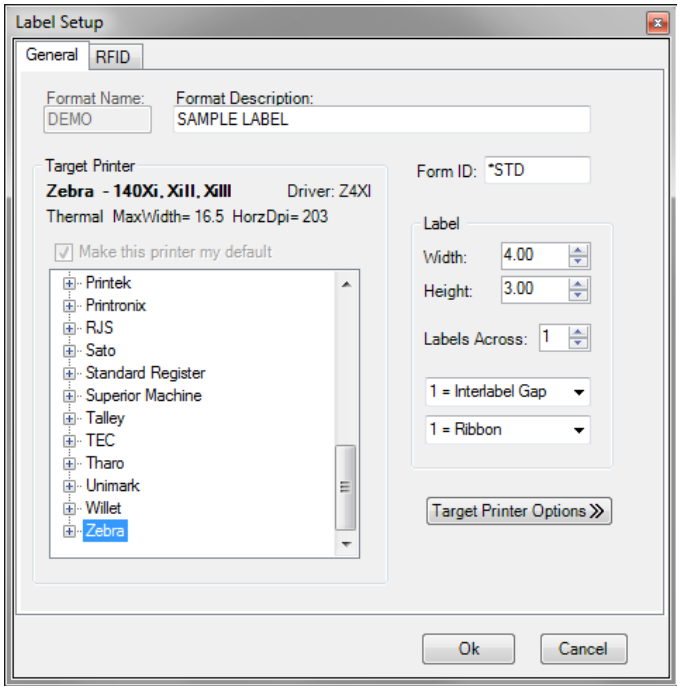
Saves the currently active format to the iSeries, but does not close the format out.

Save Label Format As

Prompts for a new Label Name to save the currently active format to the iSeries, does not close the format out.

Label Format Properties

Displays the format's current settings.



Test Print

Print a copy of the currently active label, using Sample Data.

Create Image of Label

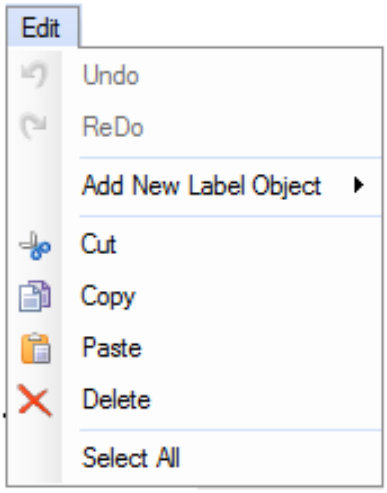
This option exports the label format as an image file (.bmp, .jpg, .gif, .png, .tif or .pcx). The image file is then saved to a selected PC hard drive or a network folder.

Exit Barcode400

Closes the Barcode400 application. If a format is currently active, the user will be prompted to save their work.

6.2 Edit Menu

This menu functions feature add or manipulating objects on the label; Undo, Redo, Add, Cut, Copy, Paste, Delete and Select All.



Undo

Any recent action can be retracted by selecting this option. The Undo also restores recently deleted objects or removes unintentionally created objects.

Redo

This function effectively reverses an Undo – restoring a label design's state before the Undo was performed. Any recent action can be retracted by selecting this option.

Add New Label Object

Any standard label element (barcode, text, line, rectangle, graphic or stored paragraphs) can be added from this option as opposed to using the buttons on the Toolbar.

Cut

Removes highlighted object(s) from the label design, but stores them in the Windows clipboard.

Copy

Creates a duplicate of any highlighted object(s) and stores it in the Windows clipboard.

Paste

Any object(s) in the Windows clipboard from a Cut or Copy will be placed on the label.

Delete

Permanently removes any highlighted object(s) from the label.

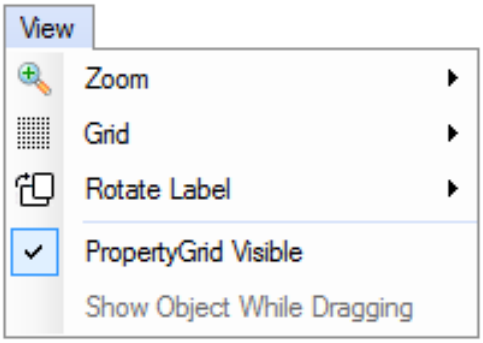
***WARNING**: Only Undo can restore a deleted object.*

Select All

Highlights all objects on the label at once. All objects can then be Cut, Copied, Deleted or dragged to a new location.

6.3 View Menu

This menu functions allow the user to manipulate how format designs are displayed on the work screen; including Zoom, Grid, Rotate, and Properties.



Zoom

The label format display can be enlarged for more accurate object placement or reduced to view the overall design. Magnification ranges from 50% - 500%. Or set to Fit to Window.

Zoom Bar

Click the Zoom In button to magnify the label format or click Zoom Out button to de-magnify the view of the label format.

or

Click on the Zoom magnification 100% button to select a specific magnification.

Grid

A grid work of dots or lines can be overlaid on the format for easier object alignment.

There is also a Grid button on the toolbar.

The Grid button is a toggle. If the grid is not visible, clicking Grid will make the grid appear. If the grid is visible, clicking the Grid button will remove the grid from view.

To change Grid Appearance, see below.

Click the Grid Options drop down button to display grid options.

Grid Menu Options

Show Grid

- If the grid is not visible, clicking Show Grid will make the grid visible.
- If the grid is visible, clicking Show Grid will remove the grid from view.

Snap To Grid

- Always On - Will cause any data being placed on a label format to be "snapped" into place. The snap-to increments are based on settings in the Grid Size option.
- Snap Only - When Grid is Visible will enable the snap-to grid function, but only when Show Grid is on.

Grid Type

- Dots - Displays the grid in dots spaced at increments specified in the Grid Size.
- Lines - Displays the grid in lines spaced at increments specified in the Grid Size.

Grid Size

- Select increments used for the snap to feature. Increments range from .075 inches to 1 inch.

Ruler Increment

- Affects how the ruler lines are displayed in the design screen. Each inch on the ruler can be adjusted to 1/10 inch, 1/8 inch, or 1/4 inch.

Rotate Label Format

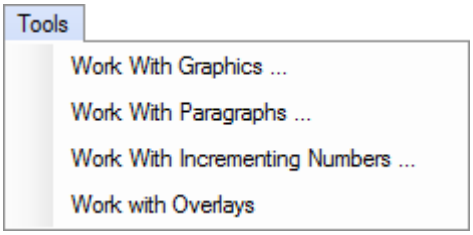
This option allows the entire format design to be turned in 90 degree increments. All objects on the label will be turned and repositioned.

Click the Label Rotate button in the top, left corner where the rulers intersect.

***NOTE**: Graphics do not rotate.*

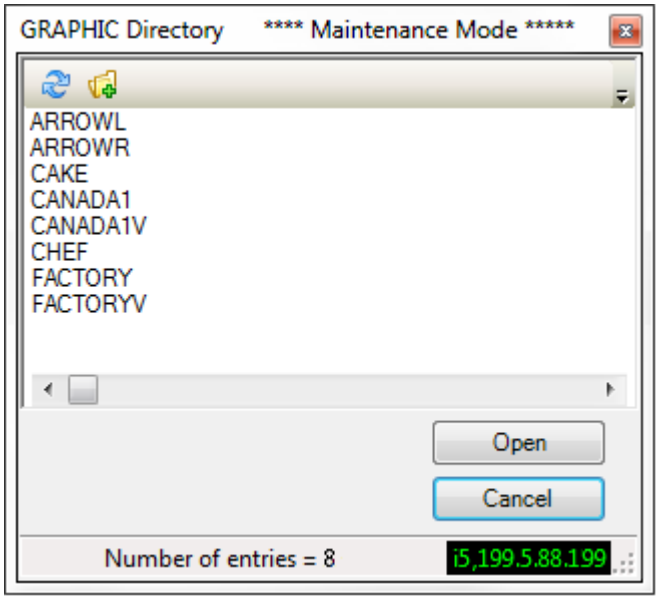
6.4 Tool Menu

This menu allows direct access to object directories.



Work With Graphics

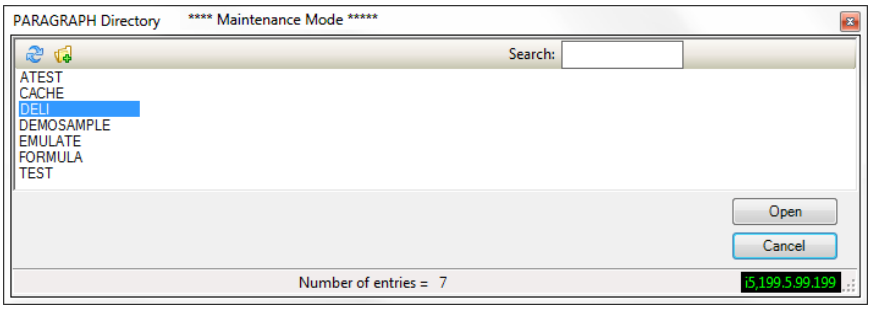
This option will access the Graphic Directory.



The user can right-click on an image to Copy, Rename or Delete logos from the Directory or click Add to transfer a new image to the iSeries. *Also see Graphics*.

Work With Stored Paragraphs

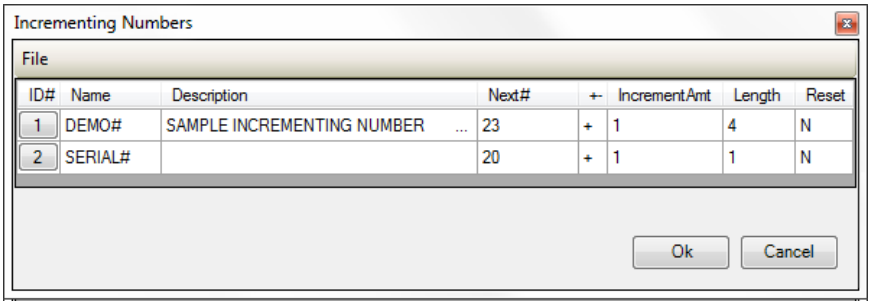
This option will access the Paragraph Directory.



The user can right-click on a Stored Paragraph to Copy, Rename or Delete paragraphs from the Directory or click Add to create a new Stored Paragraph. *Also see Stored Paragraphs*.

Work With Incrementing Numbers

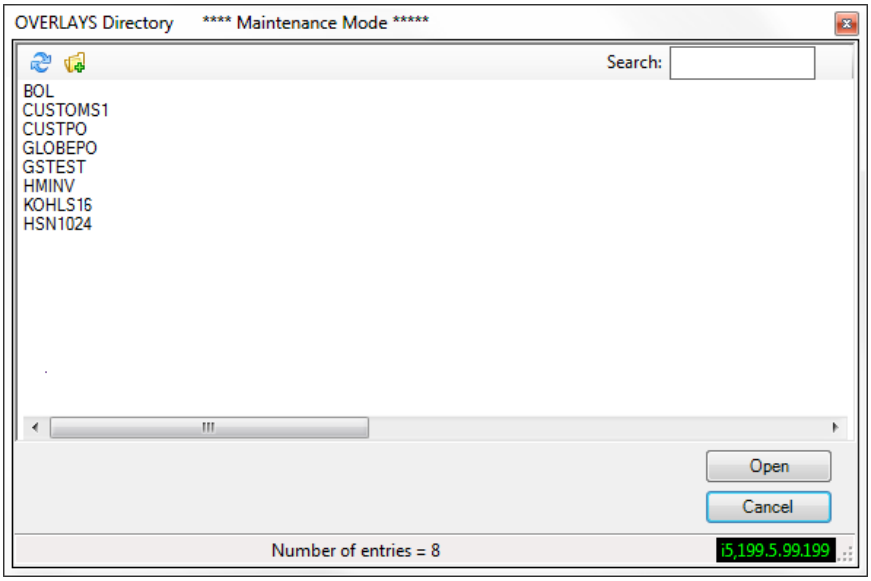
Click this option to access the Incrementing Numbers Directory.



The user can right-click on an Incrementing Number to Edit, Delete, or Create control numbers. *Also see Incrementing Numbers.*

Work With Overlays

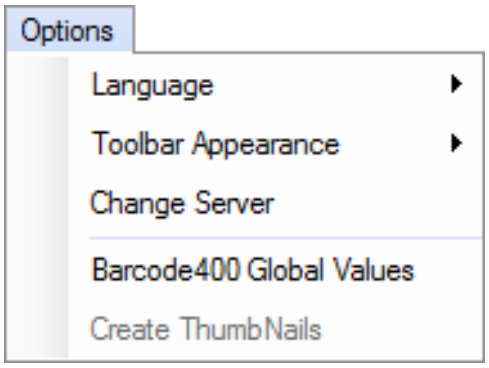
This option will access the Overlay Directory.



The user can right-click on an Overlay to Copy, Rename or Delete. Also see Overlays.

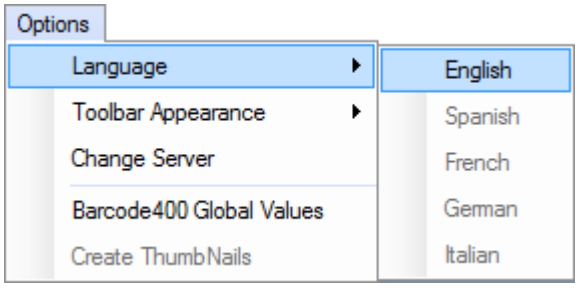
6.5 Options Menu

These additional functions affect the appearance and global function of Barcode400.



Language

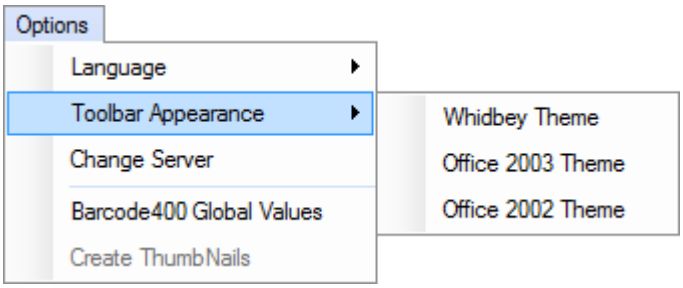
Barcode400 defaults to English. There are additional options for Spanish, French, German, and Italian.



**As of Version 4.0, only English is supported.*

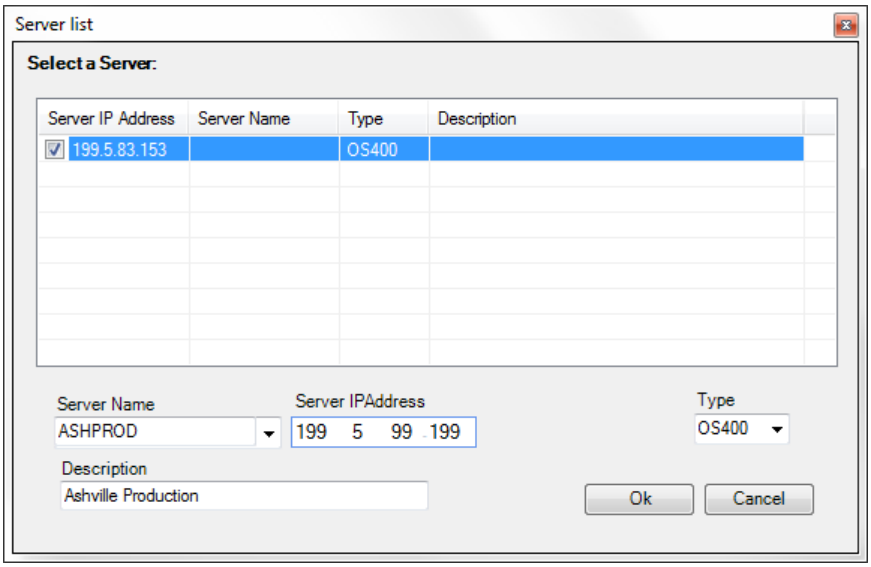
Toolbar Appearance

Barcode400 has several options to set the Toolbar and Design screen display.



Change Server

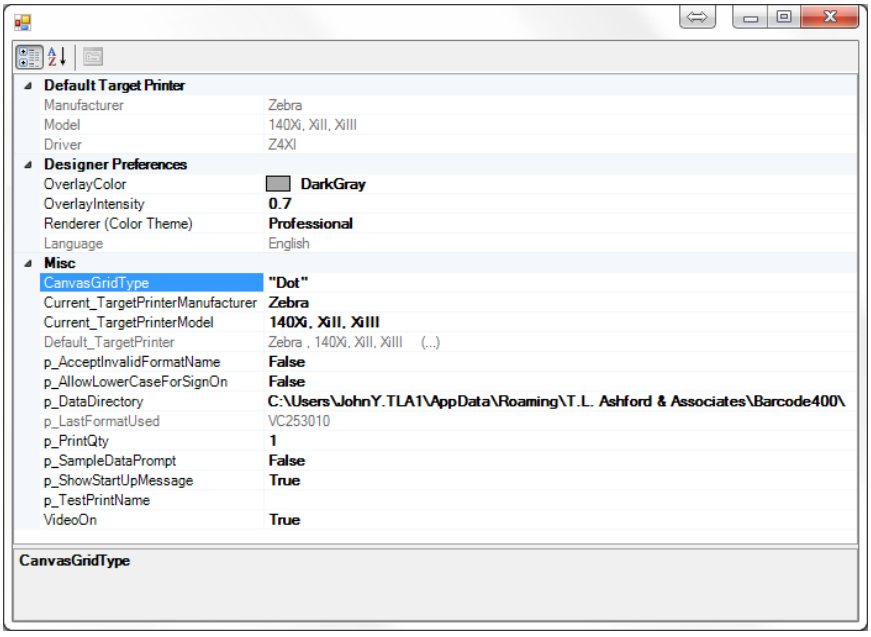
Barcode400 allows the user to connect to multiple iSeries, but only connects to one CPU at a time. By selecting this option, the user can indicate which iSeries to connect to the next time the software starts.



***NOTE**: You must close and restart the software to connect to the new server.*

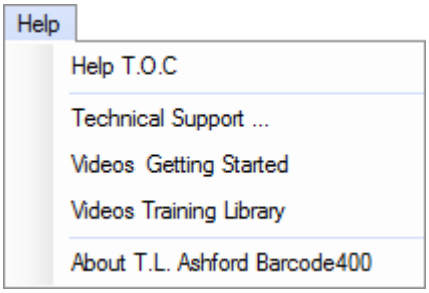
Barcode400 Global Values

This option accesses various default and connection settings. *Also see Application Values*.



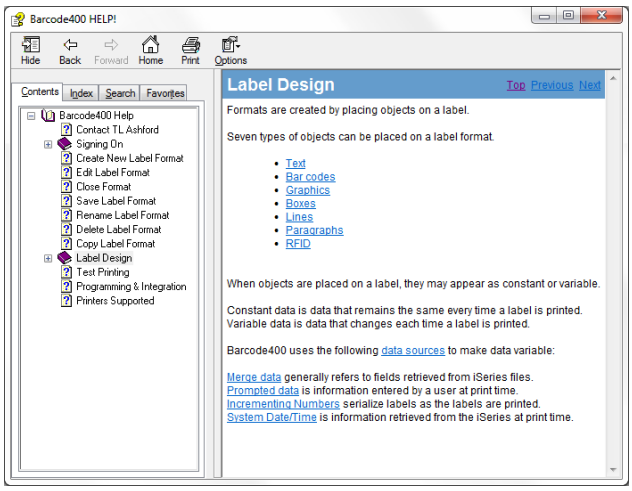
6.6 Help Menu

The Help Menu provides additional resources to the user, explaining the software's functionality and providing contact options to T.L. Ashford.

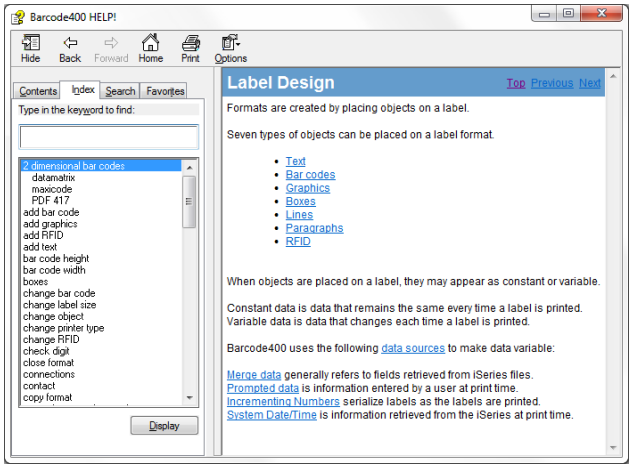


Help Table of Contents

Click on **Help T.O.C. (Table of Contents)** to view the list of help subjects.

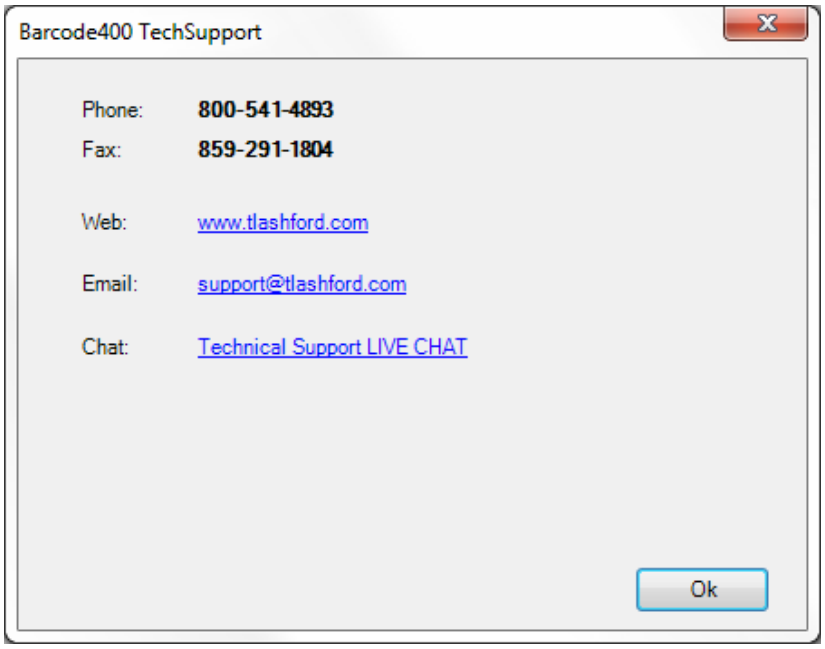


Or **Index** for a complete topic list. You can also go the Search tab to find a specific issue.

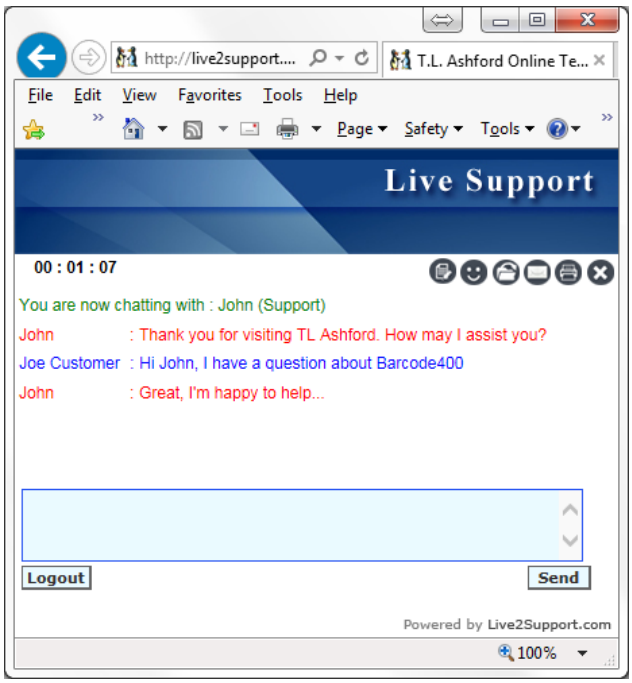


Technical Support

T.L. Ashford and Associates offers easy to access technical support to Barcode400 users. Clicking on this option opens this window –

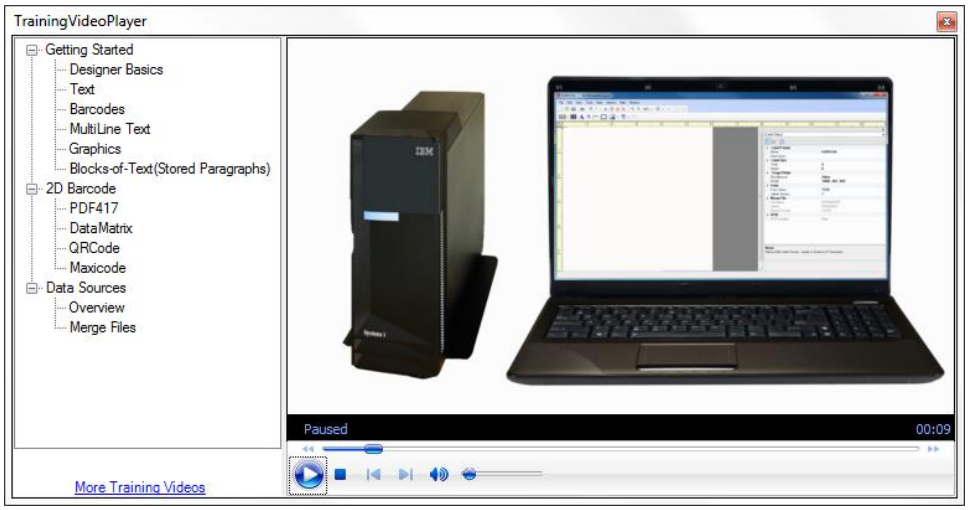


Support lines are open 8a-5p EST Monday through Friday. Click the web link to our website for the latest new and software updates. Email your support representative. Or open a Live Chat *(below)* with a T.L. Ashford support representative, during support line hours.



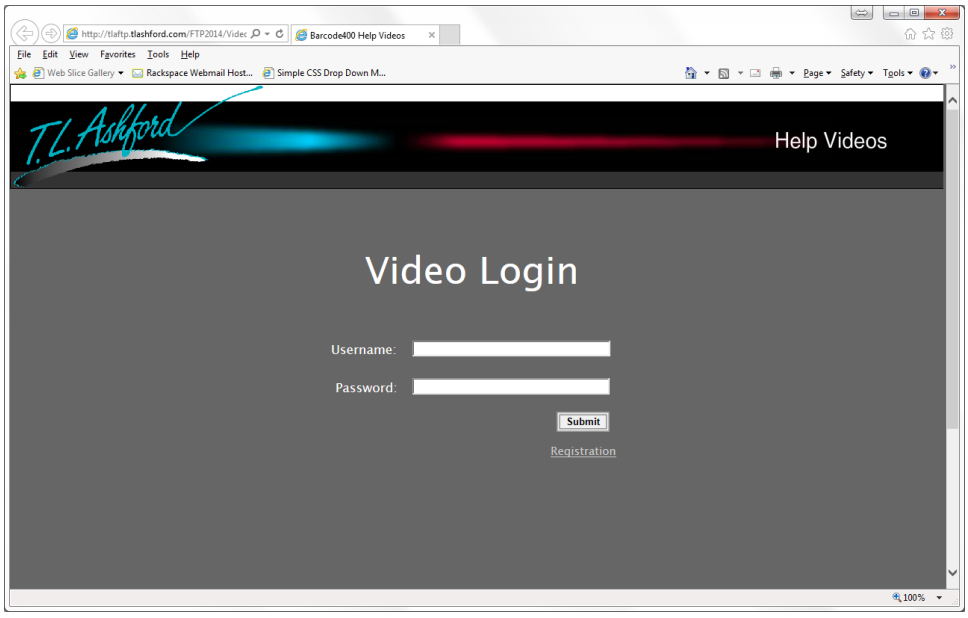
Videos – Getting Started

New users to Barcode400 might wish to view our series of introductory videos by clicking this option. The video player can be positioned on screen and scaled to allow you to work along with the instructions.



Videos – Training Library

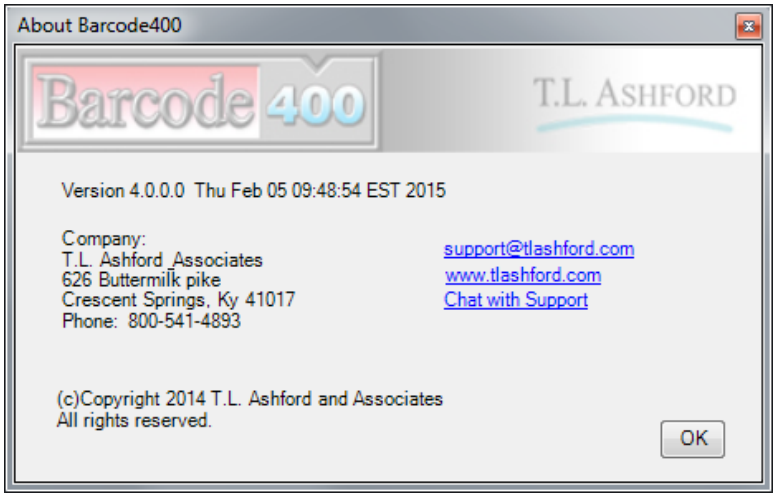
Numerous videos are available for viewing from T.L. Ashford's website for more in-depth training and instruction on all aspects of Barcode400.



Just use your Download Access sign-in. If you do not yet have an access code, you can register as well.

About

This option will display your currently installed version of Barcode400.

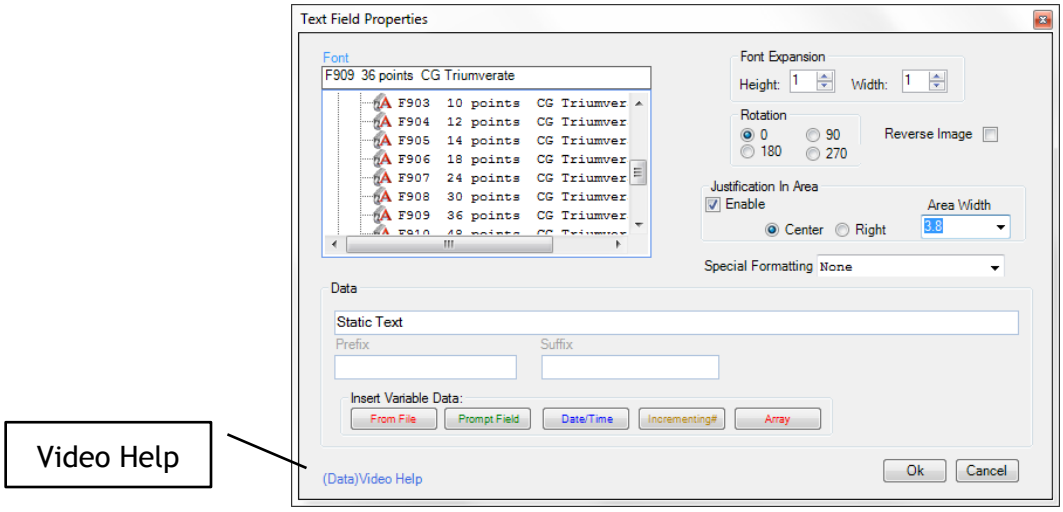


Also, links to our support email, website and Live Chat can be directly accessed.

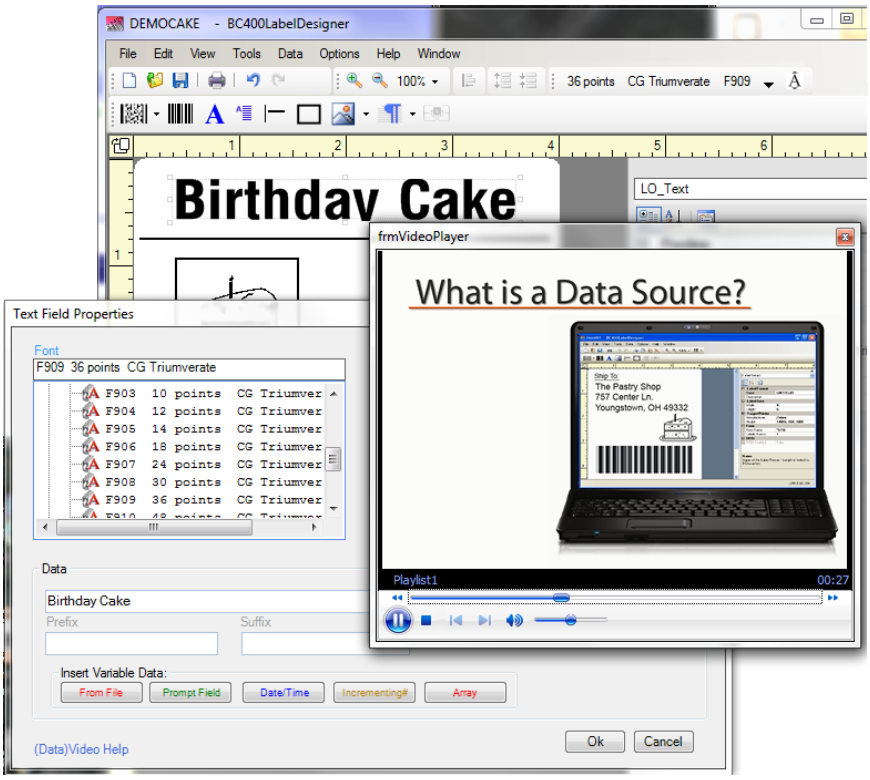
7. Additional Functions

7.1 Video Help

On various pop-ups or property screens, you may see a link to Video Help (See below)



Clicking the link(s) will produce a Video Help pop-up specific to the object or topic.



The Video Help can be viewed, paused, rewound, or fast-forwarded. There is a volume control as well. At any point, the Video Help can be closed by clicking the

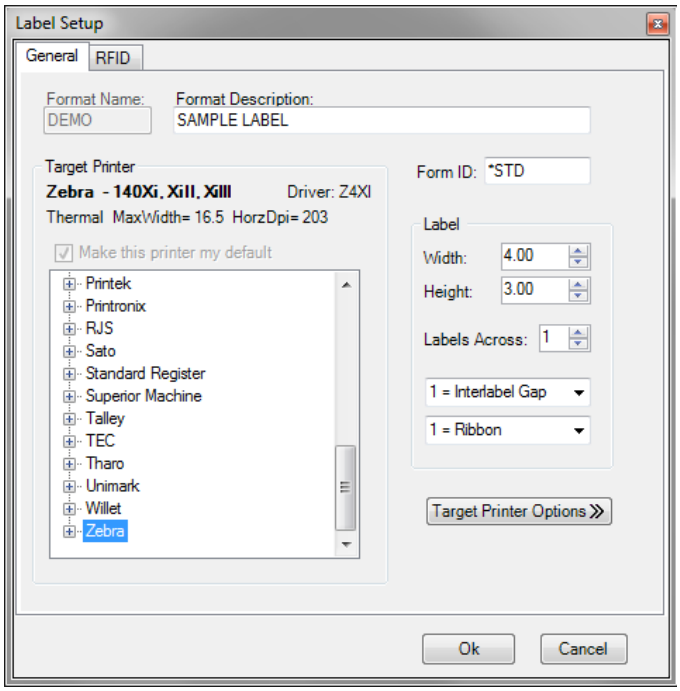
7.2 Label Setup

The Label Setup menu allows users to define the label format's target printer, dimensions and desired media options.

Change Target Printer

Target Printer is the printer make and model for which a label format is being designed. The Default Target Printer is specified under Application Values on the SignOn screen.

Right-click in the Design area on the label format > Select Show Properties DialogBox.



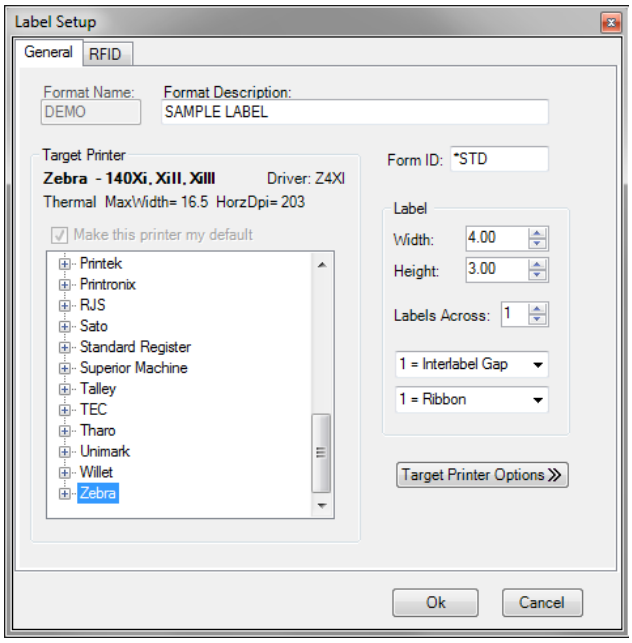
Select desired printer Manufacturer/Model. Click **OK**.

***NOTE**: Changing the Target Printer can change how the existing elements on your label appear, including graphics and barcodes.*

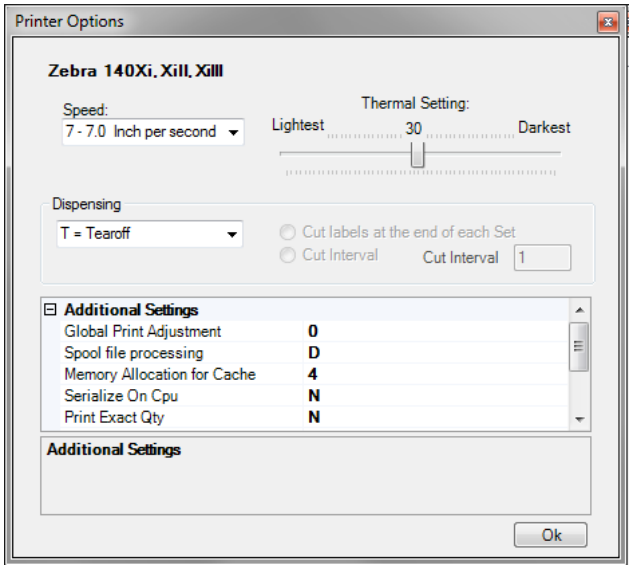
Change Printer Options

Right-click in the Design area > Select Show Properties DialogBox.

The Label Settings will appear.



To access the Printer Options, click on the Target Printer Options button.



The Printer Options are unique to each printer type. But, most common will be Print Speed, Darkness, Dispensing Method and Font options. Make any needed changes.

Click OK.

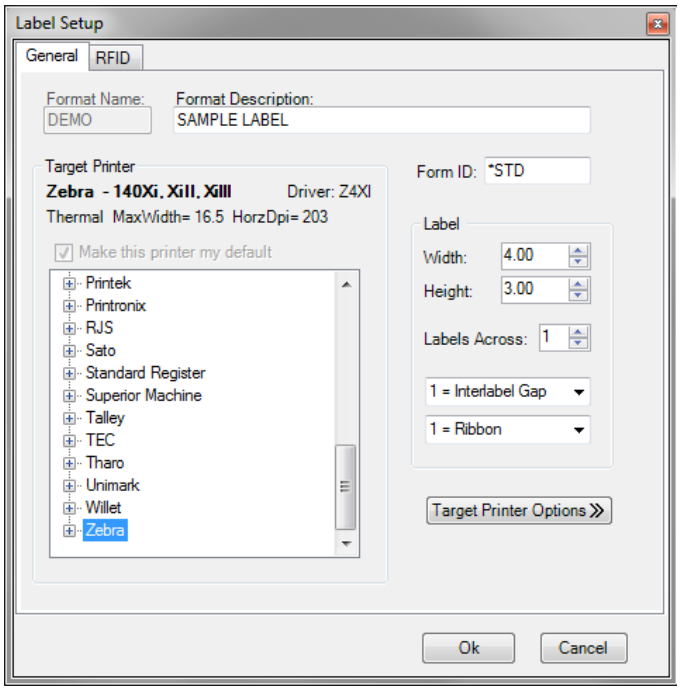
***NOTE**: Options displayed are at their Default, not the current settings.*

Change Label Size

Label Size refers to the format's dimensions in relation to the media on which it will be printed. Barcode400 determines height and width by the orientation the paper is loaded into the printer, not how the label is applied. Label Size defaults to 4" wide by 6" high.

Right-click in the Design area> Select Show Properties DialogBox.

The Label Settings will appear.



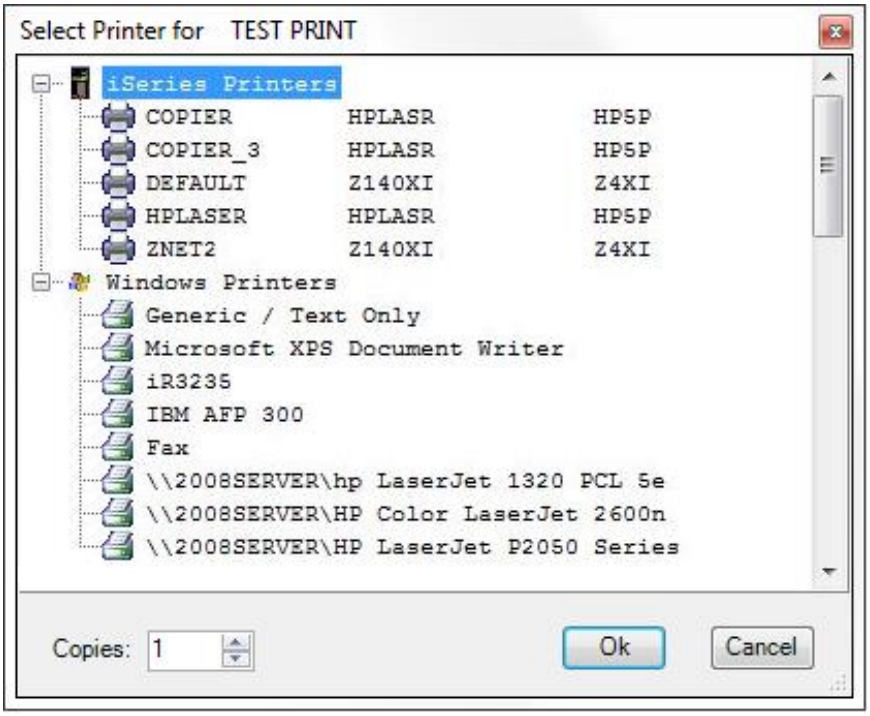
On the General tab, under Label, enter the format Height and/or Width. Click **OK**.

8. Test Printing

Label formats can be test printed from the designer to iSeries output queues or locally to printers connected to the PC.

***NOTE**: Formats using Merge Data or Prompted Data will test print using Sample Data as it appears in the label designer. The Graphical Designer does NOT access file data.*

Click the Test Print button in the tool bar.



The Select Printer Window Appears.

Choose from iSeries or Windows printers. Select the desired printer.

***NOTE**: If you do NOT see the printer queue in the iSeries list, it must be added via Barcode400's main menu on the IBMi, Option 9 (Utility Menu - Configure Printers).*

Select the number of copies to print.

Click **OK** to print.

9. Programming & Integration

Labels designed within the Barcode400 designer can be executed from existing iSeries applications in order to completely automate label printing. Once the proper code has been placed within the application program and the program is compiled, the label format may be changed without recompiling the program.

CL – LBLBATCH / LBLBATCHC

Batch processing means reading a data file containing one or more records and printing a label(s) for each record. Label printing can be initiated within a CL program, from an IBMi command line or from the Barcode400 menus on the IBMi.

RPG & COBOL

Barcode400 can be called from within an existing RPG or COBOL application. Once proper code has been placed within the program and compiled, the label format may be changed as often as necessary without recompiling the program.

LBLPRNT

The LBLPRNT command allows a user to quickly print a label without having to go to the Barcode400 main menu on the iSeries.

Complete programming details and sample programs are available in the Barcode400 Users' Guide, Chapter 2.

Appendix A: Barcode Code Symbologies

Popular 1-D Barcode Symbologies

Since 1949, when the bar code was first conceived for use in automating grocery store checkouts and inventories, dozens of symbologies have been developed for general and specialty use. However, a handful of types have become more widely used among retailers, industry groups, and shipping companies. The most common are detailed below and are supported in Barcode400.

Codabar (iSeries versions list this as type **D**)

As one of the symbologies competing to be the first grocery industry standard, Codabar was beat out by the U.P.C. in 1973. However, it was soon adopted by the blood banking industry for marking bags. Also, it was the first shipping symbology used by Federal Express.

Codabar is a numeric-only symbology with no check digit, a fixed ratio and a limit of 100 bytes.

Code39

Code 39, or Code 3 of 9, was the first standardized barcode for manufacturing and shipping. The symbol's high ratio and density make it suitable for printing on large cartons and can easily be read by long-range scanners. Developed in 1982 by Intermec, Code 39 is still widely used in part identification and shipping.

Code 39 is an alphanumeric symbology (upper-case only) with a limit of 40 bytes and a variable ratio.

Variations

Code 39, 1:3 Ratio (iSeries versions list this as type **A**)
The BNA type represents the most common version of Code 39. The high narrow-to-wide ratio of bars and spaces gives the symbol a high readability and durability.

Code 39, 1:2 Ratio (iSeries versions list this as type **Y**)
The lower ratio increases density, allowing the same data to use less space, but may sacrifice readability.

Code 39, 1:2.5 Ratio (iSeries versions list this as type **@**)
This variation is the middle ground between the high and low ratio symbologies.

Code 39, 1:3 Ratio w/ Mod43 Check Digit (iSeries versions list this as type 3)
This variation is a standard 1:3 ratio barcode (BNA), but a Modulus 43 check digit is added to confirm data content. The Health Industry Business Communications Council (HIBCC) requires this variation to produce their industry standard labels.

Code93 (iSeries versions list this as type **2**)

Originally, Code 93 was developed by Intermec to compete against Code 128 in 1982. Using the same character set as Code 39, it could produce a more efficient alphanumeric symbol than Code 128. However, Code 128's double-density encoding mode could produce more efficient numeric-only symbols.

Code 93 is an alphanumeric symbology (upper-case only) with a limit of 100 bytes and a fixed ratio.

Code 128

Developed by Computer Identics in 1981 to produce compact alphanumeric barcodes, Code 128 can encode the complete 128 ASCII character set. To best utilize its double-density capability (two values into one coded character), Code 128 offers three choices of character sets (Subsets). Each option allows for improved data flexibility or maximum efficiency.

Subsets

Code 128, Subset A (iSeries versions list this as type **0**)
Code 128, Subset A converts pairs of values into single hex-decimal values. While this conserves space, some barcode readers may not decode the barcode value back into the original two values.

Code 128, Subset B (iSeries versions list this as type **Z**)
Code 128, Subset B encodes each character as a single value. This makes Subset B the widest of the three variations, but it is also the most flexible, allowing for the encoding of numeric values as well as upper and lower-case alpha characters and punctuation marks.

Code 128, Subset C (iSeries versions list this as type **1**)
Code 128, Subset C converts pairs of digits into single values. This noticeably conserves space, however the symbology is limited to evenly paired numeric values. Most printers will either drop the odd digit or add a zero as a prefix to meet this requirement.

Variations

Code 128, Subset C + FNC1 Prefix (iSeries versions list this as type **f**)
This variant of Code 128, Subset C adds an unprintable ASCII value (Function 1) before the data content. This conforms to the GS-1 requirements for barcodes using an Application Identifier. The GS-1 or UCC/EAN 128 uses the FNC1 to indicate that an identifier is being used. When scanned, an application can determine the function of the barcode after determining the value of the AI.
(Example: FNC142012345 = 420 (Domestic Postal AI) + 12345 (Postal Code))

Code 128, Subset C + FNC1 Prefix + Modulus 10 Check Digit (iSeries versions list this as type **W**)
This variant of Code 128, Subset C is a special function barcode used for creating the GS-1 or UCC/EAN Serial Shipping Container Code or **SSCC-18**. This barcode automatically adds a calculated check digit to the original 19 digits passed to it.

EAN –13 (European Article Numbering) (iSeries versions list this as type **T**)

Founded on the principles of U.P.C., non-U.S. groups adopted the International Article Numbering system in 1976. This included the addition of another digit to the U.P.C.'s 12-digit symbol, to allow for an international number system. Like the UPC, the first 6-8 bytes of the GTIN-13 encoded data identify the manufacturer of a product, and the remaining 4-6 bytes determine the individual product.

Variation

GTIN-8 / EAN-8 (iSeries versions list this as type **U**)

Like UPC-E, this short-form is used when an EAN-13 would be too big for the product being labeled. EAN-8 uses zero suppression to truncate the vendor ID and product number, the same as UPC-E.

Interleaved 2 of 5

Interleaved 2/5 was developed for carton transportation and storage. The symbol's high ratio and low density make it suitable for printing on large containers and cartons and can easily be read by long-range scanners. Developed by Intermec, Interleaved 2 of 5 is still widely used in carton storage and warehousing.

Variations

Interleaved 2/5, 1:3 Ratio (iSeries versions list this as type **K**)
This type represents the most common Interleaved 2/5. The high narrow-to-wide ratio of bars and spaces gives the symbol high readability and durability. This variant is used for most carton labels. It can encode from 2 to 40 characters in even-numbered sets.

Interleaved 2/5, 2:5 Ratio (iSeries versions list this as type **i**)
This type uses a lower ratio to increase density, allowing for the same data to use less space at the sacrifice of some readability and durability.

Interleaved 2/5, 2:5 Ratio w/ Mod10 Check Digit (iSeries versions list this as type **9**)
This variation is the same as BNK, with the exception that it is searching for 13 digits for the SCC-14 (a.k.a. GTIN, UCC-14 or UPC Container barcode). The software will automatically calculate the 14th position check digit and add it to the end of the code.

Interleaved 2/5, 1:3 Ratio (iSeries versions list this as type **a**)
This variant uses the higher ratio of the BNK, with the check digit function of the BN9.

UPC – Universal Product Code / GTIN-12 (iSeries versions list this as type **P**)

Adopted by the U.S. Grocery Industry in 1973, the UPC is still one of the most commonly seen bar code symbols. GS1, formerly the Uniform Code Council (U.C.C.), oversees the assigning of manufacturer ID numbers to its members, who in turn, assign unique numbers to their products. The combined values are scanned at point of sale registers.

Variation

UPC-E (iSeries versions list this as type **R**)
For products too small for a full-sized UPC-A, a zero-suppressed version is available that truncates the same data into 8 bytes.

Two-Dimensional Barcode Symbologies

Allowing up to 2,000 characters in a single symbol, the next generation of barcodes increased capacity and flexibility while reducing symbol size.

Data Matrix (iSeries versions list this as type **Q**)

Able to be crafted directly into a component part or material, in addition to traditional printing, Denso's Data Matrix can engrave a few bytes on a computer chip or print over 2,000 characters.

Maxicode (iSeries versions list this as type **X**)

Developed by UPS (United Parcel Service) for high-speed automated package sorting, Maxicode can encode up to 100 characters in a 1-inch square "bulls-eye" symbol.

Maxicode has a rigid structure that cannot be deviated from, particularly the first 16 characters (Country, Service and Postal Code)

PDF-417 (iSeries versions list this as type **E**)

To meet the need for detailed information, Symbol's Portable Data File (PDF) can encode over 1,000 bytes, including graphics, in a highly secure matrix symbology.

PDF-417's ability to store a large amount of information has allowed for organizations like the auto industry to create a single symbol to replace numerous one dimensional barcodes on their label.

QR Code (iSeries versions list this as type **q**)

Originally created by Denso for the automotive industry, the easy-to-scan QR is now popular in marketing and advertising for scanning from mobile internet devices.

Appendix B: Printers Supported

TL Ashford is continuously adding printers to the list of printers supported. If you cannot find the specific printer Manufacturer or Model in our list, please contact us. We will do our very best to accommodate the requirements.

Analog Technologies	2020, 8220, 8045E, 8030, Laser, Codajet Print Server
Argox	A50, A150, A200, OS-2030, OS-2040, OS-213, OS-214, OS-314, R-400, R-600, X-1000, X-2000, X-3000. G-6000
Avery-Soabar	SPX360, SPX362
Avery-Dennison	TTX 450, TTX 650, TTX 950, TTX 1050, TDI Tag Printer, TTX 720 Print & Apply, 6404, 6405, 6405-RFID, 6408, 8045E
CIE America	250, 300, 400, 600, 800 with QMS
Citizen	CLP-521, CLP-621, CLP-1001, CLP-2001, CLP-6001/6002, CLP-7001/7002, CLP-7201, CLP-7401, CLP-8301, CL-S420, CL-S521, CL-S621, CL-S631, CL-S700
C-Itoh	CT40, CT60, S4, T4
Data South	Barcode 300 TX, Performax 600 TX
DataMax / O'Neil	A-Class, E-Class, DMX400, DMX430, DMX600, DMX800, H-Class, I-Class, M-Class, S-Class, W-Class, MP Compact, Ovation, Prodigy Max, RL4, Titan
Decision Data (Magnum Graphics)	
Eltron	Eclipse, HT146, LP2122, LP2142, LP2622, LP2642, LP2742, LP2844, LP2443 (ORION), P2242, STRATUS, TLP2046, TLP2344, TLP2642, TLP2742, TLP2746. TLP2844, TLP2824
Eltron/RJS	QB440, QB450, 240, 260, 285 with CL+
Esselte	Meto Bandit, EM450, V40 (DPL),V65, V85
Facit	MP-4, MP-6, Continuous Forms Laser
Fargo	Allegro, Allegro 2, Prodigy, Prodigy Plus
Genicom	3812, 3842, 4492, 4592, 4812, 4842, 4912, 4942, 6241, 6241LL, 6321, 6322DT, 6341, 6342, 6342DT, 6342H, 6441, 6442, 6451, 6451V, 6481
Genesis	9300 Print & Apply, 9500 Print & Apply
Godex	RT Series, DA Series
Hewlitt-Packard (HP)	HP Laser (AFP Driver)
IBI	Continuous Forms Laser with Code V
IBM	4400-04, 4400-06, 4400-08, 5500-R40, 5500-R60, 5500-R80, 6700-04, 6700-06, 6700-08, 6400-6412 (Code V), 7516, 7517l
Inducomp	N-454
Intermec	3100, 3240, 3400a-e, 3440, 3600, 4000, 4100, 4400, 4420, 4440, 4630, 4830, 7421, 7422, 8710, PB50, PC41, PD41, PD42, PF2, PF4, PF4i, PF8, PL4, PM4i, PX4i, PX6i
Mannesman Tally	645, 661, T6045, T6065, T6090, T6091, T6140, T6141
Monarch	5170, 9411, 9412, 9413, 9414, 9416, 9445, 9446, 9474, 9490, 9800, 9805, 9813, 9820, 9825, 9830, 9835, 9840, 9850, 9854, 9855, 9860

Novexx	Tiger, Puma, Lion, Chess Series
Paxar	520, 540
Printek	4003, 4500, 4503, 8003 with Imager Plus
Printronix	L150, L1016, L1024, L1524, T1006 (VGL), T2204 (SGL), T3306 (IPL, VGL, FGL), 4204, P300, P600, P5000 Series, T5000 Series, T4M
RJS	260, 285 (ZPL), 240, 260, 285 (CL+), QB440, QB450
Sato	M8400, M8400 S, M8400 RV, RVe, 84PRO, M8460 RV, M8450, M8485, CG208, CG212, CG408, CG412, CL408, CL408e, CL608, CL608e, CL412, CL412e, CL612, CL612e, CT400, CT410, CX200, GL408, GL412, GL608, GL612, GT408, GT412, GT424, LM408, LM412, M10, MB400, S8408, S8412, S8424, XL400, XL410
Soabar	TTX450, TTX 720 Pax
Standard Register	PT560
TEC	B-402, B-602, B-SX4, B-SX5, B-SX6, B-452, B-472, B-572, B-672, B-872
Tharo	Apollo 3, Freedom, 112+
Willet	2610/8 Print & Apply
Zebra	A300, DA402, GC420, GK420, GX420d, GX420t, GX430t, QL320, QL420, PA400, PT400, P4T, RW420, R4M, R110XI (RFID), R170XI (RFID), S300, S400, S500, S600, Stripe, T220, T230, T300, T402, ZE500, Z4M, ZM400, Z4000, Z6M, ZM600, Z6000, 90, 90A, 90XI (I, II, & III), 91, 92, 95, 105, 105S, 105SE, 105SL, 130, 110XI, 140, 140XI (I, II, III, & IV), 142, 160S, 160SE, 220XI (I, II, III, & IV), 170XI (I, II, III, & IV), 110PAX, 170PAX, HT146, LP2824, LP2844, TLP2844, 2443, 2684, 2722, 2742, 2746

Appendix C: Troubleshooting

Connection

*Attempting to start Barcode400 and receive the message **"Cannot Connect to Server"** or **"Existing Connection was Forcibly Closed by Host"**.*

1) *Barcode400 uses the IP address of your iSeries CPU to connect. Confirm that the address in the Server Connections is the correct CPU Ethernet address and the correct box is checked.*

2) *In Windows, users must have Administrator Authority to the Barcode400 folder (C:\Program Files\T.L. Ashford & Associates) or set the T.L. Ashford & Associates folder to Run As Admin.*

Design

Text Fields

1) *If the desired font is not listed, confirm the label's Target Printer is correct. Only the fonts for that printer type will be available.*

2) *True Type fonts are available for many printer brands, but they must be installed on the printer first. If necessary, use our Font Download application.*

Barcode

1) *If the barcode displays a Red X after being placed on the label, this is a warning of a potential error based on the barcode's type and data. Confirm that the type and amount of data being encoded meets the barcode's requirements. Also, confirm any Sample Data for Variable fields.*

2) *If data is missing from the barcode when scanned, confirm the barcode type vs. merge data. Some barcodes may not encode punctuation, lower-case letters, numeric values only or require a specific number of characters.*

Graphics

1) *Graphics must be transferred to the iSeries first to be able to be added to the format.*

2) *Graphic must be transferred in the desired orientation. Graphics cannot be rotated on the label.*

3) *If the logo prints too large or too small, be sure the label's Target Printer type matches the Outque. Also, be sure to re-size the image if needed during the Logo Transfer.*

Merge Data

1) *The file should NOT contain more than 99 fields (except when using arrays) with no more than 8 key fields, 9,999 total bytes and the record format should have a unique name.*

Printing

Not Printing

Attempting to Test Print from Barcode400, no labels print or printer produces a blank.

1) *Confirm the printer is connected properly and the iSeries outque is Active with no error messages.*
2) *Confirm that the printer is in the Printer Configuration Chart in the Barcode400 Utility Menu and defined as the correct printer type.*
3) *Network or PC-connected printers should be using Host Print Transform on the outque or device.*
4) *If printing from a Barcode400 print program, confirm the Printer File is being overridden to the correct printer device or outque (BCLBL132 for Intermec, BCLABELS for all others).*

Print Results Do Not Match Display

Label prints, but does not match the GUI's on-screen version.

1) *Confirm the printer's model and resolution matches the Target Printer. (Ex. If the printer is a 203 dpi Sato, be sure to use a 203 dpi type). This can also affect barcode and graphic dimensions.*
2) *Confirm the Display Properties in Windows. If Windows is not set to 100% (96 dpi), the GUI may not display or print the label correctly to scale.*
3) *If the label uses True Types fonts, they must be installed in the desired printer first, otherwise the printer will substitute a default font.* *See Download Fonts*.

Label Only Prints Spool Data

Label prints, but the data is not formatted and only prints the literal spool content.

1) *Confirm printer model and type before printing. Also, confirm that any Barcode400 print program matches the printer model (Ex. Z4XI1024 for a Z140xi). Check Appendix A in the User Manual.*
2) *Confirm the printer is not configured as a Line Printer or in Hex Dump/Diagnostics Mode.*
3) *Confirm remote outque or iSeries device is using Host Print Transform to convert spool files.*

If you experience any issues connecting, designing or printing, contact your T.L. Ashford & Associates Technical Support Representative.

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