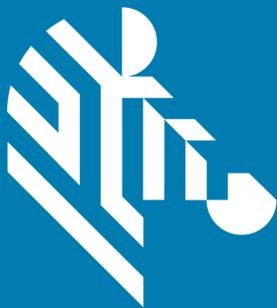


ZebraDesigner for Developers User Guide

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1 Introducing ZebraDesigner for Developers

Welcome to ZebraDesigner for Developers.

Use ZebraDesigner for Developers to design label templates and to store your templates on your mobile or offline Zebra printers. ZebraDesigner for Developers transforms your templates into labels when you need to print. ZebraDesigner for Developers also incorporates variable data from various external business applications into your labels.

ZebraDesigner for Developers lets you send crucial print stream commands and minimizes the amount of data you need to send.

TIP: Offline printing helps you print labels faster because your label's variable objects are already stored on your printers. Offline printing means you can print without using your label design application. Offline printing is also useful when you want to print without using your computer due to unacceptable conditions or logistical issues.

2 Typographical Conventions

Text that appears in **bold** refers to menu names and buttons.

Text that appears in *italics* refers to options, confirming actions like *Read only*, and locations like *Folder*.

Text enclosed in <less-than and greater-than signs> refers to keys from desktop PC keyboards such as <Enter>.

Variables are enclosed in [brackets].

NOTE: This is the style of a note.

EXAMPLE: This is the style of an example.

This is the style of a best practice.

WARNING: This is the style of a warning.

TIP: This is the style of a tip.

2.1 Basic ZebraDesigner for Developers Concepts

This section describes the ZebraDesigner for Developers elements that enable you to efficiently design label templates.

Listed below are the essential ZebraDesigner for Developers concepts. Being familiar with them provides a perfect starting point for successful labeling projects.

- [Label](#)
- [Object](#)
- [Design Surface](#)

If you come across any other unfamiliar items while working with ZebraDesigner for Developers, refer to the [Help tab](#).

2.1.1 Label

Label works as a template to add [label objects](#) and print using any kind of printing media.

Each object adds a different kind of content such as text, line, ellipse, barcode or rectangle to a label. The content is either fixed (manually entered by the user) or dynamic (defined using values from connected data sources).

After finishing your label template layout, you can store the template on your printers.

2.1.2 Object

Object is the basic building block for designing labels. To design a label means to select, add, and position the objects on the [design surface](#).

EXAMPLE: Each object performs a different role. [Text](#) object is in most cases used for single-line textual content that does not need to adapt its font size to the label design. [Barcode](#) object adds a barcode whose type and content can be adapted to the needs of current document.

Label object types and their purpose are listed [here](#).

2.1.3 Design Surface

Your design surface is a place to create, add, position, and interconnect [label](#) objects.

To help you design labels as simply and efficiently as possible, your design surface uses usability and functional principles from Microsoft Office.

TIP: Use [View tab](#) to customize your design surface.

- Learn more about design surface elements [here](#).
- Learn more about design surface editing actions [here](#).
- Learn more about design surface visual aid elements [here](#).

2.2 Keyboard and Mouse Support

To efficiently perform and complete the ZebraDesigner for Developers tasks, follow the guidelines related to the use of keyboard and mouse:

- [How to efficiently use keyboard and mouse](#)
- [Keyboard shortcuts](#)

2.2.1 Efficient Use of Keyboard and Mouse

Use the following list of tips to make your work with ZebraDesigner for Developers easier and more efficient.

1. **Select object anchoring point.** Press <Ctrl> key and click the object placeholders to quickly define the anchoring point.
2. **Label scrolling and zooming.** Use mouse wheel to scroll the label. Holding <Ctrl> when rotating the wheel, adjusts zoom factor. <Shift> scrolls label left or right.
3. **Set label or form properties.** Double-click the design surface to open the [label](#) properties dialog.
4. **Vertical or horizontal object moving.** Hold <Shift> while moving an object over the design surface. The object is moved in straight vertical and horizontal lines.
5. **Resize an object with arrow keys.** Holding <Shift> while pressing arrow keys resizes the object.
6. **Fine-tune the object position.** Hold <Ctrl> while pressing arrow keys.
7. **Open contextual menus.** Right-click the object or design surface to access the [label](#) or [design surface](#) contextual menus.
8. **Select multiple objects.** Hold <Shift> and click the objects to add them to the selected objects in a group.
9. **Quickly add an object with connected data source.** Click the object's shortcut handle in the [object toolbox](#). A list of available data sources appears. Select a data source or add a new one, and click the design surface to add an object which already has a dynamic data source connected to it.

2.2.2 Keyboard Shortcuts

Use keyboard shortcuts to reduce the time needed to accomplish frequent tasks with ZebraDesigner for Developers. To complete these tasks, use a standard combination of keys.

TIP: Keyboard shortcuts are just a faster and more convenient way of choosing commands. The command itself is executed in the same way as if it was run from the menu or toolbar.

Action	Press
Select all	Ctrl+A
Paste	Ctrl+V
Cut	Ctrl+X
Move up	↑
Move right	→
Move down	↓
Move left	←
Close	Alt+F4
Zoom to document	Ctrl+0
Copy	Ctrl+C
Zoom Out	Ctrl+minus sign on numeric keypad
Zoom In/Out	Ctrl+mouse scroll up/down
Open	Ctrl+O
Zoom In	Ctrl+plus sign on numeric keypad
Save	Ctrl+S
Open blank label connected to default printer	Ctrl+Shift+N
Redo	Ctrl+Y
Undo	Ctrl+Z
Cancel	Esc
Move Focus	Tab or Shift+Tab
Store	Ctrl+Alt+S
Format painter – copy object properties	Ctrl+Shift+C
Format painter – paste object properties	Ctrl+Shift+V

2.3 Options (Configuring the Program)

To customize the general program configuration of ZebraDesigner for Developers, open the **Options** dialog which is accessible from the **File** tab.



ZebraDesigner for Developers configuration options are grouped on the following tabs:

- **Folders**: allows you to set the default locations for storing the labels and picture files.
- **Language**: selects the user interface language. Select the preferred language from the listed options.
- **Designer**: enables you to configure opening behavior of ZebraDesigner.

3 Workspace Overview

Your ZebraDesigner for Developers workspace provides a flexible and easy-to-use environment for simple label designing.

Your ZebraDesigner for Developers workspace follows widely used application interface guidelines and is equipped with tools and interface elements familiar to most users.

ZebraDesigner for Developers workspace includes the following:

- [Landing page](#)
- [Object and Explorer Panels](#)
- [Printer and Status bar](#)
- [Tabs and Ribbons](#)
- [Design Surface](#)

3.1 Landing Page

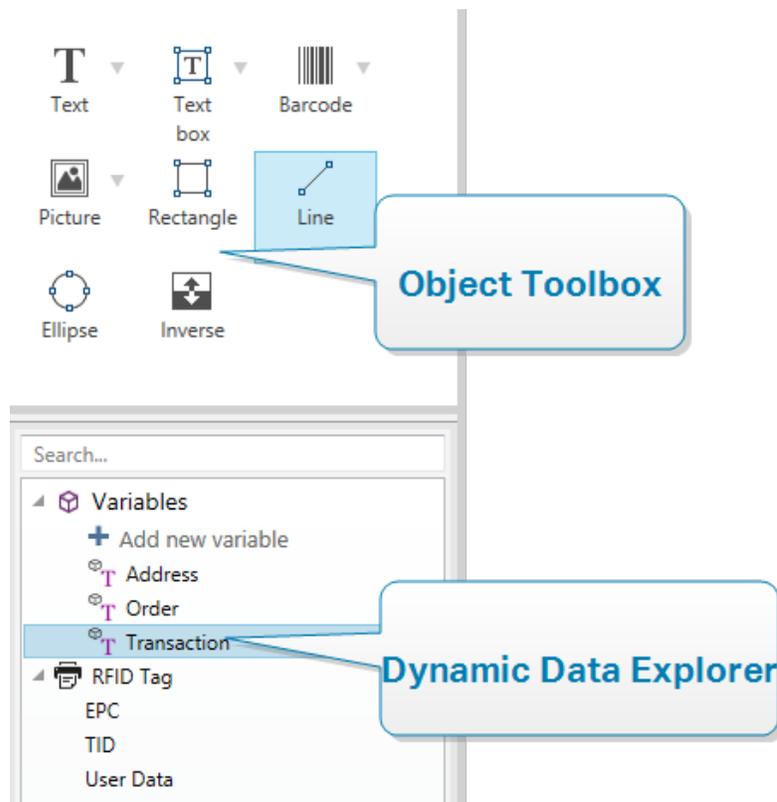
Your landing page in ZebraDesigner for Developers is an introduction which opens after the application loads. The page includes the following:

- **New document area:** create new or open existing ZebraDesigner for Developers documents.
 - **Create a New Label:** create new label documents.
 - **Create a New Receipt:** create new [receipt style labels](#).
- **Recent Files:** lists recently used ZebraDesigner for Developers files.
- **Learning resources:** access useful resources to help you create labels, and learn more about ZebraDesigner.
- **Printer Drivers:** access Zebra printer drivers. Drivers let you optimize your labels to print on specific printer models.

3.2 Object and Explorer Panels

Object and explorer panels are located at the left-most area of the ZebraDesigner for Developers window. They provide access to objects.

- **Object Toolbox:** Contains available [objects](#). These objects are ready to be used on a label. Click the selected object and drag it to the design surface.
- **Dynamic Data Explorer:** The tool for managing your data sources.



3.2.1 Dynamic Data Explorer

The Dynamic Data Explorer performs two roles. It serves as a tool for managing your variables, and gives an overview of the data sources that are currently in use.

NOTE: Right-clicking your variables allows you to cut, copy, paste, delete, edit, and rename them.

- **Add new variable:** adds an additional variable to the label data sources. There are four default variable types available. Their values are defined via dialogs described in dedicated sections
 - [Variable](#): a type of variable that obtains value when a label is printed.
 - [Current date](#): displays current date in the requested format.
 - [Current time](#): displays current time in the requested format.
 - [Counter](#): displays a counter value.
- **RFID Tag:** If you are working with an RFID compatible printer, you can directly add the content encoded in the RFID tag to your label as Text, Text Box or Barcode objects.

3.3 Printer and Status Bar

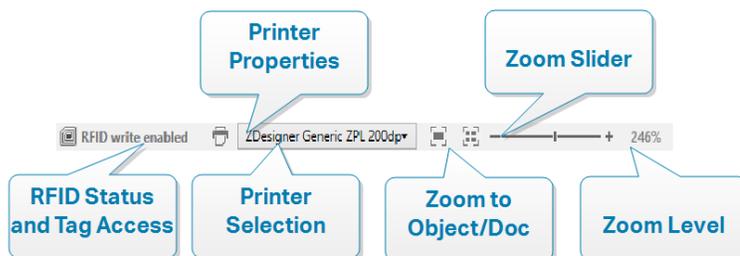
Printer and Status bar stretches over the bottom part of the ZebraDesigner for Developers window. The bar performs these roles:

- **Printer Selection** for the current print job. Select your preferred printer from the drop-down list of installed printers.

TIP: When changing a printer, label and paper size adapt automatically to the dimensions defined by the printer driver.

NOTE: Working with ZebraDesigner for Developers is tied to your installed Zebra printer drivers. As a result, only supported printer drivers are listed on the printer selection list.

- **Printer Properties:** Gives you direct access to the properties dialog of the selected printer driver.
- Design surface [zooming](#).
- **RFID Status and Tag Access:** Indicates if writing the data to the RFID tags is enabled or not. Click the button to open the RFID tag dialog. This is where you can [enable or disable writing to RFID tags](#).



3.4 Tabs and Ribbons

ZebraDesigner for Developers uses a standard Windows-based interface.

The ZebraDesigner for Developers's top section interface segments are described below.

3.4.1 Tabs

Tabs represent subsets of ZebraDesigner for Developers features. The tabs contain interrelated commands that are available to the user in an organized way – grouped, and labeled:

- **File** (background): opens the store form and document management panel.
- **Home**: offers commonly used commands such as copy/paste, print, and style commands.
- **Data**: offers data source related commands.
- **View**: gives you control over layout tools, zooming options and element markers visibility.
- **Contextual tabs**: appear after clicking an object. They allow you to define object-specific settings. The type of contextual tabs adapts to the selected object.
- **Help**: besides offering the access to F1 help, this tab leads you to multiple helpful resources that make your work with ZebraDesigner for Developers easier and more efficient.

3.4.2 Ribbon

Ribbon is a rectangular area that spreads across the top of an application window. Related commands are divided into ribbon groups. The ribbon changes along with the selected tabs and adapts to the currently used tools using the contextual tabs.

3.4.3 File Tab

File tab serves as document management panel. The following options are available:

- **Start**: takes you to the ZebraDesigner for Developers landing page.
- **New**: creates a new stand-alone label.
- **Open**: allows opening existing label.
- **Save**: saves the active label.
- **Save As**: allows saving the active label file by defining its name and location.
- **Store**: stores the current label as a template on the printer to be used in store/recall mode.
- **Close**: closes the current ZebraDesigner for Developers document.

- **Options:** opens the dialog for configuring the program defaults.
- **About:** provides software version information.
- **Exit:** closes the application.

3.4.3.1 Start

Start panel takes you to ZebraDesigner for Developers [landing page](#). Use it to create or open documents, access recently opened files, preview files and learn more about ZebraDesigner for Developers.

3.4.3.2 New

New Label creates a new stand-alone label. [New Label Setup Wizard](#) opens after clicking this button.

New receipt creates a new receipt style label. Start designing variable length receipts with predefined header, body, and footer objects. Details are available in section "Creating Receipt-Style Labels" on page 78

New from Sample Templates creates a document based on a selection of industry-standard templates.

TIP: There are two ways of opening new labels. You can open each additional document in a separate instance (window) of ZebraDesigner for Developers. An alternative way is to open documents within the already opened instance. To select the way that suits you better, go to **File > Options > Designer**.

3.4.3.3 Open

Open dialog allows opening existing label files.

Browse allows selecting the label on local or connected network drives.

Recent Files field lists the latest files that have been edited. Click any of them to open the file.

3.4.3.4 Save

Save panel saves the active label using the same file name that was used to open it.

NOTE: If a file has been opened for the first time, **Save** directs you to the **Save as** on the **File** tab.

3.4.3.5 Save as

Save as allows saving the active label file by defining its name and location.

Recent folders field lists the folders that were recently used to save the label files.

3.4.3.6 Storing Label Templates

Store label templates you create directly into your printer memory for faster printing or printing offline. Recall your stored templates to print labels using integrated external business applications without installing additional software. The store and recall features of ZebraDesigner for Developers help you create, store, test, and integrate labels you recall and print with external business applications.

- **Store:** save your pre-made templates in your printer memory.
- **Recall:** print labels from your printer memory using your pre-made templates populated with variable data.

Store and recall your label templates using the following sections:

Operation

- **Store template to printer:** store your pre-made templates in your printer memory.
- **Store template to printer then recall:** store your pre-made templates in your printer memory and immediately recall labels you manually populate with variable data. Use this feature to test your printing process and diagnose problems. Normally, you recall labels populated with variable data from external business applications.
- **Generate print file with variables:** generate .prn files of commands you send to your printers in ZPL format. ZebraDesigner for Developers saves your print files on your local disk, not in your printer memory. Use print files to analyze your print streams, replace variable names with values, and integrate your stored label templates with external business applications.

Recall stream format

Choose which format your printer uses to populate variables when you recall your labels.

- **XML:** recall your labels using variables populated in XML format.
- **ZPL:** recall your labels using variables populated in ZPL format.

Store fonts

Zebra printers use Zebra internal fonts by default. To use other fonts (e.g., TrueType and OpenType fonts) on your labels, use your printer driver settings to store them on your printer in Zebra format. Select **Yes** to associate these other fonts with your label templates in your printer memory and use them on all your printers.

NOTE: When you connect text objects to variables, use Zebra printer fonts. Your printer displays TrueType and OpenType fonts as graphics, which causes printing errors with variables.

Destination

Choose where to store your label templates.

- **Network printers** and click **Printers:** view, add to, search, and choose from your list of network printers.
- **Local disk** and click **Browse:** save your templates to your local disk in .prn format.
- **Printer selected in label:** store your templates using your currently active printer driver.

Template name on printer

Your printer holds multiple templates. Give your templates unique names so you can find and recall them later.

NOTE: ZebraDesigner for Developers limits your template names to 16 characters.

Printer memory location

Zebra printers have different memory types. Choose your printer memory location according to your printer specifications (For example: DRAM, Internal Flash, etc.).

Now you understand how to store your label templates on your printer and recall, populate, and print labels offline or use integrated external business applications.

3.4.3.7 Options (Configuring the Program)

To customize the general program configuration of ZebraDesigner for Developers, open the **Options** dialog which is accessible from the **File** tab.

ZebraDesigner for Developers configuration options are grouped on the following tabs:

- **Folders:** allows you to set the default locations for storing the labels and picture files.
- **Language:** selects the user interface language. Select the preferred language from the listed options.
- **Designer:** enables you to configure opening behavior of ZebraDesigner.

3.4.3.7.1 Folders

Folders tab defines the default location for opening and storing the documents and files which are edited and used in ZebraDesigner for Developers.

NOTE: Make sure read/write rights are granted to the account under which the ZebraDesigner for Developers is running.

- **Labels:** location for opening and saving the label files.
- **Pictures:** location for opening the picture files.

Folders set in this tab serve as the default location when searching for a specific file in ZebraDesigner for Developers.

3.4.3.7.2 Language

Language tab allows selecting the ZebraDesigner for Developers interface language. Select the appropriate language and click **OK**.

NOTE: Restart is necessary to make the user interface appear in the selected language. Make sure you save your work before closing the program.

3.4.3.7.3 Designer

Designer tab enables you to configure opening behavior of ZebraDesigner for Developers.

Opening Mode group defines how your ZebraDesigner for Developers opens new documents.

- **Display each document in its own window:** If enabled, additionally opened documents appear in separate windows of ZebraDesigner for Developers. This applies to both – newly created and existing documents.

If you decide to disable this option, additionally opened documents will appear within the currently active instance of ZebraDesigner for Developers.

Variables group allows you to set the default variable properties while designing your label templates.

- **Default name prefix for new variables:** Defines the default name prefix for the variables that you add while designing label templates. This is the name prefix that automatically appears in the variable creation dialog. ZebraDesigner for Developers

adds serial numbers to the variables with the same name prefix.

EXAMPLE: By default, the variables in ZebraDesigner for Developers have XML name prefix. If you create three variables for your label template, the names of your variables are XML, XML1, and XML2.

3.4.3.8 About

The **About** dialog page contains software information for your copy of ZebraDesigner for Developers.

3.4.4 Home Tab

Home Tab provides access to frequently used commands and settings in the following ribbon groups:

- [Clipboard](#): group temporarily stores the selected elements, objects or groups of objects.
- [Font](#): group lets you define the font properties.
- [Action](#): group allows you to store label templates and run test prints.
- [Management](#): group provides direct access to Document properties.
- The [Align](#) group options define relative horizontal and vertical positioning for the object content.
- [Objects](#): group allows you to align, group or [arrange](#) label objects.

3.4.4.1 Clipboard

Clipboard group temporarily stores the selected elements, objects or groups of objects. Use the selected and stored objects to transfer them from one label to another.

TIP: Copying and pasting of textual (plain text) and graphical (bitmaps) content between multiple applications is supported.

- **Paste:** pastes the clipboard contents on the design surface. Multiple reuse of a single clipboard item is allowed.
- **Cut:** removes the selected element(s) from the design surface and adds it to the clipboard to be pasted elsewhere. Note that the first element is selected by clicking it. When selecting additional elements, press and hold <Shift> key while clicking these elements.
- **Copy:** copies the selected content to the clipboard. Multiple objects can be copied at once – select them and click **Copy**.
- **Format painter:** copies the formatting properties from one object to another. This is how you multiply the style of your reference object.

EXAMPLE: Use the format painter to copy font, font size, font color, alignment and spacing from your reference [Text object](#) to all other Text objects using a single action.

To copy the object style properties:

1. Click your reference object. This is the object you want to copy the properties from.
2. Click the format painter.
3. Click the target object. This object now has the same properties as your reference object.

When using the format painter for different objects, you are copying and pasting the object's properties from the **Style** tab. If there are matching **Style** properties between the objects, ZebraDesigner for Developers transfers these properties to the target object.

EXAMPLE: When multiplying the properties from a [Rectangle object](#) to [Ellipse objects](#), all **Style** tab properties apply, except for the corner radius. This property is only applicable to the Ellipse object.

3.4.4.2 Font

Font group defines font properties:

- **Show/hide printer fonts:** button allows you to exclusively display internal printer fonts on the list of available fonts. Graphical fonts are hidden in this case. After pressing this button again, all available fonts are visible on the list once more.
- **Font:** defines the font family to be used in a selected object.
- **Font Size:** defines the text size in an object. Select the desired point size from the dropdown selector or enter it manually.
- **Font Style:** defines the object text stylistic characteristics of text, such as bold or italic.
- **Alignment:** defines horizontal text positioning in an object: **Left**, **Center** or **Right**.
- **Justify:** makes a paragraph aligned along the left and right object margins.

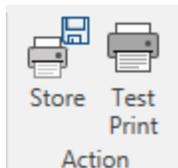
TIP: When changing a font during the design process, ZebraDesigner for Developers remembers the last used font type and size.

3.4.4.3 Action

Action group allows you to store label templates and run test prints.

Use the [Store](#) button to store your label templates on printer. During the storing procedure, ZebraDesigner for Developers converts the label template to a print stream that your Zebra printer can interpret. The result are stored labels with empty variable values, which are assigned during the recall.

Use the **Test Print** button to verify the label printout on your Zebra printer. By pressing this button, you print the labels populated with provisional values on your Zebra printer.



3.4.4.4 Management

Management ribbon group provides direct access to:

- **Document Properties** opens current [label](#) properties.

3.4.4.5 Align

The **Align** group options define relative horizontal and vertical positioning for the object content:

- **Align Objects Left:** aligns objects with the left border of the first selected object or with the leftmost object.
- **Align Objects Center:** aligns objects with the horizontal center of the first selected object or with horizontal center of the largest object.
- **Align Objects Right:** aligns objects with the right border of the first selected object or with the rightmost object.
- **Distribute Horizontally:** distributes objects using equal horizontal spacing.
- **Align Objects Top:** aligns objects with the upper border of the first selected object or with the highest object.
- **Align Objects Middle:** aligns objects with the vertical center of the first selected object or with vertical center of the largest object.
- **Align Objects Bottom:** aligns objects with the bottom border of the first selected object or with the lowest object.
- **Distribute Vertically:** distributes objects using equal vertical spacing.

3.4.4.6 Object grouping and arranging

The **Objects** group helps you work with mutiple objects.

- **Group objects** unites the selected objects and makes them behave as a single object.
- **Ungroup objects:** separates the grouped objects.

Arrange positions the objects so that they appear either in front of or behind each other.

- **Send Backward:** sends the element back one level.
- **Send to Back:** sends the element behind all other elements on the label.
- **Bring Forward:** brings the element forward one level.
- **Send to Front:** sends the element in front of all other elements on the label.

Delete allows you to remove the selected individual or group objects from your label template.

3.4.5 Data Tab

Data tab displays the ZebraDesigner for Developers ribbon with groups that enable you to instantly connect an object with commonly used data sources:

- [RFID](#) ribbon group gives direct access to [RFID Tag](#) dialog.

3.4.6 View Tab

View Tab gives you control over document zooming, marker visibility, visual aids and design surface rotation. It makes the following ribbon groups available:

- [Zoom](#): defines design surface zoom level and ZebraDesigner for Developers window zoom behavior.
- [Object Markers Visibility](#): defines visibility settings for object properties.
- [Alignment and Gridlines](#): sets object positioning behavior and defines properties for design surface gridlines.
- [Rotation](#): rotates the design surface clockwise for 90 degrees per click.

3.4.6.1 Zoom

Zoom group defines the design surface zoom level.

- **Zoom to Document:** displays the entire label in the ZebraDesigner for Developers window.
- **Zoom to Objects:** displays all objects in the ZebraDesigner for Developers window.
- **Zoom In:** magnifies the design surface by a percentage of the currently defined zoom level.
- **Zoom Out:** decreases the design surface by a percentage of the currently defined zoom level.

- **Zoom percentage drop-down menu:** allows you to type in or select the exact zooming percentage for your current document.

3.4.6.2 Object Markers Visibility

Objects markers visibility group toggles the visibility for the following object properties:

- **Object Name:** displays the name of an object.
- **Printer Element:** indicates that the object will be printed using a printer built-in function. This options serves as an alternative to sending the object to printer as a graphic.
- **Data Source:** indicates that the object is connected to a [dynamic data source](#).

3.4.6.3 Alignment and Gridline Guides

Alignment and Gridlines group sets object positioning behavior and defines properties for design surface gridlines.

- **Display gridline guides:** makes the design surface grid dots visible.
- **Grid Size X:** defines horizontal distance between the grid dots.
- **Grid Size Y:** defines vertical distance between the grid dots.
- **Grid Offset X:** defines the horizontal offset of the grid from the design surface center.
- **Grid Offset Y:** defines the vertical offset of the grid from the design surface center.
- **Align to Objects:** makes an object align with other objects on the design surface. When an object is aligned, a line which marks the object alignment appears.
- **Align to Gridlines:** aligns the selected objects with gridlines.
- **Do Not Align:** makes the object position independent of gridlines and position of other object(s).

3.4.6.4 Rotation

Rotate view button rotates the design surface clockwise. Horizontal and vertical rulers adapt to the current position of the design surface.

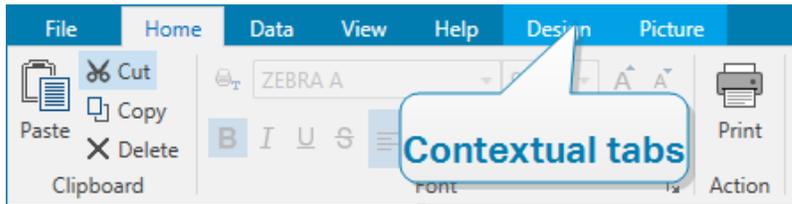
TIP: Rotation type is defined by the printer driver. Certain drivers support complete 360 degrees rotation (90 degrees per click), while others allow 90 degrees rotation clockwise (portrait/landscape).

3.4.7 Contextual Tabs

Contextual tab is a hidden tab that becomes visible when a specific [label](#) object is selected on the [design surface](#). Contextual tabs appear on the right side of the standard

ZebraDesigner for Developers tab. The selection of displayed tabs depends on the object that you are currently editing.

- Label-specific contextual tabs are described [here](#).



3.4.7.1 Label-specific Contextual Tabs

When editing various [label objects](#), the following contextual tabs appear depending on the selected object:

- [Design tab](#)
- [Barcode tab](#)
- [Shape tab](#)
- [Picture tab](#)
- [Text tab](#)

3.4.7.1.1 Design Contextual Tab

Design tab serves as a contextual tab that defines the layout and positioning of the selected label object.

The following groups of settings are available on the **Design** tab:

- [General](#): defines object's visibility and printability on a label.
- [Positioning](#): defines the object's position on the design surface.
- [Arrange](#): positions the object relative to neighboring objects on a label.

General

General group defines the object's visibility and printability on a label.

- **Not printable**: when enabled, this option prevents the object from being printed on the label. The object remains visible on the label preview.
- **Visible**: when disabled, the object neither appears on the print preview nor on the printed label. The object is treated as if it does not exist.
- **Printing Optimization**: allows activating the use of printer elements (available with [rectangle](#), [barcode](#), [line](#), [ellipse](#) and [inverse](#) objects).
- **Name**: allows you to enter object name and its description.

Positioning

Positioning group sets the object location and size on a label.

Position button opens:

- **X and Y:** coordinates set the exact position on the design surface.
- **Width and Height:** object dimensions.
- **Keep Aspect Ratio:** makes sure both object dimensions change proportionally while resizing.
- **Rotation angle:** rotates the object clockwise.

Anchoring Point button defines the spot where an object is pinned to the design surface. Variable size objects increase or decrease their size in the direction that is opposite to the chosen anchoring point.

Keep Aspect Ratio: makes sure the object is resized proportionally.

Lock prevents the selected object from being moved during the design process.

Arrange

Group objects: adds selected objects to a group.

- **Group objects:** unites the selected objects and makes them behave as a single object.
- **Ungroup objects** separates previously grouped objects.

Arrange: defines how objects are positioned in a group.

- **Bring forward:** moves the selected object up one layer.
- **Bring to front:** moves the selected object to the top of the object stack.
- **Send backward:** moves the selected object down one layer.
- **Send to back:** moves the selected object to the bottom of the object stack.

Align group allows setting the alignment and spacing for objects on the design surface. All objects can be aligned according to the neighboring object or according to the document border.

Horizontal alignment options are:

- **Left:** aligns the selected objects with the left edge of the leftmost object or with the left edge of the first selected object. If a single object is selected, it is placed on the label's left border.

- **Center Horizontally:** aligns the selected objects with the horizontal center of the largest selected object or with the horizontal center of the first selected object. If a single object is selected, it is placed in the horizontal center of a label.
- **Right:** aligns the selected objects with the right edge of the rightmost object or with the right edge of the first selected object. If a single object is selected, it is placed on the label's right border.
- **Distribute Horizontally:** equalizes horizontal spacing between the objects.

Vertical alignment options are:

- **Top:** aligns the selected objects with the top edge of the topmost object or with the top edge of the first selected object. If a single object is selected, it is placed on the label's top border.
- **Center Vertically:** aligns the selected objects with the vertical center of the largest selected object or with the vertical center of the first selected object. If a single object is selected, it is placed in the vertical center of a label.
- **Bottom:** aligns the selected objects with the bottom edge of the lowest object or with the bottom edge of the first selected object. If a single object is selected, it is placed on the label's bottom border.
- **Distribute Vertically:** equalizes vertical spacing between the objects.

3.4.7.1.2 Barcode Contextual Tab

Barcode tab serves as a contextual tab that defines the type, layout and positioning of [barcode](#) object.

The following groups of settings are available on the Barcode tab:

- [Barcode](#): defines basic barcode symbol type and its dimensions.
- [Settings](#): defines barcode details.
- [Arrange](#): positions the object relative to neighboring objects on a label.

Barcode Tab

Barcode group allows you to choose the barcode type and to set the dimensions of your barcode symbol.

NOTE: Settings in **Barcode** group depend on the selected barcode type.

- **Barcode Type:** defines the type of the barcode symbol to be used on a label.

By default, Code128 barcode type is selected. For more details about the available barcode types, see section [Barcode Types and Available Settings](#).

- **DataBar Type:** if one of the DataBar barcode types is selected, **DataBar Type** defines its specific subtype to be used on the label.
- **X dimension:** width of the barcode's narrow bar in the selected **Unit of measurement**.
- **Height:** vertical dimension of your barcode in the selected **Unit of measurement**.
- **Ratio** defines the ratio between the barcode's narrow and wide bar widths.

Each barcode type's range of permitted ratios is limited by the standard. ZebraDesigner for Developers only allows you to use valid ratios. By default, the ratio is set to 3. This means that the wide bar is 3 times the width of a narrow bar.

NOTE: The available ratios depend on the selected **X dimension**. If you are changing the X dimension, this also affects the selection of available ratios.

- **Row height** defines the height of a single data row in 2D barcodes. Row height is specified as a multiple over the **X dimension**.

Settings

Settings group allows you to configure barcode details.

Human Readable button defines the human readable content's layout.

- **No human readable:** makes the barcode appear without the human readable text.
- **Above barcode:** locates human readable text above the barcode.
- **Below barcode:** locates human readable text below the barcode.

Style group allows you to set custom properties for human readable text.

- **Custom Font:** enables font and font size selection. Internal printer fonts cannot be used as custom human readable font.
- **Auto font scaling:** If enabled (default setting), human readable text grows or shrinks proportionally along with the changing size of the barcode. To set a custom size for human readable text, disable this option and select the appropriate font size.
- **Bold:** makes human readable text appear bold.
- **Italic:** makes human readable text appear italic.

Mask group sets the format of the input data before it is displayed on a label.

- **Content mask** sets the format of the input data before it is displayed on a label.
- **Mask character** is a character used in the mask that is replaced with actual data on the printed label.

EXAMPLE

A user needs to format a phone number to be more readable on the label. Data input is not formatted since it is read from a database.

If the input value read from a database is:

+38642805090

and the content mask is:

(****) **** - ****

the resulting output is:

(+386) 4280 - 5090

If the data contains the asterisk "*" character, change the **Mask character**. The character should have a unique value that does not appear anywhere in the data.

Barcode Details differ according to the barcode standards. Define the options that are given with regard to the currently selected barcode type. Details for 1D and 2D barcodes are described in dedicated sections:

- [1D barcode details](#)
- [2D barcode details](#)

Check digit is derived from the preceding barcode digits and is placed as the final digit of a barcode.

Color: sets the barcode's line and human readable content color on the printed label.

Arrange

Group objects: adds selected objects to a group.

- **Group objects:** unites the selected objects and makes them behave as a single object.
- **Ungroup objects** separates previously grouped objects.

Arrange: defines how objects are positioned in a group.

- **Bring forward:** moves the selected object up one layer.
- **Bring to front:** moves the selected object to the top of the object stack.

- **Send backward:** moves the selected object down one layer.
- **Send to back:** moves the selected object to the bottom of the object stack.

Align group allows setting the alignment and spacing for objects on the design surface. All objects can be aligned according to the neighboring object or according to the document border.

Horizontal alignment options are:

- **Left:** aligns the selected objects with the left edge of the leftmost object or with the left edge of the first selected object. If a single object is selected, it is placed on the label's left border.
- **Center Horizontally:** aligns the selected objects with the horizontal center of the largest selected object or with the horizontal center of the first selected object. If a single object is selected, it is placed in the horizontal center of a label.
- **Right:** aligns the selected objects with the right edge of the rightmost object or with the right edge of the first selected object. If a single object is selected, it is placed on the label's right border.
- **Distribute Horizontally:** equalizes horizontal spacing between the objects.

Vertical alignment options are:

- **Top:** aligns the selected objects with the top edge of the topmost object or with the top edge of the first selected object. If a single object is selected, it is placed on the label's top border.
- **Center Vertically:** aligns the selected objects with the vertical center of the largest selected object or with the vertical center of the first selected object. If a single object is selected, it is placed in the vertical center of a label.
- **Bottom:** aligns the selected objects with the bottom edge of the lowest object or with the bottom edge of the first selected object. If a single object is selected, it is placed on the label's bottom border.
- **Distribute Vertically:** equalizes vertical spacing between the objects.

3.4.7.1.3 Shape Contextual Tab

Shape tab serves as a contextual tab that defines the appearance of [ellipse](#), [rectangle](#) and [line](#) objects.

The following groups of settings are available on the **Shape** tab:

- [Outline](#): defines how the line of the selected shape should appear.
- [Fill](#): group defines the shape's fill style and color.
- [Arrange](#): positions the object relative to neighboring objects on a label.

Outline

Outline group defines how the line of the selected shape should appear.

Outline Style button options are:

- **None:** makes the object line invisible.
- **Solid:** makes the object line solid.
- **Dot:** makes the object line dotted.
- **Dash:** makes the object line dashed.
- **Clear:** makes parts of other objects underneath the line invisible.

Outline Color defines the color of the shape's line.

Thickness defines the object line's width.

Corner radius: makes the rectangle corners round. Higher values make the curve broader.

Fill

Fill group defines the shape's fill style and color.

Fill Style options are:

- **None:** makes the object completely transparent.
- **Clear:** makes other objects beneath the active one invisible.
- **Solid:** fills the object with solid color.
- **25% of color:** sets fill color opacity to 25 %.
- **50% of color:** sets fill color opacity to 50 %
- **75% of color:** sets fill color opacity to 75 %.

Background Color defines the color of the shape's fill.

Arrange

Group objects: adds selected objects to a group.

- **Group objects:** unites the selected objects and makes them behave as a single object.
- **Ungroup objects** separates previously grouped objects.

Arrange: defines how objects are positioned in a group.

- **Bring forward:** moves the selected object up one layer.
- **Bring to front:** moves the selected object to the top of the object stack.
- **Send backward:** moves the selected object down one layer.
- **Send to back:** moves the selected object to the bottom of the object stack.

Align group allows setting the alignment and spacing for objects on the design surface. All objects can be aligned according to the neighboring object or according to the document border.

Horizontal alignment options are:

- **Left:** aligns the selected objects with the left edge of the leftmost object or with the left edge of the first selected object. If a single object is selected, it is placed on the label's left border.
- **Center Horizontally:** aligns the selected objects with the horizontal center of the largest selected object or with the horizontal center of the first selected object. If a single object is selected, it is placed in the horizontal center of a label.
- **Right:** aligns the selected objects with the right edge of the rightmost object or with the right edge of the first selected object. If a single object is selected, it is placed on the label's right border.
- **Distribute Horizontally:** equalizes horizontal spacing between the objects.

Vertical alignment options are:

- **Top:** aligns the selected objects with the top edge of the topmost object or with the top edge of the first selected object. If a single object is selected, it is placed on the label's top border.
- **Center Vertically:** aligns the selected objects with the vertical center of the largest selected object or with the vertical center of the first selected object. If a single object is selected, it is placed in the vertical center of a label.
- **Bottom:** aligns the selected objects with the bottom edge of the lowest object or with the bottom edge of the first selected object. If a single object is selected, it is placed on the label's bottom border.
- **Distribute Vertically:** equalizes vertical spacing between the objects.

3.4.7.1.4 Picture Contextual Tab

Picture tab serves as a contextual tab that defines picture resizing options and object arranging.

The following groups of settings are available on the Picture tab:

- [Resize](#): resizes the object relative to neighboring objects on a label.
- [Arrange](#): positions the object relative to neighboring objects on a label.

Resize

Resize group defines if the picture adapts to the label size at print time or not.

Picture Fit button opens the picture sizing options.

- **Resize options:** define how the source file dimensions adapt to the size of object at print time.
 - **Keep original picture size:** disables resizing. The source file is displayed using the object with its original dimensions.
 - **Resize proportionally:** makes the source file resize proportionally. The aspect ratio of source file dimensions is preserved.
 - **Resize to the designed size:** resizes the picture horizontally and vertically to make it fit into the bounding box. Using this option will most likely make the picture distorted.
- **Original size:** displays the picture's **Width** and **Height** before resizing.
- **Revert to original picture size:** removes resizing actions.

Keep Aspect Ratio makes sure both object dimensions change proportionally while resizing.

Arrange

Group objects: adds selected objects to a group.

- **Group objects:** unites the selected objects and makes them behave as a single object.
- **Ungroup objects** separates previously grouped objects.

Arrange: defines how objects are positioned in a group.

- **Bring forward:** moves the selected object up one layer.
- **Bring to front:** moves the selected object to the top of the object stack.
- **Send backward:** moves the selected object down one layer.
- **Send to back:** moves the selected object to the bottom of the object stack.

Align group allows setting the alignment and spacing for objects on the design surface. All objects can be aligned according to the neighboring object or according to the document border.

Horizontal alignment options are:

- **Left:** aligns the selected objects with the left edge of the leftmost object or with the left edge of the first selected object. If a single object is selected, it is placed on the label's left border.
- **Center Horizontally:** aligns the selected objects with the horizontal center of the largest selected object or with the horizontal center of the first selected object. If a single object is selected, it is placed in the horizontal center of a label.

- **Right:** aligns the selected objects with the right edge of the rightmost object or with the right edge of the first selected object. If a single object is selected, it is placed on the label's right border.
- **Distribute Horizontally:** equalizes horizontal spacing between the objects.

Vertical alignment options are:

- **Top:** aligns the selected objects with the top edge of the topmost object or with the top edge of the first selected object. If a single object is selected, it is placed on the label's top border.
- **Center Vertically:** aligns the selected objects with the vertical center of the largest selected object or with the vertical center of the first selected object. If a single object is selected, it is placed in the vertical center of a label.
- **Bottom:** aligns the selected objects with the bottom edge of the lowest object or with the bottom edge of the first selected object. If a single object is selected, it is placed on the label's bottom border.
- **Distribute Vertically:** equalizes vertical spacing between the objects.

3.4.7.1.5 Text Contextual Tab

Text tab serves as a contextual tab that defines formatting of [Text](#) object.

The following groups of settings are available on the Text tab:

- [Format:](#) lets you define the text format.
- [Text Settings:](#) lets you define the layout of any textual content that is added to label object.
- [Arrange:](#) positions the object relative to neighboring objects on a label.

Format

Format group lets you define the text format.

- **Show/hide printer fonts:** button turns visibility of printer fonts on the font list on/off.
- **Font:** allows specifying the typeface and its size. Fonts fall into two groups, OpenType fonts and Printer fonts.

NOTE: If the currently selected printer is a thermal printer, additional fonts will be visible on the list of available fonts. These are the **Printer fonts** identified by the printer icon in front of their names.

- The font may appear **Bold, Italic, Underlined** or as a **Strikethrough** text.
- Alignment buttons allow you to align the text to the left, center, right, or evenly.

- **Font color:** specifies font and underscore color.
- Increase/decrease font buttons allow you to gradually change the font size.
- **Scaling:** factor that defines how much the font is stretched from its original proportions.

NOTE: If the stretch factor is set to 100 %, the font has a normal look. If factor is 200 %, it means that font is twice as wide as normal. If it is 50 %, the font is half as wide.

Text Settings

Text Setting group allows defining the layout of any textual content that is added to the object.

Character and Paragraph button opens line and character spacing options:

- **Line spacing:** distance between each line in a paragraph.
- **Character spacing:** distance between individual characters.

Effects button displays the available text effects:

- **Inverse:** inverts the colors of text and background.

Arrange

Group objects: adds selected objects to a group.

- **Group objects:** unites the selected objects and makes them behave as a single object.
- **Ungroup objects** separates previously grouped objects.

Arrange: defines how objects are positioned in a group.

- **Bring forward:** moves the selected object up one layer.
- **Bring to front:** moves the selected object to the top of the object stack.
- **Send backward:** moves the selected object down one layer.
- **Send to back:** moves the selected object to the bottom of the object stack.

Align group allows setting the alignment and spacing for objects on the design surface. All objects can be aligned according to the neighboring object or according to the document border.

Horizontal alignment options are:

- **Left:** aligns the selected objects with the left edge of the leftmost object or with the left edge of the first selected object. If a single object is selected, it is placed on the

label's left border.

- **Center Horizontally:** aligns the selected objects with the horizontal center of the largest selected object or with the horizontal center of the first selected object. If a single object is selected, it is placed in the horizontal center of a label.
- **Right:** aligns the selected objects with the right edge of the rightmost object or with the right edge of the first selected object. If a single object is selected, it is placed on the label's right border.
- **Distribute Horizontally:** equalizes horizontal spacing between the objects.

Vertical alignment options are:

- **Top:** aligns the selected objects with the top edge of the topmost object or with the top edge of the first selected object. If a single object is selected, it is placed on the label's top border.
- **Center Vertically:** aligns the selected objects with the vertical center of the largest selected object or with the vertical center of the first selected object. If a single object is selected, it is placed in the vertical center of a label.
- **Bottom:** aligns the selected objects with the bottom edge of the lowest object or with the bottom edge of the first selected object. If a single object is selected, it is placed on the label's bottom border.
- **Distribute Vertically:** equalizes vertical spacing between the objects.

3.4.8 Help Tab

Help tab provides direct access to various resources that help you design and use labels quickly and efficiently.

Help ribbon group includes buttons with links to the following resources.

- **Help:** ZebraDesigner for Developers online help.
- **Knowledge Base:** online library of articles that describe many technical solutions, tips, and solved issues for labels.
- **Sample Files:** access to the collection of sample label files. Use them to become familiar with ZebraDesigner for Developers and to explore software capabilities.
- **Technical Support:** connects you with Zebra technical support department.

Product ribbon group includes links to:

- [Software About page](#)
- Zebra Home Page: www.zebra.com

3.4.9 RFID Tag

The **RFID Tag dialog** allows you to select the appropriate RFID tag type, to define its content, and to configure which type of data is going to be encoded on the tag.

NOTE: RFID functionality is available with installed Zebra printer driver.

RFID Tag dialog allows you to configure how the tag content is encoded in a tag:

- [Select the RFID tag type.](#)
- [Configure various tag settings related to its structure and programming.](#)
- [Set the RFID security parameters.](#)
- [Insert and configure data fields.](#)

3.4.9.1 Tag

The **Tag** panel of the **RFID Tag dialog** allows you to select which tag type is going to carry the encoded data and how the data should be written to the tag.

Tag group includes the tag type selection.

- **Tag type** dropdown list offers the selection of available RFID tag types. The selection of tag types is automatically defined by the printer driver.

Select the printer (and the corresponding driver) for the label with RFID tag in the [status bar](#).

Usage group defines the **RFID Tag** data sources and how the data is written to the tag.

- **RFID write enabled:** Enables or disables data writing to the RFID tag.

TIP: Disabled writing might be useful during the label designing process or during specific workflow phases.

The encodable RFID data fields are added to the Dynamic Data explorer under **RFID Tag**.

DATA FIELD POSSIBILITIES

- **EPC:** Data field with Electronic Product Code
- **User Data:** Data field with the content to be encoded on the RFID tag
- **TID:** Data field with unique ID of the RFID tag

TIP: Drag the appropriate data field and place it on the label in form of a [Text](#), [Text Box](#), or [Barcode](#) object (defined by the driver).

3.4.9.2 Content

The **Content** panel of the **RFID Tag dialog** allows you to define the content of an RFID tag. To encode the data in an RFID tag, complete the following steps.

Step 1: Select Data Fields

Data Fields group allows you to select the data fields. These fields are going to contain the encoded data of the RFID tag.

NOTE: The selection of available Data Fields with corresponding settings depends on the selected [Tag type](#).

DATA FIELD EXAMPLES

- **TID:** unique ID of the RFID tag
- **EPC:** syntax for unique identifiers assigned to objects, unit loads, locations, or other entities that are included in business operations
- **User Data:** payload data to be written in the RFID tag
- **RFID Tag Memory:** the only data field available for non-Gen2 RFID tags

Step 2: Select Data Type

Data type defines the method for entering the **Data field** content. The availability of data types depends on the selected **Data field**.

- **Memory block:** the table allows you to enter the data into individual RFID tag memory blocks. Each table row represents a single block of the selected **Tag type**.

Memory block structure and properties of individual blocks depend on the selected **Tag type**.

Data type can be defined for each block individually:

- **Electronic Product Code (EPC):** added fields allow you to enter the RFID data according to the EPC standard.
- **ASCII string:** RFID data to be entered as a string of ASCII characters.
- **HEX encoded string:** RFID data to be entered as a string of hexadecimal pairs.

Encoding type allow you to select the data encoding format that corresponds to your current **Data type**.

NOTE: Details about the SGTIN encoding type and the chip-based serialization are available in section "Chip-based Serialization" on page 122.

Step 3: Insert Value

Insert the value to be encoded in the RFID tag according to the selected **Data type**.

3.4.9.3 Security

Security tab of the **RFID Tag dialog** allows you to configure the RFID tag security settings. These settings allow or deny access to RFID data writing or editing.

Security settings depend on the selected printer. There are three major configuration types.

3.4.9.3.1 Multiple Memory Fields

Access Protection group sets a password that must be entered before editing or writing the RFID data.

Data type defines the method for entering the **Password**.

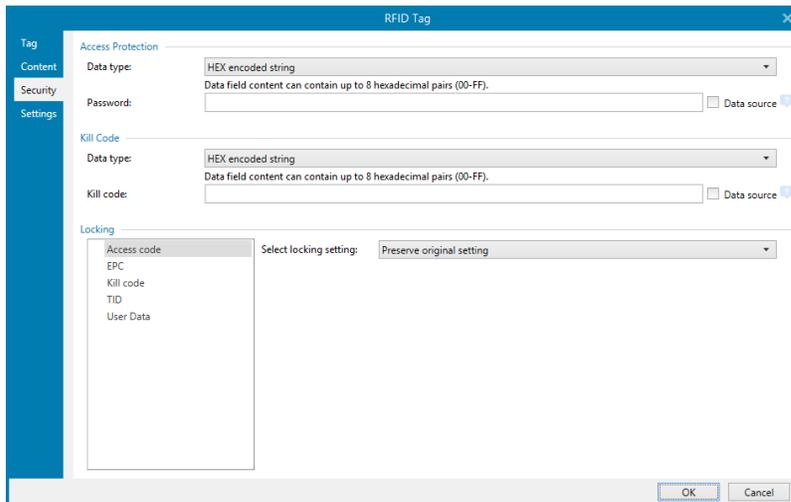
- **ASCII string: Password** should be entered as a string of ASCII characters.
- **HEX encoded string: Password** should be entered as a string of hexadecimal pairs.
- **Numeric: Password** should be entered as a string of digits.

Kill code defines the code that disables the RFID tag permanently and irreversibly.

TIP: Once the kill code is activated, the data can neither be retrieved from nor written to the tag.

Data type defines the method for entering the **Kill code** characters.

- **ASCII string: Kill code** should be entered as a string of ASCII characters.
- **HEX encoded string: Kill code** should be entered as a string of hexadecimal pairs.
- **Numeric: Kill code** should be entered as a string of digits.



3.4.9.3.2 Multiple Memory Fields With Block Locking

Additional settings from **Multiple Memory Fields** allow the user to set the locking for individual blocks within RFID tag memory fields.

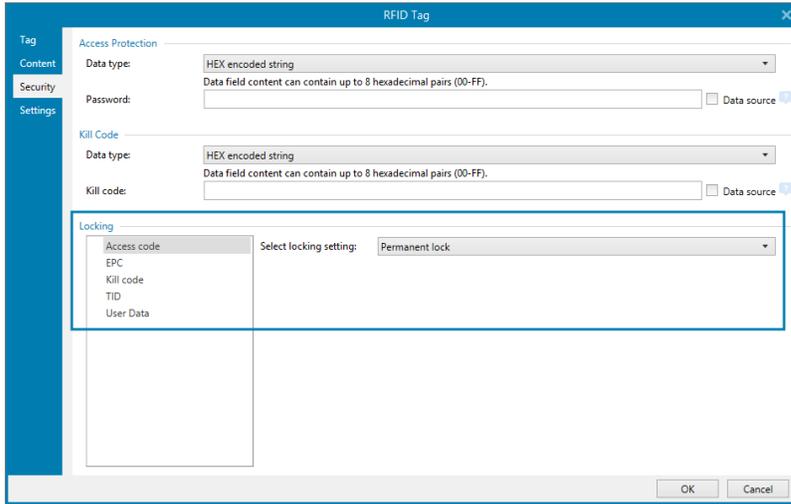
Locking group includes an overview of the memory fields that are included in the RFID tag. Each memory field can be locked individually.

Select locking settings allows you to define how the blocks are locked.

- **Preserve original setting:** original locking setting cannot be retrieved, but the default option assumes that the tag setting should remain unchanged.
- **Lock:** block is locked and further changes are prevented.
- **Unlock:** block is unlocked and editable.
- **Relock:** RFID tag is unlocked for the changes to be applied. When done, the tag is relocked immediately.
- **Permanent lock, unlock or relock:** makes the above described settings permanent. These settings cannot be undone.

Blocks for locking: defines the individual blocks or range(s) of blocks to be locked.

TIP: Individually locked blocks are defined with an index and separated by a comma (with or without inserting the space between). Ranges of blocks are defined with a dash.



3.4.9.4 Settings

Settings tab of the **RFID Tag dialog** allows you to configure various tag settings related to its structure and programming.

All available settings are listed in a table under the **Settings** group:

NOTE: The selection of available settings depends on the current **Tag type**.

3.4.9.5 RFID Read and Print

This section describes how to define which data fields from the RFID tag should be read and printed on the label using the internal printer elements.

To configure the data field properties and to make the RFID encoded data on the label, drag it to design surface. After adding it to design surface, the data field appears as a normal [Text](#) label object with the following additional properties.

Data format defines the format in which the RFID data field content is written in the label object and printed.

NOTE: Available data formats and number of permitted characters are defined by the printer driver and selected tag type.

- **HEX encoded string:** data field content is a string of hexadecimal pairs.
- **ASCII string:** data field content is a string of ASCII characters.
- **Numeric:** data field content is a string of numbers.

NOTE: You must select a printer's native font (those stored internally on the printer) to print. All other fonts will result in an error.

Preview presents the data field content as it would appear using the selected **Data format**. Preview field does not include the actual encoded data. Enter the characters manually. By default, the object contains as many question marks, as given by the length of the RFID data field.

TIP: The role of **Preview** field is to fill the object with dummy content during the label design process and to give an impression of its layout on the printed label. The object on the actual printed label displays the content which was read from the RFID tag.

Data Extraction group defines which part(s) of data field content should be read from the RFID tag and printed on the label.

TIP: By default, the entire range of encoded data is read from the RFID tag.

- **Select bytes:** specifies which bytes of the encoded RFID tag data should appear in the label object.
 - **Starting byte:** the number of the byte in an encoded string which starts the selection.
 - **Length in bytes:** number of selected bytes which should be extracted from the encoded data.
- **Select blocks:** specifies which blocks of the encoded RFID tag data should appear in the label object.
 - **Starting block:** the number of the block in an encoded string which starts the selection.
 - **Number of blocks:** number of selected blocks which should be extracted from the encoded data.

3.5 Design Surface

Your design surface is a place to create, add, position, and interconnect [label](#) objects.

To help you design labels as simply and efficiently as possible, your design surface uses usability and functional principles from Microsoft Office.

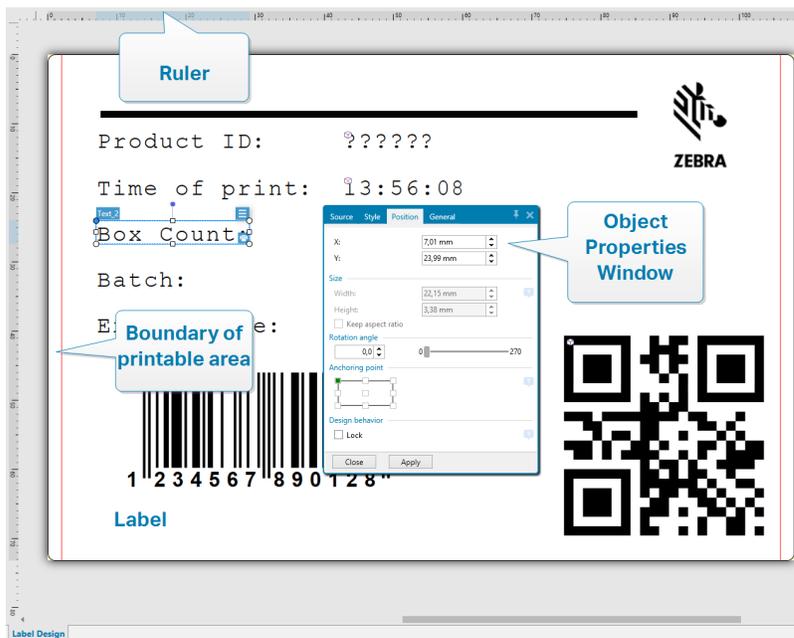
TIP: Use [View tab](#) to customize your design surface.

- Learn more about design surface elements [here](#).
- Learn more about design surface editing actions [here](#).
- Learn more about design surface visual aid elements [here](#).

3.5.1 Design Surface Elements

Design surface consists of the following elements:

- **Ruler:** Design surface is equipped with horizontal and vertical ruler. Use it to line up the objects or to properly position the label and its content. Change the unit measurements displayed on the ruler in [Label properties](#).
- **Paper:** Yellow area of the design surface displays the current size of paper. The information about supported paper format is acquired from the printer driver, but you also have the option to define custom format. Manual paper size has to be defined when printing on regular office sheets of paper. See [Paper](#) section for more details.
- **Label:** White area represents the area for label designing. Red line displays limit of the currently printable area.
- **Object Properties Window:** Defines the selected label object's properties. Double-click an object to open the dialog.



3.5.2 Design Surface Editing Actions

Below listed are the most relevant common actions for editing the objects on design surface:

- **Object arranging:** allows the objects to be placed in front of or behind other objects in a group. Arranging options are described [here](#).
- **Objects aligning:** allows the objects to be aligned among each other. Aligning options are described [here](#).
- **Zooming:** enables the entire design surface to be zoomed in or out. Zooming options are described [here](#).
- **Scrolling:** enables sliding the design surface up and down.
- **Selecting:** enables the objects on design surface to be selected for editing individually or in a group. Group selection allows any actions to be applied to multiple objects simultaneously.
- **Rotating:** enables object rotation.

3.5.3 Visual Aid Elements

Listed below are the visual aid elements that enable you to work with ZebraDesigner for Developers.

- **Gridlines** serve as a visual aid during the design process. They can be either visible or hidden. Their density is customizable. Gridline options are available in the [Alignment and Gridlines ribbon group](#).
- **Snaplines** are non-visible alignment lines that help the user align the objects during the design process. Snap options are available in ZebraDesigner for Developers's [Align ribbon group](#).
- **Ruler** shows the available design area for label (white colored field) and file page (gray colored field).
- **Resize handles** appear on the selected (active) objects. They enable you to resize the object dimensions. X and Y dimensions can be resized simultaneously or separately.
- **Margins** are the amount of fixed space between the edge of an object and the edge of a label.

3.5.4 Object Properties Window

When designing a label object, double-click an object to set its properties.

Double-click opens the object properties window. Available object properties window options adapt to each selected object and its properties.

- Available label objects and their properties are listed and described in detail [here](#).

3.6 Document Properties and Management Dialogs

ZebraDesigner for Developers offers multiple dialogs that help you configure and manage the active document and connected data sources. Read the following topics for detailed instruction:

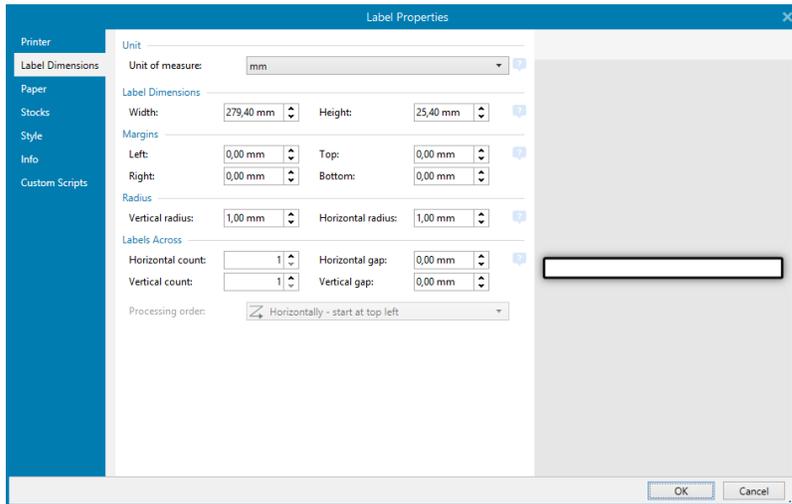
- [Label Properties](#)

3.6.1 Label Properties

Label Properties editor selects the printer, sets label dimensions, and defines the printing paper properties.

The label properties settings are listed below and appear as dialog tabs:

Label Property	Description
Printer	Selects the preferred printer.
Label Dimensions	Defines the Unit of measure and label dimensions.
Paper	Defines the printing paper properties.
Stocks	Selects the stock type.
Style	Defines the label style parameters.
Info	Inserts the label description.
Custom Scripts	Allow you to override the default variable settings and add special parameters or commands.



TIP: To open the **Label Properties Editor**, double-click the [design surface](#).

3.7 Context Menus

In ZebraDesigner for Developers, right-click displays various context menus that contain commonly used commands. The availability of commands depends on the selected items – design surface or object.

3.7.1 Design Surface Context Menu

When right-clicking the [design surface](#), a context menu appears. The context menu includes commonly used commands:

- **Document Properties:** opens the dialog.
- **Paste:** pastes clipboard contents on the design surface. Multiple reuse of a single clipboard item is allowed.
- **Cut:** removes the selected element(s) from the design surface and adds it to the clipboard to be pasted elsewhere.
- **Copy:** copies the selected object to the clipboard.
- **Select all:** selects all objects on the design surface.
- **Alignment and Gridlines:** allows you to define how the objects take their positions on the design surface.
 - **Align to objects:** makes the object on the design surface align with other objects. When two objects are aligned, a leading line appears linking the edges of the two aligned objects.

- **Align to grid:** makes the object on the design surface align with gridlines. When moving the object, it always snaps to the gridline.
 - **Do not align:** allows you to move the objects freely.
 - **Display gridline guides:** makes the gridlines visible.
- **Objects markers visibility:** toggles visibility for the object properties. Markers become visible when moving the mouse pointer over the object.
 - **Object name:** marker shows the name of an object.
 - **Internal element:** marker shows if the selected object belongs to the internal printer elements.
- **Zoom:** defines zooming behavior.
 - **Zoom to Document:** shows the entire label in the ZebraDesigner for Developers window.
 - **Zoom to Objects:** shows all objects in the ZebraDesigner for Developers window.

3.7.2 Object Context Menu

When right-clicking an object, a context menu appears. The context menu includes the following commands:

- **Properties:** opens object properties dialog.
- **Copy:** copies the selected content to the clipboard.
- **Cut:** removes the selected element from the design surface and adds it to the clipboard to be pasted elsewhere.
- **Delete:** removes the selected object from the design surface.
- **Lock/Unlock:** prevents the selected object from being moved or re-enables moving.
- **Arrange:** positions the objects so that they appear either in front of or behind each other.
 - **Send Backward:** sends the element back for one level.
 - **Send to Back:** sends the element behind all other elements on the label.
 - **Bring Forward:** brings the element forward for one level.
 - **Bring to Front:** sends the element in front of all other elements on the label.

3.7.3 Group Context Menu

When right-clicking a group of objects, a context menu appears. The context menu includes the following commands:

- **Properties:** opens common group properties dialog.
- **Copy:** copies the selected content to the clipboard.
- **Cut:** removes the selected group from the design surface and adds it to the clipboard to be pasted elsewhere.
- **Delete:** deletes the selected object(s) from the design surface.

- **Lock/Unlock:** prevents the selected group from being moved or re-enables moving.
- **Group objects:** unites the selected objects and makes them behave as a single object.
- **Ungroup objects:** separates previously grouped objects.
- **Arrange** group defines how the group position according to other objects or groups.
 - **Send Backward:** moves the selected group down one level.
 - **Send to Back:** moves the selected group to the bottom of the object stack.
 - **Bring Forward:** moves the selected group up one level.
 - **Bring to Front:** moves the selected group to the top of the object stack.
- **Align** group allows setting the alignment and spacing for objects on the design surface. All objects can be aligned according to the neighboring object or according to the document border.

Horizontal alignment options are:

- **Left:** aligns the selected objects with the left edge of the leftmost object or with the left edge of the first selected object. If a single object is selected, it is placed on the label's left border.
- **Center Horizontally:** aligns the selected objects with the horizontal center of the largest selected object or with the horizontal center of the first selected object. If a single object is selected, it is placed in the horizontal center of a label.
- **Right:** aligns the selected objects with the right edge of the rightmost object or with the right edge of the first selected object. If a single object is selected, it is placed on the label's right border.
- **Distribute Horizontally:** equalizes horizontal spacing between the objects.

Vertical alignment options are:

- **Top:** aligns the selected objects with the top edge of the topmost object or with the top edge of the first selected object. If a single object is selected, it is placed on the label's top border.
- **Center Vertically:** aligns the selected objects with the vertical center of the largest selected object or with the vertical center of the first selected object. If a single object is selected, it is placed in the vertical center of a label.
- **Bottom:** aligns the selected objects with the bottom edge of the lowest object or with the bottom edge of the first selected object. If a single object is selected, it is placed on the label's bottom border.
- **Distribute Vertically:** equalizes vertical spacing between the objects.

4 Label

Label works as a template to add [label objects](#) and print using any kind of printing media.

Each object adds a different kind of content such as text, line, ellipse, barcode or rectangle to a label. The content is either fixed (manually entered by the user) or dynamic (defined using values from connected data sources).

After finishing your label template layout, you can store the template on your printers.

4.1 New Label Setup Wizard

Label Setup Wizard guides you through the process of creating a new label. The wizard consists of four configuration steps and a summary:

- [Step 1: Select the Printer](#)
- [Step 2: Set the Page Size](#)
- [Step 3: Select the Label Layout](#)
- [Step 4: Specify the Label Dimensions](#)
- [Step 5: Summary](#)

After finishing these steps, the label is ready for editing.

NOTE: To quit Label Setup Wizard during any step, press <Escape>. The new label properties are set to default.

4.1.1 Step 1: Select the Printer

This step selects the printer to be used for printing the newly created label. It also provides direct access to printer driver properties.

1. Select the printer from the dropdown list.
2. Label setup wizard remembers the last selected printer. When creating another new label, the wizard will automatically select the printer that you selected for your last created label. If this printer is currently missing, your default printer is selected.

4.1.2 Step 2: Set the Page Size

This step defines how the page size is selected. When using a thermal printer, it is recommended to set the size automatically. Manual selection proves to be useful if you know the exact stock code or label format.

NOTE: When changing the printer, the Page Size settings always go to default (automatic).

1. Select print media.
 - **Print on a roll of labels** option prints on the installed roll of labels. Page size for thermal printers is detected automatically.

NOTE: If a thermal printer is selected in the preceding [Select the Printer](#) wizard step, this option is enabled by default.

- **Print on a sheet of paper** option prints labels on sheets of paper. It lets you manually define the label page size to fit the printer.

With this option selected, additional settings appear:

- **Unit of measure:** defines the unit of measure to be used while designing the label.
- **Paper:** defines the label page **Width** and **Height**.

2. Select stock.

Load settings from a predefined stock option sets the page to be defined by the selected stock type.

With this option selected, additional settings appear:

- **Stock:** defines which stock type should be used when designing and printing the newly created label. Stock types are usually associated with printer vendors or stationery suppliers. Select the exact stock from the dropdown menu.

If the selected stock is not compatible with printer, a warning appears. Label designing and printing is disabled.

- **Stock information:** displays the selected stock's properties.

4.1.3 Step 3: Select the Label Layout

This step defines the label orientation and rotation on a printer:

- **Orientation:** sets the new label layout as **Portrait** or **Landscape**.
- **Rotated:** rotates the **Printer Layout** of a label by 180 degrees, if the selected printer supports it.
- **Preview field:** displays the label layout according to the currently set properties.

4.1.4 Step 4: Specify the Label Dimensions

This step defines the dimensions of the newly created label, its margins, measurement unit, and labels across positioning settings:

- **Unit of measure:** defines the unit to be used while designing the label.
- **Label Dimensions:** define the new label's **Width** and **Height**.
- **Margins:** define the distance between the edge of the printing surface and the edge of the label (left/right, top/bottom).
- **Labels Across:** defines the number of labels to be printed on a single label sheet.
 - **Horizontal count:** number of labels in a row.
 - **Vertical count:** number of labels in a column.
 - **Horizontal gap:** sets horizontal distance between the labels on a sheet.
 - **Vertical gap:** sets vertical distance between the labels on a sheet.
- **Processing order:** defines the direction in which the labels are printed. Set the starting corner where the printing starts and define the horizontal and vertical direction of label positioning.

4.1.5 Step 5: Summary

This step summarizes the new label properties as defined using the **Label Setup Wizard**.

Before clicking **Finish** to enter the label editing and printing phases, check the displayed settings:

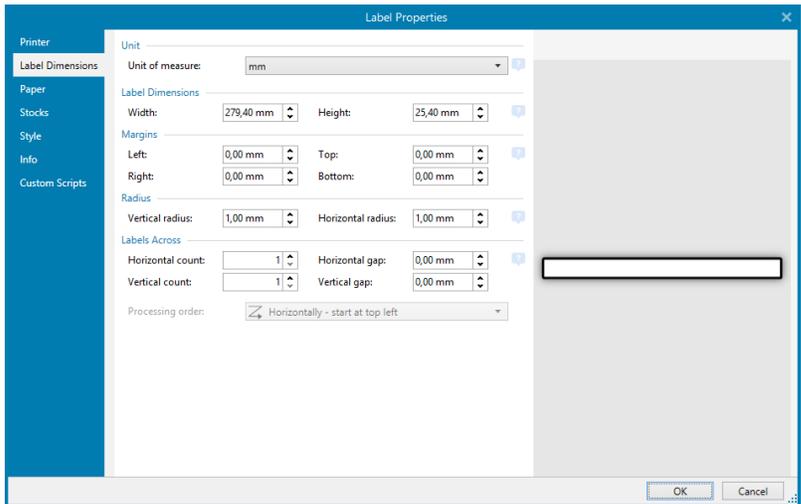
- **Printer:** selected printer for label printing.
- **Label dimensions:** dimensions of newly created label.
- **Paper dimensions:** dimensions of printable paper.

4.2 Label Properties

Label Properties editor selects the printer, sets label dimensions, and defines the printing paper properties.

The label properties settings are listed below and appear as dialog tabs:

Label Property	Description
Printer	Selects the preferred printer.
Label Dimensions	Defines the Unit of measure and label dimensions.
Paper	Defines the printing paper properties.
Stocks	Selects the stock type.
Style	Defines the label style parameters.
Info	Inserts the label description.
Custom Scripts	Allow you to override the default variable settings and add special parameters or commands.



TIP: To open the **Label Properties Editor**, double-click the [design surface](#).

4.2.1 Printer

Printer dropdown menu lets you select a printer from the currently available printers.

TIP: To set the printer settings, select a printer and click **Printer properties**. This button gives direct access to the selected printer's driver and its settings.

4.2.2 Label Dimensions

Label Dimensions tab specifies label dimensions and defines whether its size should adapt to the changing size of the objects or not.

Unit of measure defines the unit to be used while designing the label. There are four available units: cm, in, mm, and dot.

Label Dimensions group defines the label's **Width** and **Height**. Label dimension settings become active if manual label dimensions are enabled.

When manually inserting the unit of measure, this also changes the currently defined **Unit**.

Margins group sets the distance between the edge of the printing surface and the edge of the label (left/right, top/bottom).

Radius group enables you to make the label corners rounded.

- **Vertical radius:** adjusts corner roundness value in vertical direction.
- **Horizontal radius:** adjusts corner roundness value in horizontal direction.

Labels Across defines the number of labels to be printed on a single label sheet.

- **Horizontal count:** number of labels in a row.
- **Vertical count:** number of labels in a column.
- **Horizontal gap:** horizontal distance between labels on a sheet.
- **Vertical gap:** vertical distance between labels on a sheet.
- **Processing order:** defines the direction in which labels are printed. Set the starting corner in which printing starts, and the horizontal/ vertical directions of label positioning.

4.2.3 Paper

Paper tab sets printing paper properties.

Unit selects the **Unit of measure** to be used in a label.

Paper Type group defines paper dimensioning type – automatic or manual.

- **Automatically set page size based on the label dimensions (labels on a roll):** page size is defined by the printer driver.
- **Manually set page size (sheets of paper):** page size is set manually.

If the page size is defined manually, additional options appear:

- **Paper:** selection of standard paper formats.
- **Width** and **Height:** custom paper dimensions.

Orientation group sets the new label layout as **Portrait** or **Landscape**.

- **Rotated: Printer Layout** is rotated by 180 degrees.

Preview displays current label screen and print layouts.

4.2.4 Stocks

Label stocks are a time-saving alternative to designing labels from scratch. Use stock templates when designing labels for a specific printer type and when optimizing the label designing process.

Stocks group defines which stock type should be used when designing and printing a label. Stock types are usually associated with printer vendors or stationery suppliers.

NOTE: Here defined stock properties override the manually set label properties.

Stock defines the exact stock to be used for label designing and printing. Stocks are sorted by vendors and media formats. Expand stock provider and select a specific stock type.

TIP: Use **Search...** to easily find the requested stock. Partial search is available – enter a sequence of characters and all stocks which contain that sequence will be listed. If the selected stock is not compatible with the selected printer, a warning appears. Previously selected stock becomes active again (if it was defined) allowing the printing to continue.

NOTE: If the selected stock is not compatible with the selected printer, a warning appears. Previously selected stock becomes active again (if it was defined) allowing the printing to continue.

Stock information displays the selected stock's properties:

- [Label dimensions](#)
- [Labels across](#)
- [Description](#)
- **Author**

4.2.5 Style

Style tab is used for defining label style properties.

Background color: sets the color of label background.

Background picture: sets the label background picture.

- **Picture file name:** defines the image file to be used as background picture.
- **Embed picture in a document:** saves picture into the label file.
- **Save embedded picture to file:** the embedded label picture is saved to a separate file.
- **Remove embedded picture:** embedded picture is removed from the label file.
- **Picture position:** sets picture position on the label.
 - **Center:** centers the picture on the label with its original dimensions. A picture larger than the label will display only the central part leaving the rest out of view.
 - **Fit:** resizes the picture to fill the label while keeping the original aspect ratio.
 - **Stretch:** stretches picture to make it fill the entire label.

NOTE: This option ignores the original aspect ratio of the picture. The picture might appear distorted on the label.

- **Rotation:** allows you to rotate the background picture in steps of 90 degrees.
- **Print background picture:** background picture is printed.

4.2.6 Info

Info tab includes a **Description** that serves as a hint or as a guide for the user that is going to work with the label.

Define label **Description** by entering text into the field.

4.2.7 Custom Scripts

Custom Scripts allow you to add Zebra Programming Language (ZPL) parameters and commands to the data stream when storing your label templates. This means that when you finish designing the template, and store the template to your printer's memory, custom scripts can execute additional actions.

Depending on your requirements, you can use the custom scripts as a header or footer scripts.

- **Use header/footer script** allows you to add custom script to the data stream when storing your label template.

NOTE: You can use custom header/footer scripts in combination [with script definitions that you add to the variable values on your templates.](#)

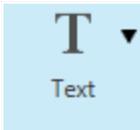
EXAMPLE:

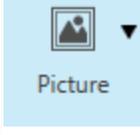
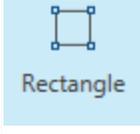
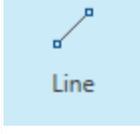
```
^FX[Fonts]^FS
^FX[Graphics]^FS
^FX[Format]^FS
<my header script>
CT~~CD,~CC^~CT~
^XA
^DFE:XML-SPEC.ZPL^FS
~TA000~JSN^LT0^MNW^MTT^PON^PMN^LH0,0^JMA^PR6,6^MD15^LRN^CI0
^MMT
^PW831
^LL0406
^LS0
^FT196,67^A0N,28,28^FB56,1,0^FH\^FN2^FDXML1^FS
^FT198,126^A0N,28,28^FB56,1,0^FH\^FN3^FDXML2^FS
^FT199,189^A0N,28,28^FB89,1,0^FH\^FN4^FDXML3^FS
<my variable script>
^XZ
<my footer script>
```

NOTE: This option is for advanced users only. The use of custom scripts requires in-depth knowledge of ZPL.

4.3 Label Objects

After setting the [label properties](#), it's time to start adding content to the label. Label objects are basic design items that are used for adding and editing various content types. Each object has its own function as described in the table below.

Label Object	Icon	Description
Text		Container for textual content. It adapts its dimensions to fit the amount of entered characters. When typing, text object grows horizontally and/or vertically.

Label Object	Icon	Description
Text box	 Text box	Container for textual content. It can either adapt its height to the content or make the font increase or decrease to fit into the object frame.
Barcode	 Barcode	Object for adding and editing various types of barcodes on a label.
Picture	 Picture	Object for adding graphic content to a label.
Rectangle	 Rectangle	Object for creating rectangular shapes on a label.
Line	 Line	Object for creating lines on a label.
Ellipse	 Ellipse	Object for creating circular shapes on a label.
Inverse	 Inverse	Object for inverting the color of the underlying object.

4.3.1 Text

Text object is a container for textual content which adapts its dimensions to fit the amount of inserted characters. When typing, text object grows horizontally and/or vertically.

4.3.1.1 Source

Connected data source defines the content source of the selected object.

- [Variables](#): predefined variable values which are used as object content.

Content field allows you to type the object content.

NOTE: When connecting your Text object to a variable, keep one of the selected internal printer fonts. Changing to one of the TrueType or OpenType fonts returns an error that results from using the variable Text object as graphic.

4.3.1.2 Style

Font color sets text font and underline color.

Font selects the typeface. Fonts are divided into two groups: OpenType fonts and Printer fonts.

NOTE: If the currently selected printer is a thermal printer, additional fonts become available. These are the internal **Printer fonts** that are installed on the printer. Printer fonts are identified by the printer icon in front of their names.

The font may appear **Bold**, **Italic**, **Underlined** or as a **Strikethrough** text.

Font Scaling sets the font stretch factor. If the factor is set to 100 %, font appears in normal scale. If the factor is set to 200 %, font appears twice as wide. If set to 50 %, font width is shrunk to half its size.

Alignment defines horizontal positioning of the entered content.

- **Left:** text aligned with the left object border.
- **Center:** text positioned in the center of the object.
- **Right:** text aligned with the right object border.
- **Justified:** distributes text evenly along both sides.

Spacing sets the space between text characters and lines.

- **Line spacing:** space between each line in a paragraph.
- **Character spacing:** space between individual characters.

4.3.1.3 Effects

Inverse: inverted text and object background colors.

4.3.1.4 Position

Position tab defines object positioning and its position-related behavior.

Position group defines the object's position.

- **X** and **Y:** anchoring point coordinates.

Size group gives information about the object's dimensions.

- **Width** and **Height**: horizontal and vertical object dimension.
- **Keep aspect ratio**: simultaneous changing of object dimensions while scaling.

In Text object, the size of text is determined by the font size. Object dimensions and aspect ratio cannot be changed manually and only serve as information about its current size.

NOTE: If the measurement unit is changed in [label properties](#), the value transforms automatically.

Rotation angle is the object angle according to the design surface.

There are multiple ways to set the object's angle: enter the angle manually , drag the slider

or click and drag the  icon on the selected object. Rotation angle and slider rotates the object around its anchoring point. The  icon rotates the object around its central point.

Anchoring point is the spot where an object is pinned to design surface. Variable size objects increase or decrease their size in the direction that is opposite to the chosen anchoring point.

Lock prevents the object from being moved during the design process, select under the **Design behavior** group.

4.3.1.5 General

General tab identifies the object and sets its status.

Name sets a unique object ID.

NOTE: Avoid using spaces or special characters in object names.

Description allows adding notes and annotations for an object. It provides help during the label design process.

Status group defines object visibility on print preview and on printed labels.

- **Not printable**: prevents the object from being printed.
- **Visible**: if the checkbox is not selected, the object neither appears on the print preview nor on the printed label. The object is treated as if it does not exist.

4.3.2 Text Box

Text box object is a container for textual content on a label. Text box object is very similar to the standard ZebraDesigner for Developers [Text](#) object. The difference between these two is the presentation of textual content with variable length. Text object is always expanding or shrinking to adapt its size to the amount of entered characters. In contrast, Text Box can either adapt (expand/shrink) its height to the content or make the font increase or decrease its size to fit into the object frame.

TIP: To ensure that the content fits the predefined box is especially useful when working with variable data. No matter how long the text value is, it is always placed and displayed on a label within the pre-designed frame.

4.3.2.1 Source

Connected data source defines the content source of the selected object.

- [Variables](#): predefined variable values which are used as object content.

Content field allows you to type the object content.

NOTE: When connecting your Text Box object to a variable, keep one of the selected internal printer fonts. Changing a TrueType or OpenType fonts returns an error that results from using the variable Text Box object as graphic.

4.3.2.2 Style

Font color sets text font and underline color.

Font selects the typeface. Fonts are divided into two groups: OpenType fonts and Printer fonts.

NOTE: If the currently selected printer is a thermal printer, additional fonts become available. These are the internal **Printer fonts** that are installed on the printer. Printer fonts are identified by the printer icon in front of their names.

The font may appear **Bold**, **Italic**, **Underlined** or as a **Strikethrough** text.

Font Scaling sets the font stretch factor. If the factor is set to 100 %, font appears in normal scale. If the factor is set to 200 %, font appears twice as wide. If set to 50 %, font width is shrunk to half its size.

Alignment defines horizontal positioning of the entered content.

- **Left:** text aligned with the left object border.
- **Center:** text positioned in the center of the object.
- **Right:** text aligned with the right object border.
- **Justified:** distributes text evenly along both sides.

Spacing sets the space between text characters and lines.

- **Line spacing:** space between each line in a paragraph.
- **Character spacing:** space between individual characters.

Inverse: inverted text and object background colors.

4.3.2.3 Effects

Inverse: inverted text and object background colors.

4.3.2.4 Position

Position tab defines object positioning and its position-related behavior.

Position group defines the object's position.

- **X and Y:** anchoring point coordinates.

Size group sets the object's dimensions:

- **Width** and **Height:** horizontal and vertical object dimension.
- **Keep aspect ratio:** simultaneous changing of object dimensions while scaling.

NOTE: If the measurement unit is changed in [label properties](#), the value transforms automatically.

Rotation angle is the object angle according to the design surface.

TIP: There are multiple ways to set the object's angle: enter the angle manually, drag the slider or click and drag the  icon on the selected object. Rotation angle and slider rotates the object around its anchoring point. The  icon rotates the object around its central point.

Anchoring point is the spot where an object is pinned to design surface. Variable size objects increase or decrease their size in the direction that is opposite to the chosen anchoring point.

Lock prevents the object from being moved during the design process.

NOTE: If the measurement unit is changed, the value transforms automatically.

4.3.2.5 General

General tab identifies the object and sets its status.

Name sets a unique object ID.

NOTE: Avoid using spaces or special characters in object names.

Description allows adding notes and annotations for an object. It provides help during the label design process.

Status group defines object visibility on print preview and on printed labels.

- **Not printable:** prevents the object from being printed.
- **Visible:** if the checkbox is not selected, the object neither appears on the print preview nor on the printed label. The object is treated as if it does not exist.

4.3.3 Barcode

Barcode object is used for adding various types of barcodes with encoded data to a label.

Details on barcode properties, types, and data encoding methods are available in the dedicated [Barcode section](#).

4.3.4 Picture

Use **Picture** object to add graphic content on a label. The following file formats are supported:

- Portable Network Graphic (*.png)
- PDF (*.pdf)
- Adobe Photoshop (*.psd)
- Scalable Vector graphics (*.svg)
- Paintbrush (*.pcx)
- JPEG bitmaps (*.jpg, *.jpeg, *.jpe)
- TIFF bitmaps (*.tif, *.tiff)
- Enhanced Windows Metafile (*.emf)
- Windows Metafile (*.wmf)
- Windows bitmap (*.bmp)

4.3.4.1 Source

Connected data source defines the content source of the selected object.

- **Fixed data:** manually entered fixed text.

Content field is used for entering the object content.

To (re)define the Picture object **Content**, click **Browse** and locate the file to be displayed on the label.

Embed picture in a document stores the picture in the label file. Link to the original picture file is discarded.

TIP: Picture embedding makes the label file more portable as the user does not have to include the picture file when sharing the label.

Save embedded picture to file: the embedded label picture is saved as a separate file.

4.3.4.2 Style

Dithering group allows you to select the most appropriate dithering method to print pictures on labels in black and white.

TIP: When printing pictures in black and white, dithering creates the illusion of multiple colors and shades by varying the pattern of black dots.

Dithering type selects the dithering method:

- **Printer driver default:** no dithering method is selected for the picture object. When printing in black and white, printer driver uses its own dithering method.

If no dithering is set for the picture object, the algorithm can also be selected using the printer properties dialog. The selected dithering algorithm for an object in ZebraDesigner for Developers overrides the algorithm selected using printer properties dialog.

- **Ordered:** achieves dithering by applying a threshold map (matrix with cells) on the pixels displayed. If the value of the pixel (scaled into the 0-9 range) is less than the number in the corresponding cell of the matrix, the algorithm plots the pixel black, otherwise, it plots it white.
- **Threshold:** sets a threshold to which every pixel is compared. If the original pixel value is higher than the threshold, it renders white. The lower the threshold value, the higher the share of pixels turned to white.
- **Floyd Steinberg:** achieves dithering using error dispersion. This algorithm generates the closest result to the original, but represents the slowest option.

4.3.4.3 Position

Position tab defines object positioning and its position-related behavior.

Position group defines the object's position.

- **X and Y:** anchoring point coordinates.

Size group sets the object's dimensions:

- **Width and Height:** horizontal and vertical object dimension.
- **Keep aspect ratio:** simultaneous changing of object dimensions while scaling.

NOTE: If the measurement unit is changed in [label properties](#), the value transforms automatically.

Rotation angle is the object angle according to the design surface.

TIP: There are multiple ways to set the object's angle: enter the angle manually, drag the slider or click and drag the  icon on the selected object. Rotation angle and slider rotates the object around its anchoring point. The  icon rotates the object around its central point.

Anchoring point is the spot where an object is pinned to design surface. Variable size objects increase or decrease their size in the direction that is opposite to the chosen anchoring point.

Lock prevents the object from being moved during the design process.

NOTE: If the measurement unit is changed, the value converts automatically.

Graphic Resizing tab is available if the picture object is connected to a variable. These settings define how the Picture object adapts its size to the source file at print time.

- **Keep original picture size:** disabled picture resizing. Picture size remains unchanged.
- **Resize proportionally:** proportional picture resizing. Aspect ratio of picture dimension remains fixed.
- **Resize to the designed size:** horizontal and vertical picture resizing to make it fit into the bounding box. This option will most likely make the picture distorted.

Original size displays the picture's **Width** and **Height** before resizing. **Revert to original picture size** cancels the resizing actions.

4.3.4.4 General

General tab identifies the object and sets its status.

Name sets a unique object ID.

NOTE: Avoid using spaces or special characters in object names.

Description allows adding notes and annotations for an object. It provides help during the label design process.

Status group defines object visibility on print preview and on printed labels.

- **Not printable:** prevents the object from being printed.
- **Visible:** if the checkbox is not selected, the object neither appears on the print preview nor on the printed label. The object is treated as if it does not exist.

4.3.5 Rectangle

Rectangle object creates a rectangular frame on a label.

4.3.5.1 Style

Outline group defines line settings:

- **Thickness:** object line thickness.
- **Outline style:** object line style.
 - **Solid:** solid line.
 - **Dot:** dotted line.
 - **Dash:** dashed line.
 - **Erase:** parts of neighboring objects become invisible underneath this object.
- **Outline color:** color of the line.
- **Corner radius:** makes the rectangle corners round. Higher values make the curve broader.

Fill group defines the object fill settings and color.

- **Fill style:** object fill properties definition:
 - **None:** completely transparent object.
 - **Erase:** makes objects beneath the active one hidden.
 - **Solid:** fills the object with solid color.
 - **Right Diagonal:** fills the object with diagonal lines that ascend toward the right side.

- **Left Diagonal:** fills the object with diagonal lines that ascend toward the left side.
- **Vertical:** fills the object with vertical lines.
- **Horizontal:** fills the object with horizontal lines.
- **Cross:** fills the object with crossed lines.
- **Cross Diagonal:** fills the object with diagonally crossed lines.
- **25% of color:** fill color opacity 25 %.
- **50% of color:** fill color opacity 50 %.
- **75% of color:** fill color opacity 75 %.
- **Background color:** object fill color definition.

NOTE: The system does not allow the **Outline style** and **Fill style** to be set to **None** at the same time.

TIP: Shape objects ([Rectangle](#), [Line](#) and [Ellipse](#)) in ZebraDesigner remember the last used setting. Each time you add one of these objects to the label, it has the same outline and fill settings as the previously added shape object.

4.3.5.2 Position

Position tab defines object positioning and its position-related behavior.

Position group defines the object's position.

- **X and Y:** anchoring point coordinates.

Size group sets the object's dimensions:

- **Width** and **Height:** horizontal and vertical object dimension.
- **Keep aspect ratio:** simultaneous changing of object dimensions while scaling.

NOTE: If the measurement unit is changed in [label properties](#), the value transforms automatically.

Rotation angle is the object angle according to the design surface.

TIP: There are multiple ways to set the object's angle: enter the angle manually, drag the slider or click and drag the  icon on the selected object. Rotation angle and slider rotates the object around its anchoring point. The  icon rotates the object around its central point.

Anchoring point is the spot where an object is pinned to design surface. Variable size objects increase or decrease their size in the direction that is opposite to the chosen anchoring point.

Lock prevents the object from being moved during the design process.

4.3.5.3 General

General tab identifies the object and sets its status.

Name sets a unique object ID.

NOTE: Avoid using spaces or special characters in object names.

Description allows adding notes and annotations for an object. It provides help during the label design process.

Status group defines object visibility on print preview and on printed labels.

- **Not printable:** prevents the object from being printed.
- **Visible:** if the checkbox is not selected, the object neither appears on the print preview nor on the printed label. The object is treated as if it does not exist.

Printing optimization group allows activating the use of internal printer elements.

TIP: If supported by the selected printer model, a share of label element processing is handled directly by the printer (e.g., internal fonts, shapes, barcodes). This speeds up the printing process also due to significantly reduced data traffic.

- **Use printer element if supported:** prints labels using internal printer elements if the printer allows it. If a selected printer does not support internal printer elements, the element is sent as a graphic file.
- **Always use printer element:** prints labels using printer elements only. If a selected printer does not support internal printer elements, an error message with explanation is displayed.
- **Always print as graphics:** sends and prints the objects as graphic files.

NOTE: When connecting your object to a variable, enable the **Use printer element if supported** or **Always use printer element** option. Printing in graphic mode returns a printing error.

4.3.6 Line

Line object creates a line on a label.

4.3.6.1 Style

Outline group defines line settings:

- **Thickness:** object line thickness.
- **Outline style:** object line style.
 - **Solid:** solid line.
 - **Dot:** dotted line.
 - **Dash:** dashed line.
 - **Erase:** parts of neighboring objects become invisible underneath this object.
- **Outline color:** color of the line.

TIP: Shape objects ([Rectangle](#), [Line](#) and [Ellipse](#)) in ZebraDesigner remember the last used setting. Each time you add one of these objects to the label, it has the same outline and fill settings as the previously added shape object.

4.3.6.2 Position

Position tab defines object positioning and its position-related behavior.

Position group defines the object's position.

- **X and Y:** anchoring point coordinates.
- **Length:** sets the line length.

If the measurement unit is changed in [label properties](#), the value transforms automatically.

Rotation angle is the object angle according to the design surface.

TIP: There are multiple ways to set the object's angle: enter the angle manually, drag the slider or click and drag the  icon on the selected object. Rotation angle and slider rotates the object around its anchoring point. The  icon rotates the object around its central point.

Lock prevents the object from being moved during the design process.

4.3.6.3 General

General tab identifies the object and sets its status.

Name sets a unique object ID.

NOTE: Avoid using spaces or special characters in object names.

Description allows adding notes and annotations for an object. It provides help during the label design process.

Status group defines object visibility on print preview and on printed labels.

- **Not printable:** prevents the object from being printed.
- **Visible:** if the checkbox is not selected, the object neither appears on the print preview nor on the printed label. The object is treated as if it does not exist.

Printing optimization group allows activating the use of internal printer elements.

TIP: If supported by the selected printer model, a share of label element processing is handled directly by the printer (e.g., internal fonts, shapes, barcodes). This speeds up the printing process also due to significantly reduced data traffic.

- **Use printer element if supported:** prints labels using internal printer elements if the printer allows it. If a selected printer does not support internal printer elements, the element is sent as a graphic file.
- **Always use printer element:** prints labels using printer elements only. If a selected printer does not support internal printer elements, an error message with explanation is displayed.
- **Always print as graphics:** sends and prints the objects as graphic files.

NOTE: When connecting your object to a variable, enable the **Use printer element if supported** or **Always use printer element** option. Printing in graphic mode returns a printing error.

4.3.7 Ellipse

Ellipse object creates a circular object on a label.

4.3.7.1 Style

Outline group defines line settings:

- **Thickness:** object line thickness.
- **Outline style:** object line style.
 - **Solid:** solid line.
 - **Dot:** dotted line.
 - **Dash:** dashed line.
 - **Erase:** parts of neighboring objects become invisible underneath this object.
- **Outline color:** color of the line.

Fill group defines the object fill settings and color.

- **Fill style:** object fill properties definition:
 - **None:** completely transparent object.
 - **Erase:** makes objects beneath the active one hidden.
 - **Solid:** fills the object with solid color.
 - **Right Diagonal:** fills the object with diagonal lines that ascend toward the right side.
 - **Left Diagonal:** fills the object with diagonal lines that ascend toward the left side.
 - **Vertical:** fills the object with vertical lines.
 - **Horizontal:** fills the object with horizontal lines.
 - **Cross:** fills the object with crossed lines.
 - **Cross Diagonal:** fills the object with diagonally crossed lines.
 - **25% of color:** fill color opacity 25 %.
 - **50% of color:** fill color opacity 50 %.
 - **75% of color:** fill color opacity 75 %.
- **Background color:** object fill color definition.

NOTE: The system does not allow the **Outline style** and **Fill style** to be set to **None** at the same time.

TIP: Shape objects (Rectangle, Line and Ellipse) in ZebraDesigner remember the last used setting. Each time you add one of these objects to the label, it has the same outline and fill settings as the previously added shape object.

4.3.7.2 Position

Position tab defines object positioning and its position-related behavior.

Position group defines the object's position.

- **X** and **Y:** anchoring point coordinates.

Size group sets the object's dimensions:

- **Width** and **Height**: horizontal and vertical object dimension.
- **Keep aspect ratio**: simultaneous changing of object dimensions while scaling.

NOTE: If the measurement unit is changed in [label properties](#), the value transforms automatically.

Rotation angle is the object angle according to the design surface.

TIP: There are multiple ways to set the object's angle: enter the angle manually, drag the slider or click and drag the  icon on the selected object. Rotation angle and slider rotates the object around its anchoring point. The  icon rotates the object around its central point.

Anchoring point is the spot where an object is pinned to design surface. Variable size objects increase or decrease their size in the direction that is opposite to the chosen anchoring point.

Lock prevents the object from being moved during the design process.

NOTE: If the measurement unit is changed, the value transforms automatically.

4.3.7.3 General

General tab identifies the object and sets its status.

Name sets a unique object ID.

NOTE: Avoid using spaces or special characters in object names.

Description allows adding notes and annotations for an object. It provides help during the label design process.

Status group defines object visibility on print preview and on printed labels.

- **Not printable**: prevents the object from being printed.
- **Visible**: if the checkbox is not selected, the object neither appears on the print preview nor on the printed label. The object is treated as if it does not exist.

Printing optimization group allows activating the use of internal printer elements.

TIP: If supported by the selected printer model, a share of label element processing is handled directly by the printer (e.g., internal fonts, shapes, barcodes). This speeds up the printing process also due to significantly reduced data traffic.

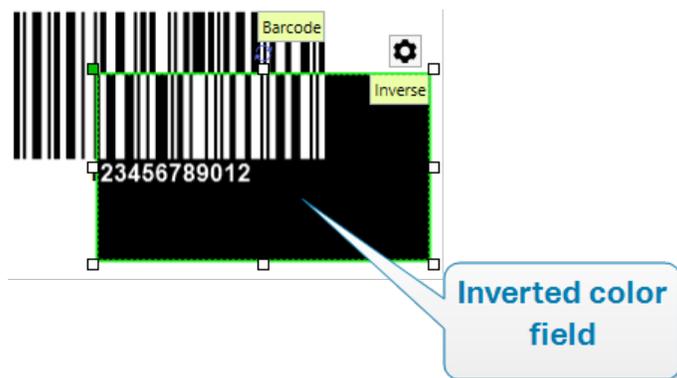
- **Use printer element if supported:** prints labels using internal printer elements if the printer allows it. If a selected printer does not support internal printer elements, the element is sent as a graphic file.
- **Always use printer element:** prints labels using printer elements only. If a selected printer does not support internal printer elements, an error message with explanation is displayed.
- **Always print as graphics:** sends and prints the objects as graphic files.

NOTE: When connecting your object to a variable, enable the **Use printer element if supported** or **Always use printer element** option. Printing in graphic mode returns a printing error.

4.3.8 Inverse

4.3.8.1 About

Inverse object inverts the underlying object's color.



4.3.8.2 Position

Position tab defines object positioning and its position-related behavior.

Position group defines the object's position.

- **X** and **Y:** anchoring point coordinates.

Size group sets the object's dimensions:

- **Width** and **Height**: horizontal and vertical object dimension.
- **Keep aspect ratio**: simultaneous changing of object dimensions while scaling.

NOTE: If the measurement unit is changed in [label properties](#), the value transforms automatically.

Rotation angle is the object angle according to the design surface.

TIP: There are multiple ways to set the object's angle: enter the angle manually, drag the slider or click and drag the  icon on the selected object. Rotation angle and slider rotates the object around its anchoring point. The  icon rotates the object around its central point.

Anchoring point is the spot where an object is pinned to design surface. Variable size objects increase or decrease their size in the direction that is opposite to the chosen anchoring point.

Lock prevents the object from being moved during the design process.

NOTE: If the measurement unit is changed, the value transforms automatically.

4.3.8.3 General

General tab identifies the object and sets its status.

Name sets a unique object ID.

NOTE: Avoid using spaces or special characters in object names.

Description allows adding notes and annotations for an object. It provides help during the label design process.

Status group defines object visibility on print preview and on printed labels.

- **Not printable**: prevents the object from being printed.
- **Visible**: if the checkbox is not selected, the object neither appears on the print preview nor on the printed label. The object is treated as if it does not exist.

Printing optimization group allows activating the use of internal printer elements.

TIP: If supported by the selected printer model, a share of label element processing is handled directly by the printer (e.g., internal fonts, shapes, barcodes). This speeds up the printing process also due to significantly reduced data traffic.

- **Use printer element if supported:** prints labels using internal printer elements if the printer allows it. If a selected printer does not support internal printer elements, the element is sent as a graphic file.
- **Always use printer element:** prints labels using printer elements only. If a selected printer does not support internal printer elements, an error message with explanation is displayed.
- **Always print as graphics:** sends and prints the objects as graphic files.

4.4 Working with Objects

This section describes how to work with [objects](#) and blend them with the design of a [label](#).

Object is a basic building block of any label. Each object is dedicated to a specific type of content. See the related topics for style and content related object properties.

These are the common actions for multiple object types:

- [Adding an object](#): adds an object to the design surface.
- Adding an object with connected data source: click the down arrow next to the object button and select an existing or new data source to make the newly added object instantly connected to a dynamic data source.
- [Grouping](#): makes multiple object behave as a single object.
- [Rotating](#): changes the angle of a selected object.
- [Aligning](#): make the object positions.

4.4.1 Adding Objects

There are multiple methods to add an object to a label. Use the most convenient one:

- **Click and Click:** click the object in the object toolbox. Mouse cursor transforms. Click on the design surface – the selected object appears where clicked.
- **Click and Drag:** click the object in object toolbox. Mouse cursor transforms. Click on the design surface and drag to define the size of the added object.

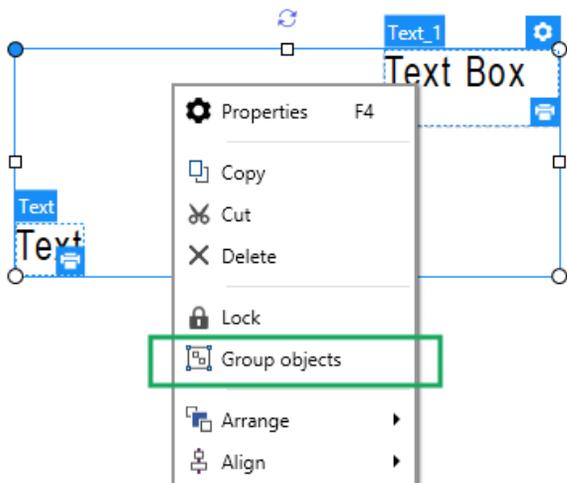
[Text](#) object's size cannot be defined using this method – its size is defined dynamically.

- **Drag and Drop:** click the object in the object toolbox and drag it to the design surface. The selected object appears where the mouse button is released.
- **Copy and Paste:** graphical and textual content can be pasted directly to the design surface. The following rules apply when copying items and pasting them directly to a label:
 - Graphical content from clipboard is pasted as embedded [Picture](#) object.
 - Single line text is pasted as [Text](#) object.

4.4.2 Grouping

To make multiple objects on a label behave as a single object, add them to a group. To group objects:

- Surround the objects you wish to group using mouse. A rectangle appears marking the selected objects. Right-click and select **Group objects** to create a group of objects.
- Hold <Shift> key and click the objects you wish to group. This selects multiple objects – right-click and select **Group objects** to create a group of objects.



4.4.3 Rotating

There are two ways to set the angle of an object:

- Enter the angle manually in degrees or drag the slider. The object rotates around its anchoring point. Rotation commands are accessible in two ways:
 - Click **Position** in the [Positioning group](#) of the Design tab.
 - Go to **Object properties -> Position -> Rotation angle**.

- Click and drag the  icon next to the selected object. The  icon rotates the object around its central point.

Anchoring point is the spot where an object is pinned to the design surface. Variable size objects increase or decrease their size in the direction that is opposite to the chosen anchoring point.

5 Creating Receipt-Style Labels

Receipts are an essential part of the purchasing process. When your customers make purchases, they expect professional looking receipts that include standard pieces of information such as purchased items, prices, and sum totals. Your receipts should also include company names, addresses, and transaction details.

ZebraDesigner for Developers helps you design your receipts using dedicated receipt-style label files. Designing your receipts this way saves you time by ensuring your receipts always contain information customers need and print correctly during purchases.

Receipt-style labels include the following:

- Separate header, body, and footer sections for individual label files. These sections serve as "sub-labels" and each contain predefined portions of your receipts.
- Variable label heights. Receipt-style labels adapt their sizes to the number of purchased items. Receipt-style labels use label rolls as media.

One Portals Way, Twin Points WA 98156
Phone: 1-206-555-1

Date: 20-feb-2002

Ship To: SPAR Supermarkt
Starenweg 5
Geneve 1204
Switzerland

Bill To: Richter Supermarkt
Grenzacherweg 237
Geneve 1203
Switzerland

Order	Customer	Salesperso	Order Date	Required Date	Ship Via
11075	RICSU	Laura Callahan	06-maj-1998	03-jun-1998	United Package

Product ID	Product Name	Quantity	Unit Price	Discount	Extended Price
2	Chang	1	\$19,0		
46	Spegesild	1	\$12,0		
76	Lakkalikoori	2	\$18,0		
46	Spegesild	1	\$12,0		
76	Lakkalikoori	2	\$18,0	15%	\$30,60

Subtotal: \$498,11
Freight: \$6,19
Total: \$504,1229

To create and design receipt-style labels:

1. Go to **File > New**, and click **New Receipt**.
2. Complete the [New Receipt Setup Wizard steps](#).
3. The receipt style label editing window opens.

- Note the three tabs under the design surface: **Header**, **Body**, and **Footer**. Use these tabs to switch between the "sub-labels" of receipts you create.



- Use the **Header** tab for your company information, date of purchase, and similar details.
 - Use the **Body** tab to create the core content of your receipts which contain lists of purchased items and prices.
 - Use the **Footer** tab for sum totals, tax information, and similar details.
- After completing your receipt designs, [store the files](#) on your printer.

NOTE: Use the label preview to visually inspect your receipt-style labels. The preview displays header, body, and footer "sub-labels" separately.

Your stored receipts are ready to print using data retrieved from your business information systems.

5.1 New Receipt Setup Wizard

The Setup Wizard guides you through the process of creating a new receipt style label. The wizard consists of three configuration steps and a summary:

- [Step 1: Select the Printer](#)
- [Step 2: Set the Page Size](#)
- [Step 3: Specify the Label Dimensions](#)
- [Step 4: Summary](#)

After finishing these steps, the receipt is ready for editing and storing.

NOTE: To quit the Receipt Setup Wizard during any step, press **Escape**. The new label properties are set to default.

5.1.1 Step 1: Select the Printer

This step selects the printer to be used for printing the newly created receipt style label. The dialog also provides direct access to printer driver properties.

Select your printer from the drop-down list.

The setup wizard remembers the last selected printer. When creating another new receipt, the wizard automatically selects the printer that you selected for your last created label. If this printer is currently missing, your default printer is selected.

5.1.2 Step 2: Set the Page Size

This step defines the receipt style label page size.

Select the print media.

- **Print on a roll of labels:** This option prints on the installed roll of labels. Page size for thermal printers is detected automatically.

NOTE: If a thermal printer is selected in the preceding [Select the Printer](#) wizard step, this option is enabled by default.

Select stock.

Load settings from a predefined stock option sets the page to be defined by the selected stock type.

With this option selected, additional settings appear:

- **Stock:** defines which stock type should be used when designing and printing the newly created label. Stock types are usually associated with printer vendors or stationery suppliers. Select the exact stock from the dropdown menu.

If the selected stock is not compatible with printer, a warning appears. Label designing and printing is disabled.

- **Stock information:** displays the selected stock's properties.

5.1.3 Step 3: Specify the Label Dimensions

This step defines the dimensions of the newly created label, its margins, measurement unit, and bottom offsets:

- **Unit of measure:** Defines the unit to be used while designing the label.
- **Label Dimensions:** Define the new receipt's **Width. Height** settings are disabled because the receipts use paper rolls with variable height.
- **Margins:** Define the distance between the edge of the printing surface and the edge of the receipt (left/right, top/bottom).
- **Bottom offset:** Defines the amount of empty space between the last object on your receipt, and the bottom edge of the "sub-labels" that belong to your receipt (header, body, or footer).

5.1.4 Step 4: Summary

This step summarizes the new receipt style label properties as defined using the **Label Setup Wizard**.

Before clicking **Finish** to enter the label editing and printing phases, check the displayed settings:

- **Printer:** Your selected printer for designing and storing the receipt.
- **Label dimensions:** Dimensions of the newly created receipt.
- **Paper dimensions:** Dimensions of printable paper.

5.2 Receipt Style Label Properties

Label Properties editor selects the printer, sets label dimensions, and defines the printing paper properties.

The label properties settings are listed below and appear as dialog tabs:

Label Property	Description
Printer	Selects the preferred printer.
Label Dimensions	Defines the Unit of measure and label dimensions.
Stocks	Selects the stock type.
Style	Defines the label style parameters.
Info	Inserts the label description.
Custom Scripts	Allow you to override the default variable settings and add special parameters or commands.

TIP: To open the **Label Properties Editor**, double-click the [design surface](#).

5.2.1 Printer

Printer dropdown menu lets you select a printer from the currently available printers.

TIP: To set the printer settings, select a printer and click **Printer properties**. This button gives direct access to the selected printer's driver and its settings.

5.2.2 Label Dimensions

Label Dimensions tab specifies the receipt dimensions and defines whether its size should adapt to the changing size of the objects or not.

Unit of measure defines the unit to be used while designing the label. There are four available units: cm, in, mm, and dot.

Label Dimensions group defines the label's **Width**. **Height** settings are disabled because the receipts use paper rolls with variable height.

When manually inserting the unit of measure, this also changes the currently defined **Unit**.

Margins group sets the distance between the edge of the printing surface and the edge of the label (left/right, top/bottom).

Bottom offset defines the amount of empty space between the last object on your receipt, and the bottom edge of the "sub-labels" that belong to your receipt (header, body, or footer).

5.2.2.1 Custom Scripts

Custom Scripts allow you to add Zebra Programming Language (ZPL) parameters and commands to the data stream when storing your label templates. This means that when you finish designing the template, and store the template to your printer's memory, custom scripts can execute additional actions.

Depending on your requirements, you can use the custom scripts as a header or footer scripts.

- **Use header/footer script** allows you to add custom script to the data stream when storing your label template.

NOTE: You can use custom header/footer scripts in combination [with script definitions that you add to the variable values on your templates.](#)

EXAMPLE:

```
^FX[Fonts]^FS
^FX[Graphics]^FS
^FX[Format]^FS
<my header script>
CT~CD,~CC^CT~
^XA
^DFE:XML-SPEC.ZPL^FS
~TA000~JSN^LTO^MNW^MTT^PON^PMN^LHO,0^JMA^PR6,6^MD15^LRN^CIO
^MMT
^PW831
^LL0406
^LS0
^FT196,67^A0N,28,28^FB56,1,0^FH\^FN2^FDXML1^FS
^FT198,126^A0N,28,28^FB56,1,0^FH\^FN3^FDXML2^FS
^FT199,189^A0N,28,28^FB89,1,0^FH\^FN4^FDXML3^FS
<my variable script>
^XZ
<my footer script>
```

NOTE: This option is for advanced users only. The use of custom scripts requires in-depth knowledge of the ZPL.

5.2.3 Stocks

Label stocks are a time-saving alternative to designing labels from scratch. Use stock templates when designing labels for a specific printer type and when optimizing the label designing process.

Stocks group defines which stock type should be used when designing and printing a label. Stock types are usually associated with printer vendors or stationery suppliers.

NOTE: Here defined stock properties override the manually set label properties.

Stock defines the exact stock to be used for label designing and printing. Stocks are sorted by vendors and media formats. Expand stock provider and select a specific stock type

TIP: Use **Search...** to easily find the requested stock. Partial search is available – enter a sequence of characters and all stocks which contain it will be listed. If the selected stock is not compatible with the selected printer, a warning appears. Previously selected stock becomes active again (if it was defined) allowing the printing to continue.

5.2.4 Style

Style tab is used for defining label style properties.

Background color: sets the color of label background.

Background picture: sets the label background picture.

- **Picture file name:** defines the image file to be used as background picture.
- **Embed picture in a document:** saves picture into the label file.
- **Save embedded picture to file:** the embedded label picture is saved to a separate file.
- **Remove embedded picture:** embedded picture is removed from the label file.
- **Picture position:** sets picture position on the label.
 - **Center:** centers the picture on the label with its original dimensions. A picture larger than the label will display only the central part leaving the rest out of view.
 - **Fit:** resizes the picture to fill the label while keeping the original aspect ratio.
 - **Stretch:** stretches picture to make it fill the entire label.

NOTE: This option ignores the original aspect ratio of the picture. The picture might appear distorted on the label.

- **Rotation:** allows you to rotate the background picture in steps of 90 degrees.
- **Print background picture:** background picture is printed.

5.2.5 Info

Info tab includes a **Description** that serves as a hint or as a guide for the user that is going to work with the label.

Define label **Description** by entering text into the field.

6 Barcode

ZebraDesigner for Developers supports a wide variety of 1D and 2D barcode types to be printed on labels. Each barcode type is configurable according to specific standards.

TIP: When encoding the barcode content, make sure the used characters, length, and identifiers comply with the barcode standard guidelines.

The following barcode types are available in ZebraDesigner for Developers:

- [1D and 2D Barcodes](#)
- [GS1 DataBar Barcode Subtypes](#)

In ZebraDesigner for Developers, barcodes are added to a label using the barcode object. To properly encode the data and to set the barcode object properties, read the sections below. Each of these sections describes barcode object properties. To start editing them, double-click the object to open the [Object Properties Window](#).

6.1 Source

Connected data source defines the content source of the selected object.

- [Variables](#): predefined variable values which are used as object content.

Content field allows you to type the object content.

NOTE: When connecting your Barcode object to a variable, keep using the barcode as internal printer element. Changing the barcode to a graphic returns an error.

6.2 Barcode

Barcode Type defines the specific barcode type which should be used to encode the data.

TIP: Code128 barcode type is selected by default. For more details about the available barcode types, see section [Barcode Types and Available Settings](#).

- **X dimension:** width of the narrowest bar in the barcode.
- **Height:** barcode's vertical dimension.
- **Ratio** defines the ratio between the barcode's narrow and wide bar widths.

Each barcode type's range of permitted ratios is limited by the standard. ZebraDesigner for Developers only allows you to use valid ratios. By default, the ratio is set to 3. This means that the wide bar is 3 times the width of a narrow bar.

NOTE: The available ratios depend on the selected **X dimension**. If you are changing the X dimension, this also affects the selection of available ratios.

- **Row height** defines the height of a single data row in 2D barcodes. Row height is specified as a multiple over the **X dimension**. For example, "3x" means that the row is 3 times the **X dimension**.

Actual properties based on selected printer displays the X dimension as it would appear printed on a label using the currently selected printer.

Color defines the color of the barcode.

6.3 Check Digit

Check digit is used by any scanning system to verify that the number scanned from a barcode is read correctly.

TIP: Check digit is derived from the preceding barcode digits and is placed as the final digit of a barcode.

Include check digit determines if check digit is included in a barcode or not.

- **Auto-generate check digit:** automatic check digit calculation.

If the data already includes invalid check digit, ZebraDesigner for Developers replaces it with a proper value.

- **Verify the provided check digit:** verification of the manually provided check digit. An error message appears if the check digit is incorrect.

- **Display check digit in human readable:** check digit included in the human readable barcode text.

6.4 Human Readable

Human Readable text displays readable barcode data content located below or above the barcode. Its role is to provide backup in case the barcode is damaged or of poor quality.

NOTE: **Human Readable** tab is visible with supported barcode types.

- **No human readable:** barcode is rendered without human readable text.
- **Above barcode:** human readable text is located above the barcode.
- **Below barcode:** human readable text is located below the barcode.

Style group allows you to set custom properties for human readable text.

NOTE: If you decide to customize human readable text, barcode can no longer be used as internal printer element. It is sent to printer and printed as a graphic element.

- **Custom Font:** enables font and font size selection. Internal printer fonts cannot be used as custom human readable font.
- **Auto font scaling:** If enabled (default setting), human readable text grows or shrinks proportionally along with the changing size of the barcode. To set a custom size for human readable text, disable this option and select the appropriate font size.
- **Bold:** makes human readable text appear bold.
- **Italic:** makes human readable text appear italic.

Mask group sets the format of the input data before it is displayed on a label.

- **Content mask** sets the format of the input data before it is displayed on a label.
- **Mask character** is a character used in the mask that is replaced with actual data on the printed label.

EXAMPLE

A user needs to format a phone number to be more readable on the label. Data input is not formatted since it is read from a database.

If the input value read from a database is:

+38642805090

and the content mask is:

```
(****) **** - ****
```

the resulting output is:

```
(+386) 4280 - 5090
```

If the data contains the asterisk "*" character, change the **Mask character**. The character should have a unique value that does not appear anywhere in the data.

6.5 Bearer Bar

Bearer bar is a border that surrounds the barcode. Its purpose is to protect the barcode image and to enhance reading reliability.

- **Fixed thickness:** automatically defined bearer bar width.
- **Variable thickness:** user-defined bearer bar width.
- **Thickness multiplier:** bearer bar width factor.
- **Show vertical bar:** vertical bearer bars displayed or hidden.

6.6 Details

Details differ according to the barcode standards. Define the options that are given with regard to the currently selected barcode type. Details for 1D and 2D barcodes are described in dedicated sections:

- [1D barcode details](#)
- [2D barcode details](#)

6.7 Position

Position tab defines object positioning and its position-related behavior.

Position group defines the object's position.

- **X** and **Y:** anchoring point coordinates.

Size group sets the object's dimensions:

- **Width** and **Height**: horizontal and vertical object dimension.
- **Keep aspect ratio**: simultaneous changing of object dimensions while scaling.

NOTE: If the measurement unit is changed in [label properties](#), the value transforms automatically.

Rotation angle is the object angle according to the design surface.

TIP: There are multiple ways to set the object's angle: enter the angle manually, drag the slider or click and drag the  icon on the selected object. Rotation angle and slider rotates the object around its anchoring point. The  icon rotates the object around its central point.

Anchoring point is the spot where an object is pinned to design surface. Variable size objects increase or decrease their size in the direction that is opposite to the chosen anchoring point.

Lock prevents the object from being moved during the design process.

NOTE: If the measurement unit is changed in [label properties](#), the value transforms automatically.

6.8 General

General tab identifies the object and sets its status.

Name sets a unique object ID.

NOTE: Avoid using spaces or special characters in object names.

Description allows adding notes and annotations for an object. It provides help during the label design process.

Status group defines object visibility on print preview and on printed labels.

- **Not printable:** prevents the object from being printed.
- **Visible:** if the checkbox is not selected, the object neither appears on the print preview nor on the printed label. The object is treated as if it does not exist.

Printing optimization group allows activating the use of internal printer elements.

TIP: If supported by the selected printer model, a share of label element processing is handled directly by the printer (e.g., internal fonts, shapes, barcodes). This speeds up the printing process also due to significantly reduced data traffic.

- **Use printer element if supported:** prints labels using internal printer elements if the printer allows it. If a selected printer does not support internal printer elements, the element is sent as a graphic file.
- **Always use printer element:** prints labels using printer elements only. If a selected printer does not support internal printer elements, an error message with explanation is displayed.
- **Always print as graphics:** sends and prints the objects as graphic files.

NOTE: When connecting your object to a variable, enable the **Use printer element if supported** or **Always use printer element** option. Printing in graphic mode returns a printing error.

6.9 Available Barcodes and Their Settings

Barcode	Example	Info	Available Settings
Anker		Variation of Plessey Code. Used for point of sale systems prior to the advent of EAN code.	Basic Barcode Settings Human Readable Details tab: Include quiet zones Space correction

Barcode	Example	Info	Available Settings
Bookland		Type of EAN barcode used exclusively for books.	Basic Barcode Settings Human Readable Details tab: Include quiet zones Space correction
Codabar		A self-checking and binary level linear barcode symbology with no check sum digit appended. Widely used in libraries and package delivery systems.	Basic Barcode Settings Human Readable Details tab: Include quiet zones
Code93		43 characters allowed. ASCII character set supported by using combinations of 2 characters.	Basic Barcode Settings Human Readable Details tab: Include quiet zones Space correction
Code128		Double density data encoding, ASCII character set supported.	Basic Barcode Settings Human Readable Details tab: Include quiet zones Space correction
Code128-A		ASCII characters 00 to 95 (0-9, A-Z, and control codes), special char-	Basic Barcode Settings Human Readable

Barcode	Example	Info	Available Settings
		acters, and FNC 1-4 supported.	Details tab: Include quiet zones Space correction
Code128-B		ASCII characters 32 to 127 (0-9, A-Z, a-z), special characters, and FNC 1-4 supported.	Basic Barcode Settings Human Readable Details tab: Include quiet zones Space correction
Code128C		00-99 (encodes each two digits with one code) and FNC1.	Basic Barcode Settings Human Readable Details tab: Include quiet zones Space correction
Code-39		Fully alphanumeric barcode for use with data-entry systems.	Basic Barcode Settings Check Digit Human Readable Details tab: Include quiet zones Inter character gap Space correction

Barcode	Example	Info	Available Settings
Code-39 full ASCII	 <p>*12345*</p>	28 ASCII character set including asterisks supported.	Basic Barcode Settings Check Digit Human Readable Details tab: Include quiet zones Inter character gap Space correction
Code-39 Tri Optic	 <p>\$12345\$</p>	Computer tape cartridge marking.	Basic Barcode Settings Check Digit Human Readable Details tab: Include quiet zones Inter character gap Space correction
Dun-14	 <p>(01)12345678901231</p>	Numbering system for shipping containers that uses other barcode types.	Basic Barcode Settings Check Digit Human Readable Details tab: Include quiet zones Space correction

Barcode	Example	Info	Available Settings
Ean-13		European Article Number, used for global retail.	Basic Barcode Settings Check Digit Human Readable Details tab: Include quiet zones Descender bar Include EAN white space Space correction
Ean-13 + 2		Often used on newspapers and magazines.	Basic Barcode Settings Check Digit Human Readable Details tab: Include quiet zones Descender bar Include EAN white space
Ean-13 + 5		For books in English language: the first digit of the EAN-5 is the currency indicator. The four following digits represent the price multiplied by 100.	Basic Barcode Settings Check Digit Human Readable Details tab: Include quiet zones Descender bar

Barcode	Example	Info	Available Settings
			Include EAN white space
Ean-14		Traded goods.	Basic Barcode Settings Check Digit Human Readable Details tab: Include quiet zones Space correction
Ean-8		Small package marking where an EAN-13 barcode would be too large.	Basic Barcode Settings Check Digit Human Readable Details tab: Include quiet zones Descender bar Include EAN white space Space correction
Ean-8 + 2		Only used if the article is too small for an EAN-13 code.	Basic Barcode Settings Check Digit Human Readable Details tab: Include quiet zones Descender bar

Barcode	Example	Info	Available Settings
			Include EAN white space
Ean-8 + 5		Only used if the article is too small for an EAN-13 code.	Basic Barcode Settings Check Digit Human Readable Details tab: Include quiet zones Descender bar Include EAN white space
GS1-128		A variant of Code 128 - it automatically inserts a FNC1 character after the initial character.	Basic Barcode Settings Human Readable Details tab: Include quiet zones Space correction
Interleaved 2 of 5		Used on 135 film, for ITF-14 barcodes, and on packaging.	Basic Barcode Settings Check Digit Human Readable Details tab: Include quiet zones Space correction
ITF 14		Higher level packaging. GTIN included.	Basic Barcode Settings

Barcode	Example	Info	Available Settings
			Check Digit Human Readable Bearer Bar Details tab: Space correction
ITF 16	 <p>12345 67890 12345 2</p>	Higher level packaging. GTIN included.	Basic Barcode Settings Check Digit Human Readable Bearer Bar Details tab: Space correction
MSI	 <p>123456789012</p>	Used primarily for inventory control, marking storage containers and shelves in warehouse environments.	Basic Barcode Settings Check Digit Human Readable Details tab: Include quiet zones Space correction
SSCC		Identification in logistics. The code includes an extension digit, a GS1 company prefix, a serial reference, and a check digit.	Basic Barcode Settings Human Readable Details tab: Space correction
Plessey	 <p>123456789012</p>	One of the first barcode symbologies. Still used in libraries and for shelf tags in retail stores.	Basic Barcode Settings Check Digit

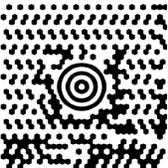
Barcode	Example	Info	Available Settings
			Human Readable Details tab: Include quiet zones Space correction
SSCC-18	 (00)123456789012345678	Identification in logistics. The code includes an extension digit, a GS1 company prefix, a serial reference, and a check digit.	Basic Barcode Settings Check Digit Human Readable Details tab: Include quiet zones Space correction
Upc Case Code	 (01)12345678901231	Used for cartons, cases, or pallets that contain products with UPC or EAN product identification number.	Basic Barcode Settings Check Digit Human Readable Details tab: Include quiet zones Space correction
Upc-A	 1 2 3 4 5 6 7 8 9 0 1 2	Product identifying at retail checkout. GTIN included.	Basic Barcode Settings Check Digit Human Readable Details tab: Include quiet zones Descender bar

Barcode	Example	Info	Available Settings
			Space correction
Upc-A + 2		Product identifying at retail checkout. GTIN included. Used with magazines and periodicals.	Basic Barcode Settings Check Digit Human Readable Details tab: Include quiet zones Descender bar
Upc-A + 5		Product identifying at retail checkout. GTIN included. Used for book pricing.	Basic Barcode Settings Check Digit Human Readable Details tab: Include quiet zones Descender bar
Upc-E		Product identifying at retail checkout. GTIN (compressed) included. Adapted for smaller packages.	Basic Barcode Settings Check Digit Human Readable Details tab: Include quiet zones Descender bar Space correction Symbology

Barcode	Example	Info	Available Settings
Upc-E + 2	 A standard 1D barcode with a check digit '6' and a trailing '7'.	Product identifying at retail checkout. GTIN (compressed) included. Adapted for smaller packages.	Basic Barcode Settings Check Digit Human Readable Details tab: Include quiet zones Descender bar
Upc-E + 5	 A standard 1D barcode with a check digit '6' and trailing digits '7 8 9 0'.	Product identifying at retail checkout. GTIN (compressed) included. Adapted for smaller packages.	Basic Barcode Settings Check Digit Human Readable Details tab: Include quiet zones Descender bar
USPS Intelligent Mail Barcode	 A dense 1D barcode used for mail tracking.	Tracking and sorting of letters and flat packages in the United States.	Details tab: Include quiet zones

6.9.1 2D Barcodes

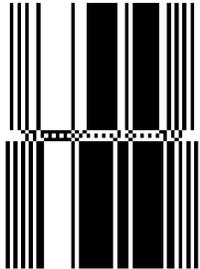
Barcode	Example	Info	Available Settings
Aztec	 A square 2D barcode with a central square.	High capacity, symbol size adjusts automatically depending on the amount of input data.	Basic Barcode Settings Details tab: Code page Data layer Error correction level

Barcode	Example	Info	Available Settings
Data Matrix		High capacity, optimal for small packages.	Basic Barcode Settings Details tab: Format Encoding Code page
GS1 DataBar		Marking products that cross POS applications. GS1 identification (AIs) included.	Available settings change according to the selected GS1 DataBar type .
GS1 Datamatrix		Added GS1 Application Identifiers and ASC MH10 Data Identifiers and maintenance.	Basic Barcode Settings Details tab: Format Encoding Code page
GS1 QR Code		Added GS1 Application Identifiers and ASC MH10 Data Identifiers and maintenance.	Basic Barcode Settings Details tab: Symbol version Error correction level Encoding Code page
MaxiCode		Used by UPS on shipping labels for world-wide addressing and package sortation.	Basic Barcode Settings
Micro QR		Reduced size and capacity of a normal QR code. Optimal when the barcode size needs to be minimized.	Basic Barcode Settings Details tab: Symbol version Error correction level

Barcode	Example	Info	Available Settings
			Encoding Code page
MicroPDF		Compact version of PDF-417.	Basic Barcode Settings Details tab: Code page Compaction mode Version
PDF-417		Commonly used in transport, inventory management, etc. The code is both self-checking and bi-directionally decodable.	Basic Barcode Settings Details tab: Code page Compaction mode Error correction level Columns Rows Truncated
QR		A matrix barcode readable by QR scanners and smartphones. Adaptable size to the amount of encoded data.	Basic Barcode Settings Details tab: Symbol version Error correction level Encoding Code page

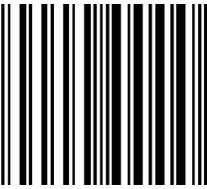
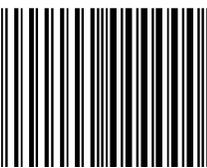
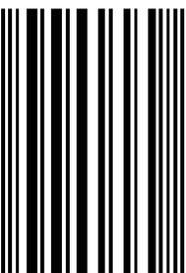
6.10 GS1 DataBar Subtypes

6.10.1 Linear Symbol Types

GS1 DataBar Subtype	Example	Info
Omnidirectional		Omnidirectional scanning, up to 20 trillion encodable values.
Stacked		Stacked truncated symbol for omnidirectional scanning with reduced symbol length.
Stacked Omnidirectional		Full height symbol stacked in two rows separated by a delimiter.
Truncated		Height reduced to 13 times the X dimension. For handheld scanners.
Expanded		Omnidirectional scanning, variable content length.
Expanded Stacked		Omnidirectional scanning, variable content length, reduced length due to stacking (2 to 11 rows). "GS1 DataBar Properties" on page 109.
Limited		Limited range of values. For handheld scanners.

6.10.2 Composite Symbol Types

GS1 DataBar Subtype	Example	Info
Omnidirectional		A linear symbology that supports omnidirectional scanning of packages. It encodes 14 digits of numerical data used to identify GTIN for scanning in the supply chain.
Stacked		Stacked truncated symbol for omnidirectional scanning with reduced symbol length.
Truncated		Intended for very small items in health-care, not intended for POS scanners.
Expanded		Omnidirectional scanning, variable content length. Used for variable-measure food, coupons.
Expanded Stacked		Omnidirectional scanning, variable content length, reduced length due to stacking (2 to 11 rows). See section "GS1 DataBar Properties" on page 109
Limited		Limited range of values. For handheld scanners.

GS1 DataBar Subtype	Example	Info
EAN-8		A smaller and shortened version of the EAN code.
EAN-13		EAN codes require 13 digits (12 if the check digit is calculated automatically).
EAN.UCC 128 & CC-A		GS1-128 linear barcode linked to a 2D barcode called CC-A.
EAN.UCC 128 & CC-C		GS1-128 linear barcode linked to a 2D barcode called CC-C.
UPC-A		The linear component encodes the item's primary identification. The adjacent 2D Composite Component encodes supplementary data, such as a batch number and expiration date.
UPC-E		PC-E compresses a normal UPC-A code into a six digit code by "suppressing" the number system digit, trailing zeros in the manufacturers code and leading zeros in the product number.

6.11 1D Barcode Details

Details tab settings vary along with the specific barcode standards.

TIP: Keep in mind the currently selected barcode type as you define the available barcode settings.

ZebraDesigner for Developers allows setting the following 1D barcode details:

- **Include quiet zones:** blank space around the printed barcode. Quiet zone ensures the highest level of scanning reliability.

NOTE: This option ensures optimum readability in case a neighboring object on a label is located right next to the barcode.

- **Inter character gap:** distance between the last bar of a character and the first bar of the next character in a barcode.
- **Descender bars:** makes the bars at the beginning, in the middle, and at the end of certain barcode types (EAN and UPC) longer.
- **Include EAN white space:** inserts a special character (< or >) to indicate the EAN barcode width.
- **Space correction:** adds white pixels to increase the gap width between the bars.

Symbology: UPC barcode **Number system:**

- 0, 1, 6, 7 and 8 are for regular UPC codes.
- 2 is for random weight items, e.g., meat, marked in-store.
- 3 is for National Drug Code and National Health related Items.
- 4 is for in-store marking of non-food items.
- 5 and 9 are for coupon use.

6.12 2D Barcode Details

2D barcodes enable multiple type-specific settings under the **Details** tab. When defining these settings manually, the dropdown lists offer specific standard-compliant options.

TIP: ZebraDesigner for Developers defines the **Details** tab settings automatically if the user chooses not to manually define them.

6.12.1 Code Page

Code page defines how the mapping of code characters with scanned characters is done. To display the scanned data accurately, the correct code page must be selected. If none of the code pages is selected by the user, ZebraDesigner for Developers uses system character encoding.

6.12.2 Columns

Columns are basic vertical elements of a PDF 417 barcode. A maximum of 30 columns may be included in a single PDF 417 symbol.

6.12.3 Compaction Mode

Compaction mode compacts a number of data characters into codewords. The decoding algorithm uses the individual codewords to place them into a meaningful matrix.

- **Binary:** all 256 ASCII values (up to 1100 bytes) are allowed.
- **Text:** all printable ASCII characters 32–126 and ASCII 9, 10 and 13 (up to 1800 characters) are allowed.
- **Numeric:** encoding of numeric data (up to 2700 digits).

6.12.4 Data Layer

Data layer defines the number of data layers that encode data in an Aztec barcode. The number of data layers correlates directly with the barcode data capacity. If the value exceeds the data capacity provided by the selected Data layer, an error returns. One to four data layers are allowed.

6.12.5 Encoding

Encoding defines character encoding scheme for the selected barcode.

NOTE: If you select the GS1 Datamatrix barcode, ZebraDesigner automatically sets the encoding scheme to ASCII. This makes sure the GS1 Datamatrix barcodes on your labels are GS1-compliant.

6.12.6 Error Correction Level

Error correction level defines the symbol security level. It adds a series of error correction codewords to the encoded data. These codewords enable the printed symbol to withstand damage without data loss. The higher the security level, the greater the number of data

layers required to contain the symbol – and hence, its overall size. If none of the Error correction levels is selected, ZebraDesigner for Developers defines it automatically.

6.12.7 Format

Format defines the symbol size and its capacity using the number of column and row elements.

If using Data Matrix barcode on your labels, DMRE (Data Matrix Rectangular Extension) allows you to use multiple rectangular formats. These additional rectangular sizes increase data encoding capacity of the barcode.

NOTE: For printers without internal DMRE support, enable **Always print as graphics** under **General** properties to print the Data Matrix barcode successfully.

6.12.8 Rows

Rows – PDF-417 barcode symbol is made of stacks of vertically aligned rows. Such barcode adapts its size to the amount of the encoded data and may contain from 3 to 90 rows.

6.12.9 Symbol Version

Symbol version defines the symbol data capacity. As the amount of data increases, additional modules are required to build a QR code. This makes the symbol larger on the printed label.

6.12.10 Truncated

Truncated reduces the PDF-417 barcode size by removing a single codeword and a stop bar from each symbol row.

6.12.11 Version

Version defines the symbol size based on the number of columns. One-, two-, three-, and four-column versions of Micro PDF417 barcode are available.

6.13 GS1 DataBar Specifics

In addition to the [common barcode properties](#), the specifics described below are available for GS1 DataBar.

6.13.1 GS1 DataBar Properties

GS1 DataBar Expanded Stacked subtype encodes the data in the form of symbol segments sequence. Symbol width is defined by the number of symbol segments in each stacked row. Symbol height is defined by the number of stacked rows and their height.

- **Segments per Row** defines the number of segments for each row of a symbol. Up to 22 segments are allowed per symbol.

7 Dynamic Data Sources

Dynamic data sources form an essential part of working with the ZebraDesigner for Developers. They enable the use of label objects that dynamically change their content with each printed label, if necessary.

EXAMPLE: Typical dynamic content that are automatically updated are counters, serial numbers, date, time, weight, and article images.

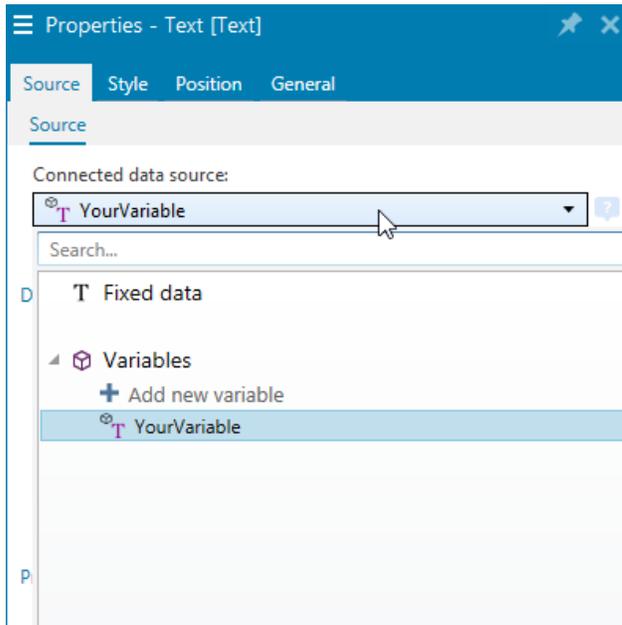
To display and print the dynamic object content properly, ZebraDesigner for Developers uses the following dynamic data types:

- [Current Date](#): current date taken as a variable value.
- [Current Time](#): current time taken as a variable value.
- [Counter](#): type of variable whose value increments or decrements along with the changing value of system or printer counter.

7.1 Variables

Variables act as containers for storing and passing data between objects, scripts, external applications, printers, and user inputs.

- [Variable](#): changes value at print time or according to conditions you define.



7.1.1 Variable

Variable (also known as prompt variable) is a type of variable that obtains its value at print time.

7.1.1.1 General

About group of settings identifies the variable and sets its definition.

- **Name:** unique variable name. This name is used as the variable reference during its use.

Avoid using non-alphanumeric characters when defining the variable name.

- **Description:** is a field that allows adding additional information and suggestions.
- **Initial value:** starting value that is assigned to a variable when created. It is defined using one of the following methods:
 - Manually entering a fixed value. Characters from any group of allowed characters are permitted.
 - Using a special character:
 - Special character can be entered manually using the less than/greater than signs, e.g. <CR>, <LF> ...
 - Special character can be selected from the dropdown [list](#).

ZebraDesigner for Developers supports combined values as the initial value. Read more about combining the values here.

EXAMPLE: A combined initial value of a variable may contain a fixed value, a dynamic data source and special characters. The order of inserted items can be set randomly. Three options:

1. `aaa123[Variable]<CR>`
2. `<CR>aaa123[Variable]`
3. `[Variable]<CR>aaa123`

Make sure the inserted initial value meets the criteria defined with **Output Rules** for each data type.

Provisional value defines a custom placeholder variable value in an object while designing labels or forms. In a label object, the provisional value is replaced by the real variable value at print time. In a form object, the real variable value appears when the form is run.

- **Auto generated:** generates the provisional value automatically. Disable this option to define and use a custom provisional value.

By default, provisional value equals the initial value.

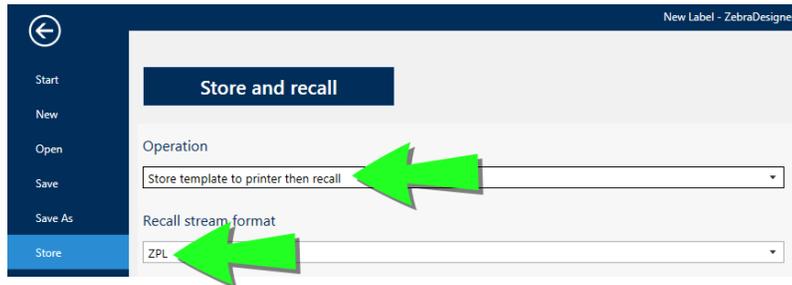
If the variable **Output rules** change, the provisional value format adapts accordingly.

Use one of the **Special variable group** options if the value of the variable contains the printing quantity information that must be included in the stored label template.

- **Use for Print Quantity:** This variable value defines the number of printed labels. When you export the label, the exported file includes this variable along with the print command for label quantity.
- **Use for Copy Quantity:** The variable value tells how many identical label copies should print. When you export the label, the exported file includes this variable along with the print command for label copies.
- **Use for Cut Quantity:** The variable value tells after how many printed labels the cutter activates. When you export the label, the exported file includes this variable along with the cut command.

To enable using special variables with your label templates, make sure you select these two options on your [Store form](#):

- **Operation:** Store template to printer, then recall.
- **Recall stream format:** ZPL



NOTE: These two settings are mandatory. To execute various operations related to printing quantities while recalling your templates, ZebraDesigner for Developers sends the ZPL ^PQ command.

NOTE: The option **Use var for Cut Quantity** is available only if the selected printer supports cutting.

7.1.1.2 Variable Properties

7.1.1.2.1 Input Rules

Data group defines permitted data properties.

- **Limit length:** maximum length of variable value.
- **Fixed length:** variable must contain the exact number of characters as defined in the **Limit length**.

7.1.1.2.2 Output Rules

Prefix and Suffix are characters that are added to a variable value.

- **Prefix:** text placed in front of the variable value.
- **Suffix:** text placed behind the variable value.

Multiline group divides text into multiple lines.

- **Number of lines:** maximum number of lines for a variable value.
- **Line length:** maximum number of characters in a single line.

Script Definition allows you to define and add custom printer commands to the printer stream data. Normally, ZebraDesigner for Developers processes your label template and

exports the appropriate printer commands to the printer. With **Script Definition**, you can define additional commands and include them in the print stream file.

- **Use script** enables adding scripts to your print stream file.

NOTE: This option is for advanced users. Your labels might not print correctly with errors in your ZPL scripts.

7.1.2 Current Date

Current Date is a type of variable that displays the current date value. The value is obtained from printer clock.

7.1.2.1 General Tab

Definition group sets output formatting and displays its preview.

- **Output format:** format in which the date is displayed. Available date formats are listed [here](#).
- **Output language:** language selection and regional formatting for days and months.

EXAMPLE: Output Language becomes relevant when the dates that include months or dates are written in words. In some cases, data calculations may be affected as well. For example, in US, a new week begins on Sunday whereas in EU a new week begins on Monday.

- **Output preview:** displays the printed current date. The range of used characters adapts to the selected **Output language** and printer.

Date offset group enables adding a certain number of days, months or years to the current date. The offset date is displayed in the object instead of the present date.

- **Days:** date offset in days.
- **Months:** date offset in months.
- **Years:** date offset in years.

7.1.2.2 Output Rules

Prefix and Suffix values may be added to a variable value if required.

- **Prefix:** text placed in front of the variable value.
- **Suffix:** text placed behind the variable value.

7.1.2.3 Date Formats

ZebraDesigner for Developers enables flexible use of date fields. When defining the formats, the following notations are used:

Notation	Description
d	The number of the day in a month. Occupies one or two characters.
dd	The number of the day in a month. Always occupies two characters – leading zeros are added if necessary.
M	M is the number of month. Occupies one or two characters.
MM	MM is the number of month. Always occupies two characters.
yy or yyyy	The year represented with 2 or 4 digit numbers.
ddd	The abbreviated name of the day of the week.
dddd	The full name of the day of the week.
MMM	The abbreviated name of the month.
MMMM	The full name of the month.
J	The number of days since January 1. Occupies from one to three characters.
JJJ	The number of days since January 1. Always occupies three characters.
W	The week number in current year. Occupies one or two characters.
WW	The week number in current year. Always occupies two characters.
N	The weekday number. The value range takes 1–7 characters, where 1 represents Monday and 7 represents Sunday.
Custom text	Any sequence of characters is displayed unchanged. Insert dots, commas, and other characters to present the date as required.

7.1.2.3.1 Date Format Examples

Format	Printed Date (English)
d.M.yyyy	10.3.2016
dd/MM/yy	10/03/16

dddd, d.MMMM yyyy	Thursday, 10.March 2016
JJJWWyyyy	069102005
textd/M/yyyytext	text10/3/2016text

7.1.3 Current Time

Current Time is a type of variable that displays the current time value. The value is obtained from printer clock.

7.1.3.1 General Tab

About group of settings identifies the variable and defines time output format and language.

- **Name:** unique variable name. This name is used as a variable reference during its use.
- **Description:** is a field that allows adding additional information and suggestions.

Definition group sets output formatting and displays its preview.

- **Output format:** format in which the time is displayed. Available time formats are listed [here](#).
- **Output preview** displays the printed current time format.

Time offset enables adding or subtracting a certain number of seconds, minutes or hours from the current time.

- **Seconds:** time offset in seconds.
- **Minutes:** time offset in minutes.
- **Hours:** time offset in hours.

7.1.3.2 Output Rules

Prefix and Suffix values may be added to a variable value if required.

- **Prefix:** text placed in front of the variable value.
- **Suffix:** text placed behind the variable value.

7.1.3.3 Time Formats

ZebraDesigner for Developers enables flexible use of time fields. Select a predefined time format or create a customized one. When defining the formats, the following notations are used.

Notation	Description
h	Hours in 12-hour format. AM/PM is added, if selected. Occupies

	one or two characters.
hh	Hours in 12-hour format. AM/PM is added if selected. Always occupies two characters. Leading zeros are added, if necessary.
H	Hours in 24-hour format. Occupies one or two characters.
HH	Hours in 24-hour format. Always occupies two characters.
mm	Used for minutes.
ss	Used for seconds.

7.1.3.3.1 Time Format Examples

Format	Printed Date
h:mm {AM/PM}	8:25PM
H:mm	20:25
hh:mm:ss	08:25:36

7.1.4 Counter

Counter is a type of variable whose value increments or decrements along with the changing value of system or printer counter.

7.1.4.1 General Tab

About group of settings identifies the variable and defines serialization details.

- **Name:** unique variable name. This name is used as variable reference.
- **Description:** is a field that allows adding additional information and suggestions.

Definition group of settings defines the counter behavior.

- **Counter type:** counter value increasing or decreasing.
 - **Incremental:** value increases along with the printed labels.
 - **Decremental:** variable value decreases along with the printed labels.
- **Step:** amount of units that represent the next state of counter value.
- **Initial value:** value that is used when the counter starts.
- **Preview:** displays the counter value sequence.

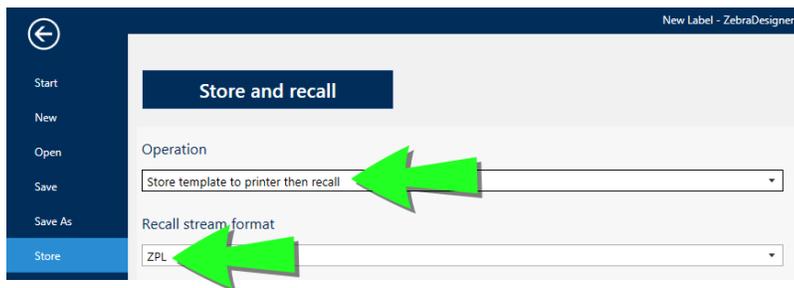
EXAMPLE: Counter Step = 3, Repetition = 3 and Initial value = 1 are: 1, 1, 1, 4, 4, 4, 7, 7, 7, 10, 10, 10, 13, 13, 13, ...

Use one of the **Special variable group** options if the value of the variable contains the printing quantity information that must be included in the stored label template.

- **Use for Print Quantity:** This variable value defines the number of printed labels. When you export the label, the exported file includes this variable along with the print command for label quantity.
- **Use for Copy Quantity:** The variable value tells how many identical label copies should print. When you export the label, the exported file includes this variable along with the print command for label copies.
- **Use for Cut Quantity:** The variable value tells after how many printed labels the cutter activates. When you export the label, the exported file includes this variable along with the cut command.

To enable using special variables with your label templates, make sure you select these two options on your [Store form](#):

- **Operation:** Store template to printer, then recall.
- **Recall stream format:** ZPL



NOTE: These two settings are mandatory. To execute various operations related to printing quantities while recalling your templates, ZebraDesigner for Developers sends the ZPL `^PQ` command.

NOTE: The option **Use var for Cut Quantity** is available only if the selected printer supports cutting.

7.1.4.2 Input Rules

Data defines the counter input criteria.

- **Limit length:** maximum length of a variable value.
 - **Length (characters):** specifies the exact number of characters permitted.

- **Fixed length:** variable must contain the exact number of characters as defined in the **Limit variable length**.

7.1.4.3 Output Rules

Prefix and Suffix are characters that are added to a variable value.

- **Prefix:** text placed in front of the variable value.
- **Suffix:** text placed behind the variable value.

Script Definition allows you to define and add custom printer commands to the printer stream data. Normally, ZebraDesigner for Developers processes your label template and exports the appropriate printer commands to the printer. With **Script Definition**, you can define additional commands and include them in the print stream file.

- **Use script** enables adding scripts to your print stream file. Type or paste your script into the dedicated **Script** field.

7.2 Special Character Shortcuts

ZebraDesigner for Developers includes several predefined control characters – select them from the dropdown menu in any dialog when text input is enabled. An arrow button on the right side of the edit field lists the shortcuts.

EXAMPLE: FNC1 character can simply be encoded as <FNC1>.

If specific special character is not available on the list of shortcuts, see sections "Insert Characters with <Alt>+<ASCII_code>" on page 121 and "Insert Characters with <#hex_code> Syntax" on page 121.

ASCII code	Abbreviation used in the application	Description of the character
1	SOH	Start of Heading
2	STX	Start of Text
3	ETX	End of Text
4	EOT	End of Transmission
23	ETB	End Transmission Block
25	EM	End of Medium
5	ENQ	Enquiry
6	ACK	Acknowledgment

7	BEL	Bell
8	BS	Back Space
9	HT	Horizontal Tab
11	VT	Vertical Tab
13	CR	Carriage Return
10	LF	Line Feed
12	FF	Form Feed
14	SO	Shift Out
15	SI	Shift In
16	DLE	Data Link Escape
17	DC1	XON - Device Control 1
18	DC2	Device Control 2
19	DC3	XOFF - Device Control 3
20	DC4	Device Control 4
28	FS	File Separator
29	GS	Group Separator
30	RS	Record Separator
31	US	Unit Separator
21	NAK	Negative Acknowledgment
22	SYN	Synchronous Idle
24	CAN	Cancel
26	SUB	Substitute
27	ESC	Escape
188	FNC	Function Code 1
189	FNC	Function Code 2
190	FNC	Function Code 3
191	FNC	Function Code 4

7.3 Insert Characters with <#hex_code> Syntax

Another method of entering special characters is using the syntax <#hex_code>. The hex_code stands for a two-character mark in hexadecimal numerical system. The appropriate values go from 0 (decimal 0) to FF (decimal 255).

EXAMPLE: <#BC> (decimal 188) would be the same as <FNC1>, as they both would encode the character with ASCII code 0188.

7.4 Insert Characters with <Alt>+<ASCII_code>

This method is valid only for characters that are above ASCII code 32. A typical example would be FNC codes that are used to encode GS1-128 barcode data. Labeling software encodes this type of barcode according to standards – normally, you would not have to change anything. However, sometimes it becomes necessary to manually add such character, to label data.

To include Function Codes, enter the appropriate character for a Function Code. ASCII codes of Function Codes are as follows:

FNC1	0188
FNC2	0189
FNC3	0190
FNC4	0191

To enter a character for FNC1, press and hold the <Alt> key and type in digits 0188 on the numeric keyboard. Note the leading zero is mandatory. Release the <Alt> and the FNC1 character appears.

7.5 Chip-based Serialization

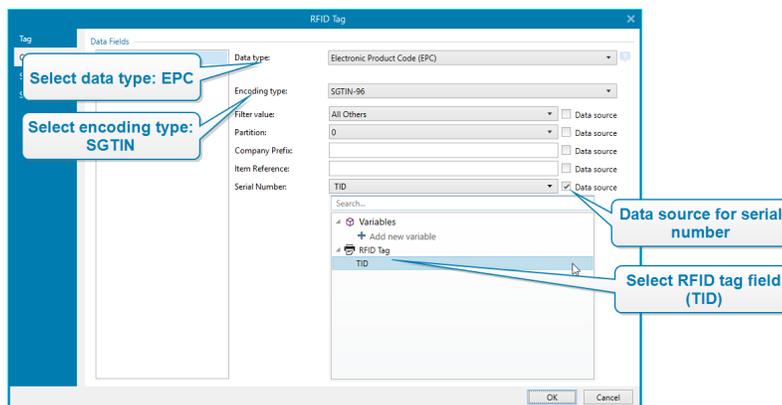
The Serialized Global Trade Item Number (SGTIN) is the RFID equivalent to a product barcode with the addition of a unique product serial number. The most common form of SGTIN uses numeric serialization which uses the SGTIN-96 encoding scheme.

RFID tags contain a unique chip serial number as part of the TID field (unique ID of the RFID tag). The chip serial number becomes part of the TID field during manufacturing, and then permalocked. Locking makes the serial number unalterable after delivery to customers.

NOTE: Field names can vary between the different RFID tags. The TID in this case represents a field using which you encode the serial number to the chip. Check your RFID tag specifications to make sure you encode the serial number to the correct field.

When implementing the chip-based serialization for your products, ZebraDesigner for Developers offers you the option to directly encode the TID unique identifier to your RFID tag:

1. Open the RFID Tag dialog and go to the **Content** panel.
2. Select the EPC data field.
3. For **Data type**, select the Electronic Product Code (EPC).
4. For **Encoding type**, select SGTIN-96 or SGTIN-64.
5. For **Serial Number**, click **Data source** to open the dynamic data selector. Use the TID value to encode your serial number into the RFID tag.
 - Other options are company-specific.



NOTE: Printer driver support for RFID is required for chip-based serialization.

8 Glossary

A

AI

Application Identifier

ANSI

American National Standards Institute

B

BOM

Bite Order Mark

C

CIJ

Continuous Inkjet

CSV

Comma Separated Values

D

DDL

Data Definition Language

DI

Data Identifier

DMRE

Data Matrix Rectangular Extension

E

EAS

Electronic Article Surveillance

F

FNC

Barcode extension character

G

GTIN

Global Trade Item Number

H

HIBC

Health Industry Bar Code

N

NDEF

NFC Data Exchange Format

NFC

Near Field Communication

O

ODBC

Microsoft Open Database Connectivity

OLE

Object Linking and Embedding

P

PJM

Phase Jitter Modulation

R

RF

Radio Frequency

RPC

Remote Procedure Call

RTF

Rich Text Format

S

SCAC

Standard Carrier Alpha Code

T

TID

Transponder ID

U

UNC

Universal Naming Convention

UPC

Universal Product Code



W

WSDL

Web Services Description Language

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