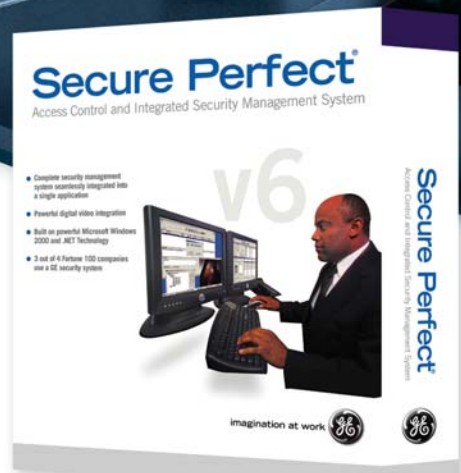


GE
Security

Badge Designer Manual

For Picture Perfect v4 and Secure Perfect v6



Badge Designer

For Picture Perfect™ v4 and Secure Perfect® v6

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Introduction

Welcome to EPIDesigner 6.3, the professional-quality design software that makes creating superb, full-color photo badge templates quick and easy. As well, create report templates that include photos and text drawn from your database or application. Import eye-catching graphics as card backgrounds and personalize your designs with the logo of your organization. Link templates to cardholder information and images stored in your database. Add bar codes, or encode magnetic stripes and smart chips, all within the same application. Even if you're not a design professional, you'll get picture-perfect results in minutes with EPIDesigner.

First-Time Computer Users

The first step on the road to designing identification cards is to learn how to configure and use this software. This User's Guide was written to guide you through the entire process of configuring your EPIDesigner workspace, linking to your database, and designing cards. The procedures outlined in this guide are straightforward, step-by-step instructions that even first-time computer users will be able to follow.

If you are uninitiated in the use of computers in general, do not be intimidated by some of the terminology used in this guide. These terms are common throughout the computer and photo imaging industries. We have included an extensive glossary at the back of this guide to introduce you to the terms that are associated with using EPIDesigner and digital imaging. This same glossary, and most of these instructions—as well as extensive reference material—are also available online, through the Help menu. Please make ample use of these tools.

Conventions

This guide and the EPIDesigner Help system use the following conventions for menus and shortcuts:

Example	Describes
Choose File > Page Setup	Choosing the Page Setup command in the File menu.
Ctrl + n	Holding down Control and pressing the lowercase letter 'n'.
Ctrl + Shift + n	Holding down Control and Shift, and pressing the letter 'n'.
Right-click	Clicking the right mouse button
Ctrl-click	Holding down Control and clicking the left mouse button.

NOTES:

EPIDesigner Setup

What's New in EPIDesigner

The following list outlines new features in version 6.3 of EPIDesigner:

- Select from new magnetic stripe character set options. You can choose ISO Standard, AAMVA Standard, or Custom.
- Open more than one EPIDesigner session at a time so you can easily cut and paste objects between designs.
- Select hidden objects placed under other objects in a layout.
- Customize the drop-down lists of colors in the toolbar and various Properties dialogs, and use these custom colors to maintain a consistent color scheme in each card layout (see “Creating Your Own Colors” on page 1.53).
- Align objects on a card layout by text baseline, even if the objects have different text fonts or sizes (see “Align and Distribute Objects” on page 1.32).
- Use the **Print image exactly as is** option to ensure objects are printed without being altered. This disables options to change the object’s line color and thickness, shadow, cropping, fading, transparency and grayscale, so that you can print bitmaps that contain digital watermarks (see “Change the Image Properties” on page 1.40).
- Select **Don't clip image** to print an entire image even if it is too large to fit on the card layout (see “Change the Image Properties” on page 1.40).
- Static image auto-sizing sets the size of an object to match the physical size of the image as specified in the image file header. This prevents EPIDesigner from re-sizing the image (see “Add Static Images” on page 1.40).
- New settings allow the designer to specify the width and height of an object. Using these measurements, and setting the object’s distance to the edge of the card, designers no longer need to manually calculate image coordinates using the left, right, top, and bottom positions of the object (see “Object Properties” on page 1.28).
- When cropping a background, click anywhere in the displayed image to choose a color to crop, or use RGB color match to specify an amount of variation from a selected color. You can also let EPIDesigner select the color automatically (see “Add Close-Cropping Effects” on page 1.42).
- Display text vertically (top to bottom) using the **Vertical text** option in the Static and Dynamic Text Properties dialogs (see “Adding Static and Dynamic Text” on

page 1.35).

- Use **Show object outlines** on the Rulers and Grid page to display an outline around every object on the layout (see “Setting the Workspace Options” on page 1.12).
- Use the **Image Setup** command to define the types of dynamic images that are available from the database (see “Setting the Workspace Options” on page 1.12).
- Use **Zoom In** and **Zoom Out** to customize the view of the card layout (see “Setting the Workspace Options” on page 1.12).
- Set up EPIDesigner to automatically adjust the contrast of images (see “Enhancing the Card Background” on page 1.25).
- Print ICAO standard machine-readable passports and travel documents using two new expression functions (see “Other functions” on page 1.68).

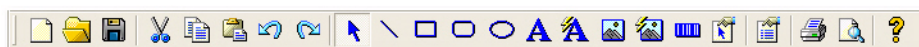
The EPIDesigner Workspace

With EPIDesigner running, you will notice one or more bars located across the top of the workspace window, below the EPIDesigner menu bar. The various toolbars available at the top of the EPIDesigner workspace are movable and resizable. To do so, click on the vertical bar at the left end of the toolbar and drag it to the desired location.

***Note:** The toolbars that appear on the EPIDesigner workspace may vary according to the product you have purchased.*

The Toolbar

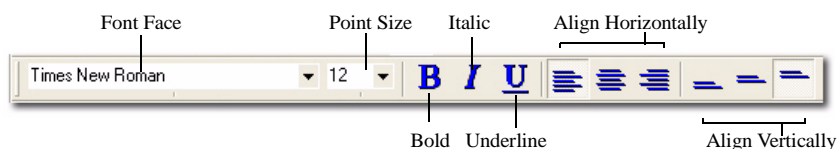
The EPIDesigner toolbar is located directly below the menu bar. It provides quick mouse access to many of the commands found in the various EPIDesigner menus.



- **New, Open, Save, Cut, Copy and Paste buttons:** Perform commonly used Windows commands.
- **Undo and Redo buttons:** Allow you to reverse the previous actions, or redo them if you so choose.
- **Flip Layout button:** Allows you to toggle between the front and back view of the card.
- **Zoom In and Zoom Out buttons:** Allow you to change the view of the layout.
- **Drawing Object buttons:** Allow you to select design objects; draw shapes (lines, rectangles, round rectangles, ellipses); or place text objects, static images, dynamic images, and bar codes on your card template.
- **Object Properties button:** Allows you to enable or disable special design features, such as image “cameos” or conditional display settings for the highlighted object.
- **Layout Properties button:** Allows you to set global parameters for the currently open layout (such as page size and background image).
- **Print button:** Allows you to print the card template.
- **Print Preview button:** Displays the active card template design as it would appear when printed.
- **About button:** Displays support and licensing information for your copy of EPIDesigner.

The Text Style Bar

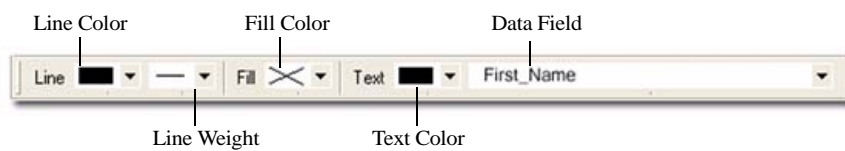
The text style bar provides access to the visual properties of text objects.



- **Font Face list:** Allows you to select a font when creating static or dynamic text objects.
- **Point Size list:** Allows you to select the point size of the characters.
- **Font Style buttons:** Allow you to change the style of the selected font (bold, italic, underline).
- **Horizontal Justification buttons:** Allow you to horizontally left-justify, center, or right-justify your text objects (and some bar codes) within their bounding boxes (that is, the adjustable invisible box within which the text resides).
- **Vertical Justification buttons:** Allow you to vertically top-justify, center, or bottom-justify your text objects (and some bar codes) within their bounding boxes.

The Attributes Bar

The attributes bar provides quick mouse access to color and line weight settings, and access to data fields or expressions that are linked to dynamic text objects, bar codes, and image keylines.

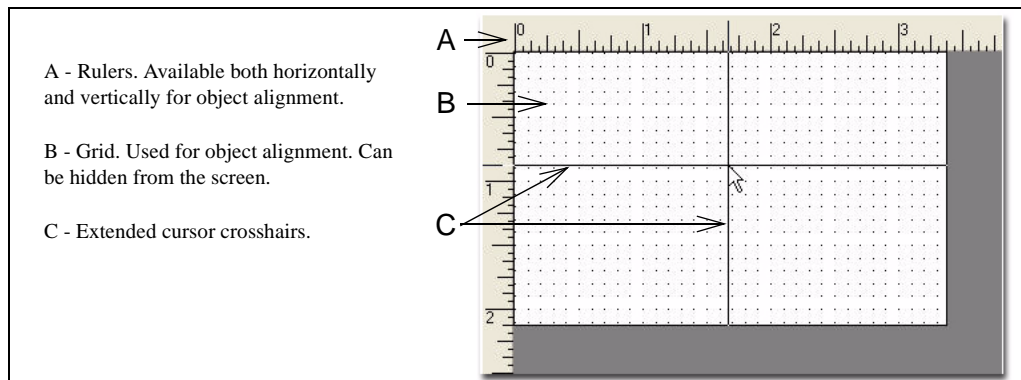


- **Line Attribute lists:** Allow you to select the color and weight (thickness) of lines and borders around drawing, text and image objects. You can also select Border Text from the Line color list (Pro only).
- **Fill Color list:** Allows you to select the color for fills (solid colors that are used to “fill” shapes).
- **Text Color list:** Allows you to select the color for text.
- **Data Field list:** Allows you to link dynamic text objects, bar codes, and image keylines to data fields or expressions. For example, linking a dynamic text object to the First_Name field in the database results in “First_Name” appearing on the card design (in whatever font and size you select). This is replaced by the cardholder’s first name (in your specified font and size) when the ID card is printed.

The EPIDesigner Design Window

The Design Window area of the EPIDesigner workspace is where you design card templates. When a new file is created, EPIDesigner opens a Design Window for the front of the card layout. The back of the card can be viewed at any time by selecting the **View** menu, and clicking **Show Back of Layout**, or by clicking **Flip Layout** on the toolbar.

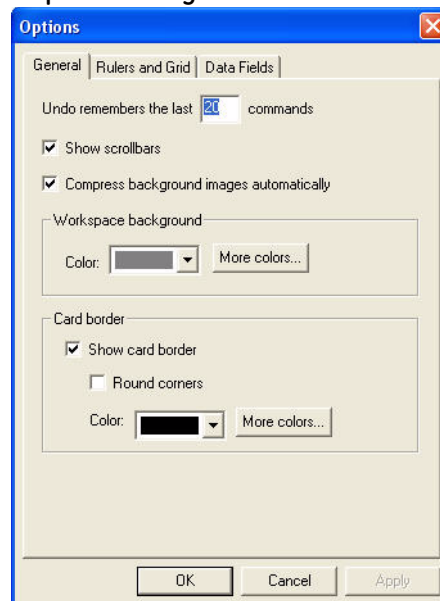
Figure 1 EPIDesigner Design Windows



Setting Up EPIDesigner

You can tailor the EPIDesigner workspace to better suit your needs. To change the default options, on the **View** menu, click **Options**. The **Options** dialog box appears.

Figure 2 Options dialog box



Specifying Undo Levels

Undo levels refer to the number of times that actions or commands can be reversed when you click **Undo** on the **Edit** menu.

For example, if you draw a circle on a card design and then set the line color from black to red, these actions represent two levels that can be undone. Therefore, if you click **Undo** twice, the first use would revert the line color of the circle from red to black, and the second use would delete the circle.

If you undo too many levels of actions or commands, you can reverse the **Undo** by clicking **Redo** on the **Edit** menu.

To set up the Undo Levels, perform these steps:

1. On the **View** menu, click **Options**. The **Options** dialog box appears (see Figure 2).
2. Enter the number of undo levels in the **Undo remembers the last XXX commands** field. The maximum you can enter is 100 and the minimum is 1.
Note: The higher the setting, the more memory EPIDesigner requires to operate.
3. Click **OK**, or proceed to the next section for more configuration.

Setting Background Image Compression

Select the **Compress Background Images...** option to have EPIDesigner compress background images to save space when your DNG files are saved (see Figure 2).

When you import a background image into a card design, EPIDesigner will perform two separate compressions of the file, using JPEG and TIFF LZW formats, and then select the smaller of the two files.

Clear this option to store your images without any form of compression. This guarantees that there will be no loss in image quality.

Setting the Workspace Options

Rulers To display the horizontal and vertical rulers on the design window, on the **View** menu, click **Rulers**. To modify the ruler settings, on the **View** menu, click **Options**, and then select the **Rulers and Grid** tab. Here you can set whether the rulers should appear in the measurement system set as your Windows default, or override that setting by choosing either Metric or Inches.

- Grid Lines** To display the editing grid, on the **View** menu, click **Grid**. To modify the grid options, on the **View** menu, click **Options**, and then select the **Rulers and Grid** tab. You can also use the **Show Grid** option on the **Rulers and Grid** tab to display the grid lines on the design area. Set the grid size by typing in a positive number between 0.02 and 1.0 (inches or their equivalent metric values) in the **Grid Spacing** fields, thus changing the distance between the lines. Select the **Snap Objects to grid** option to have the objects you move always line up along the grid lines.
- Cursor Crosshairs** You can display extended crosshairs from your mouse cursor to help you line up objects horizontally or vertically. To set up cursor crosshair, on the **View** menu, click **Options**, and then select the **Rulers and Grid** tab. Click **Show Cursor Crosshair**. See Figure 1 on page 11.
- Zoom In/Out** To enlarge or reduce the size of your card design workspace, on the **View** menu, click the **Zoom In** or **Zoom Out** button. This command affects only how you view your card on your computer monitor and does not affect how the card will print. The view you select will be displayed the next time you open the card.
- Show Object Outline** This option displays an outline around every object on the layout. To display object outlines, on the **View** menu, click **Options**, and then select the **Rulers and Grid** tab. Click **Show object outlines**. These outlines appear on the screen only and are not visible on the printed layout.
- Image Setup** This command allows you to define the types of dynamic images that are available in the database. On the **View** menu, click **Image Setup**. If EPIDesigner is connected to a database, the Image Setup configures the image types defined in that database.

Connecting to Other Databases

By default, EPIDesigner is not connected to a database. To connect to a database, you must first set up a properly configured JET database or ODBC data source for the new database (if one does not yet exist).

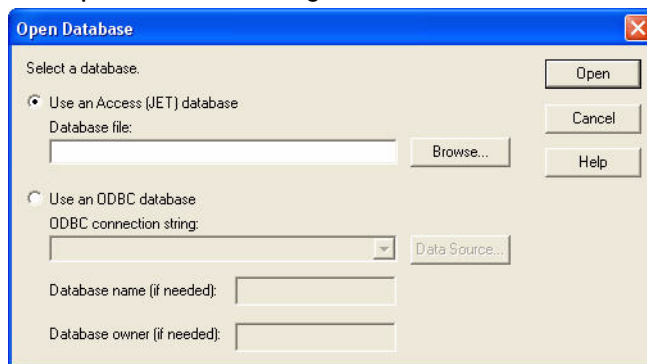
Use a Database with EPIDesigner

To use a database with EPIDesigner, perform these steps:

1. On the **View** menu, click **Options**. The **Options** dialog box appears (see Figure 2).

2. Select the **Data Fields** tab. If applicable, the path and filename of the currently connected database appears below the **Use the data fields defined in the database** option.
3. Click **Other Database**. The **Open Database** dialog box appears (see Figure 3).

Figure 3 Open Database dialog box



4. Select the type of database to be used (either JET or ODBC).
 - For a JET database, select the **Use an Access (JET) database** option and type in the path and filename of the new database, or click **Browse** to navigate to it.
 - For an ODBC database, select the **Use an ODBC database** option and select a database source from the **Database ODBC connection** string list (if required, input the database name and owner information), or click **Data Source** to access the Microsoft ODBC Data Source Administrator.

EPIDesigner automatically reconfigures itself to use the information stored in the selected database.

5. Click **OK**.

Set Up Custom Data Fields

If you are not connecting to a database for data retrieval but there are entry fields where data will be entered, you can add custom data fields to your card layouts that will be populated at print time. To do this, follow these steps:

1. On the **View** menu, click **Options**, and then select the **Data Fields** tab. The data field options appear.
2. Select the **Use a custom list of data fields** option. The **Display name** and **Internal name** fields below become enabled.
3. In the **Display name** field, enter the label that will appear in the data fields list. In the **Internal name** field, enter the name that will be used by your application to associate data with the dynamic object linked to the field. If these will be the

same name, simply enter the name in the **Display name** field and click **Add**. The name will appear in both fields.

Printers

You will need to set up a printer before creating and designing cards. All necessary printer and page information is stored in the card design file (.DGN), which in turn is used by your application as a card format (a packet of information that includes the EPIDesigner card design file, the card code generation method, and the printer and page setup).

IMPORTANT: To ensure accurate reproduction of your card design, be careful to match the card size in your **Layout Properties** (described below) to the card media in your printer. If necessary, consult your printer's documentation.

Install a Printer Driver

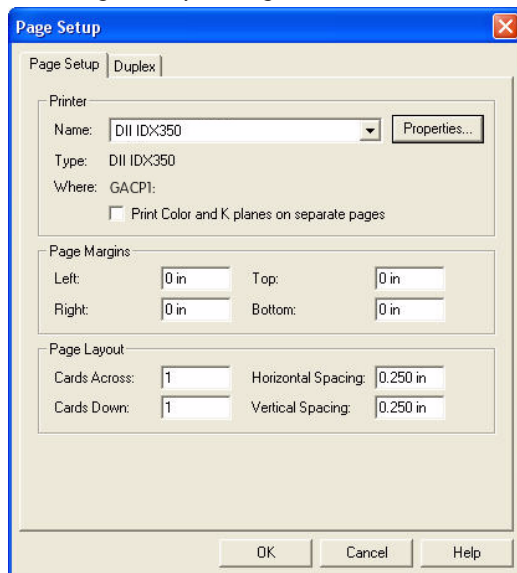
Install the printer drivers according to the instructions provided by your printer manufacturer. The printer appears automatically in the **Print** dialog box, the next time you sign into the system.

Set Up a Card Printer

To set up a card printer other than your default printer, follow these steps:

1. On the **File** menu, click **Page Setup**. The **Page Setup** dialog box appears with the **Page Setup** tab showing (see Figure 4).

Figure 4 Page Setup dialog box



2. Select a printer. The default printer (as specified in the Windows Printers control panel) appears in the list. To select a different printer, scroll through the list and choose from the printers displayed.
3. (Optional) Select the **Print Color and K planes on separate pages** option if your card printer outputs four process colors (cyan, magenta, yellow and black) when they are specified on separate document “pages”. The first page should be in CMY, and the second page should be monochrome. This option merges the two pages into one in order to output four-color process. Consult your printer manufacturer’s documentation on setting up your printer for K plane printing.
***Note:** Do not modify the **Page Margins** and **Page Layout** settings if you are printing to a card printer. See “Special Printing Options” on page 1.16 for more details.*
4. Click **OK**. The dimensions of the card layout will adjust to those of your printer’s default card media.

Special Printing Options

If you want to print cards to a sheet printer from your application, you will need to set parameters such as page margins, number of cards per page, and duplex printing using the options described in the following section. You can also use the following options to create a report that can be printed from your application to a document printer.

To modify the printer settings (from the default printer driver settings) such as paper size or orientation, follow these steps:

1. On the **File** menu, click **Page Setup**. The **Page Setup** dialog box appears with the **Page Setup** tab showing (see Figure 4).
2. Click **Properties**. The **Properties** dialog from your printer’s driver appears. If available, set the options that you want to modify.
3. Click **OK** to save the settings.

Printing Reports

To create a multi-card output (for example, a report or for sheet-printing), follow these steps:

1. On the **File** menu, click **Page Setup**. The **Page Setup** dialog appears.
2. Indicate the number of cards to be printed across the page in the **Cards Across** field.

Note: A landscape page allows for more cards to be printed across than a portrait page, although you will not be able to print as many cards down.

3. Indicate the number of cards to be printed down the page in the **Cards Down** field.

Note: A portrait page allows for more cards to be printed down than a landscape page, although you will not be able to print as many cards across.

4. (Optional) Adjust the horizontal and/or vertical spacing between the cards printed on the page.
5. Enter the new page margins in the fields as required.

Note: The default is “0” which allows the card printer to print edge to edge on the card media. If printing to a document printer, you may need to adjust these margins manually if this doesn’t occur automatically.

Headers and Footers

You can add headers or footers to your card layout that will appear at the top and bottom of the printed card or sheet. The objects you add to these areas will be saved in the card layout file (DGN).

IMPORTANT: The heights of the Header and Footer are added to the height of the card layout--they do not overlap the card layout. When setting up the Size Height of the header and/or footer, you must subtract those amounts from the height of the Front of the layout, otherwise your header will push the card layout (front/back) down the full height of the header, and the layout will in turn push down the footer. As well, if your printer requires margins (that is, does not print edge to edge) you will need to take those into account when you calculate your heights.

1. With a card layout open, on the **File** menu, click **Layout Properties**, and then select the **Page Header** (or **Page Footer**) tab. The options appear.
2. Select a page size (preferably the size of your layout Front/Back).
3. Modify the Header/Footer Size Height (and Front/Back height) as described in the note above.
4. (Optional) Add a background image or color. If you want this background to print at print time, select the **Print background** option.
5. Click **OK**.
6. To add objects to the header or footer, on the **View** menu, click **Show**, and then select **Layout Header** (or **Layout Footer**). A blank layout appears on the workspace.
7. Add objects such as text in the manner described in “Drawing Objects” on page 1.30.

Double-sided Printing

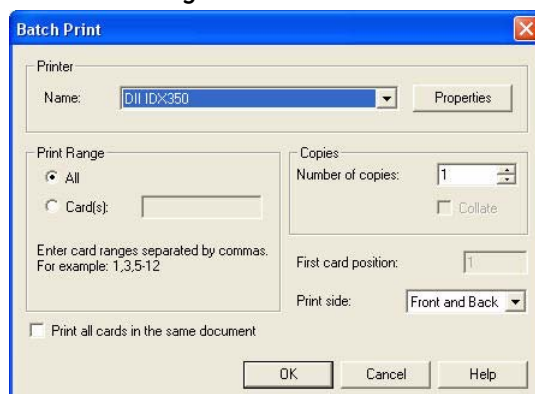
There are two settings available for double-sided printing:

- Printing on both sides of a single card from the Print command (in either EPIDesigner or your application);
- or
- Printing both sides of the card layout to a larger printer media from your application to a document printer (to print on a sheet or create a report, for example).

The first requires you to choose the appropriate **Print Side** setting on the **Print** dialog at print time, and the second requires you to choose a **Page Setup** option that will be saved in the DGN file and used when printing from your application.

Print Side *Note: This option is used for single card printing (from either EPIDesigner or your application) or batch printing (from your application).*

Figure 5 Print dialog



When you choose the **Print** command, you will have the following options:

Front Side Only -Prints only the front layout of the card.

Back Side Only -Prints only the back layout of the card.

Front and Back -Prints both the front and back layouts of the card. This selection should be used if you have a specialized printer that prints on both the front and the back of cards, or if you want to manually flip the cards over to print on their backs.

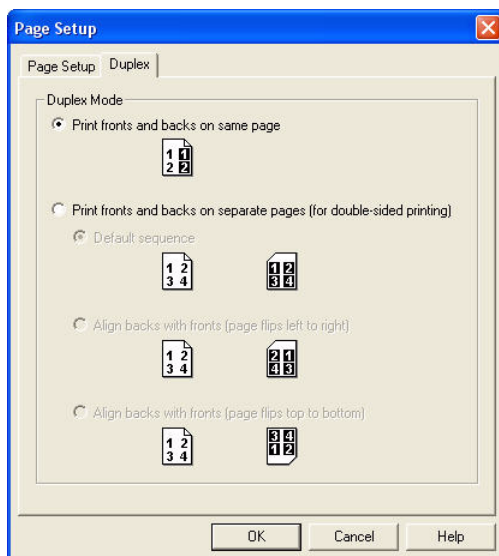
***Note:** If you want to manually flip cards over to print on their backs -- especially if you are printing both sides of the cards in batches -- you should know that this method will require a moderate amount of trial and error before you achieve satisfactory results.*

Duplex Settings

Use these settings to print layouts on both sides of the printer media or to print both sides of the layout on one side of the media. These options are saved to the layout file (DGN) and used to create reports or for sheet printing on a larger format printer.

***Note:** This does not affect the way your card layouts will print to a card printer.*

1. On the **File** menu, click **Page Setup**. The **Page Setup** dialog box appears with the **Page Setup** tab showing (see Figure 4).
2. Select the **Duplex** tab. The **Duplex printing properties** appear.



3. Choose from one of the following options:

Print fronts and back on same page -Used for printing double-sided layouts together on the front of the print media.

Print fronts and backs on separate pages -Used for printing double-sided layouts on opposite sides of the print media.

- **Default sequence** - Prints fronts and backs in the same sequence on both sides.

***Note:** The fronts and back of the cards will not back to back on both sides of the print out. Use **Align backs with fronts** to achieve this effect.*

- **Align backs with fronts (page flips left to right)** - Prints fronts to backs, flipping the media left to right.
- **Align backs with fronts (page flips top to bottom)** - Prints fronts to backs, flipping the media top to bottom.

4. Click **OK**.

NOTES:

Using EPIDesigner

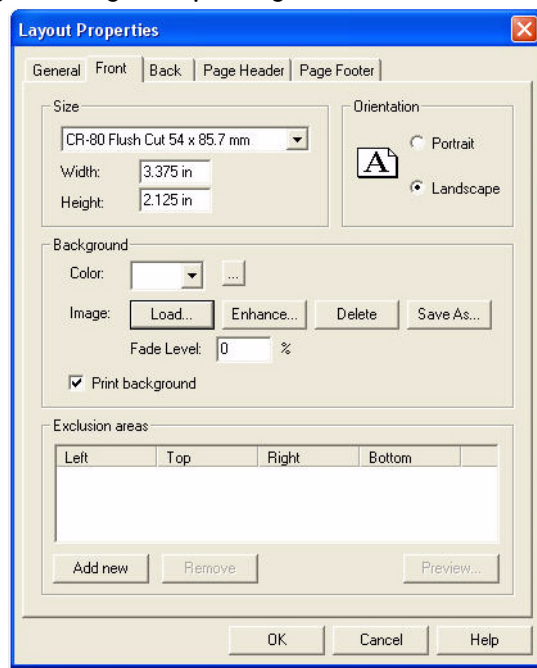
Selecting Page Sizes

Different types of ID cards come in different sizes dependent on the types of cards a printer will output. It is important to select the card page size before beginning to design a card, since resizing the page can have a serious impact on the overall design. The page size information is stored in the card layout file (DGN or GDR) and is used by your application during the printing process.

Set Up the Page Size

1. On the **File** menu, click **Layout Properties**. The **Layout Properties** dialog box appears (see Figure 6).
2. Click the **Front** tab. Front layout properties appear.

Figure 6 Page Setup dialog box



3. Select the required card size from the options listed in the **Size** list, or select **Custom Size** to specify your own dimensions in the **Height** and **Width** fields provided.

Tip: To get the maximum printable size for your printer, choose **Full Printer Page** from the **Size** list.

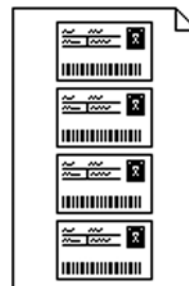
4. Select the card's orientation on the printed page as either **Portrait** or **Landscape** (see Figure 7).

Note: This affects only the orientation of the cards, and is not connected to the orientation of the page, which is determined in the **Printer Properties** dialog. See “Printers” on page 1.15..

Figure 7 Landscape Card Layouts



Landscape cards on a landscape page



Landscape cards on a portrait page

5. Click **OK**.

Note: These settings will automatically be the same for both the front and back of the card layout.

Creating New Card Designs

When you launch EPIDesigner, it automatically opens a blank layout. You can create a new layout at anytime by following these steps:

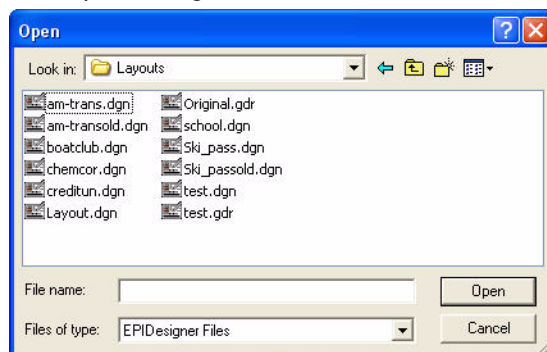
1. Specify the appropriate card size information (see “Using EPIDesigner” on page 21).
2. On the **File** menu, click **New**, or click **New** on the Toolbar. EPIDesigner opens a design window for the front of the card. To view the back of the card layout, click **Flip Layout** on the toolbar, or on the **View** menu, click **Show**, then click **Back of Layout**.
3. Design your card using the various drawing tools. Import a card background from the **Front** tab on the **Layout Properties** menu. See “Importing the Card Background” on page 1.24..

Opening Existing Card Design Files

Opening an Existing Card Design File

1. On the **File** menu, click **Open**, or click the **Open** button on the Toolbar. The **Open** dialog box appears.

Figure 8 Open dialog box



2. In the **File name** field, type the name of the card design you want to open (or select it from the list). If the card design you want to open was originally created using GuardDraw (version 4.x or later), EPIDesigner will display existing layouts with both the DGN and GDR extensions.

Note: If the card design is in another drive or directory, browse to it using the **Look In** list. You will only be able to access network drives that are mapped to your PC or available from your Network Neighborhood.

3. Click **Open**.

Opening a Recently Saved Card Design

The last four card designs that were saved to disk will be listed at the bottom of the **File** menu. Select the name or number of the card design that you want to open and it will be displayed.

Saving Card Designs

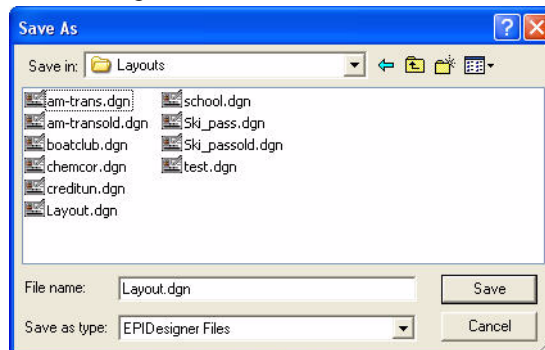
The **Save** command displays a dialog box where you can give a new card design a filename, and specify a location in which to store it.

Saving a Card Design For the First Time

To save a card design for the first time, follow these steps:

1. On the **File** menu, click **Save**. The **Save As** dialog box appears (see Figure 9).

Figure 9 Save As dialog box



2. In the **File name** field, type a name. From the **Save as type** field, select **.DGN** or **.GDR**. See *IMPORTANT* note below.

Note: To save the card design in a different drive or directory, select the drive from the **Save In** drop-down list. You will only be able to access network drives that are mapped to your PC or available from your Network Neighborhood.

3. Click **OK**.

Saving Previously-Saved Card Designs

After making changes to an existing card design, save your changes by clicking the **Save** button on the toolbar, or on the **File** menu, click **Save**. Your changes are automatically saved to the file. To save the design with a new filename, on the **File** menu, click **Save As** and follow steps 2 and 3 above.

IMPORTANT: If you open a GuardDraw file (GDR) and then save it without changing the filename, you will overwrite that file and will no longer be able to open that file using GuardDraw even though it will still have the .GDR extension. If you need to keep your old GDR or DGN files, always save with a new filename.

Importing or Removing the Card Background

Card backgrounds consist of graphics (such as bitmap images), which are created in draw or paint programs. The background is the graphical “landscape” against which the various card design objects (such as images or text objects) are placed.

Note: You can also apply these features to Back, Header and Footer layouts. On the **View** menu, click **Show**.

Importing the Card Background

To import card backgrounds, follow these steps:

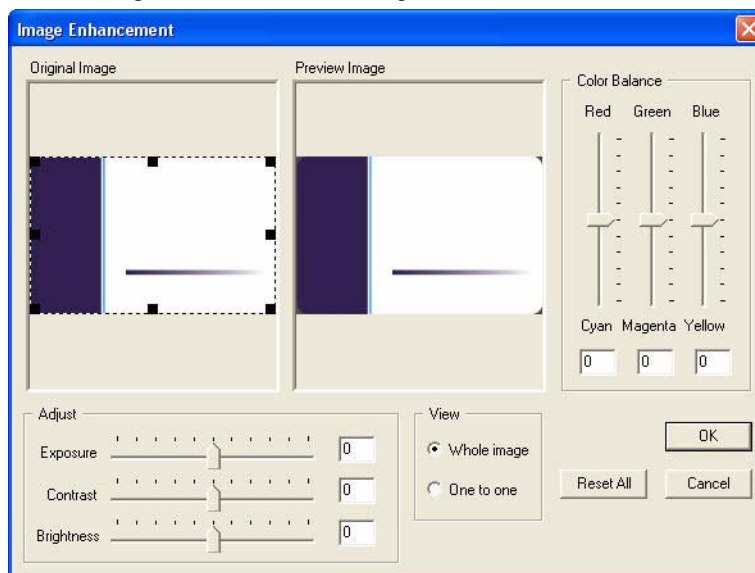
1. On the **File** menu, click **Layout Properties**. You can also click the **Layout Properties** button on the toolbar, or double-click the layout.
2. Select the **Front** or **Back** tab.
3. In the Background area, click **Load**. The **Open** dialog box appears.
4. In the **File name** field, type the name, path, and extension of the background file (or use the buttons to browse to your file).
5. Click **OK**. The **Enhance**, **Delete** and **Save As** buttons are enabled.
6. (Optional) Make any modifications to the image. See “Enhancing the Card Background” on page 1.25. for more information about the enhancement options.
7. Click **OK**. The card background is placed on the front or the back of the card design (depending on which was selected).

Enhancing the Card Background

When a background image is added to a card design, the **Enhance** button on the appropriate **Layout Properties** tab is enabled. This gives you access to the various enhancement options available for your background images--cropping, color balance, as well as exposure, contrast and brightness.

IMPORTANT: When creating a background image for your card layout (using a graphics software), be sure to use the same dimensions (or at least the same aspect ratio) for your background as your card media. If your image does not match your card media, as set in the Card Size list, EPIDesigner will stretch the image as required to fill the card layout. This is also important to remember if you choose to crop your background image.

Figure 10 Image Enhancement Dialog



To modify any of the color or image quality settings, drag the slider one way or another until the Preview Image appears as desired, or select **Automatic contrast** to automatically adjust the contrast of the image. Click **OK** when you are finished. To undo your changes click the **Reset All** button to return the Preview Image to its original settings, or click **Cancel** to return to the **Layout Properties** dialog without saving the changes.

To crop the background image, drag one of the eight sizing handles that appear on the Original Image until the image has the desired shape. You can also move the cropping area (if it is smaller than the original image) by dragging it to the desired area on the Original Image.

Removing a Card Background

To remove a background from a card design, follow these steps:

1. On the **File** menu, click **Layout Properties**, and then click the **Front** or **Back** tab (depending on which background you want to remove).
2. Click the **Delete** button then click **OK** to return to the EPIDesigner workspace or repeat the instructions for importing an image (see “Importing the Card Background” on page 1.24).

Export a Card Background

To export a card background, on the **File** menu, click **Layout Properties**, or click the **Layout Properties** button on the toolbar. Click the **Front** tab. When there is currently a background image on the layout, the **Save As** button is enabled. Save the image file with a new name, define the file type, and specify the directory to which it will be saved.

Change the Background Color

This feature allows you to add a solid color to your card's background. This color will be printed on your finished card.

***Note:** If you use both a background color and a background image file, the background color will be covered over by the image file and will not be visible.*

To change the card's background color, perform these steps:

1. On the **File** menu, click **Layout Properties**, or click the **Layout Properties** button on the toolbar.
2. Click the **Front** or **Back** tab. Click the **Color** list to choose one of the sixteen preset colors or click the ellipses button next to it to define a custom color using the Windows color dialog box. Click **OK**.

To remove the background color, select the **X** from the top of the preset color list. This removes any background color previously applied to your card design.

Inhibit Printing the Background Image

If your card media comes with the background image preprinted on it, you can still include the image file in the layout (to make layout design easier) without printing it on the card. To do this, perform these steps:

1. Import the background image file that appears on your preprinted cards.
2. On the **File** menu, click **Layout Properties**, or click the **Layout Properties** tool. Click the **Front** or **Back** tab. Clear the **Print background** option selection below the **Background** commands. The image will appear on your design in EPIDesigner but will not print on the card.

Design Objects

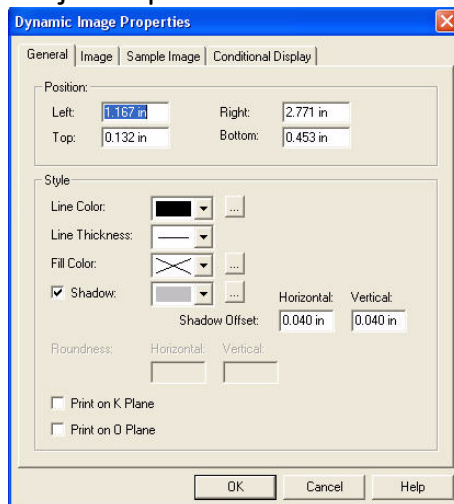
EPIDesigner comes complete with an extensive selection of tools to allow you to design cards with ease. In addition to text, image and bar code objects, you can also use lines, circles, squares, rectangles, and ellipses to spice up your illustration, or to create security clearance symbols for the easy identification of unauthorized cards.

***Note:** You can apply these features to Back, Header and Footer layouts. On the **View** menu, click **Show** and then choose the appropriate layout.*

Object Properties

All of the drawing tools available for your card layouts have properties (see “The Toolbar” on page 9); for example, position, line color, and conditional display options. All of the common object properties are described in the following section. Special properties that apply only to specific tools are described separately.

General Tab **Figure 11 Object Properties General Tab**



Size and Position fields -Use these fields to precisely place an object on the layout. Enter numbers in these fields to modify the object’s location and/or size. The number entered in each field indicates the location of that side of the object; therefore, changing a single position field will modify the size (and possibly the shape) of the object. To place an object on the design without calculating the border coordinates, enter only the width and height of the object and the distance to the edge of the card.

Note: To change the units of measurement, in the **View** menu, click **Options**, then click **Rulers and Grids**.

Style settings -Use these settings to define the color and thickness of the line framing the object, and the fill color.

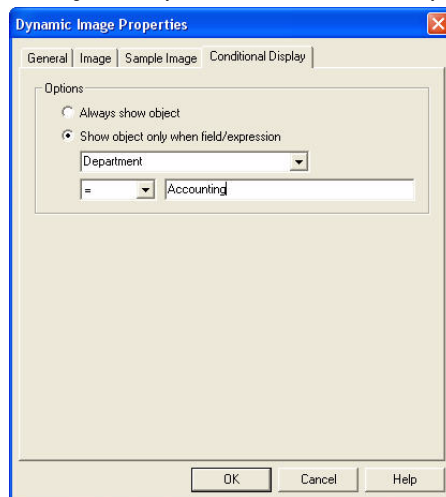
Shadow -Use this option to add a drop shadow to any type of Text or Image object (static or dynamic). A drop shadow gives a sense of depth and dimension to a 2D object. The shadow is simply a duplicate of the object, offset from the original and filled with solid color. See “Create a Shadow” on page 1.44. for a sample image and more information.

Roundness -Use this option to set the curvature of the rounded corners of a Round Rectangle. See “Edit Rounded Corner Curvatures for a Rounded Rectangle” on page 1.32..

K and O plane settings -Use these settings to print the selected object on either the K or O plane of the printer’s ribbon. See “Placing Objects on the K and O Planes” on page 1.54..

Conditional Display Tab

Figure 12 Object Properties Conditional Display Tab



Conditional Display options are used to set the conditions under which the object will appear. For example, if you want to print the object only when the **Department** field (maintained in the database) contains the word “Accounting”, follow these steps:

1. Select **Department** from the list.
2. Select “=” from the **Compare** list.
3. Type *Accounting* in the data entry field.

The selected object will only be printed on cards that are issued to members of the Accounting department.

A smart feature allows you to type date and time values into the Data Entry field and EPIDesigner will recognize them as such. For example, if you typed “01/01/01”, EPIDesigner will recognize that as the date January 01, 2001.

Always Show Object -(Default) Select this option if you want to print the object on all ID cards.

Show Object Only When Field/Expression -Select this option if you want to print the object on specific cards. The fields beneath this option will be enabled.

Compare list

- < (less-than) - indicates the contents of the field you selected should be less than the value entered in the corresponding Value box.
- <= (less-than or equal-to) - indicates the contents of the field you selected should be less than or equal to the value entered in the corresponding Value box.
- <> (not-equal-to) - indicates the contents of the field you selected should not be equal to the value entered in the corresponding Value box.
- = (equals) - indicates the contents of the field you selected should be equal to the value entered in the corresponding Value box.
- > (greater-than) - indicates the contents of the field you selected should be greater than the value entered in the corresponding Value box.
- >= (greater-than or equal-to) - indicates the contents of the field you selected should be greater than or equal to the value entered in the corresponding Value box.
- **Not Null** - indicates the contents of the field you selected should be not null (filled with any type of information). You do not need to enter a value if you select this option.
- **Null** - indicates the contents of the field you selected should be null (empty). You do not need to enter a value if you select this option.

Drawing Objects

Drawing an object on the card layout is essentially the same for all object types.

Draw an Object

1. Choose the appropriate tool on the Toolbar.
2. Move the mouse to the workspace.
3. Press and hold the left mouse button to anchor one end or corner of the object, and drag the pointer. A flexible line stretches from the anchor point to the new pointer position.
4. Release the left mouse button when the dimensions of the object are satisfactory.

Edit an Object

1. Select the object. Handles appear at each corner.
2. Position the mouse over one of the handles, then press and hold the left mouse button.
3. Drag the pointer to a new position on the editing screen.
4. When you are satisfied with the line, release the left mouse button.

Double-click the object and make any changes in the <object> Properties dialog box.

Set the Default Object Properties

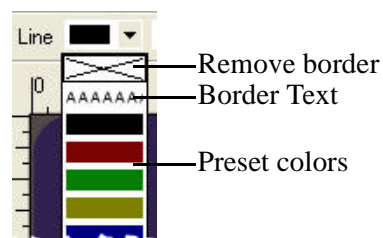
By setting the default object properties, you can customize the appearance of the Line Color, Line Weight and Fill Color for all drawing objects. To do this, follow these steps:

1. Draw an object on the layout then make all modifications necessary.
2. On the **Object** menu, click **Set Default Properties**. All subsequent objects will automatically have those new settings when drawn.

Remove or Modify a Border

By default, a line runs around the perimeter of all newly created objects (except bar codes) that can either be modified or removed.

To remove the line, select the large **X** at the top of the line color list on the Attribute bar.



To add border text, select **AAAA** from the list. See “Adding Border Text to Objects” on page 1.38. for more information.

To change the color, select a color from the list, or create a custom color in the <object> **Properties** dialog box.

Edit Rounded Corner Curvatures for a Rounded Rectangle

1. After you have drawn the round rectangle, a special handle appears inside the upper right-hand corner of the rounded rectangle. Position the mouse over the handle and the pointer changes from a single-headed arrow to a four-headed arrow.
2. Hold down the left mouse button and drag the handle toward the center of the object to increase the curvature of the rounded corners, or away from the center of the object to decrease the curvature.
3. When you are satisfied with the rectangle's new shape, release the left mouse button.

***Note:** You can also modify the curvature using the **Roundness** options of the **Properties** dialog. The **Horizontal** and **Vertical** entries indicate how far from the respective corners the curves should start.*

Moving and Aligning Objects

Dragging objects with the mouse allows you to position them interactively.

Move Objects

1. Highlight the object you want to move using the **Select** tool.
2. Drag and drop the object at its new location.

Alternatively, you may select the object and press any of the keyboard arrow keys to move it. This is called “nudging”.

Copy or Duplicate Objects

1. Highlight the object you want to copy using the **Select** tool.
2. Press and hold the **CTRL** key, and then drag and drop the copy to its new location. This creates a copy of the object and leaves behind the original.

***Note:** You can also perform this task using the **Copy** and **Paste** tools.*

Align and Distribute Objects

The **Align** function allows you to select several objects on your card design and align them by their left, center, or right points, and/or their top, middle, or bottom points. You can also align objects according to their text baselines.

The **Distribute** function allows you to select several objects and space them evenly either vertically or horizontally on your design.

To align or distribute several objects, follow these steps:

1. Select several objects by holding down the **SHIFT** key and clicking on the objects of your choice.
2. On the **Object** menu, click **Align or Distribute**, and then choose the appropriate command from the menu that appears.

Resize Multiple Objects

You can select two or more objects and resize them all to the same criteria. For example, if you draw a square and a circle on the layout and want them to be the same dimensions, select them both (by Shift-clicking). Then on the **Object** menu, click **Size**, and then choose one of the following options:

To Tallest -Resizes the shorter object(s) to the same height as the taller (or tallest) object.

To Shortest -Resizes the taller object(s) to the same height as the shorter (or shortest) object.

To Widest -Resizes the narrower object(s) to the same width as the wider (or widest) object.

To Narrowest -Resizes the wider object(s) to the same width as the narrower (or narrowest) object.

***Note:** These commands do not maintain the objects' aspect ratios.*

Rotate Objects

To rotate objects, perform these steps:

1. Select the object you want to rotate.
2. On the **Object** menu, click **Rotate 90 Degrees**.
3. Click **Left** to rotate the object counterclockwise, or click **Right** to rotate the object clockwise.
4. Repeat until you are satisfied with the object's appearance.

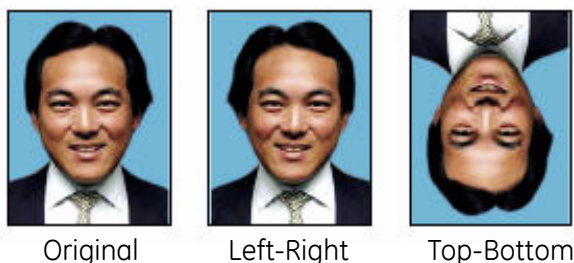
Note: Rotating can be used to design duplex cards with different front and back page orientations.

Flip Objects

The **Flip** function allows you to create a mirror image of an object by inverting the object either vertically (from right to left) or horizontally (from top to bottom). To flip an object, follow these steps:

1. Select the object to be flipped.
2. On the **Object** menu, click **Flip**. The Flip submenu appears.
3. Click either **Left - right**, or **Top - bottom**.

Figure 13 Flip Object Samples



***Note:** This function is not available for bar codes or text objects.*

Resize an Object

To resize an object, perform these steps:

1. Highlight the object using the Select tool. Handles appear on the sides and corners of the object.
2. Position the mouse over one of the handles, then press and hold the left mouse button.
3. Drag the pointer to a new position on the editing screen.
4. When you are satisfied with the object's new size and shape, release the left mouse button.

You cannot resize static text objects, in the sense that the point size of the font will be increased or decreased as you stretch the text box. Rather, when you resize the text box, you expand or contract the amount of available space in which the text will fit. This is particularly important if you increase the font's point size, or if you type too much text to fit within the text box. To reveal text that has been hidden due to constraints in the size of the text box, follow the instructions above.

Changing Object Attributes

You can change object attributes, such as line weight or fill color, at any time while you are creating or editing the card design.

Change Line Attributes

To change line attributes, perform these steps:

1. Double-click the line you want to change. The Line Properties dialog box appears.
2. On the **General** tab, change the line color by choosing from the sixteen quick-access colors in the **Line Color** list. For a more extensive selection of colors, click the ellipsis button next to the **Line Color** list.
3. Click **Line Thickness** and select from the list.

Change Object Attributes

To change object attributes, perform these steps:

1. Double-click the object you want to change. The <object> Properties dialog box appears.
2. On the General tab, change the object color by choosing from the sixteen quick-access colors in the **Line Color** list. For a more extensive selection of colors, click the ellipsis button next to the Line Color list.
3. Change the fill color by selecting from the sixteen quick-access colors in the **Fill Color** list. For a more extensive selection of colors, open the <object> **Properties**, click the General tab, and then click the ellipsis button next to the **Fill Color** list.
4. If the object is static or dynamic text, change the text color by selecting from the sixteen quick-access colors in the Text Color list. For a more extensive selection of colors, click the ellipsis button next to the Text Color list.

Adding Static and Dynamic Text

There are two types of text objects in EPIDesigner: static and dynamic. Static text objects are used as non-changeable design elements such as headlines or field labels (for example, "First Name"). Dynamic text/data objects are connected to a data field or expression, and change from card to card (for example, the first name of the cardholder).

The links between the database (or data field in certain cases) and your card design are created automatically. You only have to select the font, style, point size, color, and location of both the data fields/expressions and the text objects.

Create Static Text Objects

To create static text objects, perform these steps:

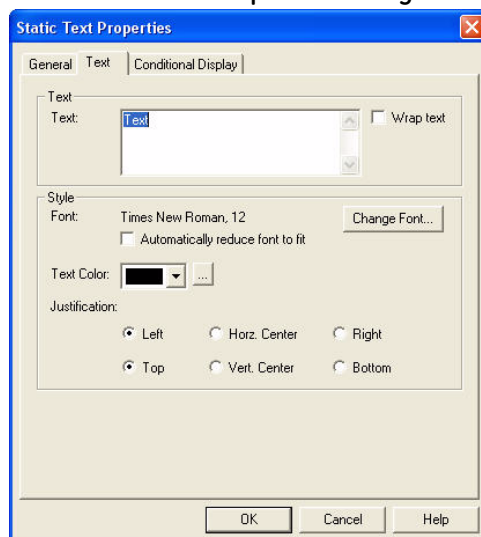
1. On the **Draw** menu, click **Static Text**, or click the **Static Text** button in the Toolbar.
2. Draw the object (as described in “Draw an Object” on page 1.30). The Text object will appear on the workspace (see Figure 14).

Figure 14 Static Text Object



3. Double-click the object. The **Static Text Properties** dialog box appears.

Figure 15 Static Text Properties Dialog



4. Select the **Text** tab. In the Text field, enter the text you want to appear.
5. If the text is long, select the **Wrap** text option so that the text wraps to the next line within the boundaries of the object, or select the **Automatically reduce font to fit** option to have EPIDesigner shrink the text to fit into the object without wrapping. If you want a long text string to appear with specific line breaks, you can force a break by pressing **Ctrl+Enter** where you want the line to wrap.
6. (Optional) Select **Vertical Text** to display the text vertically (top to bottom).
7. (Optional) Click **Change Font** to select the font, style, and point size.
8. (Optional) Click **Text Color** to select one of the preset colors, or click the ellipsis button to access the Windows Color palette to create a custom color.
9. (Optional) Adjust the text justification using the **Justification** options.

Note: You can change any of these options later by highlighting the text object and making your choices on the Text Style and Attribute bars. See “The Text Style Bar” on page 1.10..

10.(Optional) To add a border or background color to the text object, click the **General** tab and then select the text box line and fill colors.

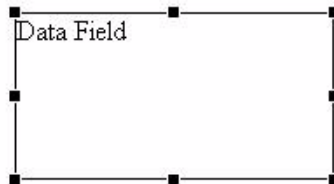
11.(Optional) Adjust the text box Line Thickness.

Create Dynamic Text Objects

To create dynamic text objects, perform these steps:

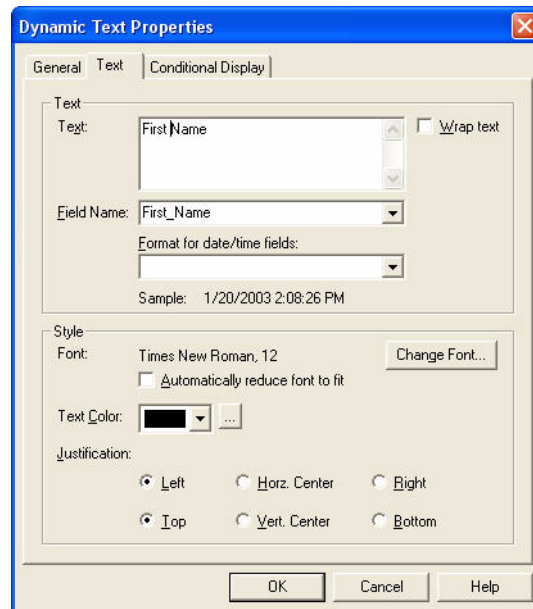
1. Using the Dynamic Text tool, draw the object as described in “Draw an Object” on page 1.30.

Figure 16 Dynamic Text Object



2. Double-click the object to open the Dynamic Text Properties dialog.

Figure 17 Dynamic Text Properties dialog



3. Click the **Text** tab. From the **Data field name or expression** list, select the data field that will supply the data at print time. Click **Edit** if you want to customize the data field.

4. (Optional) In the **Sample Text** field, enter a label that will identify the contents that will appear in the object at print time (for example, First Name).
5. Make any further modifications to the object as described in see “Create Static Text Objects” on page 35.

Adding Border Text to Objects

This security feature allows you to add a border of very small, user-definable print around rectangle, text and image objects, both static and dynamic.

Figure 18 Sample Border Text



Border text set to 3 points



Border text set to 7 points

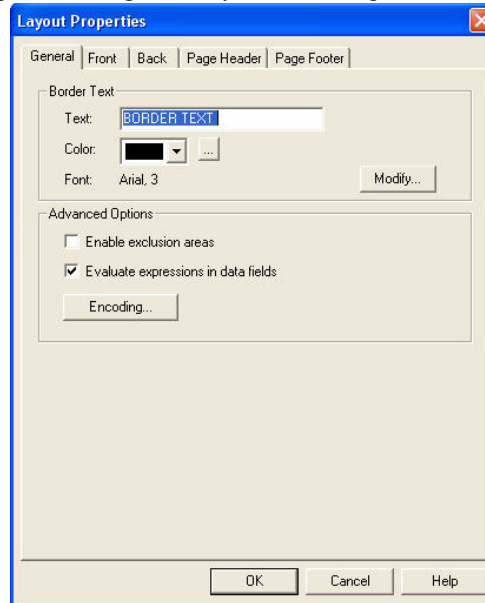
Note: The settings for the Border Text will be global for your card layout, so you only need to set the properties once in the **Layout Properties** dialog.

Set the Border Text Properties

To set the border text properties, perform these steps:

1. On the **File** menu, click **Layout Properties**, or click the **Layout Properties** button on the Toolbar. The **Layout Properties** dialog box appears.

Figure 19 Layout Properties dialog



2. In the **Text** field, enter the text that will appear around the design object. This word or phrase will be repeated until there is no more room and the last iteration will be truncated to fit. The text will begin at each corner as shown in Figure 18.

Tip: Add a space after the last word to create a buffer between it and the first word so they don't run together.

3. Click the **Color** list to select a color for the text. For a more extensive selection of colors, click the ellipsis button next to the Color list.
4. Click **Modify...** to change the default font setting of Arial 3 point in black. The options available are similar to those offered on the Text Style bar. We recommend that you keep the font size very small, 3 points being the smallest. You may need to experiment with the size to find what works best with your printer.

Keep in mind also that the keyline or outside perimeter for your object becomes the baseline (or outermost point) of the text, therefore any border text will reduce the size of the image. The samples above were created from the same image object. You can see that the larger font size reduces the space available for the image.

5. Click **OK** to accept the changes.

Add Border Text to an Object

1. Add your Rectangle, Text or Image object to the card.

2. With the object still highlighted, choose **AAAA** from the **Line color** list to set the line to border text. Your object will appear similar to the samples in Figure 18.

Adding Static and Dynamic Images

You can use a drawing tool to add digital images to a card, such as photographs, fingerprints, signatures, and clip art. The **Dynamic Image** tool is used to create a keyline for any dynamic image type available in EPIDesigner. The **Static Image** tool allows you to import static image files from any external source.

Dynamic Image keylines are automatically linked to your data source. When you print cards using your application, the keylines are replaced by the cardholder's images. Hard-to-counterfeit transparent images and cameo effects can also be defined for the image keylines, therefore, providing an extra level of security to the cards issued.

Add Static Images

To add a static image, perform these steps:

1. On the **Draw** menu, click **Static Image**, or click the **Static Image** button on the Toolbar.
2. Draw the image object (as described in "Draw an Object" on page 1.30). The **Open** dialog box appears when you release the mouse button.
3. Browse to the image file you want to insert in the keyline, then click **Open**.

***Note:** The image size is automatically set to match the size as specified in the image file header.*

Add Dynamic Images

To add a dynamic image, perform these steps:

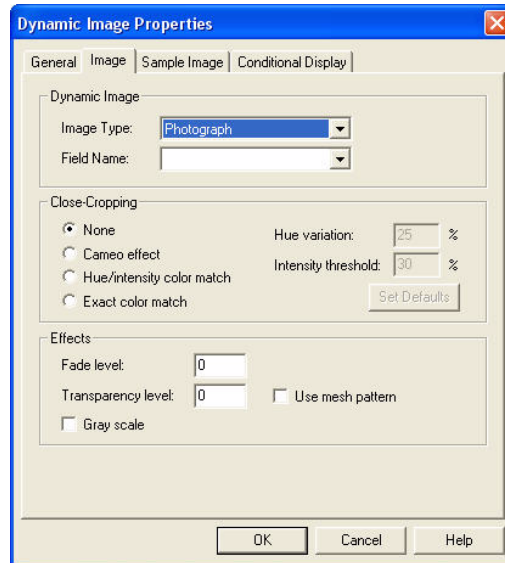
1. On the **Draw** menu, click **Dynamic Image**, or click the **Dynamic Image** button on the Toolbar.
2. Draw the image object (as described in "Draw an Object" on page 1.30). The object will maintain the aspect ratio as set in your application for the default image type (for example, Photograph).

Change the Image Properties

To change the image properties, perform these steps:

1. (Optional) Change the image properties by double-clicking the object to access the **Dynamic Image Properties** dialog box. Select the **Image** tab.

Figure 20 Dynamic Image Properties dialog



2. Change the **Image Type** by choosing from the list.

Note: These options will differ depending on the product you have purchased.

3. (Optional) Select **Print image exactly as-is** to prevent changes to an image so that it prints correctly. Use this feature for bitmaps that contain digital watermarks which may be lost if the bitmap is resized.

Note: When you select **Print image exactly as-is**, other properties for the image are disabled, such as line color and thickness, shadow, close-cropping, fading transparency, and gray scale. However, the checkbox **Don't clip image** becomes enabled, allowing you to print the entire image even if it is too large to fit in its rectangle as defined on the layout.

4. If applicable, select the data source field that points to the image.

Select a Sample Image

If you want to add effects to your dynamic images, it's a good idea to select a sample image so you can preview the effects prior to printing. Perform these steps:

1. Double-click the image to open the **Dynamic Image Properties** dialog box. Select the **Sample Image** tab.
2. Click **Load**. The **Open** dialog appears.
3. Select an image that is a good representation of the typical image you will be capturing with your application. Click **Open**.

4. Click **Enhance** to make any enhancements necessary (see “Enhancing the Card Background” on page 25 for more details). These enhancements only affect the sample image and not the images that will be added at print time.
5. Click **OK**.

Add Close-Cropping Effects

The Close-cropping option allows you to remove the background pixels from an image. On the **Image Properties** dialog box, click the **Image** tab. Select the **Close-cropping** checkbox, then click **Settings**. The options you select depends on the image quality of the background you want to remove.

Cameo Effect -Select this option if you want to create a cameo effect. This will remove all background pixels around the subject of the image (i.e., the cardholder's head). Use this option with the **Fade** and **Transparency** levels to make an interesting ghost effect.

Hue/Intensity Color Match -Select this option if you want to remove all pixels within a specified hue/intensity range. This option is particularly useful if you are having trouble removing background pixels with the **RGB Color Match** option. Enter your custom **Color Variation** and **Intensity Threshold** percentages.

RGB Color Match -Select this option if you want to remove all background pixels that are exactly the same color. This option is particularly useful for solid-color backgrounds, which are commonly found in bitmap files (for example, logos), and it may not be suitable for cropping photographs. In the **Color variation** field, enter an amount of variation from the selected color, or enter **0** for an exact color match.

Color Variation -This is the percentage of the hue that EPIDesigner will use to scan for variations of the background pixels along the color spectrum. EPIDesigner removes pixels by sampling the first one located in the upper left-hand corner of the image. It then uses this setting to scan for pixels of a similar hue along the specified percentage of the color spectrum. A higher value means that EPIDesigner will scan and remove pixels across a wider percentage of the color spectrum. A lower setting means that EPIDesigner will confine the removal to pixels that more closely match the first one that was sampled.

For example: If you enter a setting of “30” here, and if the image's first pixel is a shade of green, EPIDesigner will scan and remove all shades of green across 30 percent of the spectrum (and possibly into portions of the yellow and blue color ranges).

Intensity Threshold -This is the percentage that EPIDesigner will use to scan for variations in color intensity. EPIDesigner removes pixels by sampling the first one located in the upper left-hand corner of the image. It then uses this setting as a

threshold by which all pixels of a certain intensity (and higher) will be scanned. A higher value means that EPIDesigner will confine its removal to the brighter pixels that fall within the specified Color Variation range. A lower setting means that EPIDesigner will widen its scan and remove a broader range of bright and dark pixels within the specified Color Variation.

For example, if you enter a setting of “60” here and a setting of “30” in the Color Variation box, and if the image’s first pixel is a shade of green, then EPIDesigner will scan and remove all of the brighter shades of green across 30 percent of the color spectrum. In other words, fewer green pixels will be removed from the image. If, on the other hand, you lowered this setting to “20,” the removal will include a broader range of both light and dark green pixels.

Background Color -If **Automatic** is selected, EPIDesigner removes pixels by sampling the top-left and top-right pixels of the image and estimating the background color. To select a different color, click on the color in the displayed image, or check the **Specific color** box and then click **Choose color**. Select the color and then click **OK**.

Create an Image Ghost Using the Effects Settings

The **Fade** and **Transparency** levels can be used to create a ghost image. An image ghost is an image that is transparent (that is, the background elements show through it) generally used in addition to a regular image, and can be placed anywhere on the card design—even behind text or other objects. This is considered to be an additional ID security feature, as ghosted images are extremely difficult to reproduce.

You may want to experiment with the settings to get the effect you want.

1. Add an image object (as described in “Draw an Object” on page 1.30). If you want to create a ghost of an image that already exists on your card, Ctrl+click the image and drag the newly created image to its location. Then you can apply the effects you want to the new image. You will need to move the ghost behind the original; on the **Object** menu, click **Move**, then click **Back**.
2. Double-click the image to open the **Dynamic Image Properties** dialog box. Select the **Image** tab.
3. Modify the **Effects** settings to get the look you want.
 - **Fade level:** Use this feature to create a “washed out” appearance. The number entered in the field represents the percentage of “whiteness” that you want for the image.
 - **Transparency level:** Use this feature to reduce the opacity of the image. The number entered in the field represents the percentage of the image that will be transparent.

- **Use mesh pattern:** This is a quick way to create a ghost effect and can be used instead of changing the Transparency level. It automatically sets the appropriate level of opacity. This option uses the same algorithm as the ghost option in GuardDraw 5.5.
- **Gray scale:** Select this option to remove the color information from the image—the color will be replaced with levels of gray.

Create a Shadow

Create a shadow behind any text or image object, static or dynamic, giving a sense of depth and dimension to a 2D object.

***Note:** In the case of an image object, the shadow created will reflect the shape of the image's keyline (outside border) and not that of the image itself (even if you select a close-cropping effect).*

Figure 21 Shadow Samples



Static Image object with
cameo effect and shadow

Company, Inc.

Static Text object with shadow

1. Double-click the image or text object to open the **Properties** dialog.
2. In the **Style** settings, click **Shadow**.
3. (Optional) Modify the color and offset of the shadow (keeping in mind what the object over the shadow will be).
4. Click **OK**.

The default settings for the amount of offset are, horizontally and vertically, 0.04 of the units of measurement you are currently using, and the color is black. These settings create a shadow appearing below and to the right of the object. To change these settings, perform these steps:

1. Select a new color from the **Color** list, or click the ellipses button next to it to change the shadow color. The Microsoft Color palette appears.
2. Type a new setting for the horizontal and vertical offsets. Positive integers create a shadow below (horizontal) and to the right (vertical), while negative

integers create them above and to the left. Experiment to see the settings that are most appropriate for your design.

Tip: Create eye-catching portraits on your cards by adding a Cameo Effect to your image and then adding a shadow. Remove the object outline, change the shadow color, and increase the offset to enhance the effect. See Figure 21 on page 44.

Change Signature Fill and Text Attributes

Changing the fill color and/or text color of a signature can make it stand out more on your card design. Changing the text color results in your printed signature appearing in the chosen color.

1. With the signature selected, change the text and fill color by choosing from the sixteen quick-access colors in the **Text Color** list on the toolbar.

For a more extensive selection of colors, double-click the object to open **Dynamic Image Properties**. Click the **General** tab, and then click the ellipsis button next to the color list. To print the signature against the card background, click **X** for “no fill”.

Note: *These two attributes will not change the appearance of your sample image (if you have chosen one); they will only affect the final printed card.*

Defining Expressions

Define Expressions with a Database Connection

While EPIDesigner allows you to define any manner of valid SQL expressions, you will most likely combine available database fields (for example, First_Name and Last_Name).

Note: *You cannot use expressions if your configuration does not access textual data in your database.*

SQL expressions that can be defined in EPIDesigner differ from database to database. Refer to the documentation that accompanies the ODBC-compliant database you are using.

Define Expressions with No Database Connection

In the case of a “no database” connection, that is, when your application provides data directly to the card layout without the use of a database, you can create expressions based on the data fields that are defined in the **View** menu, by clicking **Options**, and then **Data Fields**.

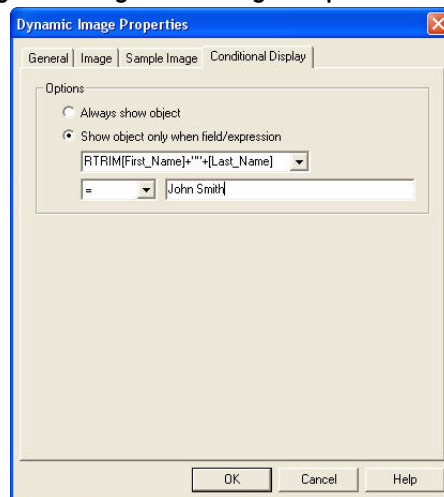
Note: *For this feature to work properly, you must select the option **Evaluate expressions in data fields** on the **General** tab of the **Layout Properties** box.*

Define an Expression for a Conditional Display

You can choose a combination of data fields that can be used as display criteria for a design object. For example, if you want a design object to appear only when the cardholder's name equals "John Smith", then you will need to create an expression that reflects that condition.

1. Double-click the object to open the **Properties** dialog box.
2. Click the **Conditional Display** tab.
3. Click the option **Show object only when field/expression**. The fields below become active.
4. From the **Data field** list, select your valid SQL database expression.

Figure 22 Dynamic Image Properties Dialog



Use Expressions as Dynamic Text Objects

You can use any expression when creating a dynamic text object, just as you would any regular database field. For example, if you want to show both the cardholder's first and last names together, you would enter the appropriate expression in the **Field Name combo** box.

The "Dynamic Text Properties Text Tab" on page 1.47 shows the SQL expression used to concatenate the First_Name and Last_Name fields together to create the "Full Name" expression.

```
RTRIM[First_Name] + " " + [Last_Name]
```

The RTRIM command at the beginning of the string is used in SQL to remove any blank spaces to the right that may exist in the database field. The pair of double quotes in the middle of the expression is a marker for a space in between the two names.

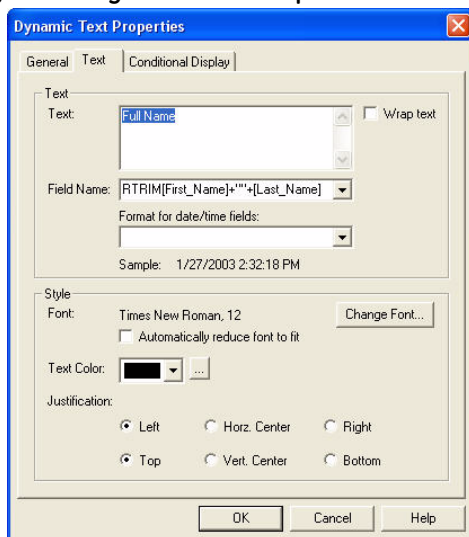
If you do not have a database connection, the code entered would look something like this:

```
First_Name + ' ' + Last_Name
```

where First_Name and Last_Name are data fields that have been defined in the **View** menu, by clicking **Options**, then the **Data Fields** tab.

Note: To use expressions without a database connection, on the **Layout Properties** box, click the **General** tab, and select the option **Evaluate expressions in data fields**. See “Define Expressions with No Database Connection” on page 1.45..

Figure 23 Dynamic Text Properties Text Tab



1. Double-click the **Dynamic Text** object to open the Properties dialog box.
2. Click the **Text** tab.
3. In the **Data field name or expression** box, enter the expression you want to use.

To create a custom field name or expression, click **Edit**. Select the field name from the list, then click **Insert**. Repeat to add more names or expressions. Click **OK** when you are done.

4. Because an expression can be lengthy, you can edit the label so it more closely resembles the expression's intended purpose (for example, "Full Name"). Otherwise, EPIDesigner automatically uses the Field Name entry as the Text label.
5. (Optional) If the expression is a date or time field, select a format from the **Format for date/time fields** list.
6. Click **OK**.

Adding Bar Codes

Drawing bar codes on a card design can be a moderately complex process. It is important to familiarize yourself with the type of bar code you will be using, and to set the corresponding properties, values, and database field specifications with care. Bar Code Properties and Values (below) contains descriptions of the various types of bar codes that can be added to your card design. You should first refer to your hardware documentation for information on the types of bar codes supported by the card reader you have purchased and the type of data the bar code can accept.

Drawing a Bar Code

To draw a bar code, perform these steps:

1. On the **Draw** menu, click **Bar Code**, or click the **Bar Code** button on the Toolbar.
2. Draw the bar code as you would any other design object.

Figure 24 Sample Bar Code with Readable Text



Link a Bar Code to a Data Field or Expression

In order for the bar code to convert and use the proper data from the data source, it is important that you link it to a data field. To do this, double-click the bar code to open the **Bar Code Properties** box. Click the **Bar code** tab, and then select a data field from the **Field Name** list.

Set Bar Code Properties and Values

To set the bar code properties and values, perform these steps:

1. Double-click the bar code to open the **Bar Code Properties** dialog box, or click the **Object Properties** button on the Toolbar. Click the **Bar code** tab.
2. Select the appropriate bar code type from the **Type** list. See “Bar Code Types” on page 1.49. for details.
3. Continue selecting properties and their corresponding values until you have properly configured your bar code. See “Bar Code Properties” on page 1.52. for details.

Print Bar Codes on the K Plane

Bar codes should always be printed in black. There are two types of black available: process black and pure black (the black that is exclusively printed on the K plane). While both colors are an acceptable selection, it is important to note that infrared bar code readers cannot recognize bar codes printed in process black. Unless you are sure that your bar code reader can read process black, it is recommended that you set your bar code to print in pure black.

To print bar codes on the K plane, double-click the bar code on your card design to open the **Bar Code Properties** dialog. Click the **General** tab, and then select **Print on K Plane**.

***Note:** This option is only valid if your card printer supports K plane (pure black) printing.*

Set the Bar Code Background Color

While the default bar code background color is white, and should generally remain white, EPIDesigner allows you to specify any other color (including no color, or transparent) to prevent the illicit duplication of ID cards by photocopying.

***Note:** Only a small number of readers can recognize the black code against a non-white field; therefore, if you intend to specify a bar code background fill as any color other than white, first make sure your reader is capable of distinguishing the code from the color field.*

A good rule to remember when printing bar codes against a non-white field is to print the bar code on the K plane (see “Print Bar Codes on the K Plane” on page 49 for more information).

To set the bar code background color, highlight the bar code on your card design. Change the bar code background fill color by selecting from the sixteen quick-access colors in the **Fill Color** list on the Attribute bar, or open the **Bar Code Properties** dialog and click the ellipsis button next to the **Fill Color** list to create a custom color.

Types and Checksums

The following sections describe the bar code types that are available on the **Bar Code** tab of the **Bar Code Properties** box.

Bar Code Types This property is used to set the type of bar code to be used. The following is a list of the possible types of bar codes:

- **Code 3 of 9** - an alphanumeric bar code allowing uppercase letters and numbers. Each character consists of nine elements, three of which are wide. An embedded CRC character is present. To add a checksum to the bar code, select an option

from the Checksum list.

- **Extended Code 3 of 9** - this bar code type is similar to Code 3 of 9, except it allows the full 128 ASCII character set to be encoded by printing two bar code characters for each text character. To add a checksum to the bar code, select an option from the Checksum list.
- **Interleaved 2 of 5** - a numeric bar code. Each encoded character is composed of five elements, two wide and three narrow. The number of characters to be printed must be even. If the number of characters is odd, a zero is appended to the beginning of the code. To add a checksum to the bar code, select an option from the Checksum list.
- **Code 93** - an alphanumeric bar code allowing uppercase letters and numbers. To add a checksum to the bar code, select an option from the Checksum list.
- **Extended Code 93** - this bar code type is similar to Code 93, except it allows the full 128 ASCII character set to be encoded. To add a checksum to the bar code, select an option from the Checksum list.
- **UPCA** - Universal Product Code version A. This bar code type is used to encode an 11 digit number. The first digit is the system number and the rest are data characters. Both two and five digit supplements are supported. Checksum is not used.
- **UPCE 10 digit** - a zero-compressed version of the UPCA bar code. This version allows 10 digits to be encoded. The first digit must be a zero. Both two and five digit supplements are supported. Checksum is not used.
- **UPCE0 6 digit** - a zero-compressed version of the UPCA bar code. This version allows 6 digits to be encoded. The first digit must be a zero. Both two and five digit supplements are also supported. Checksum is not used.
- **UPCE1 6 digit** - a zero-compressed version of the UPCA bar code. This version allows 6 digits to be encoded. The first digit must be a zero. Both two and five digit supplements are supported. Checksum is not used.
- **EAN 13** - this bar code type is used when the country origin must be known. EAN 13 is composed of 13 digits. The first two characters are used to define the country of origin, the next 10 are data, the last is a checksum. Both two and five digit supplements are supported. Checksum is not used.
- **EAN 8** - this bar code type is used when the country origin must be known. EAN 8 is composed of eight digits. The first two characters are used to define the country of origin, the next five are data, the last is a checksum. Both two and five digit supplements are supported. Checksum is not used.
- **Code 128 Auto** - a variable-length bar code that is capable of encoding the full 128 ASCII character set. Code 128 allows three subsets: A, B and C. This

version automatically selects the subset that produces the smallest bar code. See Note below for special checksum information.

- **Code 128 A** - a variable-length bar code that is capable of encoding the full 128 ASCII character set. Code 128 allows three subsets: A, B, and C. This version allows all standard uppercase alphanumeric keyboard characters, plus control characters. See Note below for special checksum information.
- **Code 128 B** - a variable-length bar code that is capable of encoding the full 128 ASCII character set. Code 128 allows three subsets: A, B, and C. This version allows all standard uppercase alphanumeric keyboard characters, plus all lowercase alpha characters. See Note below for special checksum information.

***Note:** For Auto, A & B - Set the checksum to "Mod 103" to use the regular Code 128 checksum value or to "Mod 43/Mod 103" to perform the HIBC standard Mod 43 encoding prior to the Code 128's Mod 103 checksum.*

- **Code 128 C** - a variable-length bar code that is capable of encoding the full 128 ASCII character set. Code 128 allows three subsets: A, B, and C. This version includes a set of 100 digit pairs, from 00 to 99 inclusively. This allows double-density numeric digits: two digits per bar-coded character. A checksum is automatically chosen.
- **Codabar** - a variable-length bar code that is capable of encoding 16 characters, including 0 to 9, plus the symbols "-", "\$", ";", ".", and "+". It is used primarily for numeric data. Any one of "a," "b," "c", or "d" must be used as the start and stop characters. To add a checksum to the bar code, select an option from the Checksum list.
- **MSI Plessey** - a variable-length bar code that is capable of encoding up to 15 numeric digits. To add a checksum to the bar code, select an option from the Checksum list.
- **UCC 128** - a specially-defined subset of Code 128 that is used primarily on shipping containers. It is numeric and has a fixed length of 19 digits. To add a checksum to the bar code, select an option from the Checksum list.
- **POSTNET (Zip + 4 PostalCode)** - this bar code type is used on envelopes and postcards that are shipped through the US Postal Service. It is placed on the lower right-hand corner of the envelope. Checksum is not used.
- **Symbol PDF417** - a two-dimensional symbology that allows you to encode a Portable Data File with ASCII, binary, or numeric data. The Symbol PDF417 is particularly useful if you need to encode large amounts of data onto a limited space (for example, an ID card that requires customer or employee profiles, biometric data, and personal descriptions). See "Setting Up Symbol PDF417 Bar Codes" in the EPIDesigner Help system for complete details on the proper use of this technology.

***Note:** Symbol PDF417 bar codes are only available through an optional plug-in.*

- **Code 49** - a multiple-row bar code that can encode the full ASCII character set below ASCII 128. Up to 49 alphanumeric characters or 81 numeric characters can be encoded. These characters are encoded into 2 to 8 rows, each divided by a separator bar. The top and bottom of the symbol also have separator bars that extend to the ends of the minimum quiet zones.
- **Code 16K Auto** - a multiple-row bar code that can encode the full ASCII character set below ASCII 128 using existing UPC and Code 128 character set patterns. Up to 77 full ASCII characters or 154 numeric characters can be encoded into 2 to 16 rows, and each row is divided by a separator bar. The top and bottom of the symbol also have separator bars that extend to the ends of the minimum quiet zones. Code 16K is similar to Code 128 in that you can choose between three subsets directly (A, B, or C), or you can choose Code 16K Auto for auto switching mode.
- **Code 16K A** - a multiple-row bar code that can encode the full ASCII character set below ASCII 128 using existing UPC and Code 128 character set patterns. In Code 16K A, you can encode punctuation, digits, uppercase letters, and control codes below the space character.
- **Code 16K B** - a multiple-row bar code that can encode the full ASCII character set below ASCII 128 using existing UPC and Code 128 character set patterns. In Code 16K B, you can also encode lowercase letters, but not control codes below the space character.
- **Code 16K C** - a multiple-row bar code that can encode the full ASCII character set below ASCII 128 using existing UPC and Code 128 character set patterns. In Code 16K C, only digits can be encoded. This mode prints digits in double-density compressed mode.

Bar Code Properties

Sample Text -This property sets the sample text that replicates the data that will populate the bar code at print time. Each bar code has its own associated sample text, but you can modify it within the parameters of the bar code.

Field Name -Select the data field from which the data will be taken at print time.

Justification -Select Left, Center or Right as the justification of the bar code within the bounding box.

Show readable text -Choose **Below** or **Above** if you want the data that encodes the bar code to appear as readable text along with the bar code.

Checksum list -This property controls how the checksum is created. Checksums can be optionally added to some bar codes. See each bar code type description for more information.

Ratio list -Select the ratio of the width of the bar code's bars. This setting is dependent on the bar code type.

Narrow bar -Enter the width to use for the narrowest bars in the bar code.

Bar code height -Set the height of the bar code bars. This setting is only required by Code 49 and Code 16K type bar codes, which use fixed height bars.

PDF417 options -These settings are specific to PDF417 type bar codes. See the EPIDesigner Help system for more information.

Selecting Colors

Selecting Colors Using the Attribute Bar Lists

To select colors using the Attribute bar lists, perform these steps:

1. Highlight the object using the **Select** tool.
2. To change the line color, select any of the sixteen quick-access colors from the **Line Color** list in the Attribute Bar.

To change the fill color, select any of the sixteen quick-access colors from the **Fill Color** list in the Attribute Bar.

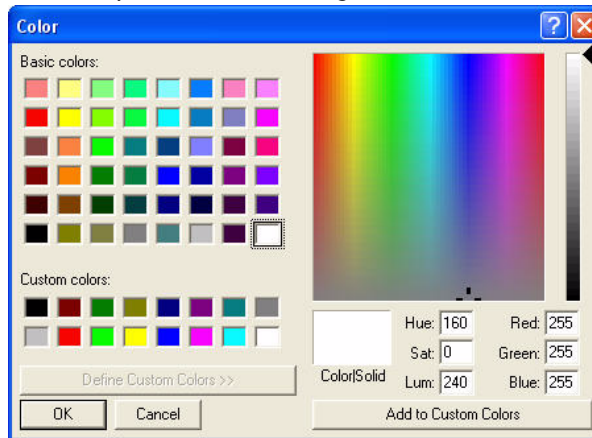
To change the text color, select any of the sixteen quick-access colors from the **Text Color** list in the Attribute Bar.

Creating Your Own Colors

To create your own colors and apply them to screen elements, perform these steps:

1. Double-click the object to open the Properties dialog box. On the General tab, click the ellipsis buttons next to either **Line Color**, **Fill Color** or **Shadow**. The **Color** dialog box appears.

Figure 25 Expanded Color dialog box



2. Drag the cursor in the color refiner box and the arrow beside the luminosity bar to define your color. You can also create a color by typing numbers in the **Red**, **Green** and **Blue** boxes, or in the **Hue**, **Sat** (saturation), and **Lum** (luminosity) boxes.

Note: The color you create is shown in the left side of the **Color/Solid** box. You can double-click the right side of the box, or press **ALT+O**, to use the solid color that most closely resembles the one you have created.

3. In the **Custom Colors** palette, select an empty box for the new color, or select a color that you want to change.
4. Click **Add to Custom Colors**.

Note: The custom color list is saved in the layout (DGN) file so that you can maintain a consistent color scheme in each card layout.

5. Create any other colors you want and add them to the palette.
6. Click **OK**.

Placing Objects on the K and O Planes

EPIDesigner supports 24-bit color, with output process colors, in the following models: CMY (cyan, magenta and yellow), CMYO (CMY plus a protective overlay); CMYK (CMY plus pure black), and CMYKO (CMYK plus a protective overlay). Each color is considered a “plane”.

CMYK For CMYK, ribbon-based ID card printers will use individual ribbons or ribbon segments for each process color. Some color document printers, like the HP DeskJet 560C, have a CMY ink cartridge and a pure black (K) ink cartridge. As the card is passed through the printer, each plane is applied to the card in such a way that it is combined with the other planes to achieve a desired color. For

example, if you were to print process black on a card, the printer would combine 100% of the cyan, magenta, and yellow planes to achieve black. By contrast, pure or resin black (which is much richer) is achieved by printing 100% of the K plane.

Place Objects on the K Plane

To place objects on the K Plane, perform these steps:

1. Double-click the object you want place on the K plane. The **<object> Properties** box opens.
2. Click the **General** tab.
3. Click **Print on K Plane**.

Note: This option is only valid if your card printer supports K plane printing.

The O Plane or Protective Overlay

The O Plane, or protective overlay, is a transparent film on a separate ribbon (the O plane), which is applied after the other colors have been printed onto the card. It is used to protect the card from wear and tear. It is not technically a color, but it is treated as such by printers that offer protective overlay printing as an option.

Note: *This option will only work with certain printers. Please consult your printer documentation for information on setting up options and exclusion areas to apply a protective overlay to your card design.*

Setting Up Magnetic Stripe Information

Use Magnetic Stripes to Retrieve Cardholder Data

EPIDesigner allows you to encode virtually any data you want on the Magnetic Stripe, which is particularly helpful if you are creating items such as credit cards, ATM cards, long distance telephone cards, or public transportation access cards.

Allowable Track Information

The following table illustrates the type of information that may be encoded to each track of the Magnetic Stripe:

Track	Bits per Inch	No. of Alphanumerics	No. of Numerics
1	210	76	
2	75		37
3	210		104

Track 1 allows alphanumeric (both alphabetic and numeric) characters, and Tracks 2 and 3 only permit numeric characters. Certain character sets are accepted for encoding on each track. For more information on allowable character sets, refer to the documentation that accompanies your Magnetic Stripe encoding module.

The printer automatically verifies whether or not a card has been successfully encoded. Depending on your printer's features, if a card is not encoded properly, the printer ejects the blank card and the on-line LED flashes. If this occurs, reexamine the information you have selected for encoding and make the necessary modifications to your track layout.

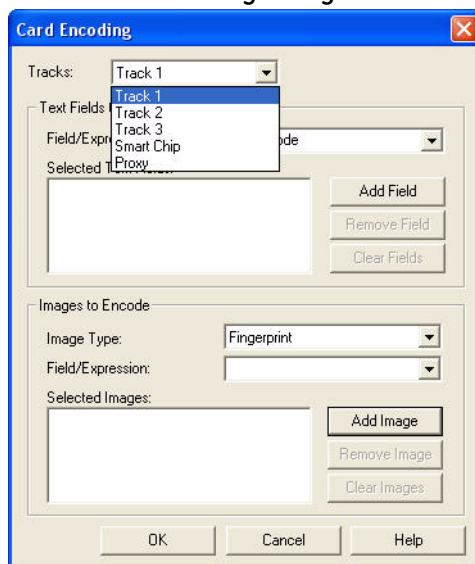
Note: You do not need to add special data characters to signify **Start Sentinels**, **End Sentinels**, and **Field Separators** (as defined by ISO 7811-2 standards). *EPIDesigner* will add these characters automatically during the encoding process.

Set Up Magnetic Stripe, Smart Chip or Proxy Encoding

To set up Magnetic Stripe, Smart Chip, or Proxy Encoding, perform these steps:

1. On the **File** menu, click **Layout Properties**.
2. Click the **General** tab, then click **Encoding**. The **Card Encoding** dialog appears.

Figure 26 Card Encoding dialog



3. From the **Tracks** list, select the type of technology that can be read by your card reader. For magnetic stripe encoding, refer to your hardware documentation to find out which tracks are supported by your particular device.

4. From the **Field/Expression** list, select any available data field (or create an expression) that you want to encode. See “Defining Expressions” on page 1.45. for more information.
5. Click **Add Field**. Your selection appears in the **Selected Text Fields** list.
6. Repeat steps 3 and 4 for each data field or expression that you want to encode.
7. For magnetic stripes, repeat steps 1 to 4 to encode additional tracks.
8. When you are finished, click **OK**.

The track layout information is saved to your card design when you choose **Save** or **Save As** from the **File** menu. The physical encoding of the magnetic stripe occurs when you print or externally encode the card from your application.

Remove Individual Fields/Expressions from the Layout

To remove individual fields/expressions from the layout, perform these steps:

1. From the **Tracks** list, select the track or technology from which the database field or expression is to be removed.
2. Select the data field or expression from the **Selected Text Fields** list.
3. Click **Remove Field**.

Remove all Fields and Expressions from the Track Layout

To remove all fields and expressions from the layout, perform these steps:

1. From the **Tracks** list, select the track from which all of the database fields and expressions are to be removed.
2. Click **Clear Fields**.

Tips and Tricks

Creating Your Own Card Backgrounds

There are plenty of software packages available that offer high resolution bitmap images that can be used as card backgrounds. If you would like to develop your own company-specific backgrounds, there are a few points to remember.

- Use a sophisticated paint program to design your card backgrounds, and save them in a bitmap or JPEG file format that is recognized by EPIDesigner. While Microsoft Paint is an adequate tool for some kinds of graphic design, it does not offer the creative effects (such as gradient fills or artistic text) that can give your artwork a professional quality.
- To assure your custom card background graphic will not be cropped during import, always set the size of your card background to the page size of the medium onto which you will be printing (for example, 80mm long by 54mm high). Also, set the output resolution to at least 300 dots per inch, with a 24-bit (16 million) color setting: line art should have a higher dpi for the best quality, and photographs can be a bit lower than 300 dpi without significant degradation in quality.
- If you prefer to use a draw program, export your card background graphic with a one-to-one pixel setting. Set the output resolution to at least 300 dots per inch with a 24-bit color setting. If the draw program offers anti-aliasing with the export utility, it will smooth out the “jaggies” in your artwork.
- You can save or export your background graphic to 256 different colors to conserve disk space. The end result will be noticeably inferior to 24-bit color output. Sixteen million colors will give your card background a near-photographic quality. If disk space is an issue, save the file as a JPEG image. This file format offers exceptional compression, while maintaining the high quality of the image.
- Test-print your background design on the printer you will be using to produce your ID cards. ID card printers do not always output the colors you see on your screen. Test-printing allows you to adjust the color output to your satisfaction before you go into full ID card production.

Color Variation and Intensity Threshold Settings

The effects of these settings depend entirely on the tonal quality of the image that is being close-cropped. Images with darker background pixels, or backdrops that have distinct variations in shading, pose more of a problem than images with brighter, solid-colored backgrounds.

For best results on close-cropping photographs, follow these image capturing tips:

- Make sure your subject is well lit. Using backlighting behind the subject separates the subject's hair from the backdrop, creating a slight halo effect around the hair. This works well to define dark hair from a dark backdrop.
- Photograph your subjects against a solid-colored backdrop.
- If you are using the ambient lighting in an office, rather than specialized photographic lighting, place your subjects against a colorful backdrop (sky blue, red, or green work well). This enhances your subject's flesh tones, and makes it easier for EPIDesigner to differentiate the background pixels from those that compose the image of the cardholder.
- When you are not using cameo or ghosting effects, darker backgrounds reduce the intensity threshold of the image.

Nudging Objects

You can “nudge” EPIDesigner objects one pixel at a time to place them on your card design with precision. To do this, select the object and use your arrow keys to move it in the direction of your choice.

Constraining Objects

To draw perfect squares and circles, or perfectly horizontal or vertical lines, hold down the **SHIFT** key to constrain the object while you draw or resize it.

***Note:** Images (photographs, fingerprints and signatures) are automatically constrained to their proper aspect ratios when you draw or resize them on your card design.*

Quick-Copying Objects

You can quick-copy an object by holding down the **CTRL** key, and selecting and moving the original object with your mouse pointer. This action leaves behind a copy of the original image at the original location. This allows you to bypass the **Copy/Paste** commands and **Toolbar** buttons.

Selecting/Deselecting Multiple Objects

You can select multiple objects by holding down the **SHIFT** key and clicking on the objects of your choice. Clearing objects from a previously selected group can be performed in the same manner.

Another way to select multiple objects is to click and hold down your left mouse button, and draw a marquee box around the group of objects that you want to select. Be careful to not click and hold down your left mouse button while the pointer is located over an object, as this will select and move the object.

Selecting Individual Objects

It can be difficult to highlight an individual object when there are several objects overlapping one another, particularly if the object you want to select is in between or underneath others. An easy way to select a layered object is to press the **Tab** key on the keyboard to select each object in succession.

Placing Bar Codes

When adding a bar code to your card design, place it so the bottom of the code is at least 1/4-inch from the bottom margin of the card. Most card readers are incapable of reading bar codes that are printed below this location. To be sure your bar code is in the right spot, test-print a single ID card and try it on your card reader.

When sizing a bar code to fit onto your card design, remember the following useful points:

- To see how long the bar code will be (using the default narrow bar width ratio), select the bar code, open the **Properties** dialog box and enter a sample text string with the same number of alphanumeric characters as you plan to use in the bar code. For example, if your planned bar coding sequence is 9 alphanumeric characters in length, enter nine sample alphanumeric characters in the **Sample Text** field. The bar code on your card design will automatically resize itself to accommodate the new character length.
- If the bar code is too long to fit onto your card design, select the bar code, open the **Properties** dialog box and change the **Ratio** option to “2.5:1” or “2:1”. This resizes the widest bars in the bar code by a ratio of 2.5 to 1 or 2 to 1 respectively, relative to the narrowest bars. The bar code on your card design is automatically reduced in the length.
Note: This option does not apply to all bar code types.
- If you reset your bar width ratio and you still cannot fit your bar code onto your card design, adjust the narrow bar width itself. To do this, open the **Properties** dialog box and enter a smaller number in the **Narrow bar width** field than the default.
- Select **Show readable text** to add human-readable text.
- Add a “quiet zone” (that is, a clear space with no machine readable marks in it) before and after the bar code.

- If your bar code reader is not infrared, place the bar code on a white background.

Protecting Your Bar Codes Against Counterfeiting

K (resin) plane bar codes can be printed against a process black background and still be used by infrared card readers. Since infrared readers do not identify process black, this combination of pure and process blacks makes bar codes impossible to photocopy or scan.

For other types of bar code readers, consult your supplier for possible anti-counterfeiting options. Intermec readers, for example, do not identify Pantone 202; therefore, a K plane bar code printed against this color (either resin or dye) will still be recognized by the reader, but remains difficult to reproduce.

Using Fonts

If you are new to the concepts of proper font usage, remember these simple rules to great ID card typography:

- Never use more than one or two fonts in your ID card design. If using two fonts, be sure they complement each other. In general, combine one serif typeface and one sans serif typeface (for example, Times and Arial).
- If your ID card printer prints at unusually low resolutions (for example, 200 dots per inch or under), always use a single bold sans serif typeface (printers with low resolutions cannot print the thin line weights in a serif font). Set the point size to at least 10.
- If you are using a card background bitmap, ensure your typeface fill color makes your text object stand out against the background. Generally, yellow and white characters can be easily read against dark background colors. Try to avoid harsh contrasts (for example, red typography against a dark green background).
- To test if you have selected the proper typographical point size, print a sample card and try to read it at arm's length. If you cannot see what is written on the card, select a different font.

NOTES:

EPIExpression Syntax

Numeric constants

Integer or floating-point decimal numbers

Examples:

0
12.34

String constants

Text strings enclosed in single or double quotes

Examples:

"abc"
'abc'

Variable names

Variable names consist of letters, numbers and the characters "_" and ".". The first character of the name must be a letter. When the EvaluateExpression method is called, EPIExpression evaluates the expression using the given values for the variables.

Examples:

X
Field_1

String concatenation

+
&

Text strings can be combined using either "+" or "&" operators.

Examples:

First_Name + " " + Last_Name
"Date: " & DATE()

Arithmetic

+
-
*
/

These operators are used to add ("+"), subtract ("-"), multiply ("*") or divide ("/") numbers. Multiple operations in one expression are performed according to the usual order of operations (multiplication and division before addition and subtraction), unless parentheses are used to specify a different order.

Examples:

$(X + 1) / 2$
PRICE * 0.15

Comparison operators

=
<>
<
<=
>
>=

The usual comparison operators can be used to compare strings or numbers.

Examples:

First_Name < "M"
IF(X = 0, "INVALID", X)

Logical operators

AND
OR

A logical expression with "AND" is true if both parts of the expression are true. A logical expression with "OR" is true if either part of the expression is true.

Examples:

First_Name <> "" AND Last_Name <> ""
Department = "Sales" OR Department = "Marketing"

Functions

These built-in functions can be used in expressions. The function names are not case-sensitive - "DATE()", "Date()" and "date()" are all valid. Some functions have more than one name, for the convenience of people who are used to the different names.

String functions

LEFT(s, n) -Return the first n characters of the string s.

Example:

LEFT(First_Name, 1) + LEFT>Last_Name, 1)

RIGHT(s, n) -Return the last n characters of the string s.

Example:

RIGHT(Employee_Number, 3)

LTRIM(s) -Remove blank spaces from the beginning of a string.

Example:

LTRIM(First_Name)

RTRIM(s) -Remove blank spaces from the end of a string.

Example:

RTRIM(First_Name)

LCASE(s), LOWER(s) -Change all the letters in a string to lower-case. LCASE and LOWER are synonyms.

Example:

LCASE(First_Name)

UCASE(s), UPPER(s) -Change all the letters in a string to upper-case. UCASE and UPPER are synonyms.

Example:

UCASE(Card_Code)

LEN(s), LENGTH(s), DATALENGTH(s) -Return the number of characters in a string. LEN, LENGTH and DATALENGTH are synonyms.

MID(s, n [, l]), SUBSTR(s, n [, l]), SUBSTRING(s, n [, l]) -Extract the portion of the string s starting at character position n and l characters long. The third argument, l, is optional. If it is omitted, return the string from position n to the end. MID, SUBSTR and SUBSTRING are synonyms.

Examples:

```
MID(Card_Code, 3, 4)
MID(Card_Code, 3)
```

INSTR([n,] s1, s2) -Search the string s1 for the first occurrence of the sub-string s2. If the optional argument n is given, it is the character position to start searching. Returns the character position where s2 starts, or 0 if s2 is not found in s1.

Example:

```
INSTR(First_Name, "e")
INSTR(5, First_Name, "e")
```

STRING(n, c) -Make a string consisting of the character c repeated n times.

Example:

```
STRING("x", 100)
```

CHAR(n), CHR(n) -Return the character with a given ASCII code. n is a number, and the return value is a single-character string. CHAR(ASCII(c)) equals c. CHAR and CHR are synonyms.

Example:

```
CHAR(34)
```

ASC(c), ASCII(c) -Return the ASCII code of a given character. ASC and ASCII are synonyms. ASCII(CHAR(n)) equals n.

Example:

```
ASC("A")
```

Numeric functions

FIX(n) -Convert a number or numeric string to an integer. The result is rounded to the nearest integer, so for example FIX(0.99) equals 1.

Example:

FIX(Height)

FLOAT(s) -Convert a numeric string to a floating-point number.

Example:

FLOAT("3.14159")

HEX(n) -Convert an integer number to a hexadecimal string.

Example:

HEX(65)

OCT(n) -Convert an integer number to an octal string.

Example:

OCT(65)

Date and time functions

NOW() -Return the current date and time in a string.

DATE() -Return the current date in a string.

TIME() -Return the current time in a string.

YEAR(s) -Return the year from a date/time string.

Example:

YEAR(NOW())

MONTH(s) -Return the month (1 - 12) from a date/time string.

Example:

MONTH(NOW())

DAY(s) -Return the day of the month (1 - 31) from a date/time string.

Example:

DAY(NOW())

WEEKDAY(s) -Return the day of the week (1 - 7) from a date/time string. 1 means Sunday.

Example:

WEEKDAY(NOW())

HOUR(s) -Return the hour (0 - 23) from a date/time string.

Example:

HOUR(NOW())

MINUTE(s) -Return the minute (0 - 59) from a date/time string.

Example:

MINUTE(NOW())

SECOND(s) -Return the seconds (0 - 59) from a date/time string.

Example:

SECOND(NOW())

Other functions

IF(a, b, c) -Choose one value or another based on a logical expression. If the logical expression a is true (non-zero or non-empty) then return the value of expression b, else return c.

Example:

IF(LEN>Last_Name) = 0, "INVALID", Last_Name)

MRTD(nFormat, nLine, sDocType, sDocNum, sCountry, sNationality, sGivenName, sSurname, sSex, sExtra, dBirth, dExpiry) -Format the given data fields into a machine-readable text string according to the ICAO standard for machine-readable passports and travel documents.

Note: *You will require additional licensing to use this command.*

nLang1 - The first language to use. Possible values: 0 = default (English), 1 = English, 2 = French, 3 = Spanish

nLang2 - The second language to use. Possible values: 0 = default (English or French depending on nLang1), 1 = English, 2 = French, 3 = Spanish

Example:

MRTDDATE("June 2, 1998", 0, 0)

Result:

02 JUN /JUN 98

Glossary

A

- Aspect Ratio** The ratio of the width of an image to its height.
- Attributes** Characteristics assigned to objects, with respect to the line and fill. Line attributes include weight (thickness) and color. An object's fill attribute is a color. Text objects also have attributes, such as the font (typeface), style and color.

B

- Bitmap** An image composed of a series of dots (pixels). Scanners and paint programs, such as Paintbrush, generate this type of image. By contrast, EPIDesigner creates images using vector objects—shapes stored internally as mathematical equations.

C

- Cameo effect** An artistic effect that is accomplished by removing the bitmapped image's background pixels. In the case of photographs, the image backdrop will be removed, and a close-cropped image of the card holder will be placed against the card background.
- Card** The printed card that has been issued to the cardholder. A card can exist as a record in the database, even if the card itself has never been printed.
- Card Background** A card background is a high resolution bitmapped image that is imported into the card design. It serves as a scenic backdrop to the graphic objects and static or dynamic data that is printed on the card.
- Card Format** A card format is a template from which ID cards are produced. It is composed of an EPIDesigner card design including the card background image, design objects, smart chip or magnetic stripe track layout, and the printer setup information.
- Card Reader** A card reader is an access control hardware device used to read bar codes, magnetic stripes, smart chips, or microwave emissions from the different types of advanced security cards.

<i>Constrain</i>	Holding down the SHIFT key while drawing or resizing an object, to force the object into a specific shape. For example, holding the SHIFT key down while you draw or resize a rectangle forces that object to become a perfect square. Images (photographs, fingerprints and signatures), when drawn, are automatically constrained to their proper aspect ratios (as determined in your application).
<i>Crop</i>	Reducing or increasing the visible area of an image by using the Crop button in the Crop Image dialog box. The area of the image that resides within the rectangle will be cropped and saved to the database. The area of the image that resides outside the rectangle will be discarded.
<i>Cropping Rectangle</i>	The rectangle with eight handles that signifies the cropping area over a captured image.
D	
<i>Directory</i>	A directory is a structure used to organize files on a disk like a drawer in a filing cabinet. Directories have names, and can be divided into subdirectories. For example, you can have a directory named CARDS to store your card designs.
<i>Double-click</i>	To press and release the left mouse button twice in quick succession.
<i>Drag</i>	To move the mouse while holding down the left mouse button.
<i>Drive</i>	A device in a computer that spins disks used to store information. Personal computers normally have a fixed, or hard, disk (labeled C) and one or two floppy disk drives (labeled A and B).
<i>Drop-down List</i>	A drop-down list allows you to choose commonly-used entries for a specific category of information (such as Blue, Green, Brown or Gray, if you create a pick list for the card holder's eye color). This is often referred to simply as a "list".
<i>Dynamic Text Object</i>	A text object in a EPIDesigner card design that has been linked to a database field (e.g., the cardholder's first name, last name, etc.). Unlike static text, a dynamic text object outputs the variable information that was entered into its associated field.

E

Expression In EPIDesigner, a combination of operators, constants and names of fields that produce a single value. You can use expressions to combine database fields for magnetic stripe or smart chip encoding, or for database field links to dynamic text objects (e.g., the First_Name and Last_Name fields can be combined into one dynamic text object that prints the cardholder's full name on a single line).

Extension Characters following the period in a filename that identify the type of information in the file. For example, the .DGN extension indicates that the file contains a EPIDesigner drawing.

F

Field Label The name which identifies the field. In EPIDesigner, a dynamic text object's label can be modified in the Text field of the Dynamic Text Properties > Text tab.

G

Ghost Image An image or bitmap that is almost transparent, so that the card background can be seen through it.

Grid Lines A series of evenly spaced, intersecting horizontal and vertical dots used to align objects.

H

Handles Small squares that appear on the corners and sides of the cropping rectangle. You can use these handles to resize or move the rectangle over the captured image. The area of the image that resides within the rectangle will be cropped and saved to the database. The area of the image that resides outside the rectangle will be discarded.

Hue The position of a color along the color spectrum. For example, green is located in the spectrum between yellow and blue.

J

Justification The alignment of text in relation to the left, right, top and bottom margins of the text frame.

L

**Landscape
(Page Orientation)** A page oriented so that it prints from left to right across its longest dimension.

Luminosity The brightness of a color on a scale from black to white.

O

Orientation Refers to the direction in which print is oriented on the page. Printing across the width of the page is known as portrait orientation (derived from portraits of people, which are usually vertical in format). Printing across the length of the page is known as landscape orientation (derived from landscape paintings or photographs, which are usually horizontal in format).

P

Pixel Short for “picture element.” Pixels are dots on a computer screen or television that combine to form an image.

Point Size A unit of measurement used primarily in typesetting for designating type sizes. There are approximately 72 points to an inch.

**Portrait
(Page Orientation)** A page oriented so that it prints from left to right across its shortest dimension.

S

Saturation The purity of a color’s hue, moving from gray to the pure color.

Static Text Object A text object in a EPIDesigner card design that has not been linked to a database field. Unlike dynamic text, a static text object, such as a headline or a field label, remains constant from card to card during the print process.

Symbol PDF417 A two-dimensional symbology that allows you to encode a Portable Data File with ASCII, binary, or numeric data. The Symbol PDF417 is particularly useful if you need to encode large amounts of data onto a limited space (e.g., an ID card that requires customer or employee profiles, biometric data, and personal descriptions).

T

Text Box A simple text field, which allows you to manually enter alphanumeric or numeric data.

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