TFORMer Designer
Label and Report Designer

Version 9.0

User Manual

WWW.TEC-IT.COM

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3   Introduction

3.1   Professional Documents Created With Ease

Many thanks for evaluating **TFORMer**!

The **TFORMer** product family represents a complete, lean and powerful solution for generating arbitrary documents. It combines the features of barcode labeling tools with the characteristics of report generators into a unified printing-solution. It provides *professional layout and output* capabilities, an integrated *barcode generator,* full-featured *UNICODE* support and it supports direct *PDF generation.* It can be used on client and on server side and it is available for all major operating systems.
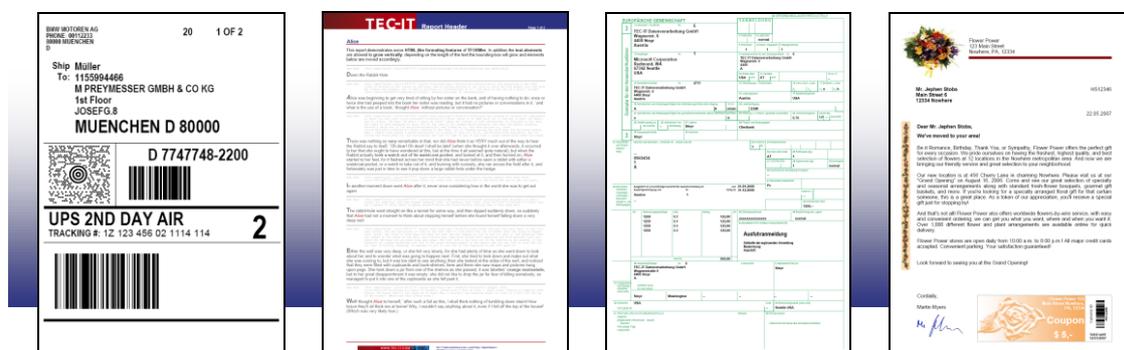
The functionality of **TFORMer** is available for end-users as well as for software developers:

End-Users benefit from the graphical layout editor with instant output capabilities: **TFORMer Designer** offers outstanding design and printing features for reports, tables, lists, serial letters, industry forms, vouchers and barcode labels. Furthermore, the numerous ready-to-use label and report templates for industry and logistics (e.g., VDA-4902, Odette, GALIA, AIAG, …) will be a valuable assistance.

Software developers use **TFORMer SDK** as reporting tool for direct printing, PDF generation, PostScript, HTML, image or ZPL-II output. Layouts are designed graphically with **TFORMer Designer.** The **TFORMer SDK** is then used to provide dynamic data for the layouts and to generate the output. This core functionality for printing and output is available for all major operating systems.

3.2   TFORMer Basics

In contrast to a word processor which is mostly used for static content, **TFORMer** generates *output based on dynamic data*. Examples for dynamic contents are article-numbers used in product labels or addresses used in serial letters.

Dynamic content is provided by an external data source like a database, a file, an arbitrary application or by the user. Such an external data source is read by **TFORMer** during printing. So-called data fields are used to access the external data. They serve as placeholders for dynamic content in the layout. To simplify usage, **TFORMer** provides a mapping mechanism to bind external data to the data fields used in a layout.

This data-centric output scheme is maintained in all cases. Even when printing pure static documents (like personal address labels without any dynamic data) a data source is required for controlling the number of printed labels.

Figure 1: Architectural Overview

Layouts created with **TFORMer Designer** are able to perform computations and to react on the values of data fields. Thus, **TFORMer** enables you to embed the complete output logic of a document into the layout.

3.3 Output Formats

Once a layout was designed it produces identical results across printer models, operating systems and formats. The following formats are supported:

- **Direct Printing**
  Print layouts directly on all printers supported by Microsoft® Windows®.
- **PDF**
  PDF-export with full-featured barcode support, Unicode and font embedding.
- **PostScript®**
  Used for printing under Linux/UNIX and for pre-press applications.
- **HTML**[1]
  The built-in HTML output is ideal for previewing and for web-based applications.

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[1] Due to the nature of HTML some output features may be limited or not available.

- **Image Formats**
  The built-in image output supports the formats BMP, GIF, JPG, PCX, PNG, TGA and TIF (including multipage TIF), as well as the vector format SVG. No additional software required.
- **ZEBRA®**
  Print to ZEBRA® printers without any additional driver. ZPL-II output is generated directly.
- **ASCII**
  Pure ASCII output without any graphics for special purpose requirements.

3.4   System Requirements

3.4.1   Operating Systems

TFORMer Designer requires one of the operating systems listed below. It works with 32-bit and 64-bit operating systems.

- Microsoft® Windows 7 SP1
- Microsoft® Windows 8 / 10 / 11
- Microsoft® Windows Server 2008 SP2 (including Terminal Server)
- Microsoft® Windows Server 2012 - 2022 (including Terminal Server)

TFORMer Designer includes the output kernel of the **TFORMer SDK**. This output kernel is available for Linux® and UNIX® as well. For details check out the Developer Manual.

3.4.2   Memory

1 GB RAM is the recommended minimum. Actual memory requirements depend on the type and size of the generated output.

3.4.3   Disk Space

TFORMer needs approximately 30 MB on disk. Please also consider .NET 4.5 requirements when using the .NET based API of the **TFORMer SDK**.

4   User Interface

This chapter will give you an overview of the **TFORMer** user interface.

4.1   Main Window
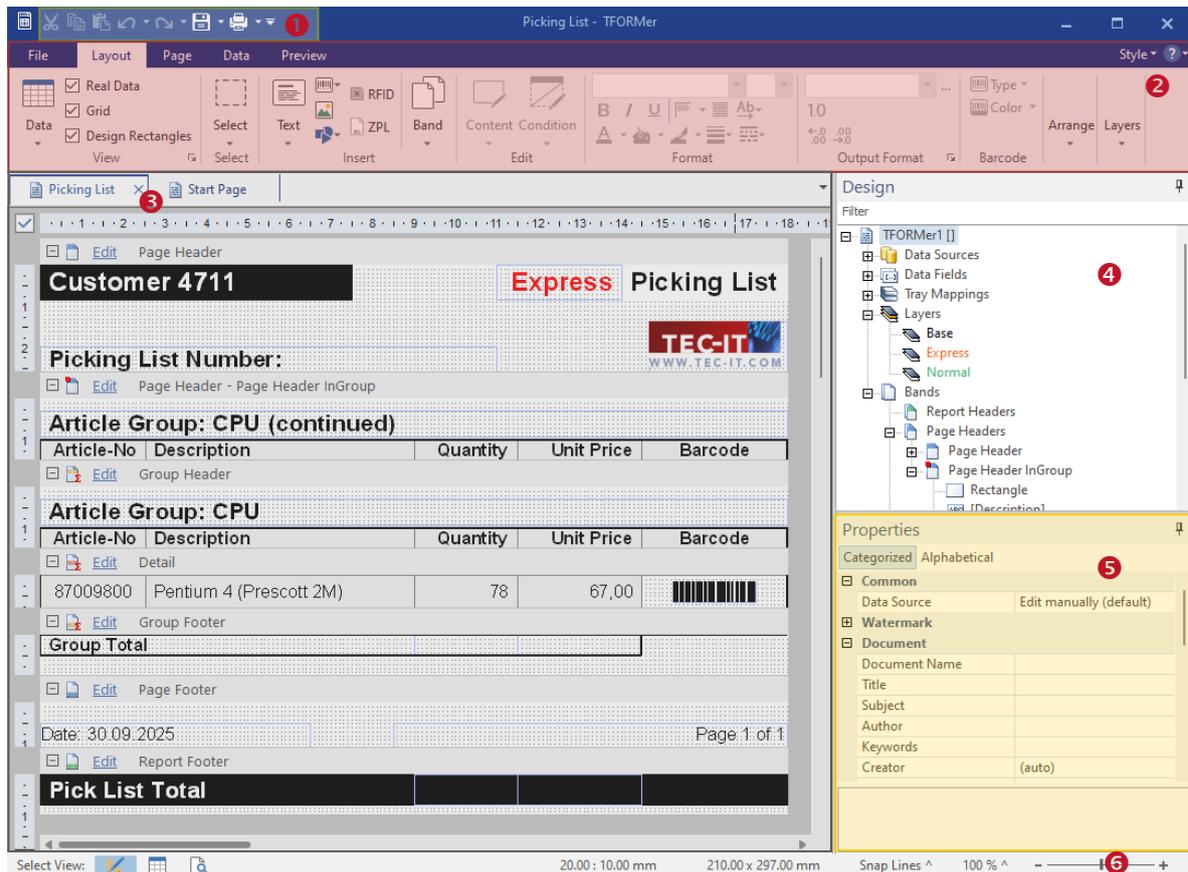
Figure 2: User Interface

The *main window* is divided into the following areas:

❶   Quick Access Toolbar (see 4.2).
❷   Ribbon Menu (see 4.3).
❸   Layout Window with Layout Tabs (see 4.4 and 4.8).
❹   Design Tree Window (see 4.5).
❺   Properties (see 4.6).
❻   Status Bar (see 4.7).

4.2   Quick Access Toolbar
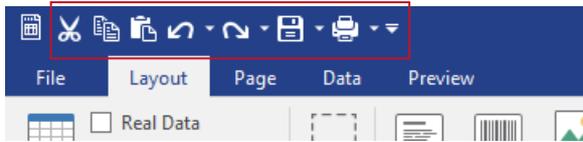
Figure 3: Quick Access Toolbar

The quick access toolbar gives you access to the following functions:

	Cut	Copies all selected objects (rectangles, texts, printing bands, data fields, ...) to the clipboard and removes them from the layout. Shortcut: *Ctrl+X*		
	Copy	Copies all selected objects to the clipboard. Shortcut: *Ctrl+C*		
	Paste	Inserts the content of the clipboard. Shortcut: *Ctrl+V*		
	Undo	Reverts the last change. Shortcut: *Ctrl+Z*		
	Redo	Reverts the last *Undo*. Shortcut: *Ctrl+Y*		
	Save	Saves the current layout. (Same as the "Save" command in the file menu, see section 4.3.1.) Shortcut: *Ctrl+S*		
	Print	Prints the current layout. (Same as the "Print" command in the file menu, see section 4.3.1.) Shortcut: *Ctrl+P*		
	…	Quick access for specific program settings:		
			Options…	Opens the options dialog (see chapter 16.6).
			Buy TFORMer	Launches the browser and navigates to the TEC-IT online shop.
			License…	Opens the licensing dialog (see also section 18.2).
			Check for Update…	Checks for new software updates.

4.3   Ribbon Menu

The ribbon menu gives you access to the functions below. The menu structure is divided into the following areas:

- File – see 4.3.1
- Layout – see 4.3.2
- Page – see 4.3.3
- Data – see 4.3.4
- Preview – see 4.3.5
- Repository (only on demand) – see 16.3

4.3.1 File
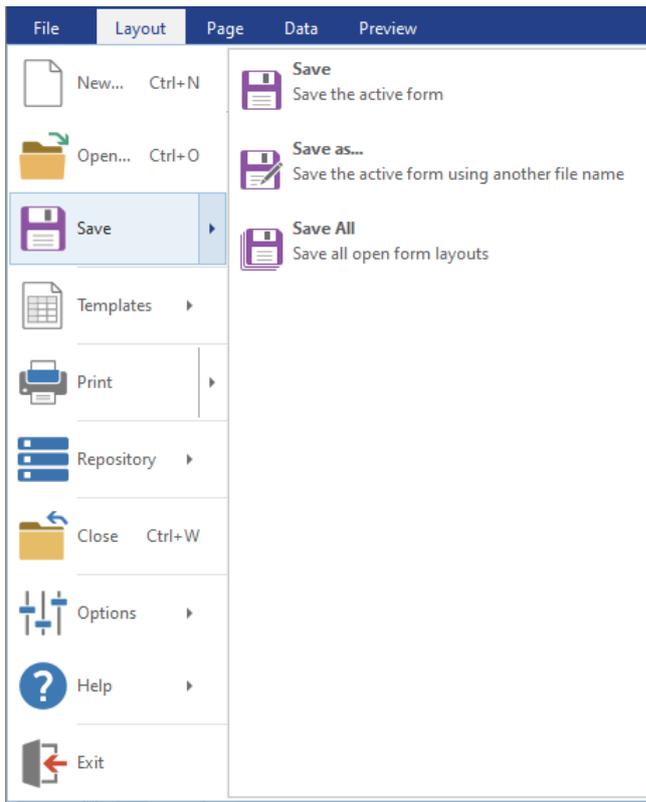
Figure 4: Ribbon Menu – File

	New…	Creates a new layout (see also section 6.2.2). Shortcut: *Ctrl+N*	
	Open…	Opens an existing layout (or repository) – see also section 6.2.1. Shortcut: *Ctrl+O*	
	Save	Save	Saves the current layout (see also section 6.2.4). Shortcut: *Ctrl+S*
		Save as…	Saves the current layout with a new name. You can also save layouts as ZIP-files. Shortcut: *F12*
		Save All	Saves all layouts (and repositories) that are currently opened. Shortcut: *Ctrl+Shift+S*
	Templates	Templates can be used as basis for new layouts.	
		Save as Template…	Saves the current layout as template.
		Organize Templates…	Organizes the templates in a hierarchical structure.
	Print…	Print	Prints the current layout (see also chapter 15). Shortcut: *Ctrl+P*
		Preview	Shows the current layout in the print preview (see also chapter 14). Shortcut: *Ctrl+Space*
	Repository	A repository is a central location for storing multiple layouts in a structured way (see chapter 16).	
		New Repository…	Creates an empty repository.
		Open Repository…	Opens an existing repository.
		Close Repository	Closes an open repository.

	Close		Closes the current layout. Shortcut: *Ctrl+W* or *Ctrl+F4*	
	Options…		Options…	Opens the options dialog window (see chapter 16.6).
			Buy TFORMer	Opens the TEC-IT online shop.
			License…	Opens the Licensing dialog for **TFORMer Designer** (see chapter 18).
			Check for Updates…	Checks if an update of **TFORMer Designer** is available.
	Help		See also section 4.3.6!	
	Exit		Exits **TFORMer.**	

4.3.2   Layout
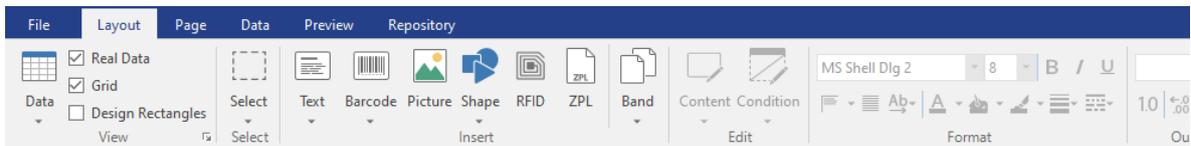
Figure 5: Ribbon Menu – Layout

4.3.2.1   View

	Data		Layout	Selects the layout view (see section 4.4.3). Shortcut: *Ctrl+L*
			Data	Selects the data view (*see* section 4.4.4). Use this view to manually edit the data or to import data from external data sources. Shortcut: *Ctrl+D*
			Preview	Selects the print preview (see section 4.4.5). Shortcut: *Ctrl+Space*
	Real Data		Shows real data or placeholders in the design view.	
	Grid		Shows or hides the grid (see also *General Settings*, section 17.2.2). Shortcut: *Ctrl+G*	
	Design Rectangles		Shows or hides the bounding rectangles for the single design elements.	

4.3.2.2   Select

	Select		Select	Normal selection mode. Allows the selection of elements via mouse click.
			All	Selects all elements in the layout.
			Document	Selects the document. (Required for editing specific properties – see also section 6.4)

4.3.2.3   Insert

	Text		Inserts a text element. A text element provides formatted text. The content may consist of static and dynamic data (see also section 8.3.1). Depending on the required content type choose one of the following options. Please note that the content and its type can be changed at any time (see section 9.3).	
			Data Field	Shows the content of a data field (without any additional information). (See also section 9.4.)
			Formatted Text	Shows an arbitrary formatted text, which may be enriched with data fields and expressions (see also section 9.5).
			Expression	Shows the result of an expression (see also section 9.8).

	Barcode	Inserts a barcode.	
		A barcode encodes the given data in a machine-readable form. The content may consist of static and dynamic data (see also section 8.3.2). Depending on your requirements choose one of the following barcode types. This type can be changed at any time (see section 4.3.2.6).	
		Recently Used	Choose from the most recently used barcode types.
		Linear Barcodes	Choose the barcode type by category.
		2D Codes	For more information on barcode types and their possible adjustments, please refer to the "Barcode Reference"
		Postal Codes	which is available for download on www.tec-it.com.
		GS1 DataBar	
		HIBC Codes	
	Picture	Inserts a picture.	
		The name of the image file may be specified as fixed text or computed (see also section 8.3.3).	
	Shape	Rectangle	Inserts a rectangle (see also chapter 8).
		Rounded Rect.	Inserts a rectangle with rounded corners.
		Ellipse	Inserts an ellipse.
		Line	Inserts a line.
	RFID	Experimental element (see also section 17.15).	
		For additional information, please refer to section 15.4.3.	
	ZPL	The ZPL element allows embedding of Zebra® Printer commands (ZPL II®) directly into the layout (see also section 15.4.2).	
	Band	Report Header…	Inserts a new band (see also chapter 7).
		Page Header…	
		Group Header…	
		Detail…	
		Group Footer…	
		Page Footer…	
		Report Footer…	

4.3.2.4 Edit

	Content	Edits the content of a text, barcode or picture element (see also chapter 9).	
		Edit…	Edits the element content. Shortcut: *Double-Click* the Element or press *F2*
		Data Field	Assigns one of the existing data fields or a new data field of the respective type as element content.
		Computed Field	
		Serial	
		Formatted Text / Text / File	Assigns a text (respectively a file name) as element content.
		Expression	Assigns an expression as element content.
	Condition	Edit…	Edits the printing condition for the selected object (band, element or layer) – see also section 12.2.
		Print	Removes the printing condition. Thus the object is always printed.
		Don't Print	Sets the printing condition to 0 (= *false)*. Thus the object is never printed.

4.3.2.5 Format

	Font	Arial	Selects the typeface.
	Font Size	12	Selects the font size (in points).

	Font Style		Bold	Toggles bold text on/off. Shortcut: *Ctrl+B*
			Italic	Toggles italic text on/off. Shortcut: *Ctrl+I*
			Underlined	Toggles underline on/off. Shortcut: *Ctrl+U*
	Alignment		Alignment	Sets the text alignment.
			Justify	Toggles text justification on/off.
			Direction	Specifies the text direction inside the text frame (in 90° steps).
	Coloring		Font Color	Selects the font color.
			Fill Color	Selects the fill color.
			Line Color	Selects the line color.
	Line Properties		Line Width	Sets the line width.
			Line Style	Sets the line style.

4.3.2.6 Output Format

	Output Format	Changes the output format for the selected text element (see also section 9.9). Can only be applied to unformatted content like "Datafield" or "Expression". Not applicable to "Formatted Text".	
		General	Selects the output format (e.g., General, Number, Decimal, Date, …)
		Thousands Separator	Quick adjustments for numeric output.
		Increase Decimal	
		Decrease Decimal	

4.3.2.7 Barcode

	Type	Changes the barcode type. You can choose between several 1D and 2D barcode types. For more information on available barcode types and their possible adjustments, please refer to the "Barcode Reference" which is available for download on www.tec-it.com.
	Color	Changes the barcode color.

4.3.2.8 Arrange

See also section 8.2.11.

	Align		Aligns two (or more) selected elements (see also section 8.2.11.1).	
			Left	Aligns the selected elements to the left. Shortcut: *Ctrl+←*
			Vertical	Aligns the selected elements vertically centered.
			Right	Aligns the selected elements to the right. Shortcut: *Ctrl+→*
			Top	Aligns the selected elements to the top. Shortcut: *Ctrl+↑*
			Horizontal	Aligns the selected elements horizontally centered.
			Bottom	Aligns the selected elements to the bottom. Shortcut: *Ctrl+↓*
	Vertical Spacing		Make Equal	Makes the vertical spacing between the selected elements equal.
			Increase	Increases the vertical spacing between the selected elements.

			Decrease	Decreases the vertical spacing between the selected elements.
	Horizontal Spacing		Make Equal	Makes the horizontal spacing between the selected elements equal.
			Increase	Increases the horizontal spacing between the selected elements.
			Decrease	Decreases the horizontal spacing between the selected elements.
	Size	Adjusts two (or more) selected elements in size (see also section 8.2.11.2).		
			Same Width	Applies the same width to all selected elements.
			Same Height	Applies the same height to all selected elements.
			Same Size	Applies the same size to all selected elements.
	Z-Order	Changes the order of overlapping elements (see also section 8.2.11.4).		
			Move to Top	Moves the selected elements to the foreground. Shortcut: *Ctrl+Pos1*
			Move Up	Moves the selected elements up one level. Shortcut: *Ctrl+Page Up*
			Move Down	Moves the selected elements down one level. Shortcut: *Ctrl+Page Down*
			Move to Bottom	Moves the selected elements to the background. Shortcut: *Ctrl+End*

4.3.2.9 Layers

	Base	Assigns all selected elements to the corresponding layer (see also section 12.3.2).
	New Layer	Creates a new layer (see also section 12.3.1).
	Show Layers	Toggles the display of layer colors on or off (see also section 12.3.3).

4.3.3   Page
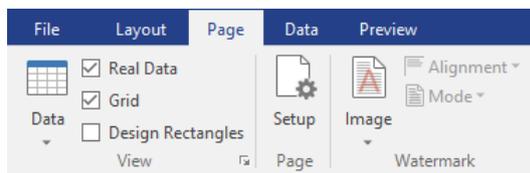
Figure 6: Ribbon Menu – Page

4.3.3.1 View

	Layout Data Preview	Switches to the respective view (see also section 4.4.2). Shortcuts: *Ctrl+L*, *Ctrl+D* and *Ctrl+Space*

4.3.3.2 Page

	Setup	Adjusts the page settings. The dimensioning can be adjusted manually or you can choose one of the many predefined templates. The dialog allows you to adjust the layout type, the paper format, the page orientation, the margins, and the appropriate partitioning when printing on label sheets. – See also section 6.2.3.

4.3.3.3 Watermark

	Image	Specifies a background image for the output page (= watermark). You can use a specific image file name or an expression which computes the file name during print-time.

			Edit…	Specifies either a fixed or a computed image file name.
			Select Image…	Selects the image via file dialog.
			No Watermark	Removes the background image.
	Alignment	Specifies the output position of the picture on the page:		

	Top, Left	Top, Center	Top, Right
	Center, Left	Center	Center, Right
	Bottom, Left	Bottom, Center	Bottom, Right

	Mode		Clip	Uses the image as is. Clipping may occur.
			Stretch	Stretches the image to fit the page size without maintaining the aspect ratio.
			Zoom	Zooms the image to the page size.
			Tile	Fills the page using tiles of the image.

4.3.4   Data
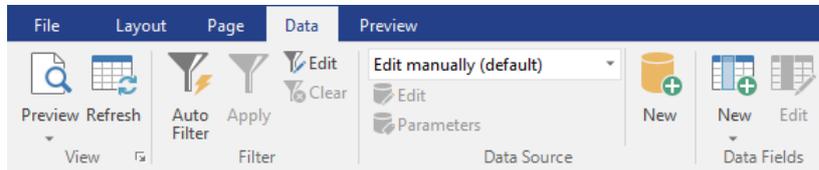
Figure 7: Ribbon Menu – Data

4.3.4.1   View

	Layout **Data** **Preview**	Switches to the respective view (see also section 4.4.2). Shortcuts: *Ctrl+L*, *Ctrl+D* and *Ctrl+Space*
	Refresh	Reloads the data from the data source. Shortcut: *F5*

4.3.4.2   Filter

See also section 13.6.

	Auto Filter	Creates a new filter which is based on the current selection in the data grid (see also section 13.6.1.2). If you want to filter for a specific value, place the cursor inside the row and on the value for which you want to filter. Then click Auto Filter. You can also click on a line number on the left side and then filter for the whole row. Please note that multiple selection is possible (hold down the *Shift* or the *Ctrl* key). You can also filter several times in order to refine the result.
	Apply	Enables or disables the filter (see also section 13.6.1.2).
	Edit	Edits the filter expression (see also section 13.6.1.1).
	Clear	Removes the existing filter.

4.3.4.3   Data Source

		Selects an existing data source or creates a new one (see also sections 13.3.2.6 and 13.3.2.1).
	Edit	Edits the current data source (see also section 13.3.2.3).
	Parameters	Edits the data source parameters (see also section 13.5.2.3).
	New	Creates a new data source (see also section 13.3.2.1).

4.3.4.4   Data Fields

	New	Inserts a new data field (see also section 10.2.1.1).
	Edit	Edits the selected data field (see also section 10.3).

4.3.5   Preview
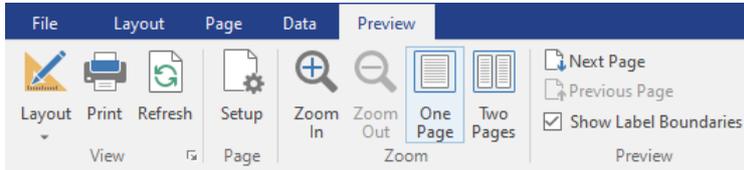
Figure 8: Ribbon Menu – Preview

4.3.5.1   View

	Layout Data Preview	Switches to the respective view (see also section 4.4.2). Shortcuts: *Ctrl+L*, *Ctrl+D* and *Ctrl+Space*
	Print	Prints the layout on a printer of your choice or generate file output (PDF, PostScript®, HTML, Text). Shortcut: *Ctrl+P*
	Refresh	Refreshes the preview. Shortcut: *F5*

4.3.5.2   Page

	Setup	See also sections 4.3.3.2 and 6.2.3. Shortcut: *Ctrl+Shift+P*

4.3.5.3   Zoom

	Zoom In	Selects the zoom factor. You will find the selected zoom factor shown next to the zoom symbol in the status bar:
	Zoom Out	Shortcut: *Ctrl++, Ctrl+–* or *Ctrl+Mousewheel*
	One Page	Switches to single page preview mode.
	Two Pages	Switches to two page (side by side) preview mode.
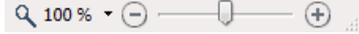
4.3.5.4   Preview

	Next Page	Shows the next page in the preview.
	Previous Page	Shows the previous page in the preview.
	Show Label Boundaries	Enables or disables the display of the label boundaries.

4.3.6   Help
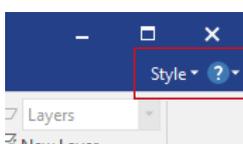
Figure 9: Ribbon Menu – Help

Style ▾	**Style**		Specifies the style respectively color scheme for the **TFORMer Designer** user interface.
❓	**Help**	Help	Displays the **TFORMer** manual. Shortcut: *F1*
		Online FAQ	Opens the default browser and navigates to the **TFORMer Designer** frequently asked questions web page.
		Examples	Opens the directory with the included sample files.
		TEC-IT Website	Opens the page www.tec-it.com in the default web browser.
		About TFORMer...	Displays information about **TFORMer Designer** and the program version.

4.4 Layout View, Data View and Preview

4.4.1 Introduction

TFORMer Designer provides three different views for documents:

- Layout View (see section 4.4.3)
- Data View (see section 4.4.4)
- Preview (see section 4.4.5)

The default view is the *layout view* (see 4.4.3). It is used to create the layout. The layout usually utilizes data fields (like *[ProductGroup]*, see figure below) as placeholders for the data. For details regarding data fields, please refer to chapter 10.

The data for the data fields is provided by a data source. The data source can be edited in the *data view* (see section 4.4.4).

TFORMer also offers a *preview*, which instantly renders the resulting output using the layout and the data of the adjusted data source (see section 4.4.5).
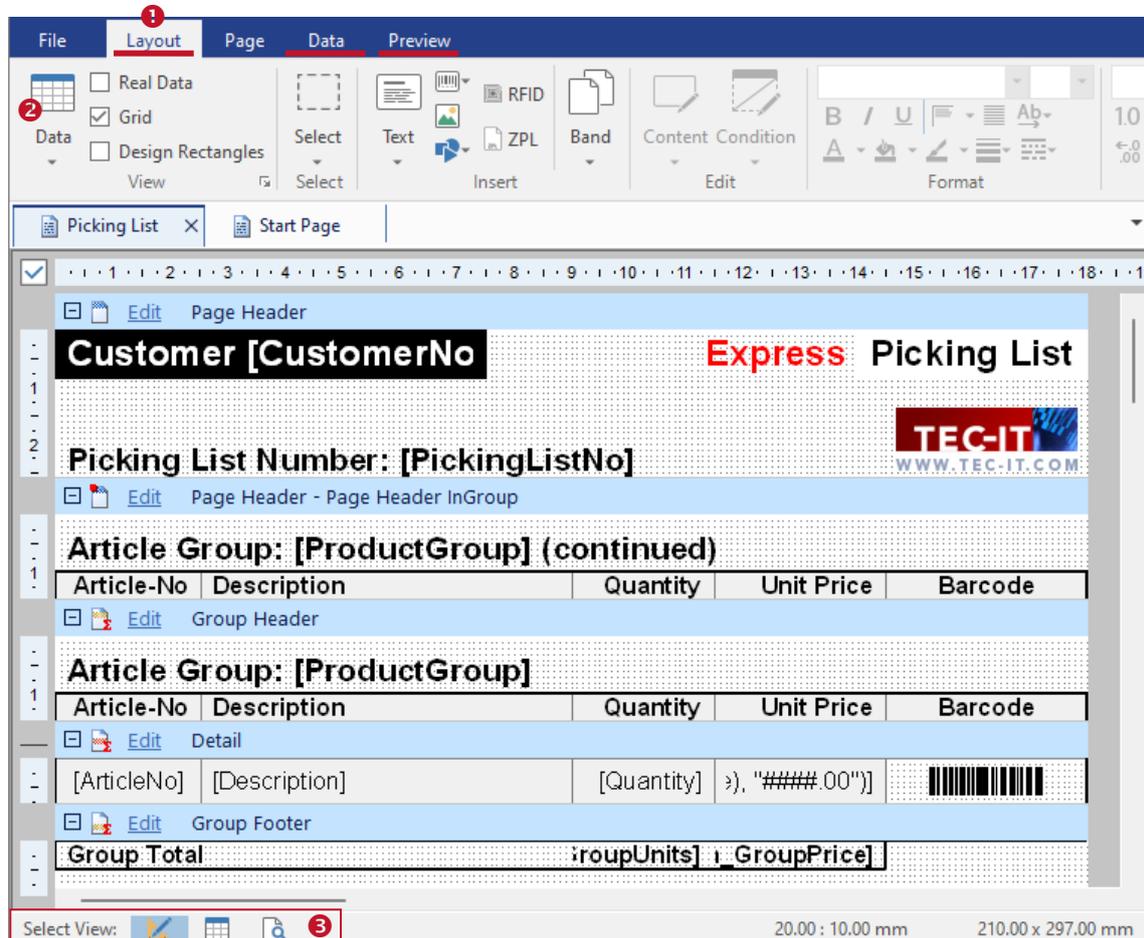
Figure 10: Layout View, Data View and Preview

4.4.2 Switching Views

You can switch between the layout view, the data view and the preview by clicking the corresponding tabs in the ribbon menu (❶) or by selecting the required view via button ❷. Alternatively, you can also click on the respective symbol in ❸.

4.4.3   Layout View

The *layout view* is used to create layouts:
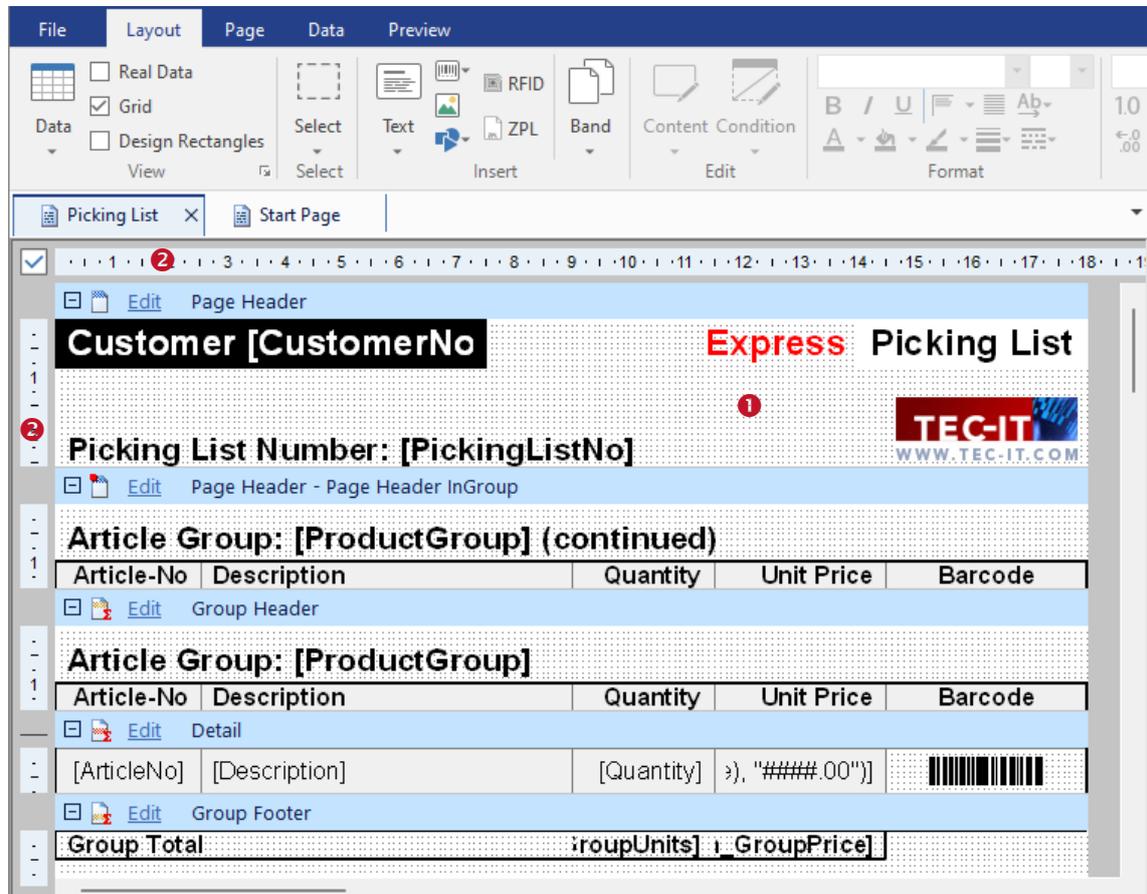
Figure 11: Layout View

On the worksheet ❶ you can place all kinds of graphical elements like text elements, lines, rect-angles, barcodes and images. Such elements can be moved, resized or deleted. Furthermore, you can add and remove single print areas like page headers and page footers. These areas are called bands (see chapter 7).

On the left and on the top of the layout there are rulers (❷) which assist you when positioning elements. After starting **TFORMer Designer** for the first time, the measuring unit is set to *"System (Default)"*. You can change this value in the options dialog (ribbon menu *File ► Options… | Options…*).

Using the popup selection or the zoom slider 100 % ^ – ——┼—— + on the bottom right side of the application window it is possible to zoom the layout. You can also adjust the zoom factor via the hotkeys *Ctrl++* and *Ctrl+-*, or by holding down the *Ctrl* key and by simultaneously turning the *mouse wheel*.

For more information on how to design layouts, please refer to chapters 6 to 12.

4.4.4 Data View

The *data view* is used to administrate data sources. You can create, switch and modify data sources. Furthermore, the content of the active data source is shown. This is the data which is used for printing the layout.

Figure 12: Data View

The *data view* mainly consists of a data grid showing the current data (❶). Use the navigation buttons in ❸ to select rows or to jump to a specific row in the data source. In ❷ you will find functions for manipulating and selecting data sources. When checkbox ❹ is activated all data fields which are not used in the layout will be hidden.

By default, **TFORMer** assigns a manual data source to a newly created layout. This means that you can enter values for data fields manually in the grid. It is also possible to create and edit other types of data sources (e.g., ODBC database access). For more information regarding the data view, please refer to section 13.2.

4.4.5 Preview

This view shows an instant *preview* of the output using the selected data source.
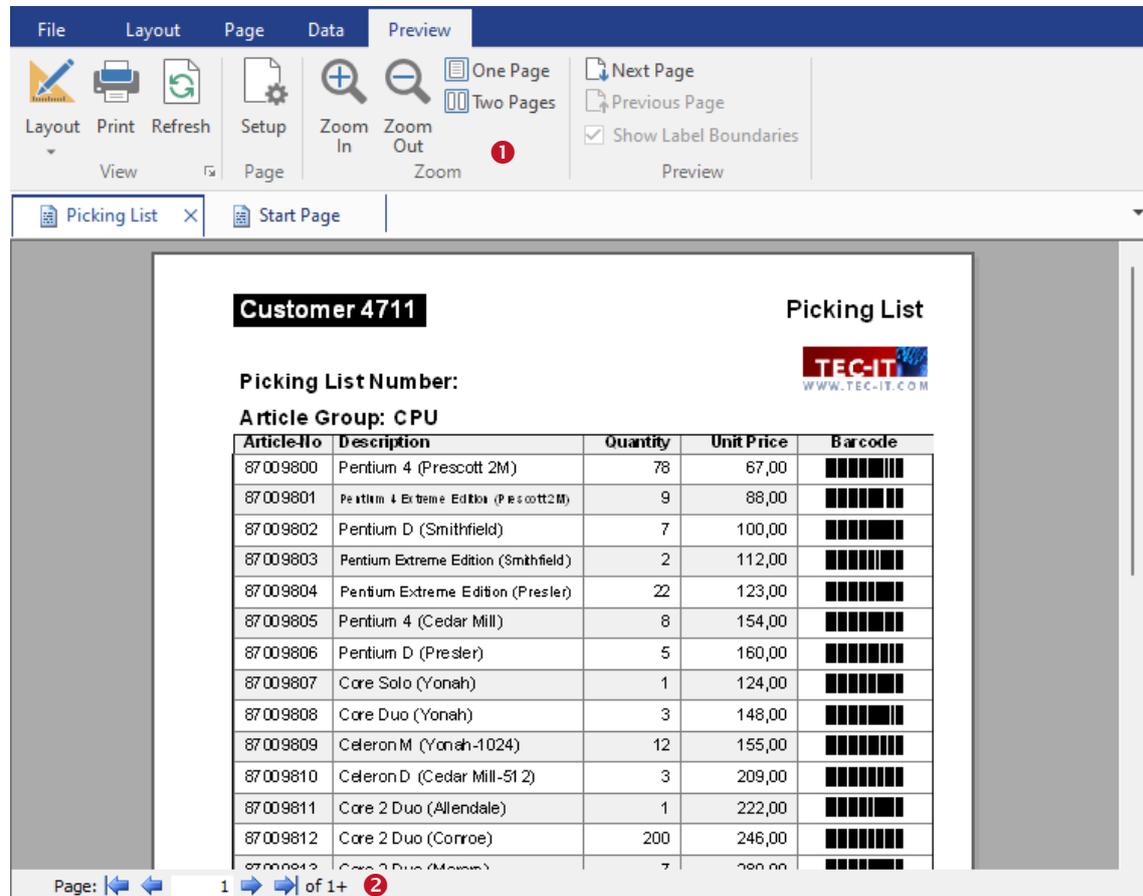
Figure 13: Preview

Use the functions in ❶ to change the zoom factor, switch between single page or double-page preview and show/hide label boundaries. The buttons in ❷ allow you to navigate between pages or to jump to a specific page. For details, please refer to chapter 14.

4.5   Design Tree Window

4.5.1   Layout Tree

The *design tree window* shows a structured view of the layout. It lists all objects in a single place and allows the selection of objects per mouse click. Even such elements, which are occluded in the design view, can be selected in the design tree easily.
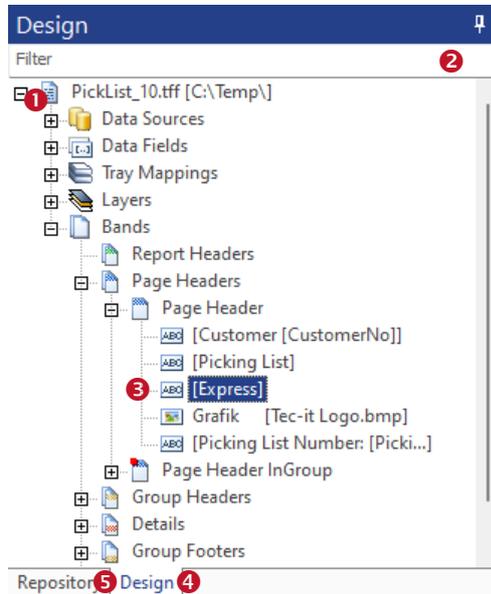
Figure 14: Design Tree Window   Figure 15: Delete a Data Source
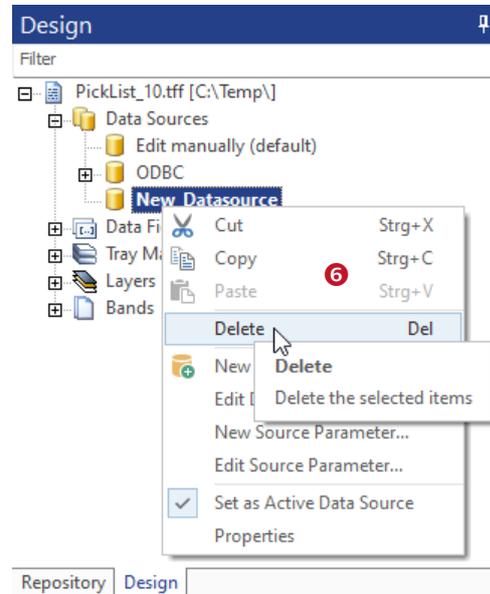
The tree ❶ lists all objects in a hierarchical structure. You can expand single branches of the tree by clicking the ⊞ symbol and you can collapse them by clicking the ⊟ symbol.

The filter ❷ allows you to quickly find elements. If you filter for a data field name (such as "Arti-cleNo"), the tree view will only show the desired data field, and all elements where the data field is used.

To select an object, click on it with the left mouse button. Hold down the *Shift* key or the *Ctrl* key for multiple selection. Figure 14 shows a selected text element (❸), which is located in the page header of a layout called "PickList_10.tff".

Right-clicking on a tree item opens a context menu (see Figure 15, ❻). The context menu offers various functions for the selected object.

If **TFORMer** encounters an error in a user defined computation, the affected tree item is drawn red. For more information, please refer to section 10.4.

4.5.2   Repository Tree

If a repository is used, a second tab will be shown next to the *Design* tab ❹. Clicking tab ❺ switches to the tree view of the *Repository*. A repository is a central database for layouts, data field defini-tions and tray-mappings. For details, please refer to chapter 16.

4.6 Properties

The complete layout structure in **TFORMer** is based on objects (bands, text boxes, data sources, etc.). To adjust the properties of such objects the properties window is used. For a completive list of all object properties, please refer to Appendix A.

The properties of the following objects can be modified:

- Forms
- Bands
- Elements (graphical design elements)
- Data Sources and Source Parameters
- Data Fields
- Layers
- Tray Mappings
- Projects (Repository)
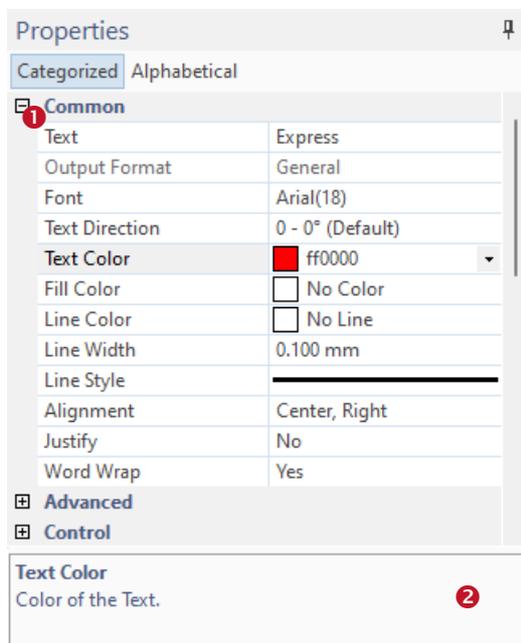
Figure 16: Properties Window

All properties are grouped into categories (like *"Common", "Advanced"* or *"Position",* see ❶). The categories help you to locate properties more easily.

Properties are accessible as "field:value" pairs. E.g., the property *"Text"* is currently set to "Express". The color (*"Text Color"*) is set to red.

The area ❷ shows information on the selected property.

> ► **TFORMer Designer** supports multiple object selection. This can be used to change the properties of multiple objects simultaneously. A change will be applied to all objects within the selection.

4.7 Status Bar

The status bar displays information about position and measurement of the selected design element. Furthermore, you can switch between the different views, change the raster settings and modify the zoom factor for the layout view.

Figure 17: Status Bar

❶ allows to switch between the design view, the data view and the preview (see also section 4.4).

❷ shows the coordinates of the upper left corner of the selected element (or of the element with the mouse focus).

❸ shows the dimensions of the selected element (or of the element with the mouse focus). The measuring unit used for displaying positions or dimensions can be adjusted in the options dialog (menu *File ► Options… | Options…*).

❹ adjusts positioning mode and raster settings.

❺ shows the current zoom factor for the layout view. The zoom factor can be adjusted via the drop-down menu, by pressing the buttons ⊕ and ⊖, or by dragging the zoom slider. Alternatively, you can change the zoom factor by pressing *Ctrl++* and *Ctrl+-,* or by using the shortcut *Ctrl+Mousewheel.*

4.8 Layout Tabs

When working with multiple layouts, each of these layouts is represented by a tab (see ❶). To switch between layouts, click on the corresponding tab in ❶ or use the layout picker ❷. To close the current layout, click on the ✕ symbol inside the tab or use the keyboard shortcut *Ctrl+W*.
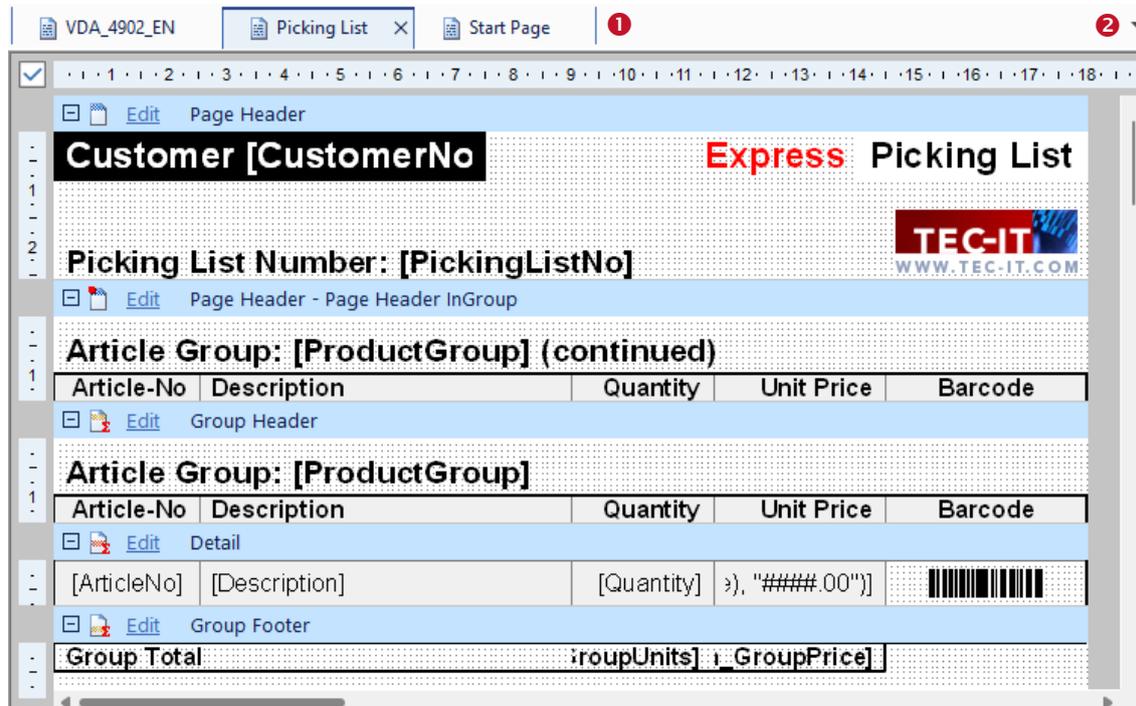
Figure 18: Change Layouts quickly by using Tabs

5   Printing Concept and Workflow

5.1   Introduction

TFORMer uses one universal output concept to produce all different kinds of outputs like:

- Reports – a table, a list or a letter usually spanning multiple pages.
- Label sheets – a layout which is printed repeatedly in multiple rows and columns on each page.
- Single labels (Label Printer) – a layout which is printed once on each page. One page is one label.
- Hybrid Layouts – a mix of the first two variants.

The output concept is based on the logical separation of the *layout* (❶) into different printing areas (e.g., report header, page header, detail area, page footer and report footer). Such a printing area is called *band.*

Each of these bands fulfills a specific purpose. By combining bands and by adjusting their properties, different layout schemes can be produced. The figure below illustrates the printing of a simple report (❷).
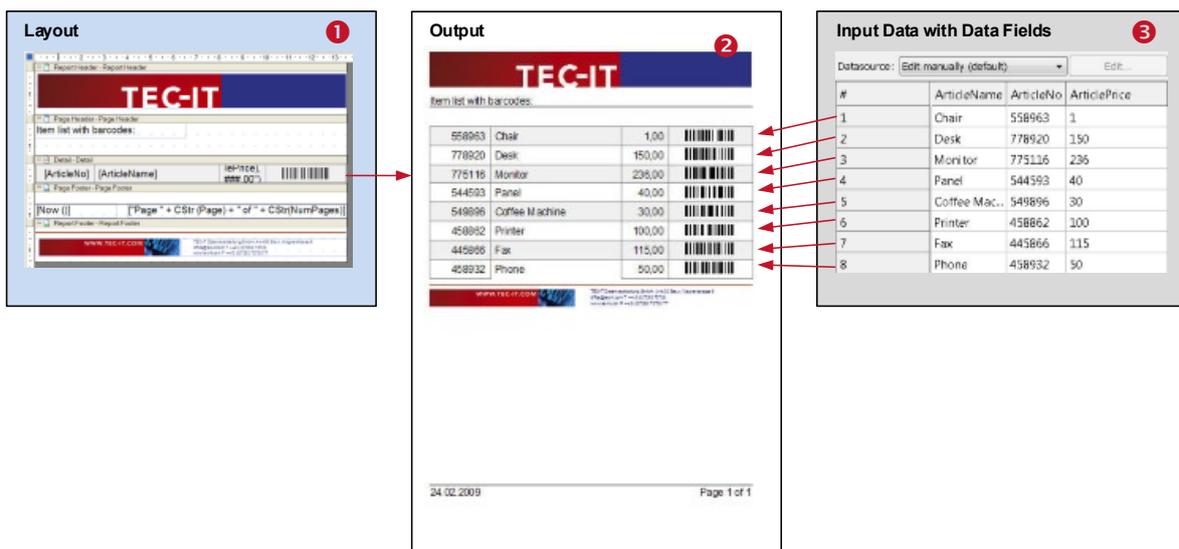
Figure 19: Printing Concept

In contrast to a word processor which is mostly used for static content, a report generator like **TFORMer** generates output based on dynamic data. Good examples for dynamic contents are the article numbers on product labels, the addresses in serial letters and the order positions in invoices.

The dynamic content is usually provided by an external *data source* (❸). This is either a text file, a database, an arbitrary application or user specified data.

5.2   Rendering the Layout

Each print-out is based on the form layout. The form layout uses different design elements like text elements, barcode elements, shapes and pictures which are placed on bands (see Figure 20, ❶).

When generating the output, each of the bands will be rendered repeatedly: Usually a *detail band* is rendered for each single record (see Figure 20, ❷) of the data source. *Page header* and *page footer* are rendered at the top respectively bottom of each page automatically (see Figure 20, ②).

The *report header* and the *report footer* are printed at the beginning and at the end of the report (see Figure 20, ①). In this way the output is assembled.
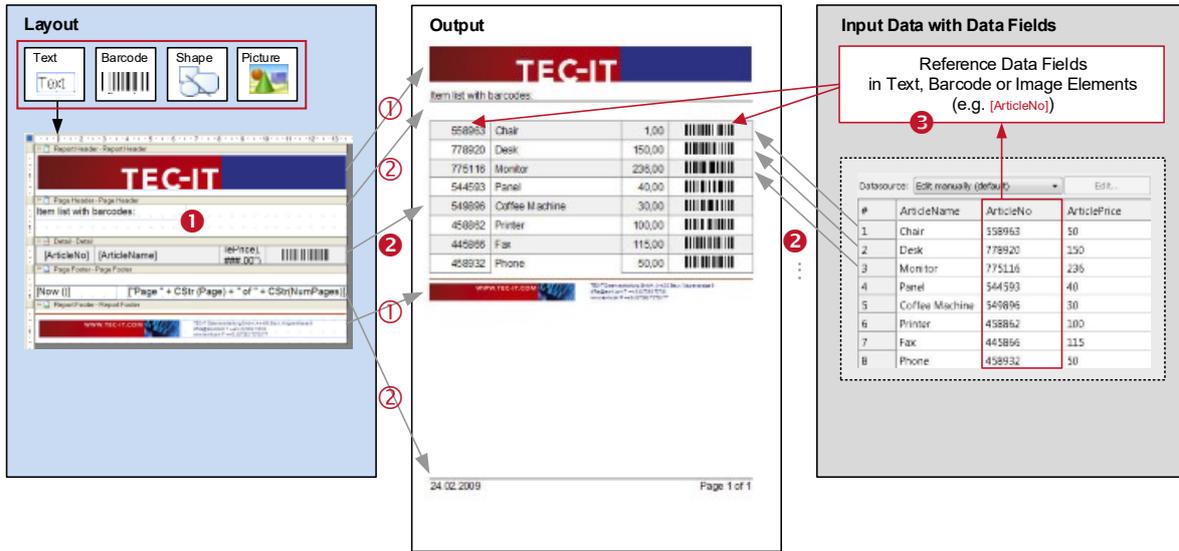
Figure 20: Rendering the Layout

For providing the content you have various possibilities: Text, barcode and image elements can be filled with fixed data. Aside from that they can also reference the fields in a data source. Such references will be resolved during print time and the actual data is inserted (see Figure 20, ❸). However, not only the fields in the data source may be used to provide dynamic data. **TFORMer** also provides system fields (e.g., the current page number) and functions (e.g., the current date), and you can perform your own arbitrary computations. Besides that, you can easily create your own serial numbers and use them in the layout.

5.3   Data Source Concept

For generating output **TFORMer** requires data. The records and the data fields control the content and the appearance of the output. As a rule of thumb **TFORMer** prints one detail band per record of the data source.

Please note, that this data-centric output scheme is maintained in all cases, even when printing pure static documents like personal address labels. In this case the number of records (or the copy counter for records) controls the number of printed labels.

A data source can be seen as a simple table, which is read row by row (record by record) by **TFORMer** during printing. Each *record* (each row) provides the values for one or more *data fields* used in the layout (e.g., "ArticleName", "ArticleNo" and "ArticlePrice").

Figure 21: Data Source Concept

5.4 Reading a Data Source and Printing Bands

TFORMer processes an output request in the following way:

A data source is read record by record in the native order of the data source. **TFORMer** does not change the order of the records.

After starting a print-job the first record is loaded. If no record exists **TFORMer** does not produce any output.

Then, for each available data record, **TFORMer** internally iterates through all bands in the layout. Whether a band should be printed on the current printing position on the output page depends on the following rules:

- If the current record is the first record of the input data, all defined *report headers* are printed.
- If the current record is the first record within a group, all defined *group headers* are printed.
- All defined *detail bands* for the current record are printed.
- If the current record is the last record within a group, all defined *group footers* are printed.
- If the current record is the last record of the input data, all defined *report footers* are printed.
- Printing *page headers* and *page footers* is triggered automatically. It works completely independent from the current record.

► Keep in mind that **TFORMer** supports multiple bands of the same type in one layout (e.g., multiple page headers).

► Whether a specific band is printed or not can be controlled via printing conditions.

For more information on bands, please refer to chapter 7.

5.5 Typical Workflow

The typical workflow when designing a new layout is outlined below.

5.5.1 Identify Dynamic Data

The first step before creating a layout is to identify the static and dynamic content of the layout. Dynamic content is usually provided by the user or by external data sources via placeholders. These placeholders are called data fields and are filled with current values during print-time.

5.5.2 Layout Design

To create the layout, you either modify one of the numerous available templates, or you create your own layout.

Layouts are composed of different logical areas called bands. When designing a layout, you can combine different bands to create different layouts schemes. Each band can contain different graphical elements (text elements, barcode elements, shapes and images). Dynamic features (e.g., printing conditions) give you additional control over the output.

For more information on designing layouts, please refer to chapters 6 to 12.

5.5.3 Provide Data

Before you can generate any output, you have to specify the data to be printed. The data can be provided in different ways:

- It can be edited manually.
- It can be imported from an external file or from a database.
- It can be provided programmatically via the **TFORMer SDK**.

For more information on providing data, please refer to chapter 13.

5.5.4 Generate Output

Once you have designed your layouts you can assign different data sources to generate output with different content. For details, please refer to chapter 15.

6 Documents (Forms)

6.1 Introduction

TFORMer documents are also called forms. A form contains the graphical design (the layout), which consists of one or more vertical areas holding all graphical design elements. Furthermore, it contains all data fields, data sources, tray mappings and layers.

6.2 Basic Operations

6.2.1 Open an Existing Document

To open an existing document, select *File ► Open…* from the menu or press the keyboard shortcut *Ctrl+O*. Then select the requested file and press *OK* to confirm.

Alternatively, you can double-click on the .tff or .tfz file in the Windows Explorer, or drag the file from the Explorer to the **TFORMer** window.

> Please note:
> ► The *.tff* file format stores the form layout.
> ► The *.tfz* file format is a compressed container format (ZIP file) that stores the layout (.tff), the default print data (.xml) and all embedded images in a single file.

6.2.2 Create a New Document

To create a new document, select *File ► New…* from the menu or press the keyboard shortcut *Ctrl+N*. The following wizard will appear:
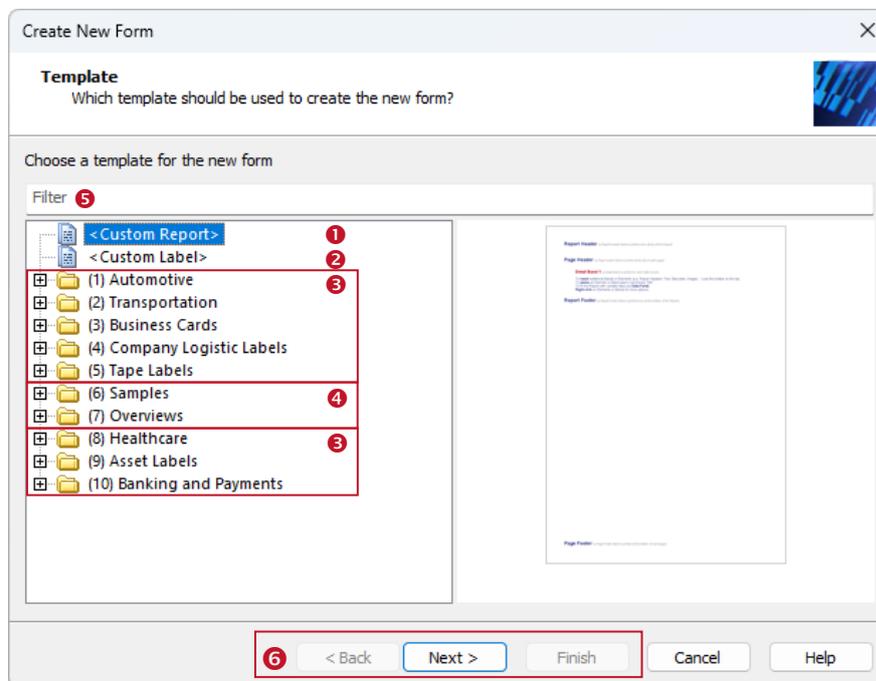
Figure 22: Create a New Document

Select the template that you want to start with. Choose between:

❶ Custom report (see section 6.2.2.1).
❷ Custom label (see section 6.2.2.2).
❸ Ready-to-use label or report templates for industry, logistics and the medical branch.
❹ Sample and overview layouts, demonstrating the functionality of **TFORMer.**

The categorized list and the filter function in ❺ help you to find the required template. Select an item and confirm your selection with *Next* respectively with *Finish* (see ❻). If all required adjustments are done, the according layout will be opened in the design window.

The layout can be adapted to your needs by adding, removing or modifying bands and design elements.

6.2.2.1   Custom Report

If you want to design your own report, choose *<Custom Report>* and click *Next.* The following wizard will appear:

Figure 23: Simple Report – Page Settings

Choose the desired layout type in ❶. Normally this is the type *Simple Report*.

Then specify the *page size,* the *orientation* and the *page margins* in ❷.

Click *Finish* ❸ to open the layout.

The following layout was created with the settings as shown above. Reports typically have a *report header,* a *page header,* followed by a list of *data records (detail bands),* a *page footer* and a *report footer.* Upon creation of the new report 10 records are inserted automatically. For each of these records **TFORMer** generates one "row" in the report.
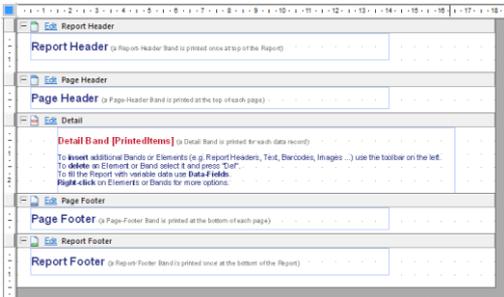
Figure 24: Simple Report – Layout View

Figure 25: Simple Report – Print Preview

6.2.2.2 Custom Label: Label Sheet

If you want to design your own label for laser or inkjet printers (e.g., Avery® standard label formats), choose *<Custom Label>* and click *Next.* The following wizard will appear:
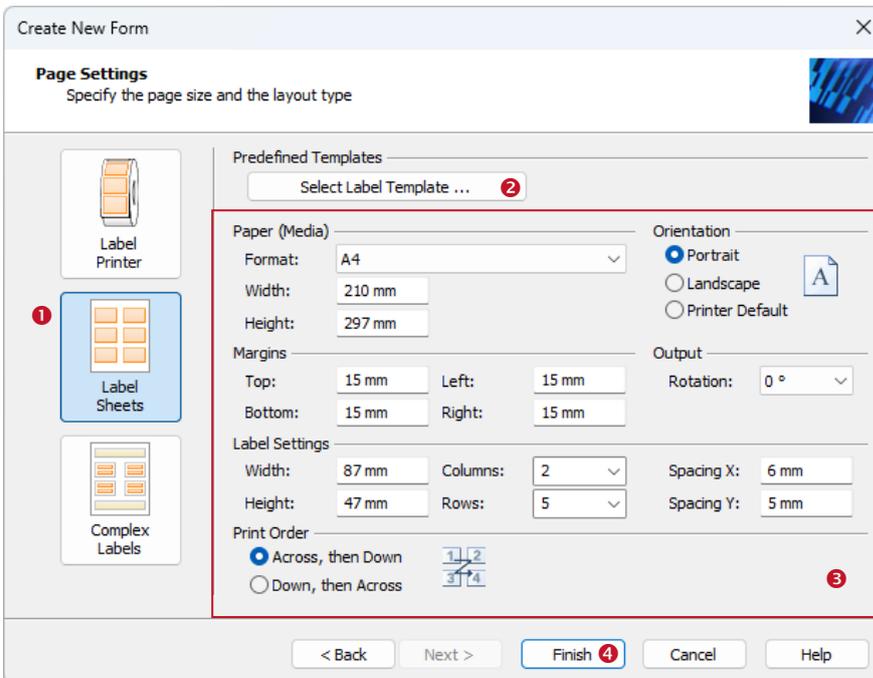
Figure 26: Label Sheets – Page Settings

Choose the layout type *Label Sheets* ❶ (= print multiple labels on one output page).

In ❸ you specify the *paper size,* the *page orientation* and the *page margins.* Furthermore, you can specify the *label dimensions,* the number of *rows* and *columns* (= the number of labels per page), the *row-* and *column-spacing* and the *printing order* for the labels.
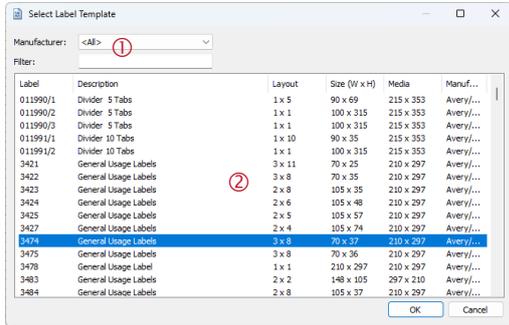
In order to select one of the predefined label templates use the button *Select Template…* ❷. The selection dialog shows a list of all available format definitions (see figure on the left). Use the filter ① to narrow down the selection. After you have chosen the desired format in ② confirm with *OK*.

Click *Finish* ❹ to open the layout.

The following layout was created using the settings as shown above (3 columns, 5 rows, label dimensions of 6 cm x 5 cm, row-and column-spacing each 2 mm). Labels typically use the *detail band* only. No page headers or footers are used by default. Upon creation of the new label some records are inserted automatically. For each of these records **TFORMer** generates one label.
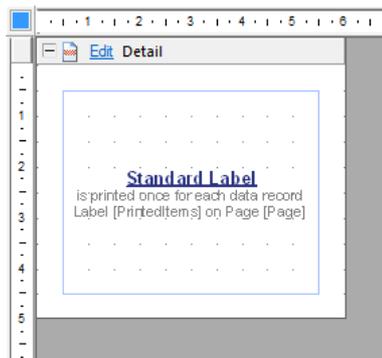
Figure 27: Label Sheets – Layout View

Figure 28: Label Sheets – Print Preview

6.2.2.3   Custom Label: Label Printer

For printing labels with label printers (e.g., thermo transfer printers), choose *<Custom Label>* and click *Next.* The following wizard will appear:
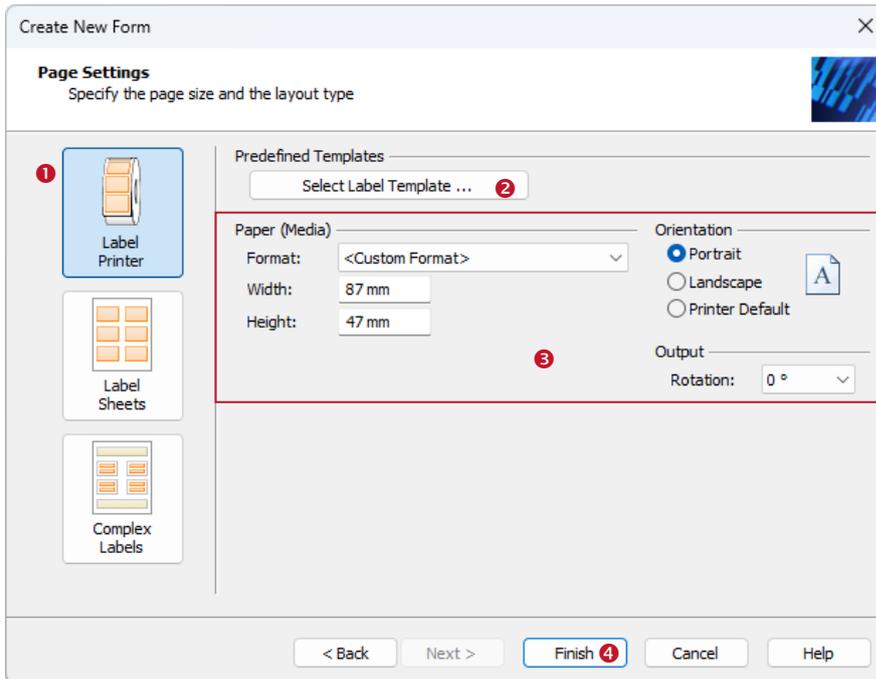
Figure 29: Label Printer – Page Settings

Choose the layout type *Label Printer* ❶ (= the output page is the label).

In ❸ you specify the *label size and* the *page orientation.*
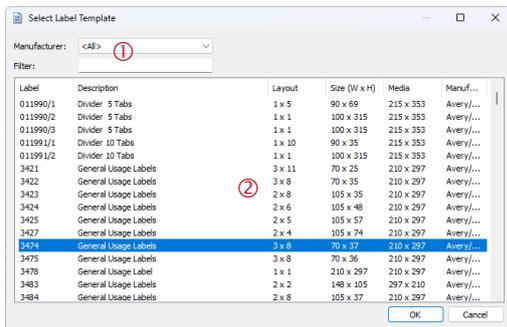
In order to select one of the predefined label templates use the button *Select Template… ❷*. The selection dialog shows a list of all available format definitions (see figure on the left). Use the filter ① to narrow down the selection. After you have chosen the desired format in ② confirm with *OK*.

Click *Finish ❹* to open the form

The following layout was created using the settings as shown above (label dimensions of 6 cm x 5 cm). Labels typically use the *detail band* only. No page headers or footers are used by default. Upon creation of the new label one record is inserted automatically. Unless you insert more records **TFORMer** will generate exactly one label.
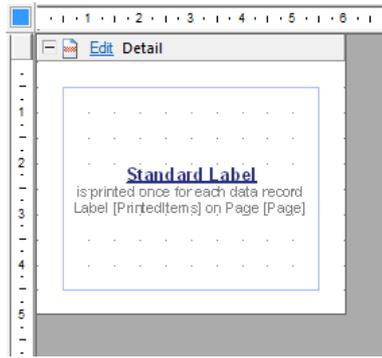
Figure 30: Label Printer – Layout View

Figure 31: Label Printer – Print Preview

6.2.3 Page Setup

If you want to adjust the page setup for the opened layout select *Page ► Common | Setup* from the menu or press the keyboard shortcut *Ctrl+Shift+P*. Alternatively, you can also double-click on the gray area around the layout. The following dialog appears:
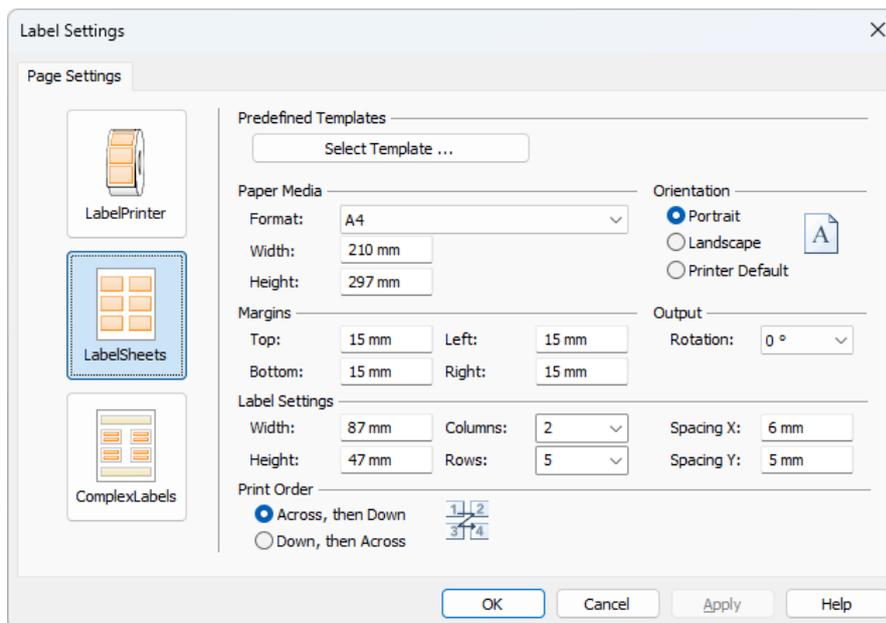
Figure 32: Page Setup

On this dialog you can do all necessary page adjustments. You can change

- the layout type,
- the paper format and the page orientation
- and the page margins.
- For labels you can additionally adjust the row- and column- settings and the print order (*"Across, then Down", "Down, then Across"*).

► For labels you can access a large number of predefined formats by clicking *Select Template…*.

Using the page setup dialog you specify the exact page layout:
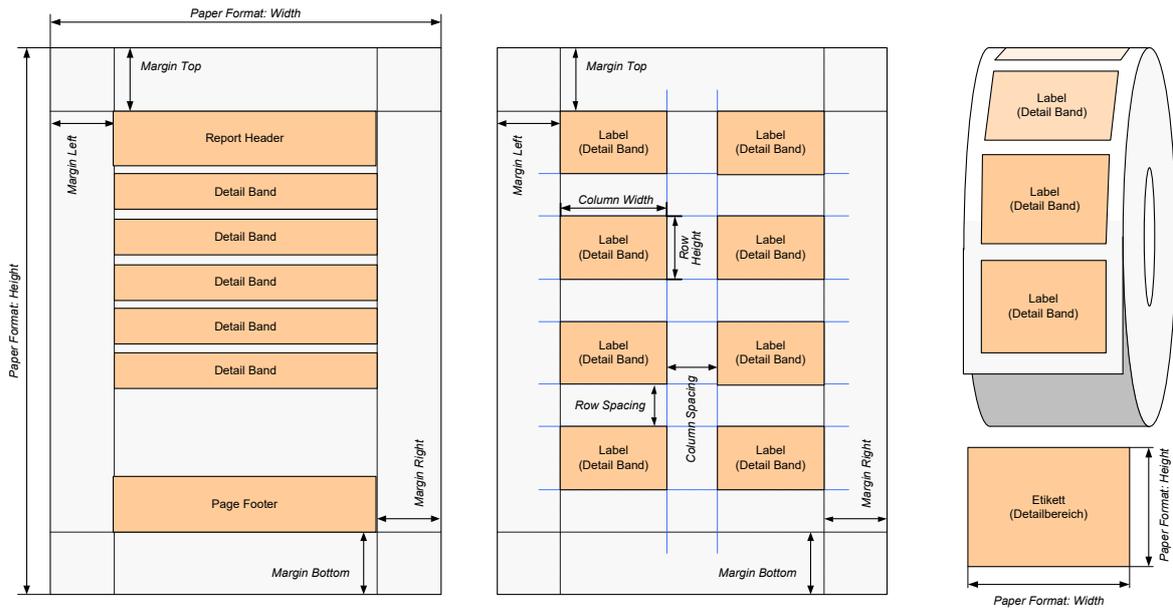
Figure 33: Page Setup for Standard Reports, Label Sheets, and Label Printers

For more information about different layout variations please refer to Appendix D.

6.2.3.1 Paper Media

Property	Description
Format	The paper format (e.g., DIN A4, DIN A5, …, <Custom Format>).
Width	The paper width.
Height	The paper height.

6.2.3.2 Margins

Property	Description
Top	The page margins are used to confine the printing area on the output page. They are specified with respect to the physical borders of the output page.
Bottom	
Left	
Right	

6.2.3.3 Orientation

Property	Description
Orientation	The page orientation: ▪ Portrait ▪ Landscape ▪ Printer Default (uses the orientation, which is adjusted in the printer driver)

6.2.3.4 Output

Property	Description
Rotation	Output rotation (0, 90, 180 or 270 degrees, counter clockwise). Instead of rotating the output page (portrait, landscape) you can also rotate the output on the page.

6.2.3.5 Label Settings

In order to print multiple labels on one output page (e.g. business cards on an A4 page) you have to specify the size of the labels and the desired number of labels per page:

Property	Description
Width	The width of the label.
Height	The height of the label.
Columns	The number of labels which is printed besides each other. (If set to *auto*, the maximum number of columns that fit on the output page will be selected automatically.)
Rows	The number of labels which is printed underneath each other. (If set to *auto*, the maximum number of rows that fit on the output page will be selected automatically.)
Spacing X	The horizontal spacing between the labels.
Spacing Y	The vertical spacing between the labels.
Print Order	The print order defines the order (*"Across, then Down"* or *"Down, then Across"*) in which the labels are printed on the output page. This setting is only available when printing multiple rows and columns (see also 6.2.3.4).

6.2.4   Save a Document

To save an open layout select *File ► Save* from the menu or click on the icon 💾 ▾ in the quick access toolbar:

💾	**Save**	💾	Save	Saves the current layout. Shortcut: *Ctrl+S*
		💾	Save as…	Saves the current layout with a new name. You can also save layouts as ZIP-files. Shortcut: *F12*
		💾	Save All	Saves all layouts (and repositories) that are currently opened. Shortcut: *Ctrl+Shift+S*

> Please note:
> ► The *.tff* file format stores the form layout.
> ► The *.tfz* or *.zip* file format is a compressed container format (ZIP file) that stores the layout (.tff), the default print data (.xml) and all embedded images in a single file. Both of these two selectable options are the same file type. They just use different file extensions.

6.2.5   Switch between Documents

To switch between open forms just click on the corresponding tab in the layout window. Alternatively, you can use the layout picker ▾. Using the keyboard shortcut *Ctrl+Tab* you will switch to the next layout tab. *Ctrl+Shift+Tab* switches to the previous tab.

6.2.6   Close a Document

There are different ways to close an open document:

- Click on the small ✕ in the layout window tab (see section 4.8, ❶).
- Select *File ► Close* from the menu.
- Click with the right mouse button on the form (either in the layout window or in the design tree window) and select *Close Form* from the pop-up menu.
- Press the keyboard shortcut *Ctrl+W*.

6.3   Watermark

The *Watermark* is an image which is used as background for each page.

In order to set a watermark switch to the *Page* tab in the ribbon menu. In the group *Watermark* you can adjust the image file name, the output position and the output size (see also section 4.3.3.3). Alternatively, you can also set the watermark in the document properties (see below).

6.4   Document Properties

For editing the document properties, first select the document. Thereafter the properties can be adjusted.

A description of all document properties can be found in section A.1. Please note that the following properties are only accessible through the properties window:

- Document properties
  Document name for controlling the output file name, plus additional meta information – see also sections 6.4.2, 15.4.1 and A.1.3
- Advanced properties
  Custom ZPL code – see also sections 15.4.2 and A.1.4
- Documentation
  An arbitrary comment – see also section A.1.5
- PDF-Security
  Properties for PDF output – see also section A.1.6

6.4.1   Select Document
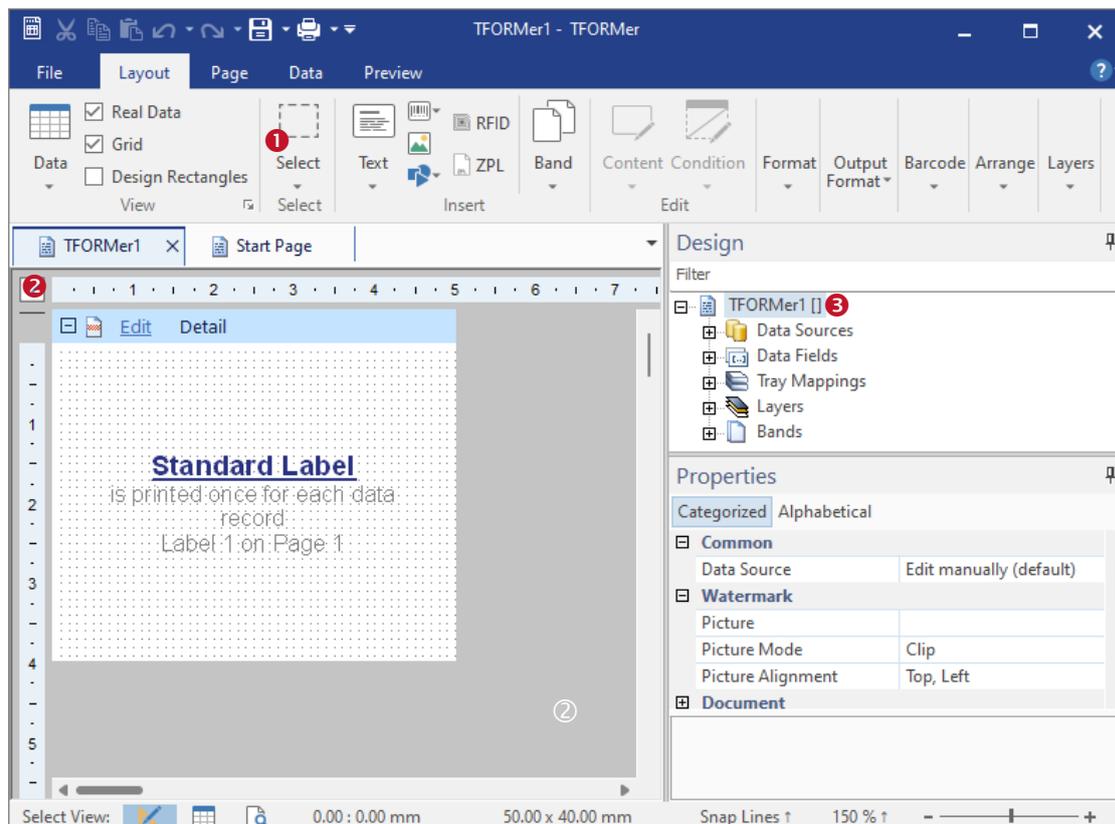
Figure 34: Document Properties

To select the document, choose *Layout ► Select ►Document* from the ribbon menu ❶ or simply click with the left mouse button in the upper left corner of the layout view ❷. Alternatively, you can also click somewhere inside the gray area ② or you can click on the top-level element in the design tree ❸. The checkbox ☑ in ❷ will indicate, that the form is selected.

6.4.2   Document Name

The property "*Document Name*" (in category *Document,* see also section A.1.3) has a special function. It can be used to control the name for the generated output or spool file (under Microsoft Windows). For details, please refer to section 15.4.1, Dynamic Output File Names.

The value can be either a fixed text or it can be calculated dynamically using expressions and data fields.

7 Bands

7.1 Introduction

A layout consists of one or more bands. Each band is a vertical section, which contains graphical elements like text elements, lines or barcodes. Each band fulfills a specific purpose and is printed in a clearly defined position and sequence.

Besides that, bands may be used for computations, and they can be used to control the output behavior (see chapter 12).

7.2 Band Types

TFORMer supports the following band types:

- *Report Header*
  This band is printed at the top of the first page of the output. Alternatively, it can also be printed at the top of the first label. This band is optional.
- *Page Header*
  This band is printed at the top of each page (on the first page after the report header). Alternatively, it can also be printed at the top of each label. This band is optional.
- *Group Header*
  This optional band is printed before a group starts. A group is defined by the *"Group By"* property in this band. Whenever the *"Group By"* expression changes, a new group is started.
- *Detail Band*
  This band is printed for each single record.
- *Group Footer*
  This optional band is printed after a group. A group is specified by a *"Group By"* expression.
- *Page Footer*
  This band is printed at the bottom of each page (on the last page before the report header). Alternatively, it can also be printed at the bottom of each label. This band is optional.
- *Report Footer*
  This band is printed on the last page of the report (after the last data record). Alternatively, it can also be printed at the bottom of the last label. This band is optional.
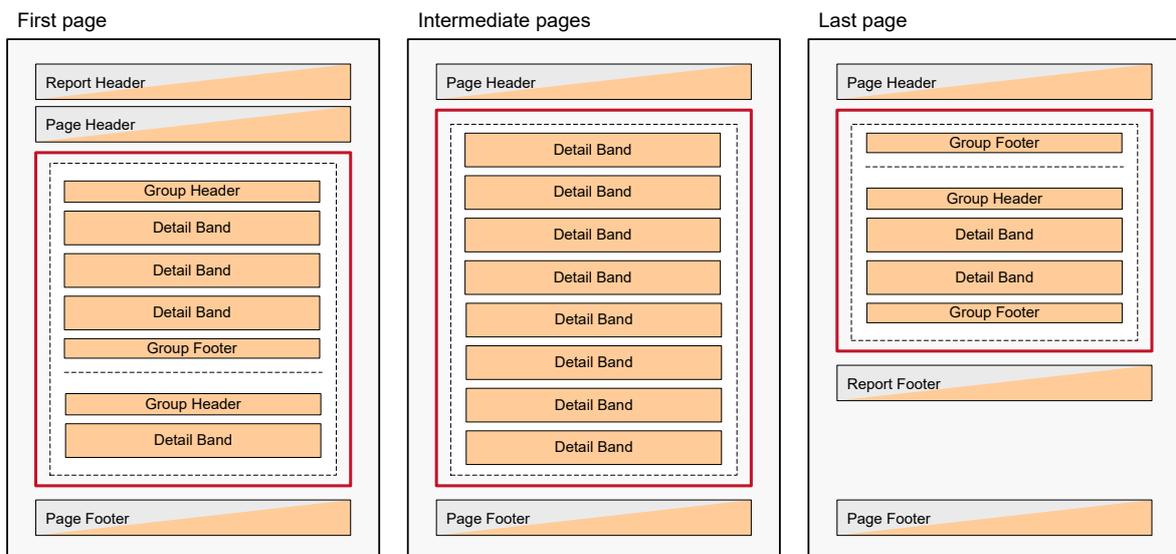
Figure 35: Rendering Scheme for Bands (Report)

The figure above shows the printing of a report. When printing labels, typically no page- and report headers/footers are required. The detail bands will be arranged differently (see also Appendix D).

7.3 Basic Operations

7.3.1 Insert a Band
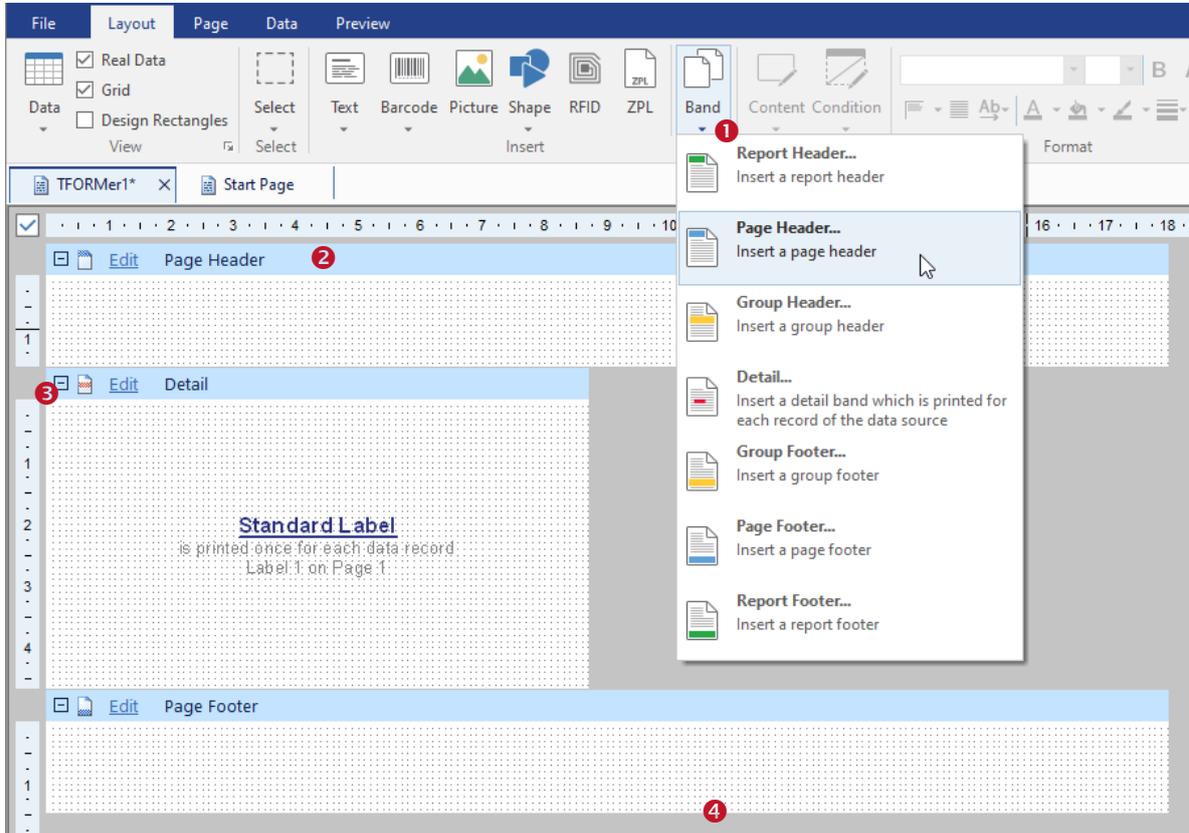
Figure 36: Insert a Band

To insert a band, select *Layout ► Insert | Band* from the menu and choose the desired band type (see ❶). The band will be inserted as a vertical section on the worksheet.

Band			
	🟩	Report Header…	Inserts a new report header.
	📄	Page Header…	Inserts a new page header.
	🟨	Group Header…	Inserts a new group header. For each group header you have to define a group by expression (see also 7.3.10).
	📄	Detail Band…	Inserts a new detail band.
	🟨	Group Footer…	Inserts a new group footer. For each group footer you have to define a group by expression (see also 7.3.10).
	📄	Page Footer…	Inserts a new page footer.
	🟩	Report Footer…	Inserts a new report footer.

7.3.2 Band Selection

To select a band, click on the band header ❷ or on an empty area inside the band. You can also select a band in the design tree. Once a band is selected, it can be copied, deleted or its properties can be adjusted.

7.3.3 Expanded/Collapsed Band View

Bands can be displayed in expanded or in collapsed view. The collapsed view is used to hide a band during the layout design. The resulting output is not influenced!
Click on the ⊞ symbol to expand, and on the ⊟ symbol to collapse the band view (see ❸).

7.3.4 Adjust Band Properties

To adjust the band properties, first select the band. Then the properties can be edited in the proper-ties window. For a list of available properties, please refer to Appendix A.2.

7.3.5 Change Size

7.3.5.1 Width

The width of bands is usually defined by the page setup (see 6.2.3). Each band gets the maximum available space which is available (= paper width minus the page margins).

For complex layouts certain bands may also be adjusted directly in the layout.

7.3.5.2 Height

For labels the height of detail bands, group headers and group footers is preset and fixed according to the label size (see 6.2.3).

For reports the height of bands is freely adjustable. It can be changed with the mouse by clicking and dragging the lower band margins (see Figure 36, ❹). Alternatively, you can adjust the height in the group *"Position"* in the properties window.

7.3.6 Change Band Printing Order

If your layout contains more than one band of the same type (e.g., three *detail bands),* **TFORMer** processes them from top to bottom.

The position of bands can be changed. Click the Edit link in the band header (or right-click on the band) and select *Order* from the appearing menu. Alternatively, you can also use the keyboard shortcuts *Alt+↑* and *Alt+↓* to move the selected band.

7.3.7 Delete a Band

Select the band that you want to delete and press the *Del* key. Alternatively, you can also right-click on the band and select *Delete* from the pop-up menu.

7.3.8 Printing Conditions

For each band you can specify a printing condition. A printing condition decides at print-time whe-ther a band is printed or not.

For more details on printing conditions, please refer to section 12.2.

7.3.9 Pre- and Post-Evaluations

For each band you can specify pre-evaluation and post-evaluation expressions. These expressions will be evaluated before and after the band is printed.

For more details, please refer to section 12.4.

7.3.10 Grouping

By using group headers and/or group footers you have the possibility to achieve a grouping for the output:
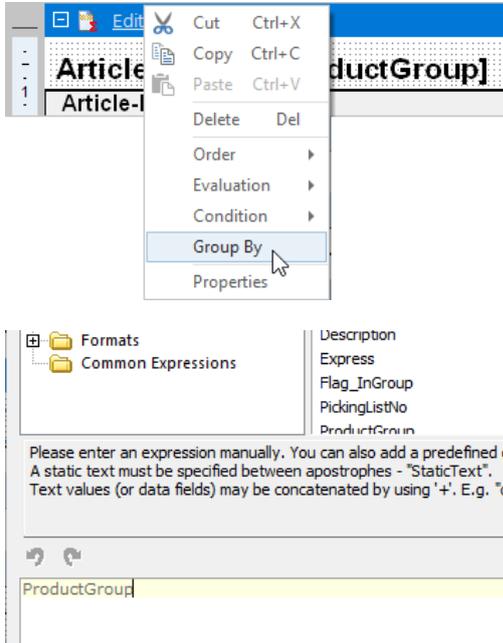
First insert a group header and/or a group footer. Then enter an appropriate group by expression. Click the Edit link in the band header (or right-click on the band) and select *Group By* from the context menu.

The expression editor (see also section 11.2) will appear.

In the expression editor enter the group by expression. This expression works as follows: Every time the computed value changes a new group will be started and the corresponding group header respectively footer is printed.

Please note that the group by expression must be entered for each single group header respectively group footer in the layout!

When generating the output, the records will be grouped accordingly.

Please note that the group by expressions does not change the order of the records in the data source! The records must be provided in the correct order already.

8 Elements

8.1 Introduction

Elements (or graphical design elements) are all sorts of printable shapes like texts, barcodes, lines, rectangles, circles and pictures. They are placed on the bands to create the layout.

8.2 Basic Operations

8.2.1 Insert an Element
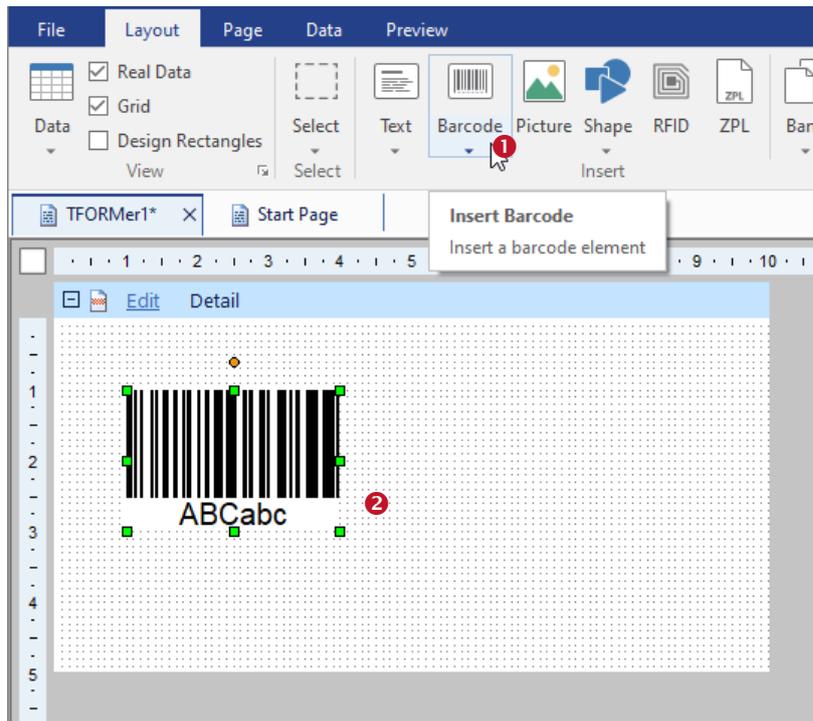
Figure 37: Insert Element

To insert an element (e.g., a barcode) into your layout, first click on the appropriate symbol in the ribbon menu (❶). Then place the element on one of the bands inside the layout (❷). You can place elements in two different ways:

▪ A single mouse click on the worksheet will insert the element with its default size.
▪ If you click and drag a frame with the mouse pointer (while holding down the mouse button), the element is inserted in the given dimensions upon release of the mouse button.
Please note that the modifier keys which are described in section 8.2.3 will also apply for the insert operation.

	Select	Selects existing elements (or bands) in the layout view. This tool is enabled by default.
	Text	Inserts a text element. A text element provides formatted text. The content may consist of static and dynamic data (see also section 8.3.1). Depending on the required content type choose one of the following options. Please note that the content and its type can be changed at any time (see section 9.3).
		Data Field — Shows the content of a data field (without any additional information). (See also section 9.4.)

			Formatted Text	Shows an arbitrary formatted text, which may be enriched with data fields and expressions (see also section 9.5).
		fx	Expression	Shows the result of an expression (see also section 9.8).
	Barcode	Inserts a barcode. A barcode encodes the given data in a machine-readable form. The content may consist of static and dynamic data (see also section 8.3.2). Depending on your requirements choose one of the following barcode types. This type can be changed at any time (see section 4.3.2.6).		
			Recently Used	Choose from the most recently used barcode types.
			Linear Barcodes	Choose the barcode type by category. For more information on barcode types and their possible adjustments, please refer to the "Barcode Reference" which is available for download on www.tec-it.com.
			2D Codes	
			Postal Codes	
			GS1 DataBar	
			HIBC Codes	
	Picture	Inserts a picture. The name of the image file may be specified as fixed text or computed (see also section 8.3.3).		
	Shape		Rectangle	Inserts a rectangle.
			Rounded Rectangle	Inserts a rectangle with rounded corners.
			Ellipse	Inserts an ellipse.
			Line	Inserts a line.
	RFID	Experimental element (see also section 17.15). For additional information, please refer to section 15.4.3.		
	ZPL	The ZPL element allows embedding of Zebra® Printer commands (ZPL II®) directly into the layout (see also section 15.4.2).		

For a list of element properties, please refer to Appendix A.3.

8.2.2 Element Selection

In the layout view you can select elements in various ways:

▪ Click with the left mouse button on an element.
  Hold down the *Shift* key or the *Ctrl* key for multiple selection.
▪ Click with the left mouse button in an empty area of the layout view and (while holding the mouse button pressed) drag a selection frame around the required elements. Then release the mouse button. Depending on the direction, in which you have dragged the selection frame, different selection criteria are used:
  - Drag frame *from left to right:*
    Only objects that are entirely overlapped by the frame will be selected.
  - Drag frame *from right to left:*
    All objects that are entirely or partially overlapped by the frame will be selected.

Small rectangles (sizing handles) on the corners and on the sides indicate that the element is selected.

► To start a selection frame over an existing graphical element, try to hold down the *Shift* or the *Ctrl* key. This will prevent other elements (which might be under the mouse pointer) from being moved.

8.2.2.1 Examples
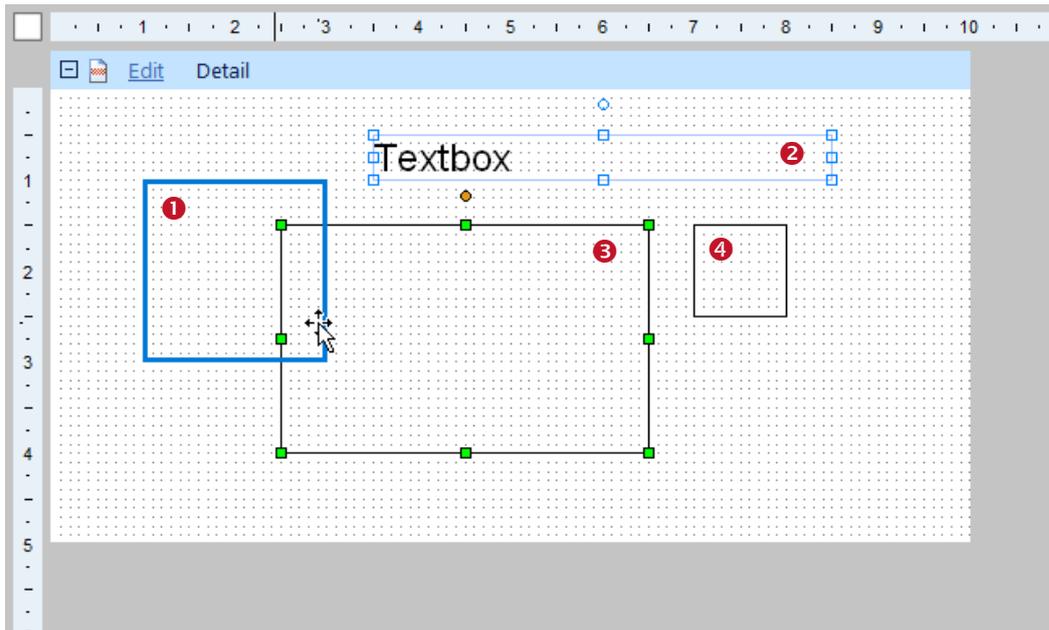
Figure 38: Element Selection

❶ This element has the mouse focus (bold outline). If you click your left mouse button, it will be selected.

❷ This element is part of a selection. Because it does not have the selection focus its sizing handles are drawn as outline (⬚).

❸ This element is part of a selection and has the selection focus. This is indicated by solid sizing handles (▣).
If you adjust the size or the alignment of two or more elements (see sections 8.2.11.1 and 8.2.11.2), the focused element will act as "master". This means its properties (or property changes) will be applied to the rest of the selection. The last element that is added to the selection always receives the selection focus.
You can set the focus within a selection by clicking on the required element. Do NOT hold down any modifier keys, like *Shift* or *Ctrl!*

❹ This element is not selected.

8.2.3 Change Element Size

After selecting an element, you can change its size by clicking and dragging the sizing handles. While changing the size you can use the following modifier keys:

Modifier Key	Description
Shift	Square/Circle. The width and the height of the element are set to the same value.
Ctrl	Centered. The element center is maintained. The change is applied with respect to the center.
Alt	Fine positioning. Allows a positioning off the grid. (For setting up the grid see sections 4.7, ❹ and 17.2.2.)

Alternatively, you can also edit the element size in the properties window.

► Please note: If the selection contains more than one element, all selected elements will be resized simultaneously.

8.2.4 Move an Element

An element can be moved by clicking and dragging. While dragging you can use the following modifier keys:

Modifier Key	Description
Shift	Move horizontally/vertically. The movement of the element will be restricted to the horizontal and vertical axis.
Ctrl	Copy mode. A copy of the original element(s) will be created on the release position. In copy mode the mouse pointer changes its shape to .
Alt	Fine positioning. Allows a positioning off the grid. (For setting up the grid see sections 4.7, ❹ and 17.2.2.)

8.2.5 Rotate an Element

In order to rotate an element first you need to select it. Then click and drag the rotation handle until the desired orientation is reached. While dragging you can use the following modifier keys:

Modifier Key	Description
Shift	15° Steps. The element is rotated in 15° steps.

Alternatively, you can enter the required rotation in the group *Position* in the *Properties Window*.

> ► Please note: For text, barcode and picture elements the direction of the content can be adjusted separately (independent from the element rotation). To change the text-direction use the button in the *Layout* tab, group *Format* (see section 4.3.2.5). Alternatively, you can also adjust the *Text Direction* in the *Properties Window*, group *Common*.

8.2.6 Element Properties

To change the properties of a selected object, you can:

- Edit the desired properties in the *Properties Window*.
- Use the Commands int the ribbon menu to change common element properties:
  - *Format* (see section 4.3.2.5): Change font style, background color, etc.
  - *Output Format* (see 4.3.2.6): Change the output format for text elements.
  - *Barcode* (see 4.3.2.7): Change the type and color of barcode elements.

8.2.7 Positioning and Measuring

Graphical elements are either positioned with the mouse or by entering the corresponding values in the properties window.

When using the mouse, the rulers and the status bar assist you with measuring and positioning elements.

When entering measures in the properties window please note: If no unit is given **TFORMer** interprets the value as mm or as inch (depending on your system settings). However, you may also specify the measurement unit by appending common abbreviations (mm, cm, inch, mil) to the numeric input.

8.2.8 Delete an Element

You can delete selected elements in various ways:

- Press the *Del* key on the keyboard.

▪ Right-click on the element. Then select *Delete* from the pop-up menu.

8.2.9 Printing Conditions

For each element a printing condition can be specified. The condition decides at print-time whether the element is printed or not. In order to edit a printing condition first select the Element, then use the menu *Layout ► Edit | Condition*.

For more details on printing conditions, please refer to section 12.2.

8.2.10 Assign Elements to a Printing Layer

A printing layer gives you the possibility to use a single printing condition for multiple elements. This condition lets you control whether all elements assigned to the layer are printed or not.

By default, only one layer (the *"Base"* layer) is available. Newly created elements are automatically assigned to this layer.

Please note: The printing layer does NOT affect the z-order, in which the elements are printed!

For more details on printing layers, please refer to section 12.3.

8.2.11 Helper Functions for Design Elements

These functions simplify the creation of layouts. You can make all selected elements the same size, you can adjust the spacing between selected elements, and more.

The following properties can be adjusted:

▪ Alignment
▪ Spacing (horizontal and vertical)
▪ Size
▪ Z-Order

The respective functions are available via the ribbon menu under *Layout ► Arrange*.

> ► When changing the alignment or the size of selected elements, the element with the selection focus (see 8.2.2.1, ❸) acts as master: all selected elements will be changed according to its values!

8.2.11.1 Alignment

Select at least two elements. Then choose one of the following functions. The element with the selection focus acts as master.

	Align		Left	Aligns the selected elements to the left. Shortcut: *Ctrl+←*
			Vertical	Aligns the selected elements vertically centered.
			Right	Aligns the selected elements to the right. Shortcut: *Ctrl+→*
			Top	Aligns the selected elements to the top. Shortcut: *Ctrl+↑*
			Horizontal	Aligns the selected elements horizontally centered.
			Bottom	Aligns the selected elements to the bottom. Shortcut: *Ctrl+↓*

8.2.11.2 Spacing

Select at least two elements. Then choose one of the following functions. The element with the selection focus acts as master.

	Align		…	
	Vertical Spacing		Make Equal	Makes the vertical spacing between the selected elements equal.
			Increase	Increases the vertical spacing between the selected elements.
			Decrease	Decreases the vertical spacing between the selected elements.
	Horizontal Spacing		Make Equal	Makes the horizontal spacing between the selected elements equal.
			Increase	Increases the horizontal spacing between the selected elements.
			Decrease	Decreases the horizontal spacing between the selected elements.

8.2.11.3 Size

Select at least two elements. Then choose one of the following functions. The element with the selection focus acts as master.

	Size		Same Width	Applies the same width to all selected elements.
			Same Height	Applies the same height to all selected elements.
			Same Size	Applies the same size to all selected elements.

8.2.11.4 Z-Order

Select at least one element. Then choose one of the following functions:

	Z-Order		Move to Top	Moves the selected elements to the foreground.
			Move Up	Moves the selected elements up one level.
			Move Down	Moves the selected elements down one level.
			Move to Bottom	Moves the selected elements to the background.

8.3 Element Types with Data-Binding

8.3.1 Text Elements

Text elements are used for printing formatted text. Single phrases, words and characters can be formatted individually. Data fields and expressions can be embedded within the text.

Figure 39: Text Element

In the example above static and dynamic content is mixed. The embedded expressions for the current date *[Now ()]*, the current page number *[Page]* and the total number of pages *[NumPages]* are placed in-line with the static text. During print-time these expressions will be replaced by the

actual values automatically. Such dynamically provided content is always displayed between square brackets "[]" (see ❶) or angle brackets "<>":

- Square brackets indicate that the content of the data field respectively the result of the expression will be inserted as is.
- Angle brackets indicate that the content of the data field respectively the result of the expression will be interpreted as HTML. This allows you to specify dynamic content with additional formatting (see also section 9.5.3)!

For information on how to edit the content of text fields, please refer to chapter 9.

8.3.2 Barcode Elements

Barcode elements encode the given data in a machine-readable form.

Figure 40: Barcode Elements

The barcode data can contain static content (e.g., the fixed string "AaBb12", see ❶), dynamic content (e.g., the data field *ArticleNo,* see ❷), or a combination of both. Dynamically provided content is always displayed between square brackets "[]".

For information on how to edit the barcode data, please refer to chapter 9.

> ► Please note: The barcode symbol in the layout view is just a sample. It does not encode the actual data! The correct barcode is computed during print-time.

The *Barcode Type* and other barcode specific settings are adjusted in the properties window. You can choose from 1D, 2D and composite barcode symbologies. Depending on the selected barcode type different property groups are available

For more information on available barcode types and their possible adjustments, please refer to the "Barcode Reference" which is available for download on www.tec-it.com.

8.3.3 Picture Elements

Picture elements are used to embed images in the layout. Supported image formats are BMP, ICO, GIF, JPG, PCX, PNG, TGA, TIF and PSD (Photoshop).
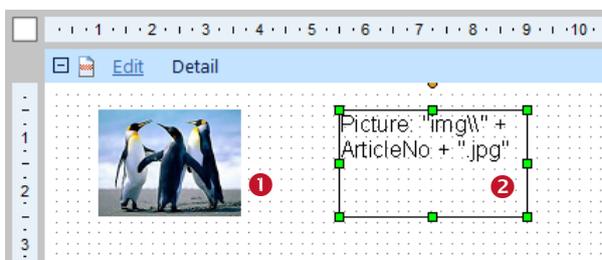
Figure 41: Picture Elements

The actual image is usually specified through a fixed file name (see ❶). If you want to use different images for different records (dynamic logos) you can also compute the file name dynamically (e.g., based on a data field value, see ❷).

For information on how to edit the image file name, please refer to chapter 9.

► You can use absolute file names (e.g., "C:\sample.jpg") or relative file names (e.g., "sample.jpg" or "img\sample.jpg"). Relative file names are treated relative to the base path of the layout file.

9   Element Content and Formatting Data

9.1   General

All text, barcode and picture elements are filled with specific content.

9.2   Content Types

When assigning data, you have the choice between the following three different content types:

- *Data Field* (Computed Field, Serial) – see 9.4
  Provides the value of the given data field (dynamic data). This type is typically used for barcodes or simple text elements.
- *Text* (Formatted Text, Simple Text, File) – see 9.5 to see 9.7
  A fixed text which may be combined with the content of data fields and/or expressions. This type is the standard choice for text elements and barcodes. It can be used for the creation of simple and complex contents.
- *Expression* – see 9.8
  Computes the content dynamically with the help of the available functions, constants and data fields. This type can for example be used for dynamic picture file names.

9.3   Edit the Element Content

Whenever a text, barcode or picture element is inserted the appropriate editing dialog is opened automatically (see Figure 43 below).

In order to edit the content of an existing element, first select the element, then use the menu *Layout ► Edit | Content*. Instead of using the command *Edit…* in ① (see Figure 42) you can also right-click the element and select *Edit Content…* from the pop-up menu, use the keyboard shortcut *F2* or *double-click* the element.
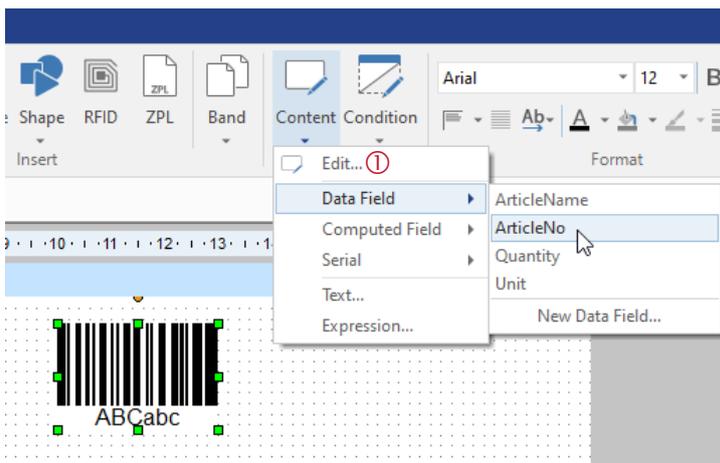
Figure 42: Edit Element Content

	Content		Edit…	Edits the element content. Shortcut: *Double-Click* the Element or press *F2*
			Data Field	Assigns one of the existing data fields or a new data field of the respective type as element content.
			Computed Field	
			Serial	

		Formatted Text / Text / File	Assigns a text (respectively a file name) as element content.
		Expression	Assigns an expression as element content.

The element content is edited via the following dialog:
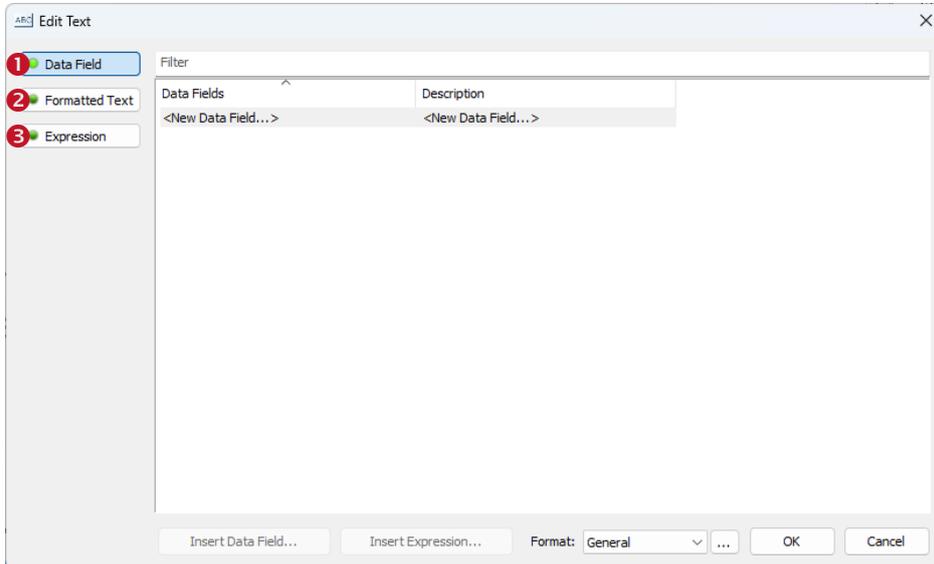
Figure 43: Edit Dialog for Element Contents

Use the option buttons on the left side to switch between the three different content types:

❶   Data Field (see 9.4)
❷   Formatted Text (for text elements, see 9.5)
     Simple Text (for barcode elements, see 9.6)
     File (for picture elements, see 9.7)
❸   Expression (see 9.8)

Depending on your selection (❶, ❷ or ❸) one of the following dialogs is shown:

9.4   Data Field

The type *Data Field* is used to provide data field values (without any additional data).
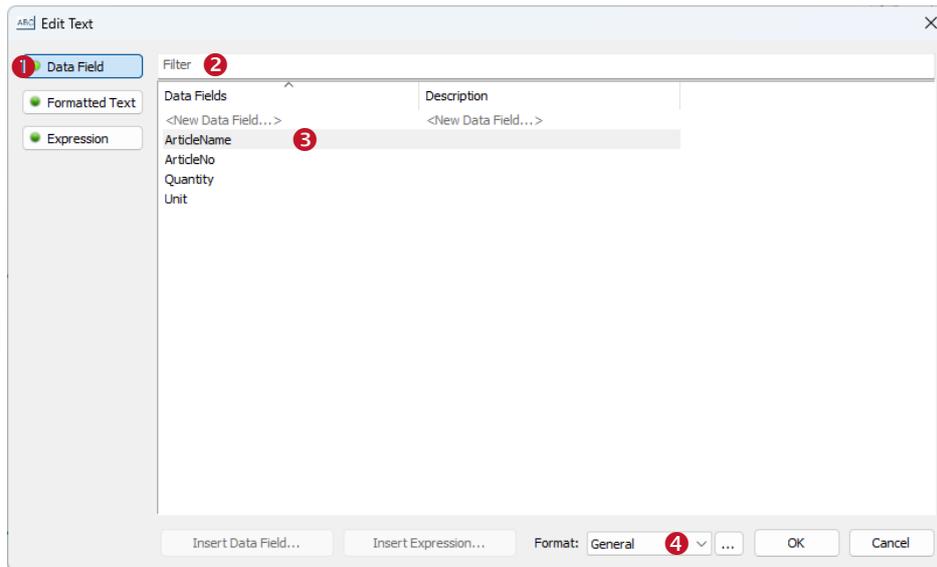
Figure 44: Edit Dialog – Data Field

Make sure the option *Data Field* ❶ is selected. If needed, you can use the filter ❷ to narrow down the list of displayed data fields. Then, select the desired data field in list ❸. If you need a specific output format (number, currency, date/time, etc.), select the desired format in ❹ (see also section 9.9.1). Confirm with *OK.*

The creation of a new data field is also possible. When double-clicking on "<New Data field…>" an appropriate dialog will be opened (see section 10.2.1.1).

Please note that **TFORMer** internally distinguishes between three different data field types (see also chapter 10):

- Data Field
  Provides values from a data source.
- Computed Field
  Computes the values based on a user defined expression respectively on one of the built-in aggregation functions.
- Serial
  Provides consecutive numbers.

9.5 Formatted Text (Text Element)

The type *Formatted Text* is available for text elements only. It is an arbitrary formatted text, which may be enriched with data fields and expressions.
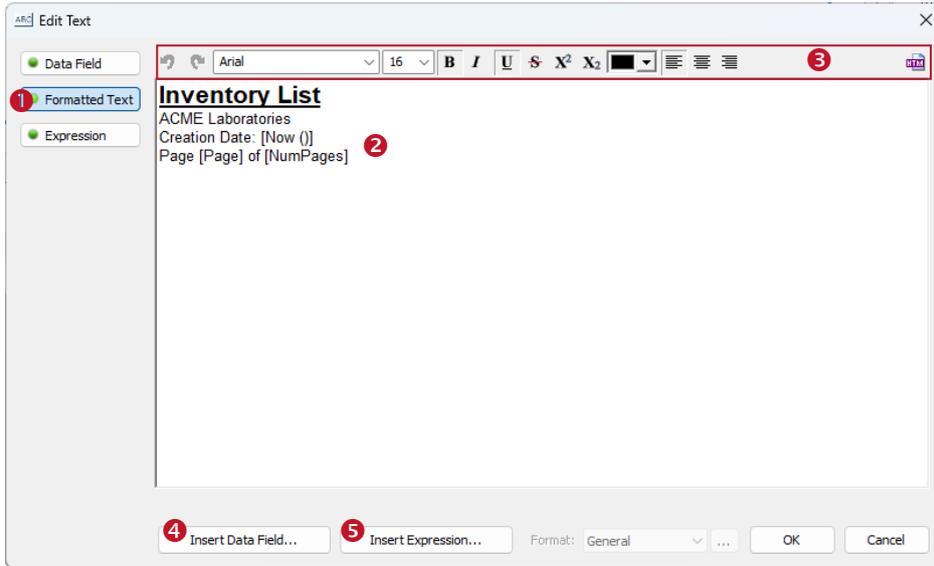
Figure 45: Edit Dialog – Formatted Text

Make sure the option *Formatted Text* ❶ is selected. You can now edit the text in ❷. The toolbar ❸ allows you to apply different formatting (single phrases, words and characters can be formatted individually – see section 9.5.1). Using the buttons ❹ and ❺ you can insert data fields and expressions (see section 9.5.2). When you are done with editing confirm with *OK.*

9.5.1 The Toolbar

Toolbar ❸ provides the following functions:

↶	**Undo**	Reverts the last change. Shortcut: *Ctrl+Z*
↷	**Redo**	Reverts the last *Undo*. Shortcut: *Ctrl+Y*
Arial	**Font Name**	Selects the typeface.
10	**Font Size**	Selects the font size (in points).
B	**Bold**	Toggles bold text *on/off*. Shortcut: *Ctrl+B*
I	**Italic**	Toggles italic text *on/off*. Shortcut: *Ctrl+I*
U	**Underline**	Toggles text underline *on/off*. Shortcut: *Ctrl+U*
S	**Strike Through**	Toggles text strike through *on/off*.
X²	**Superscript**	Toggles text superscript *on/off*.
X₂	**Subscript**	Toggles text subscript *on/off*.
■	**Font Color**	Selects the font color.
≡	**Align Left**	Aligns the text left. This alignment is applied to the whole text element and *not* for single lines or paragraphs. (Same as the *Text Alignment* property *"Top, Left".*)
≡	**Center**	Centers the text. This property is applied to the whole text element and *not* for single lines or paragraphs. (Same as the *Text Alignment* property *"Top, Center".*)
≡	**Align Right**	Aligns the text right. This alignment is applied to the whole text element and *not* for single lines or paragraphs. (Same as the *Text Alignment* property *"Top, Right".*)
HTM	**HTML Source**	**TFORMer** internally uses a subset of HTML (see Appendix B) for storing formatted text. With this button you can toggle between the WYSIWIG view

		and the HTML source view.

9.5.2 Data Fields and Expressions

In order to provide dynamic content, you have the possibility to insert data fields and expressions in line with the formatted text. Use the following buttons for inserting. For more information on data fields and expressions see chapters 10 and 11.

Insert Data Field...	**Insert Data Field**	Opens a selection dialog for Data Fields (analogous to section 9.4). In this dialog select the desired data field from the list and confirm with *OK*.
Insert Expression...	**Insert Expression**	Opens the *Expression Builder* (see sections 9.8 and 11.2). In this dialog compose the desired expression using the available functions, constants and data fields. Then confirm with *OK*.

The data field respectively expression will be inserted at the current cursor position. Data fields and expressions are marked with square brackets "[]" (or angle brackets "<>" in case of HTML content – see section 9.5.3):

> Please note:
> ► Data fields and expressions must always be inserted using the appropriate buttons!
> ► If you try to enter the expression start- and end-markers [] (or <>) via keyboard, the text will not be evaluated as an expression!

For formatting the in-line data fields and expressions use the format toolbar ❸ as you would do for the rest of the formatted text. For dynamic formatting you can also use HTML formatted expressions (see below).

To edit an existing data field or expression place the cursor between the square brackets and click on the *Insert Data Field…* or *Insert Expression…* button. The appropriate dialog will be opened. Alternatively, you can also *double-click* on the data field (or expression) which will always open the expression builder.

Hint: The functions *Insert Data Field…* and *Insert Expression…* are also available via *context menu* when right-clicking inside the text area.

9.5.3 HTML Formatted Expressions

In order to provide dynamic text formatting, you can use HTML formatted expressions.

> This feature allows you to control the appearance of a text element during print-time.

If the ![HTM button] button is pushed inside the expression builder (see Figure 59, ❻), the result of the expression will be interpreted as HTML content. This means, all supported HTML tags that are found in the result of the expression are directly applied. For a list of supported HTML tags, please refer to Appendix B.
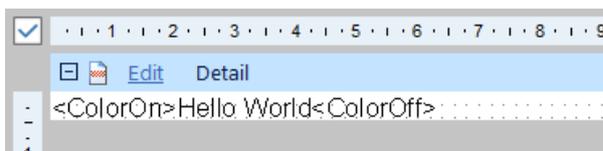
In this example the data fields "ColorOn" and "ColorOff" are utilized for dynamic text formatting.

#	Copies	ColorOff	ColorOn
1	1		
2	1		
3	8		
*			

In order to apply different font colors, the appropriate HTML tags (and) are inserted in the Data window. In this case this is done for the first two records. The following eight records are printed with default formatting (as applied in the text

editing dialog).

Hello World
Hello World
Hello World
Hello World
Hello World
Hello World
Hello World
Hello World
Hello World
Hello World

When printing, **TFORMer** reads the content of the fields in the data source. The contained font tags are directly applied to the output.

9.6   Simple Text (Barcode Element)

The type *Simple Text* is available for barcode elements only. It allows you to mix unformatted text with data fields and expressions.
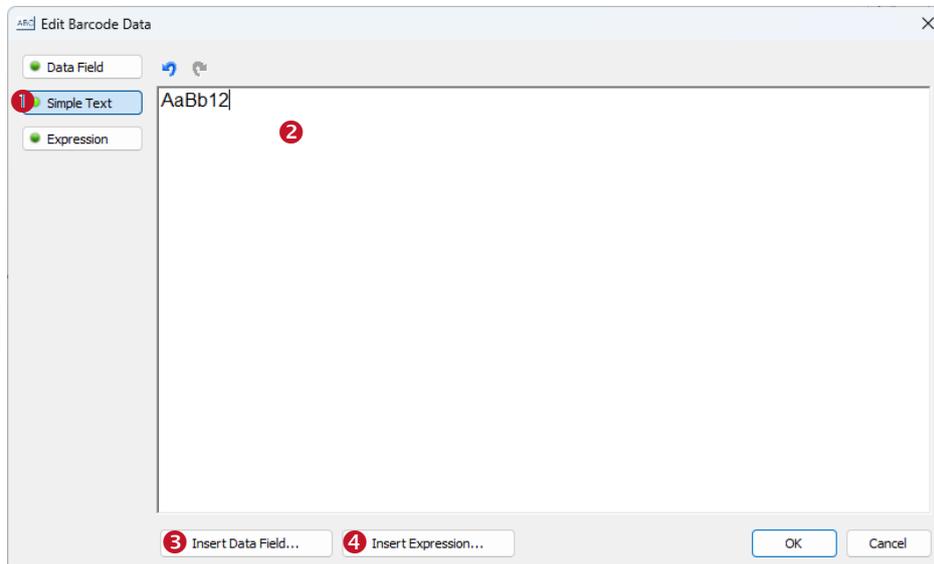
Figure 46: Edit Dialog – SimpleText

Make sure the option *Simple Text* ❶ is selected. You can now edit the text in ❷. Using the buttons ❸ and ❹ you can insert data fields and expressions (analogous to section 9.5.2). When you are done with editing confirm with *OK.*

9.7   File (Picture Element)

The type *File* is available for picture elements only. The file name can be entered manually or via file selection dialog.
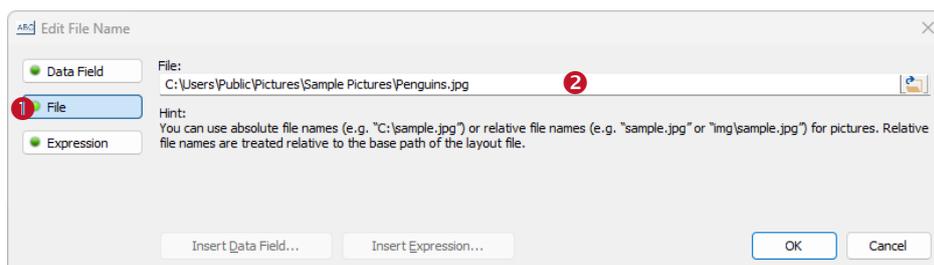
Figure 47: Edit Dialog – File

Make sure the option *File* ❶ is selected. Then specify the file name in ❷ and confirm with *OK.* The button 📂 opens a file selection dialog.

For dynamic image file names (e.g., different images for different records) use either the option *Data Field* or *Expression*.

> ► Please note: When using images in your layout, these images will not be embedded in the layout file (.tff), but stored as file references. So don't forget to include these external images when sharing your layout file. Alternatively, you can also store your layout in the container format *.tfz* or *.zip* (see also 6.2.4).

9.8   Expression

The type *Expression* is required in special cases only (e.g., calculating the file names for dynamic picture content). For all common applications it is recommended to use the option *Data Field* or *Formatted/Simple Text*. Expressions can be embedded in-line with such text content.
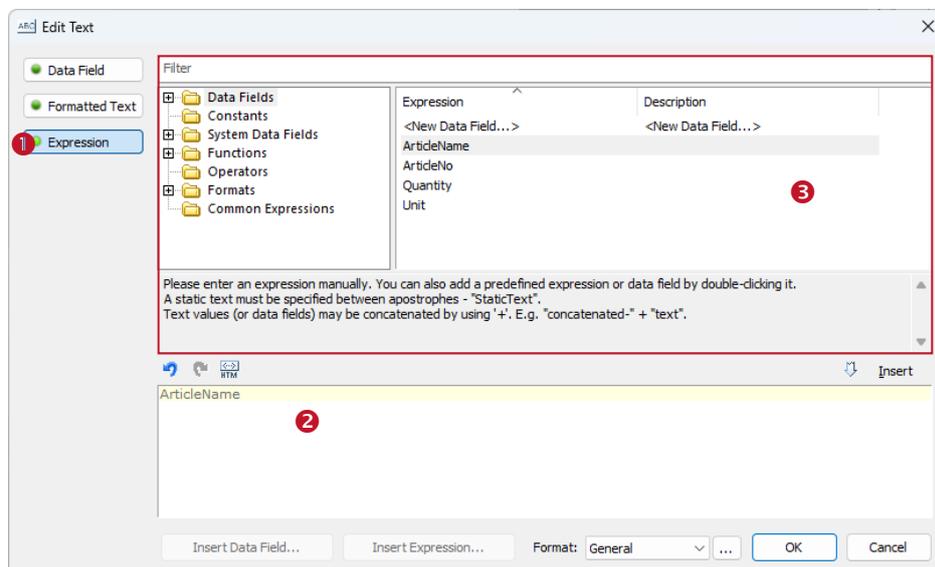
Figure 48: Edit Dialog – Expression

Make sure the option *Expression* ❶ is selected. You can now edit the expression in ❷. The categorized list and the filter function in ❸ help you to find the required functions.

For more information on expressions see chapter 11.

9.9   Formatting Data

If you need a specific output format for the data (number, currency, date/time, etc.) you can specify that in two different ways:

- Use the format functions in the expression editor
  (see sections 11.2 and C.4)
- Set the *Output Format* property of a text element
  (see section 9.9.1 below)

9.9.1   Output Format Property (Text Element)

The *Output Format* property is available for text elements only. It specifies the output format for the element content. The format is applied in an additional step – after the evaluation of expressions.

Please note that the format property can only be used for unformatted content (data field, expression).

The default value is "General" (= no specific formatting). For changing the format you can use the ribbon menu (see section 4.3.2.6), the properties window (see section 4.6) or the expression editor (see section 11.2)

When selecting "More Formats…" or when clicking on […] the following dialog is shown:
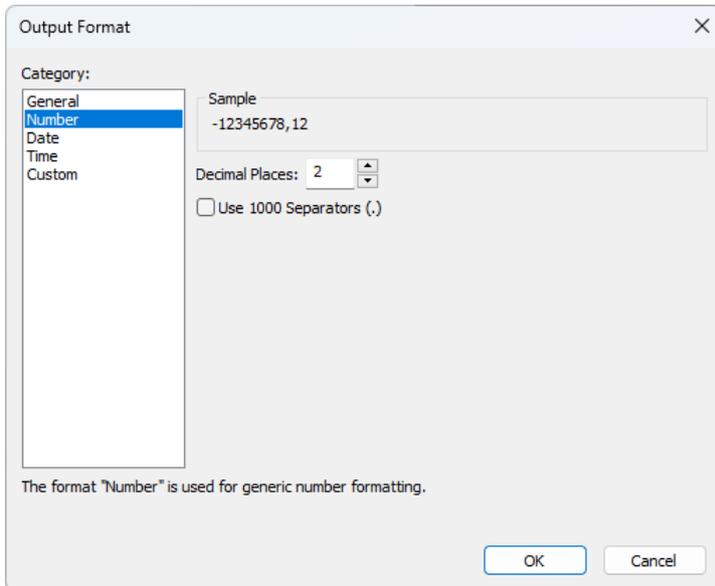
Figure 49: Edit Dialog for the Output Format

First select the category and then adjust the respective detail settings.

Under "Custom" you can define your own formats. Use the respective type-specific placeholders, such as 0 and # for numbers, or yy MM dd and other placeholders common in the C programming language for date and time values. Fixed text can be added using single quotes.

Example: Use the format "0.00' kg'" to print kilograms with two decimal places.

10 Data Fields

10.1 Introduction

For providing dynamic content **TFORMer** uses so called *data fields.* These data fields serve as placeholders for the actual data. They can be used in text, barcode and picture elements (dynamic logos).

A data field must be defined before it can be used. This definition takes place directly in the layout (see below) or in a repository (see chapter 16). One layout can use an arbitrary number of data fields (0..n).
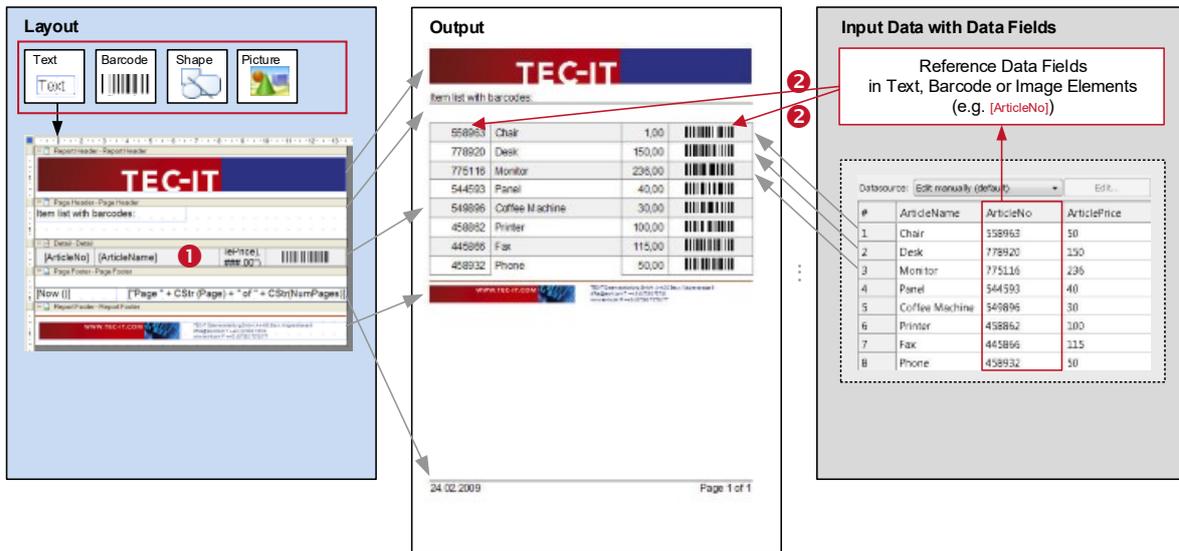
Figure 50: Data Fields as Part of the Printing Concept

In the layout **TFORMer** displays each data field in square brackets "[]" (or angle brackets "<>" for HTML content) – see ❶. The current value of a data field is available on the print-out respectively in the preview only (❷). The value of a data field is either

- provided manually (see section 13.3.1),
- provided by an external data source (e.g., imported from a database – see section 13.3.2),
- a serial number (see section 10.3.3),
- computed per record (see section 10.3.2),
- computed for specific bands (pre- and post-evaluation – see section 12.4) or
- provided programmatically by a software developer (see section 15.3).

If no value was loaded (or computed), the data field returns its default value (see section 10.3.1), its start-value (see section 10.3.3) or zero (see section 10.3.2).

> ► In order to provide the data from an external data source, the data field has to be bound to the required field in the data source (to the so-called source field). Please note: Data field and source field need not necessarily have the same name (see section 13.4).

10.2 Basic Operations

The design tree window lists all available data fields in an alphabetical sort order (see ❶). If you want to edit an existing data field or if you want to create a new data field, right-click on the respective tree item. A context menu with the appropriate editing commands will appear.
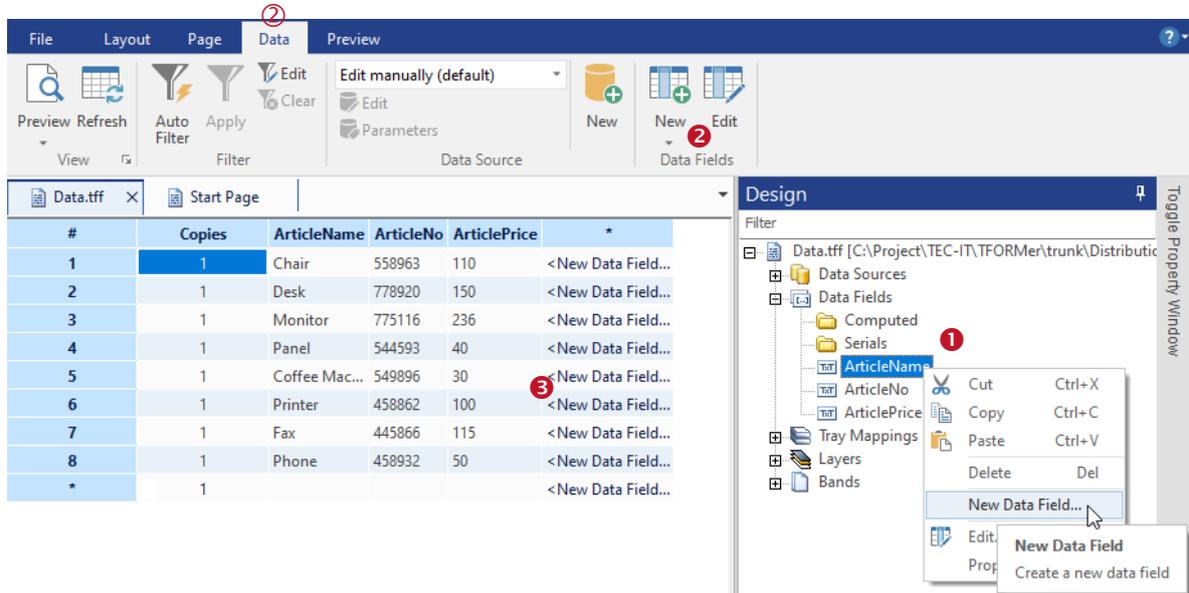
Figure 51: Maintain Data Fields

If you are in the data view (see ②) you can also edit the data fields via the corresponding commands in the ribbon menu ❷ or in the data grid ❸ (e.g., double-click the respective column header or click on *<New Data Field>).*

	New	Inserts a new data field (see also section 10.2.1.1).
	Edit	Edits the selected data field (see also section 10.3).

For more detailed information on creating and editing data fields, please see below:

10.2.1 Create Data Field Definitions

Data field definitions can be created manually, or they can be imported from a data source.

10.2.1.1 Create Data Field Definitions Manually

To create a new data field definition either use the context menu in the design tree or select *Data ►Data Fields | New* from the ribbon menu. Alternatively, you can also right-click in the gray area of the layout or on the entry *"Data Fields"* in the design tree and select *New Data Field…* from the pop-up menu.

The following dialog is opened:
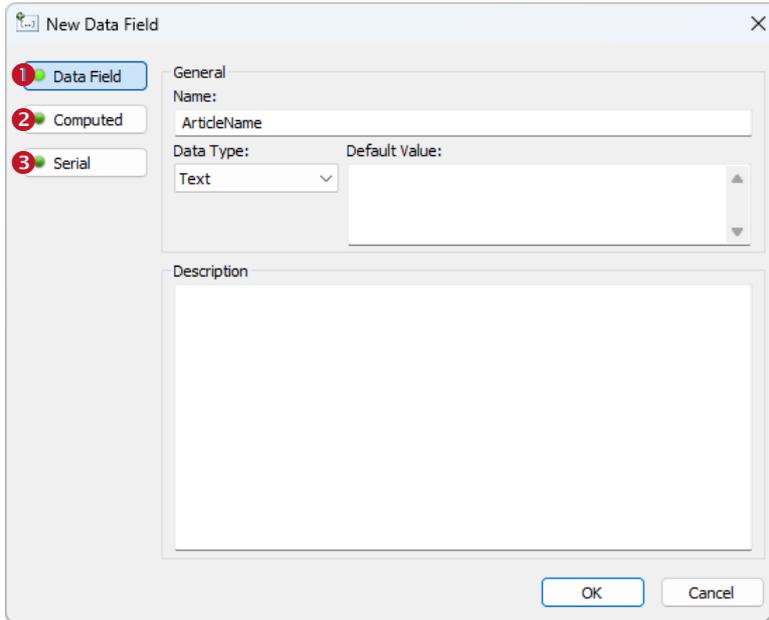
Figure 52: New Data Field Dialog

Depending on your requirements choose the kind of data field that you want to create:

❶ Data Field (see 10.3.1)
A conventional data field provides values from a data source.

❷ Computed (see 10.3.2)
A computed data field provides values, which are computed via an expression respectively with the help of the built in aggregation functions.

❸ Serial (see 10.3.3)
A serial number field provides consecutive numbers.
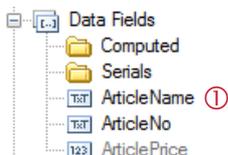
Once the data field is inserted you will find the appropriate entry in the design tree: Normal data fields are listed directly under the branch "Data Fields" (see ①). Computed fields and serials are listed in the corresponding subfolders.

Used data fields are displayed in black (= the data field is used in the layout, within a computation or in a printing condition). Unused data fields are displayed in gray.

10.2.1.2 Create Data Field Definitions Automatically

When using an external data source, you can generate all data field definitions automatically. In the data source configuration dialog go to the tab *Field Bindings* (see section 13.4) and press the button *Auto…*. **TFORMer** will suggest to create and assign a new data field for each source field which is not already used in the current layout (or repository). The data type *"Text"* is assigned automatically.

Using this function, you can create numerous data field definitions automatically. All field names of an existing data source are imported.

10.2.2 Use Data Fields in Layouts

Once a data field was defined it can be used

▪ as element content in
  - text elements (see section 8.3.1),

- barcode elements (see section 8.3.2) and
- picture elements (dynamic logos – see section 8.3.3),
  - in control expressions (e.g., printing conditions – see sections 12.2 and 12.3) and
  - in computations (e.g., as operand for computed fields – see section 10.3.2).

10.2.2.1 Element Content

To assign a data field to an element edit the element content as described in section 9.3 and select the desired data field.

Alternatively, you may also *drag and drop* the data field from the design tree to the layout view (see ❶ below). Drop the data field on an existing element to update its content or drop it on an empty area to insert a new element. When using the right instead of the left mouse button for the drag operation you will be offered additional insert options.
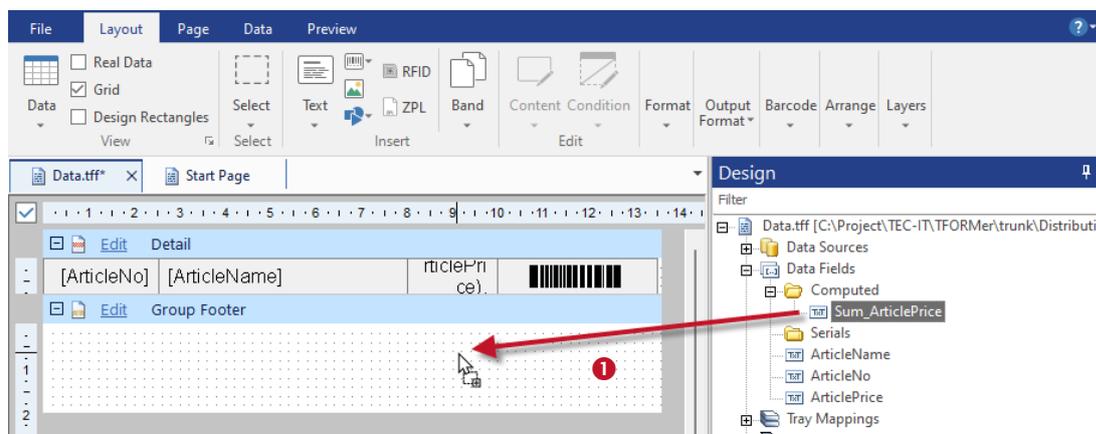
Figure 53: Drag and Drop a Data Field

10.2.3 Edit a Data Field

To edit an existing data field first select it in the design tree or in the data grid in the data view. Then choose *Data* ► *Data Fields | Edit* from the ribbon menu or right-click the data field and select *Edit…* from the pop-up menu. Alternatively, you may also *double-click* the data field.

The *"Edit Data Field"* dialog will appear (see section 10.3). Use the dialog to adjust the required settings and confirm with *OK.* Alternatively, you can also directly edit the data field properties in the properties window.

For a description of data field properties, please refer to sections 10.3 and A.5.

10.2.4 Rename a Data Field

To rename a data field select it in the design tree and thereafter press *F2* (or click again on the data field with the left mouse button). Now you can directly edit the data field name. Alternatively, use the properties window or the *Edit Data Field* dialog to rename a data field.

> ► Attention: When renaming a data field **TFORMer** will NOT automatically update all referen-ces to this field (e.g., in text elements, pre-/post-evaluations, printing conditions, …). A man-ual update is required. – Invalid references will throw errors and are marked with red color (see section 10.4)!

10.2.5 Delete a Data Field

To delete a data field select it in the design tree and then press the *Del* key. Alternatively, right-click the data field and select *Delete* from the pop-up menu.

► Attention: When deleting a data field, **TFORMer** will produce errors in all bands and elements in which the data field is used (e.g., in text elements, pre-/post-evaluations, printing conditions, …). Affected elements are marked with red color (see section 10.4).

10.3 The Edit Data Field Dialog

10.3.1 Standard Data Fields

The type *Data Field* provides the field values from a data source.
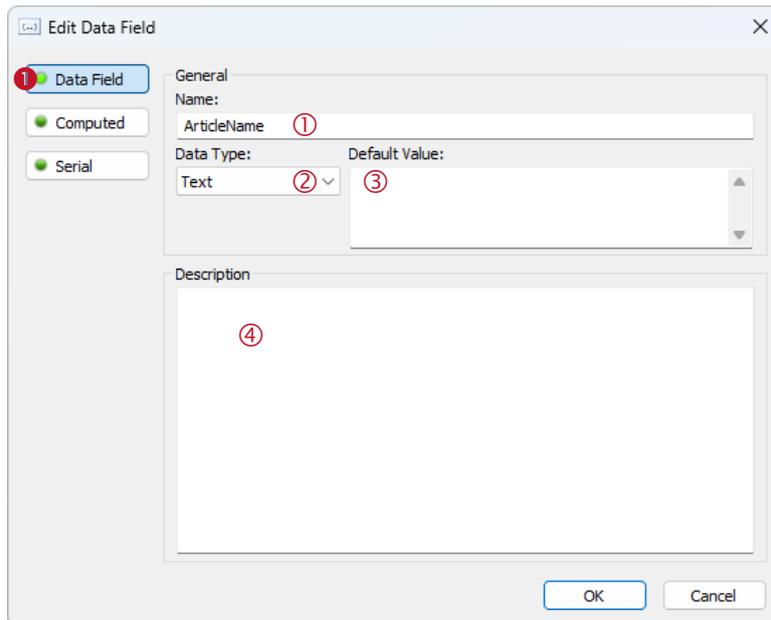
Figure 54: Edit Data Field Dialog – Data Field

Make sure the option *Data Field* ❶ is selected.

In ① enter a name for the data field. Depending on the field type in your data source you may adjust a suitable type in ② (Text, Integer, Floating-point). However, for most cases the type *"Text"* will be fine. In ③ you can specify a default value. This value will always be used if no other value is computed respectively provided by the data source. In ④ you can add an arbitrary description text.

► Please note: Before you can use the data field to access the data from an external data source you have to create the necessary field bindings (see section 13.4)!

10.3.2 Computed Fields

The type *Computed Field* computes the values based on a user defined expression. Besides that you may also apply one of the built-in aggregation functions to the expression result (e.g., calculate sums).
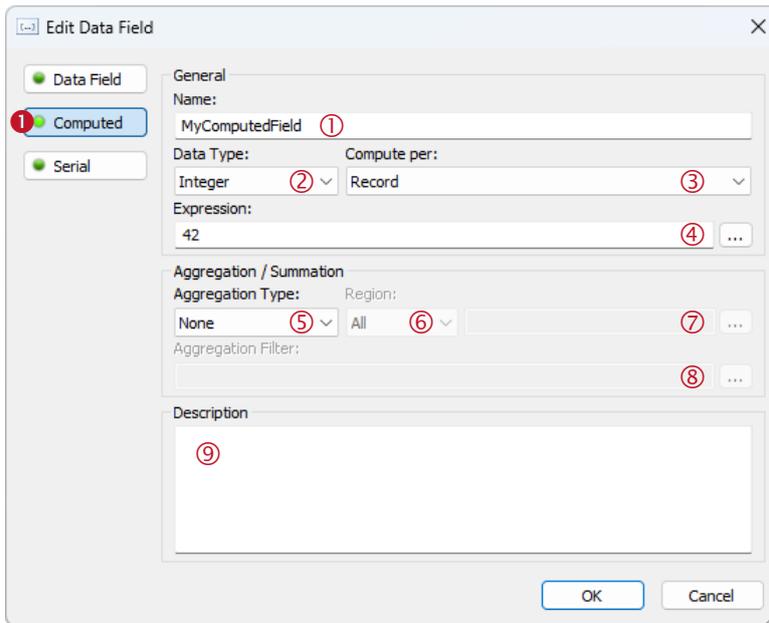
Figure 55: Edit Data Field Dialog – Computed

Make sure the option *Computed* ❶ is selected.

In ① enter a name for the data field. In ② select the data type. The computed value can either be a text, an integer or a floating-point number. The field value is calculated by evaluating the expression in ④. In ③ you can choose, whether the expression is computed for every record or for every record copy.

Example:
If you set the expression in ④ to "NumRecordCopies" the data field will return the number of copies, which is adjusted in the data source.

A typical application for computed fields is the aggregation / summation of data field values. In ⑤ you can select one of the following aggregation types:

Selection	Description
None	Do not calculate any sums.
Running Average	Calculate the arithmetic average for all values within each enclosed region ⑥ up to the current record. – This means, the expression ④ is calculated for each record respectively record copy (see ③). The result is then added to the series of values within region ⑥. The data field provides the average for these values. Pease note: The average of all(!) records is not available before the last record!
Running Sum	Calculate the sum for all values within each enclosed region ⑥ up to the current record. – This means, the expression ④ is calculated for each record respectively record copy (see ③). The result is then added to the series of values within region ⑥. The data field provides the sum of these values. Pease note: The sum of all(!) records is not available before the last record!

► Please note: These functions are only available for numeric data types (integer, floating-point) and not for text!

For *Running Sums* and *Running Averages* specify the region in which the values shall be evaluated (see ⑥):

Selection	Description

All	Do one aggregation within the whole range of the print-job.
Page	Do a separate aggregation within the range of each new page.
Label	Do a separate aggregation within the range of each new label.
Group	Do a separate aggregation within the range of each new group. In order to identify the group, enter the same condition as for the group header/footer (property *"Group By"*) in field ⑦. Whenever the result of the expression changes a new group is started.

When using a filter in field ⑧, single values will only be considered if the expression returns true. Thus you can define, which values are considered for the aggregation, and which not.

In ⑨ you can add an arbitrary description text.

10.3.2.1 Example: Calculate Sum

In the following example we will summarize all listed prices in a report. The result is printed underneath the last detail band.

Figure 56: Calculate Sum

First create a new computed data field (e.g., "Sum_ArticlePrice"). Set the data type to *"Floating-point"* (prices are usually given with decimal digits). As expression enter the name of the data field that you want to sum up (in this case "ArticlePrice"). Choose the aggregation type "Running Sum" and confirm with *OK.*

The newly created data field "Sum_ArticlePrice" can now be used in the layout. Place it in the report footer to print the sum underneath the last list item. You can print the sum directly, or you can format it. Use the following expression to create a number with up to eight digits before the decimal point and exactly two digits after the decimal point:

```
[Format (Sum_ArticlePrice, "#######0.00")]
```

Of course, you can also use digit grouping if required:

```
[Format (Sum_ArticlePrice, "##,###,##0.00")]
```

10.3.3   Serial Numbers

The type *Serial Number* provides consecutive numbers.
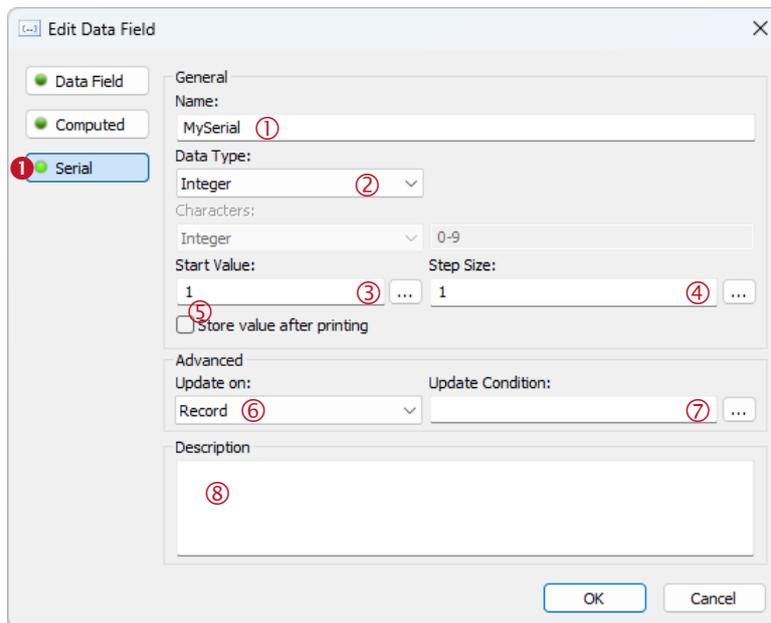
Figure 57: Edit Data Field Dialog – Serial Number

Make sure the option *Serial* ❶ is selected.

In ① enter a name for the data field. In ② select the data type. A serial number can either be an integer or a floating-point number. Enter the start value in ③ and the increment in ④. If you want **TFORMer** to remember the last value which was printed you have to select option ⑤. In this case **TFORMer** will continue with the next serial number on the next print-out.

Instead of making **TFORMer** remember the last serial value you can also provide each starting value via an expression (compute it, read it from a data field). To do this, click button ⎣…⎦. The expression editor will open.

In field ⑥ you can specify, whether the serial number should be incremented for each new

- Document,
- Label,
- Page,
- Record (default) or
- Record copy.

When using an update condition in ⑦ the serial number will only be incremented if this condition returns true.

In ⑧ you can add an arbitrary description text.

After you are done with editing close the dialog with *OK.* The serial number can now be used in the layout. You can print the counter directly, or you can format it. For example, use the following expression to create an eight-digit number with leading zeros:

```
Format (MySerial, "00000000")
```

10.4 Faulty Data Field References

When renaming or deleting a data field, all references to this data field will become invalid imme-
diately (e.g., in a text element, in the printing condition of a band, etc.). The concerned bands and
elements are marked red to indicate the error. In order to fix the problem all broken references have
to be replaced manually.

In this example the data field "Quantity" ❶ was
renamed to "Quantity_renamed".

The original data field name is still in use in
various bands and elements. For this reason,
some errors are displayed (❷).

When hovering the mouse over one of the red
objects a short error description is displayed (❸).
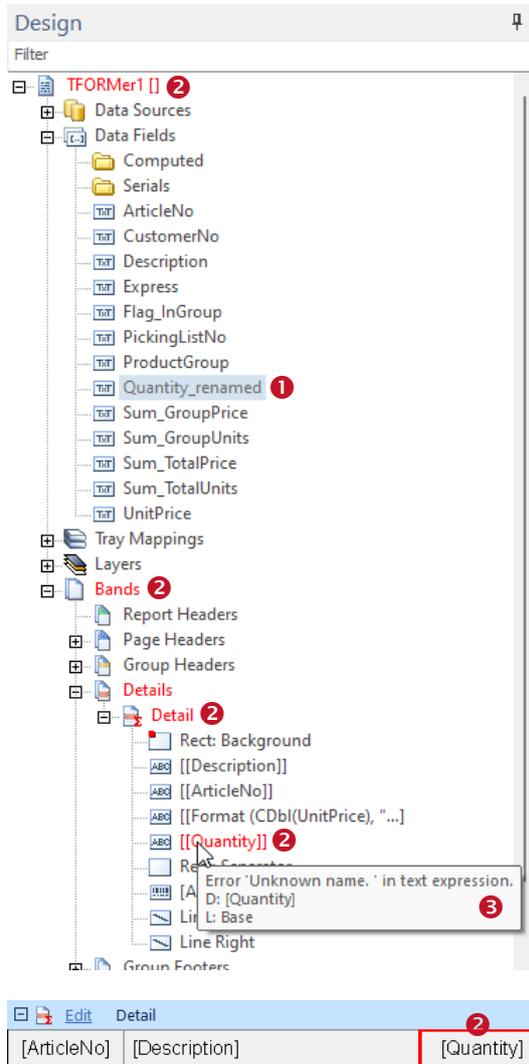
Figure 58: Data Field Reference Errors

11 Expressions

11.1 Introduction

Expressions are used for computing element content or controlling output behavior during print-time. Expressions can be used

- as dynamic content in text, barcode and picture elements (see section 8.3).
- as printing conditions for bands and graphical elements (see section 12.2).
- as printing conditions for layers (see section 12.3).
- for computed fields and serial numbers (see sections 10.3.2 and 10.3.3).
- for pre- and post-evaluations in bands (see section 12.4).
- to compute the name of the generated output or spool file (see section 6.4.2).
- to filter the input data (see section 13.6).

The syntax used by **TFORMer** is similar to the programming language C.

Example:
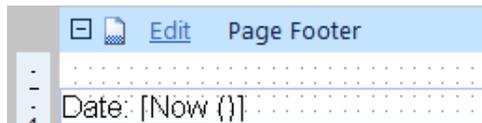
This text element contains formatted text. In line with the text the expression *"Now()"* was inserted. It will return the current system date.

Date: 05.11.2025

During print-time the expression is evaluated: Instead of *[Now()]* the current date is printed.

11.2 Expression Builder

Expressions are edited using the *Expression Builder*:
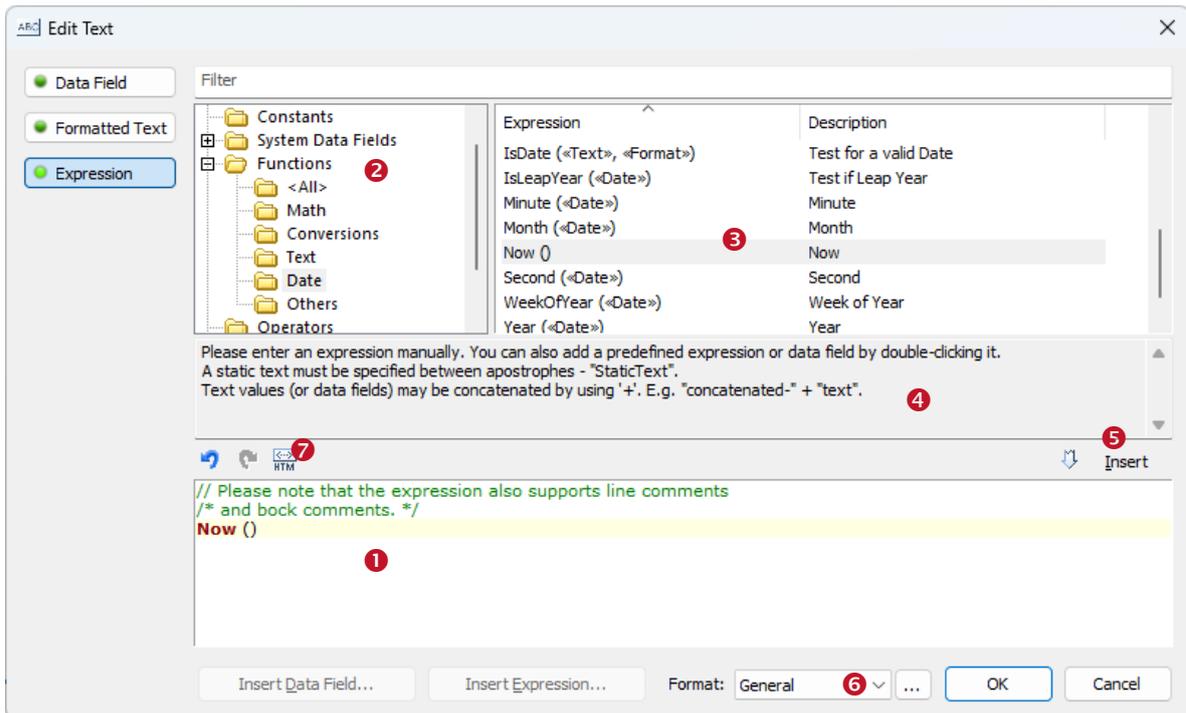
Figure 59: Expression Builder

Area ❶ shows the current expression. To extend the expression in ❶ you can select one of the predefined

- *Data Fields*
  The data fields available in your layout.
- *Constants*
  True, False and *Linefeed* ("\n").
- *System Data Fields*
  Data fields that are maintained by **TFORMer** automatically (the current page number, the band name, …)
- *Functions*
  Mathematical functions, conversion functions, string manipulation, …
- *Formats*
  Common formats for numbers, date and time values.
  To apply formatting to the entire expression, you can also use the *Format* property ❻ (see section 9.9.1).
- *Common Expressions*
  Frequently used expressions like page numbering ("Page N of M"), the current date and time, currency formatting, …

First select the category in ❷. Then mark the required item in ❸ and click *Insert* ❺ (or just double-click on the list item). The item will be inserted at the current cursor position in ❶. The text area ❹ shows additional information on selected items.

If you click *OK* the expression will be validated. Only expressions with a correct syntax are accepted.

A list of all available functions, constants, system data fields, formats and common expressions is available in Appendix C.

For text elements, additionally the button [HTM icon] (❼) is available. When pushed, the evaluated expression in ❶ will be interpreted as HTML. Thus, you can provide additional format specifications within the text. HTML-formatted expressions are marked with angle brackets "<>" (see section 9.5.3).

11.3 Evaluation Order

The over-all evaluation order for expressions is defined as follows (see also figure below):

1. *Printing Condition* of the *Band*
2. *Pre-Evaluation* of the *Band*
   (Can be used for computing d*ata fields)*
3. *Printing Conditions* of *Layers*
   (These are computed for every band, the results are used later when printing the elements)
4. *Printing Condition* of *Elements* in the *Band*
5. *Dynamic Contents* for *Elements*
6. *Post-Evaluation* of the *Band*

Steps 2 to 6 will only be performed if the band is printed – in other words: if the printing condition of the band is true.
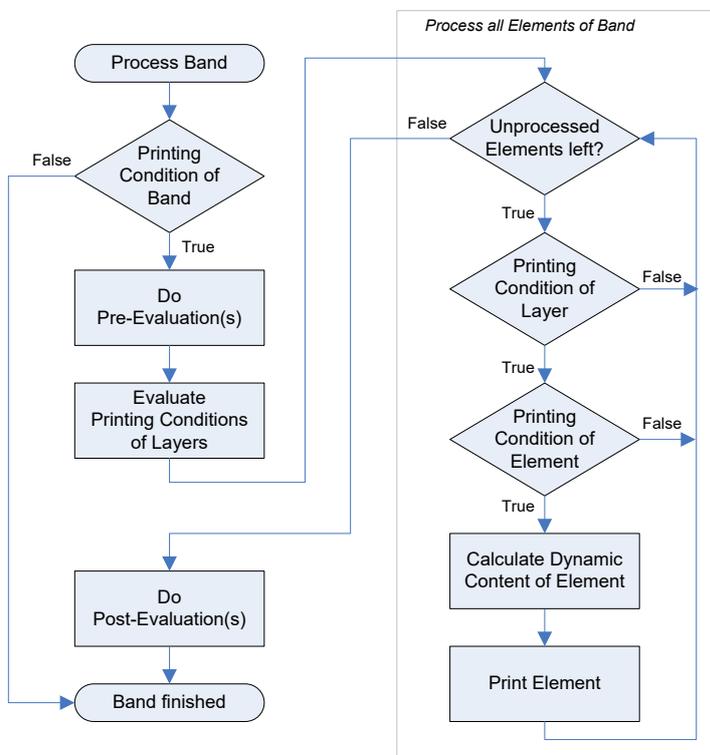
Figure 60: Evaluation Order

12 Smart Layouts

12.1 Introduction

TFORMer offers a number of features, which give you additional flexibility for formatting the output:

- *Printing Conditions*
  (These are used to control whether single bands or elements are printed or not.)
- *Printing Layers*
  (With the help of printing layers you can control the printing of multiple design elements via one single printing condition.)
- *Pre- and Post-Evaluations*
  (These are used for performing computations which are specific to a certain band.)
- *Invisible Bands*
  (These are used for controlling special layout features.)
- *Tray Control*
  (This allows you to switch printer trays – even within a print job!)

12.2 Printing Conditions

Printing conditions are used to control the visibility of elements, layers or bands during print-time.

A printing condition is an *expression* (see chapter 11) which returns either *true* or *false.* Printing conditions can be assigned to elements (text elements, lines, …), to entire bands and to printing layers (see below). If a printing condition returns *false* the corresponding object will not be printed.

► Please note: The result of a printing condition will be converted to the data type *"Integer"* (numerical value) if required. A value of 0 is interpreted as *false.*

12.2.1 Edit a Printing Condition

In order to edit a printing condition first select the object (in this example the page header). Then use the menu *Layout ► Edit | Condition*. Alternatively, you can also right-click on the object and select *Condition* from the pop-up menu.
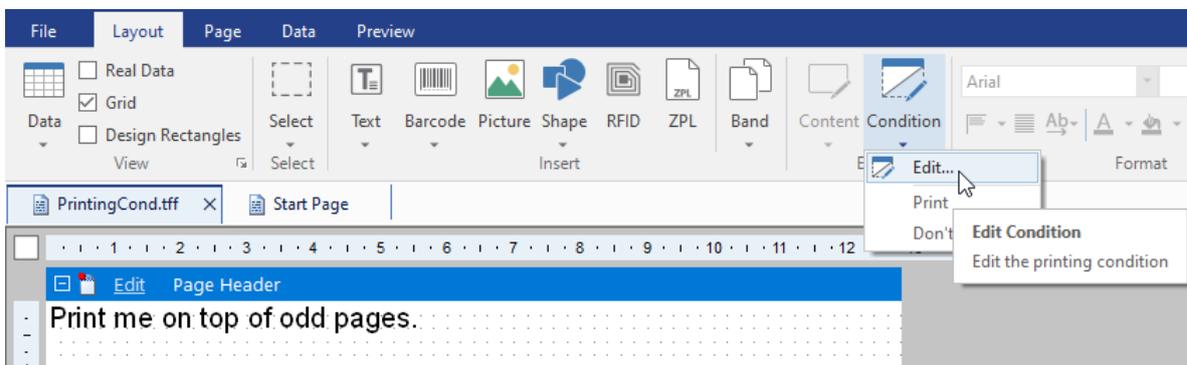
Figure 61: Edit Element Content

	Condition		Edit…	Edits the printing condition for the selected object (band, element or layer).
			Print	Removes the printing condition. Thus, the object is always printed.
			Don't Print	Sets the printing condition to 0 (= *false)*.

				Thus the object is never printed.

For editing the printing condition, the *Expression Builder* (see section 11.2) is used. In order to print the page header in Figure 61 on odd pages only you would, for example, enter the following printing condition (see also section 12.2.3):

```
IsOdd (Page)
```

12.2.2 Visual Cues for Printing Conditions

If you have applied a printing condition, the band or the element will be marked with a small red dot:
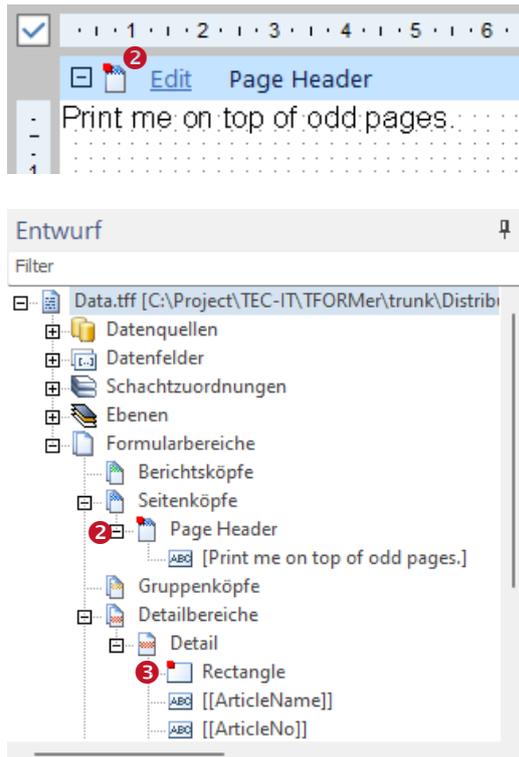
Bands are marked in the layout view and in the design tree (❷). Graphical elements are marked in the design tree only (❸).

12.2.3 Examples

12.2.3.1 Different Headers or Footers

To print different headers and footers create at least two bands of the same type. Then use the printing condition to decide which band shall be printed. E.g., create one page header for odd pages and one page header for even pages. The expressions "IsOdd(Page)" respectively "IsEven(Page)" will serve as printing condition.

12.2.3.2 Alternating Background Colors

To print rows with alternating background colors, draw a filled rectangle in the background of the detail band. Then set the printing condition to "IsOdd(Record)".

12.3 Printing Layers

Printing layers are used to control the *visibility of multiple elements with a single printing condition.* The printing condition of the layer decides whether all elements assigned to that layer will be printed or not.

By default, only one printing layer, the layer "Base", is defined. Newly inserted design elements are always added to this layer.

> Please note:
> ► One element can be assigned to one printing layer only.
> ► Layers do NOT influence the z-order of elements!
> ► Elements assigned to a printing layer may still use additional element-specific printing conditions.

12.3.1 Create a New Layer
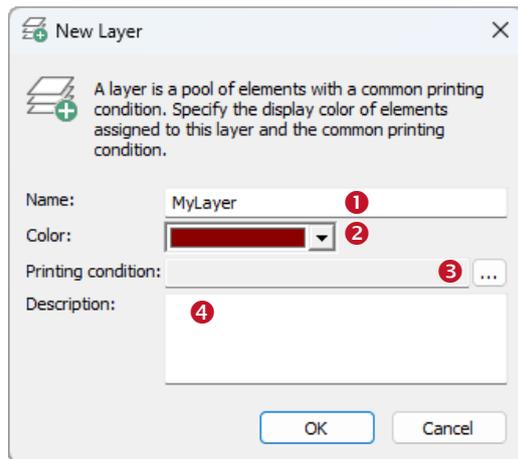
To create a new layer, select *Layout ► Layers | New Layer* from the menu. Alternatively, you can also right-click on the item *"Layers"* in the design tree and select *New Layer…* from the pop-up menu.

The *"New Layer"* dialog will appear.

In this dialog enter the name (❶), the color (❷) and the printing condition (❸) for the layer. In ❹ you can enter an arbitrary description text.
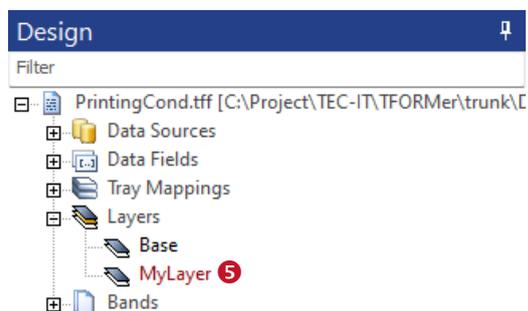
Once the printing layer is inserted you will find the appropriate entry in the design tree (❺).

For a description of all layer properties, please refer to Appendix A.4.

12.3.2 Assign Design Elements to a Layer

To assign design elements to a specific printing layer, perform the following steps:

First select all elements that you want to assign to the layer. Then use the menu *Layout ► Layers |* Base ▼ (see ❻ below) to complete the assignment. Alternatively, you can also right-click on the selection and select *Assign Layer ► MyLayer* from the pop-up menu.
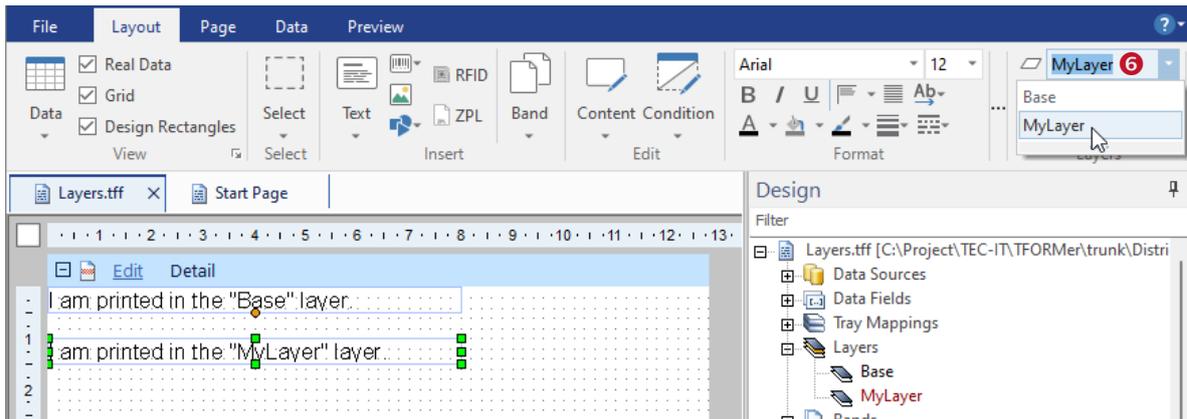
Figure 62: Assign Printing Layer

12.3.3 Display Layer Colors

If you want to see which design elements are assigned to which layer, you can make **TFORMer** display the layer colors. Use the menu *Layout ► Layers | Show Layers* to toggle between the following two display modes.
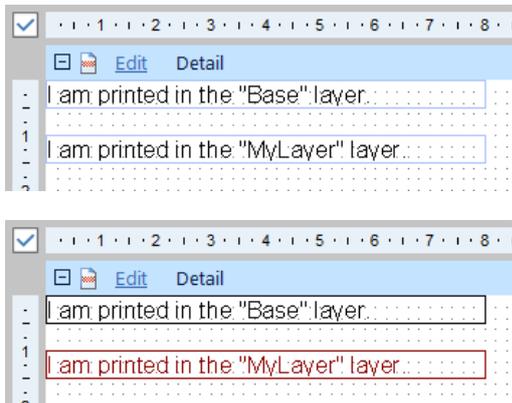
Per default "*Show Layers*" is *disabled*. All design elements are displayed in their printing color.

If "*Show Layers*" is *enabled* all design elements are drawn in the respective layer colors.

The layer color can be adjusted in the layer properties (see section 12.3.1, ❷).

12.3.4 Hide Layer Contents

To hide all elements which are assigned to one layer, first select the layer in the design tree and then use one of the following methods:

- Right-click on the layer in the *design tree* and deselect *Visible* in the pop-up menu.
- Double-click on the layer in the *design tree.*
- In the *properties window* go to the *Common* group and set the property *Visible* to "False".

12.4 Pre-Evaluation and Post-Evaluation

The pre- and the post-evaluation can be used to compute data fields during print-time.

With this type of evaluation each band can perform arbitrary computations. You have the choice between computations before a band is printed *(Pre-Evaluation)* and computations after a band was printed *(Post-Evaluation).* If the band is not printed at all (if the printing condition of the band returns false), no evaluations are performed.

Usually pre- and post-evaluations are used for

- implementing computations which are specific to a band,

- implementing counters,
- formatting data prior printing.

For example, the pre-evaluation in the *report header* may be used to evaluate one or more expressions at the "beginning" of the report.

> Please note:
> ► When assigning a value to a data field during print-time (computed field, pre-/post-evaluation), this data field will be excluded from data import. It will no longer be filled with any values from the data source. – A data field which provides the data from a data source (which is bound to a source field) may therefore never be filled with computed values. Always use a separate data field for computations!

12.4.1 Edit Pre- and Post-Evaluations
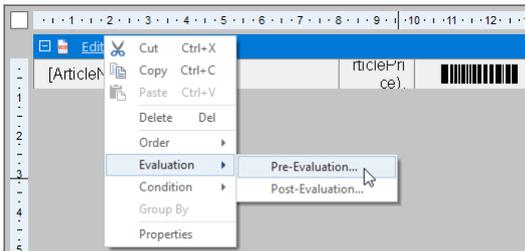
Click the Edit link in the band header (or right-click the band) and select *Evaluation ► Pre-Evaluation…* respectively *Post-Evaluation…* from the pop-up menu.

The following dialog will appear:
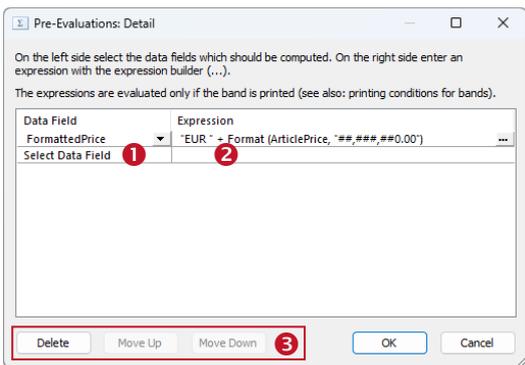
First select the data field that you want to compute in ❶. Then enter an expression in ❷. Click on the ⋯ button to open the *Expression Builder* (see section 11.2).

The computations are evaluated in the order as they appear in the dialog (from top to bottom). If you want to change the computation order or if you want to delete a computation, use the buttons in ❸.
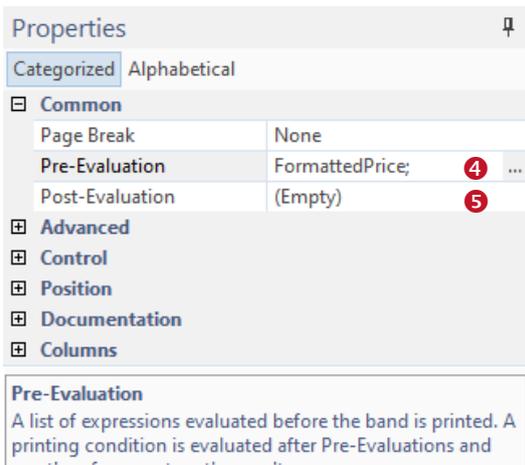
The *Common* group in the *properties window* of the band shows all data fields calculated in the pre-evaluation ❹.
The *post-evaluation* ❺ is empty. No data fields are computed.

12.4.2 Visual Cues for Pre- and Post-Evaluations
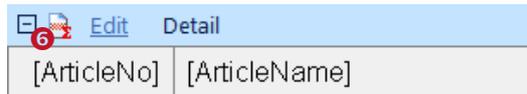
If you have entered a pre- or a post-evaluation expression, the band will be marked with a small red sigma symbol in the layout view ❻ and in the design tree ❼.
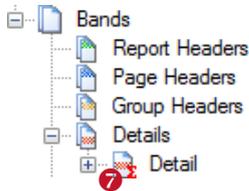
12.5 Invisible Bands

Invisible bands are used to perform computations or to control the output behavior of the layout.

An invisible band is a band with zero height. It does not contain any graphical elements like text or lines, and therefore nothing is being printed.

Invisible bands can be used for:

- Computations *(pre-* and *post-evaluation).*
  You can initialize a *data field* in the *report header* (at the beginning of the printing process).
- Feed Control (insert page- or column-breaks, triggered by printing conditions).
- Tray Control (see section 12.6).

Please note:
- ► If the printing condition for the band returns *false,* it will not be printed. This means, no pre- and post-evaluations are performed, no page- or column breaks are inserted and no tray will be selected.
- ► If the height of the band is not adjustable use the menu *Page ► Common | Setup* to change to the layout type *Complex*.

12.6 Tray Control

The tray control is used to select or switch printer trays during print-time.

For every single page of the output, you can dynamically select a tray on the target printer. This is useful for printing the first page of an invoice on a letterhead or for adding an envelope to a print-out. You could also print a number of labels and add a cover sheet which is printed on non-sticky paper. Such output with mixed types of paper can be done in one single print-job. The selection of the trays is performed during print-time.

The tray selection works completely device-independent: **TFORMer** uses logical tray numbers (tray 1 to tray 10). Thus, it is possible to select the trays without taking care for the actually used hardware or printer driver. A tray is always selected by its logical number.

The mapping of the device-dependent printer trays to the logical tray numbers is done in the *Tray Mappings.* These tray mappings have to be configured beforehand. Then, for each print job, you can select the appropriate mapping.

Example:

Assume you are printing one layout on two different printer models (Printer A and Printer B):

Name	Tray Mappings for Printer A			Name	Tray Mappings for Printer B
Tray 1	Automatically Select			Tray 1	Auto
Tray 2	Upper Paper Tray			Tray 2	Tray 1
Tray 3	Manual Paper Feed			Tray 3	Tray 1 (Manual)
Tray 4	Envelope, Manual Feed			Tray 4	Envelope Feeder
…				…	
Tray 10	A4			Tray 10	A4

The first page of the layout should be printed using the manual paper feed which is named differently on both printers (due to different printer drivers). Using the tray mappings as shown above, the tray number 3 can be assigned in both cases. When printing, take care to select the appropriate tray mapping for the actual output device.

The following steps are necessary for tray control:

- Create and configure the required tray mappings.
- Perform the tray selection in the band properties.
- Select the correct tray mapping for printing.

Please note:

► The "_Default_" tray mapping is always available.

► You can define as many tray mappings as required (this is useful when printing one layout on different printers).

► When using paper sizes (e.g., A4 or Letter) in the tray mappings (instead of tray names), be careful to configure your printer drivers correctly. Otherwise, the mapping between the paper format names and the printer trays will not work.

12.6.1 Create a New Tray Mapping
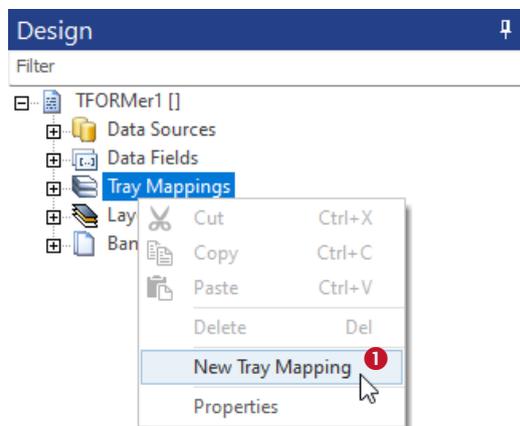
To create a new tray mapping, right-click on the folder *"Tray Mappings"* in the design tree and select *New Tray Mapping* from the pop-up menu (see ❶). A new entry "New_Tray_Mapping_0" will be created.

To rename the tray mapping select it in the design tree and thereafter press *F2* (or click again on the item with the left mouse button). Now you can directly edit the name. Alternatively, use the properties window to rename a tray mapping.

12.6.2 Configure Tray Mappings

Each tray mapping has ten logical trays which can be filled with device specific physical trays. The trays are assigned as follows:
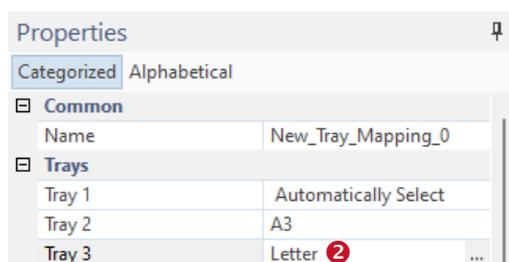
Enter the name of the logical tray directly in ❷ or select it from the list provided by the printer driver. Click on the … button to open the dialog below.
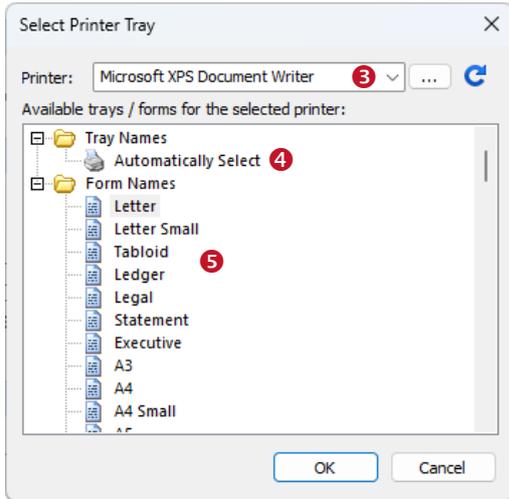
First select the target printer in ❸. Then select one of the listed items: You can choose a *"Tray Name"* (❹) or a *"Form Name"* (❺).

In order to refresh the tray list for manually entered printer names, use the button ↻.

Click *OK* to assign the selection.

12.6.3 Tray Selection in the Layout

First select the band which should perform the tray change. Then go to the properties window and choose the required tray number (1 to 10) in the *Tray* property:
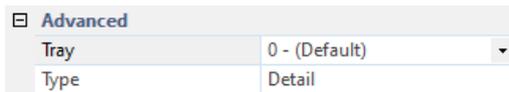
By default, *"Tray 0 - (Default)"* is pre-selected for each band. This means, the settings of the current printer driver are used for printing.

> ► The first band that is printed on a page (e.g., the *page header)* does the tray selection. Tray settings of subsequent bands which are printed on the same page are ignored.
> ► Tray 0 (default) uses the settings of the current printer driver.
> ► Tray 1 to 10 can be pre-configured in the tray mappings.

12.6.3.1 Example

If you want to print the first page of a report on a letterhead, assign the required tray to the *report header.* After the first page you have to switch back to normal paper. Therefore, enter the number for the default tray in the *page header*.

12.6.4 Select the Tray Mappings for Printing

If your layout contains any sort of tray selection, please make sure to choose the appropriate tray mapping for the target printer.
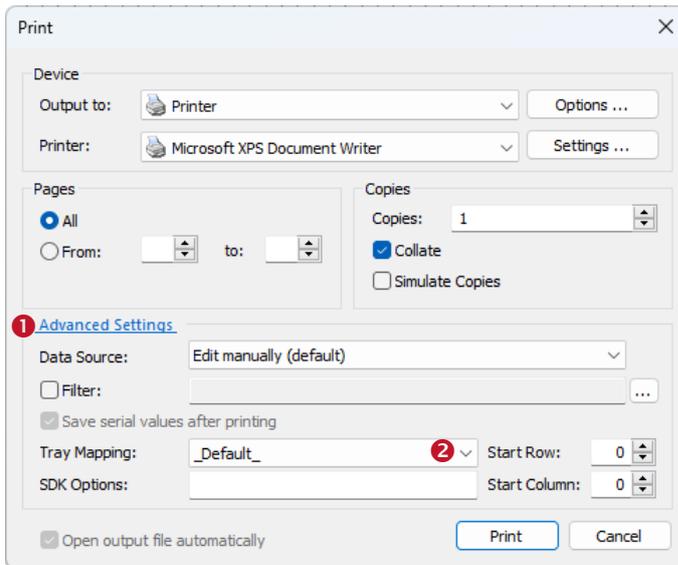
Figure 63: Select Tray Mappings in the Print Dialog

On the print dialog choose *Advanced Settings* ❶. Then select one of the pre-configured tray mappings in ❷. For more information on the print dialog, please refer to chapter 15.

13 Providing Data

13.1 Introduction

As mentioned in chapter 5 **TFORMer** requires data in addition to the layout for printing. The following data source types are supported:

- *Manual Data Source*
  This is the default data source. It allows you to edit every single data value manually
  (see section 13.3.1).
- *ODBC Data Source*
  The data will be imported from an ODBC connection (see section 13.3.3).
- *Flat Text File*
  The data will be imported from a text file (CSV, TSV,…) (see section 13.3.4).
- *XML File*
  The data will be imported from a XML file (see section 13.3.5).
- *TFORMer SDK API*
  This data source is not selectable in the user interface. The data will be provided programmatically from outside **TFORMer Designer.** This method can be used by software developers. For details see section 15.3.

► For each layout you can create multiple data sources and switch between them as required. So you have the possibility to print one single layout with data from different data sources without modifying the layout.

13.2 The Data View

For managing data sources **TFORMer** offers a separate view, the *data view*. In the data view you can…

- inspect the data which is provided by the currently selected data source,
- create, edit, rename and delete data sources,
- switch between different data sources,
- reload a data source,
- set parameters for a data source,
- bind source fields (the fields provided by a data source) to data fields (the placeholders, which are used in the layout),
- and apply a filter to the current data source.

To switch to the data view, click on the *Data* tab in the ribbon menu (see ❶ below) or use one of the other methods as described in section 4.4. You can also use the keyboard shortcut *Ctrl+D*.
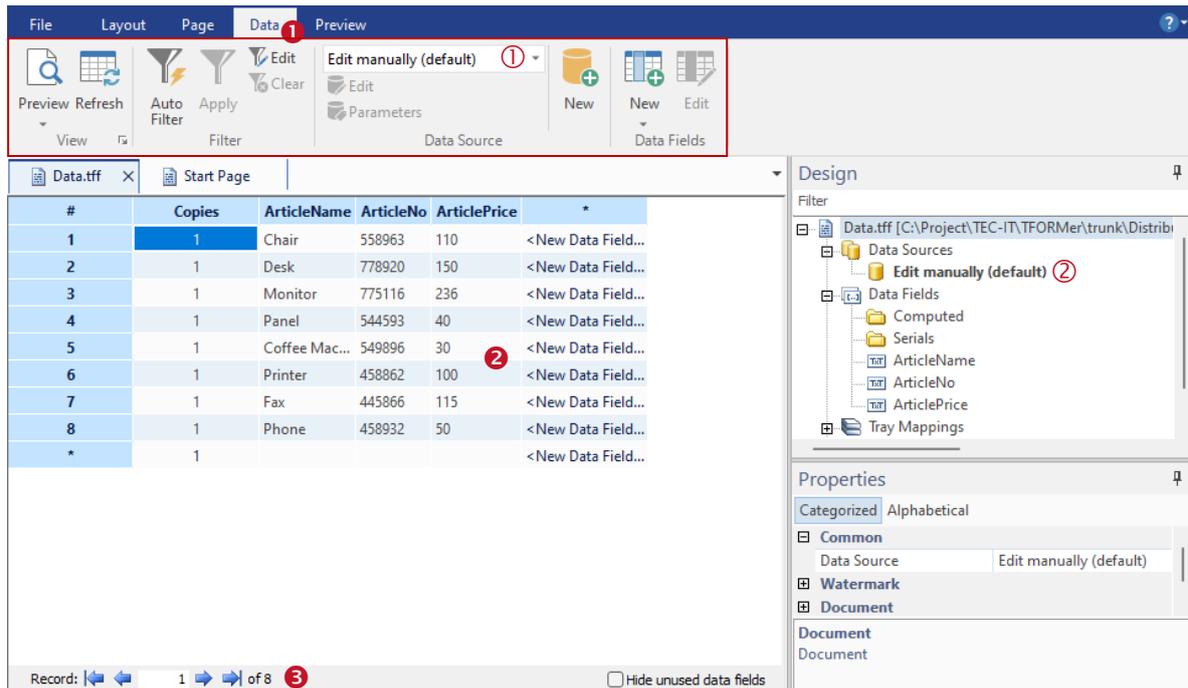
Figure 64: Data View

The *data view* is divided into the following areas:

❶ Ribbon Menu ► Data
❷ Data Grid
❸ Record Navigation

Via the ribbon menu ❶ you can edit the active data source, switch to a different data source, or create a new data source (see also command descriptions in 13.2.1). To set a different data source you would, for example, use the drop-down list in ①. By default, the manual data source is selected. This data source is used for directly editing the print data within **TFORMer**.

The design tree ② gives you an overview over the available data sources. The active data source is displayed in bold. A right-click on the data source will open a context menu with the most important commands.

The data grid ❷ shows the data which is provided by the active data source. The grid is divided into rows and columns. The rows represent the data records, the columns represent the data fields (*ArticleName, ArticleNo* etc…).

The first column in the data grid is the column "*Copies*" . This column is always available. It defines how often each single record is printed.

The data field columns are ordered alphabetically by default. Using the data field property *"Display Order"* (see section A.5) a custom display order can be specified.

The record navigation ❸ allows you to navigate to the next, previous, first or last record, or to a specific data record directly.

> ► **TFORMer Designer** always uses the active data source for printing.
> ► **TFORMer Designer** only prints the records which are shown in the data grid. This is usually the content of the active data source, but the number of records may be reduced by a filter (see section 13.6).

► Sorting the records in the data grid is not supported. If the printing order has to be changed, please re-arrange the records manually or adjust the appropriate data source definition (e.g., by inserting an ORDER BY instruction in the SQL statement).

13.2.1 Menu Commands

The following table gives you an overview over the available menu commands:

13.2.1.1 View

	Layout Data Preview	Switches to the respective view (see also section 4.4.2). Shortcuts: *Ctrl+L*, *Ctrl+D* and *Ctrl+Space*
	Refresh	Reloads the data from the data source. Shortcut: *F5*

13.2.1.2 Filter

	Auto Filter	Creates a new filter which is based on the current selection in the data grid (see also section 13.6.1.2). Place the cursor inside the row and on the value for which you want to filter. Alternatively, you can also select a specific record by clicking on the line number on the left side. Then click Auto Filter. Please note that multiple selection is possible (hold down the *Shift* or the *Ctrl* key). You can also filter several times in order to refine the result.
	Apply	Enables or disables the filter (see also section 13.6.2).
	Edit	Edits the filter expression (see also section 13.6.1.1).
	Clear	Removes the existing filter.

13.2.1.3 Data Source

Edit manually (default) ▼		Selects an existing data source or creates a new one (see also sections 13.3.2.6 and 13.3.2.1).
	Settings	Edits the current data source (see also section 13.3.2.3).
	Parameters	Edits the data source parameters (see also section 13.5.2.3).
	New	Creates a new data source (see also section 13.3.2.1).

13.2.1.4 Data Fields

	New	Inserts a new data field (see also section 10.2.1.1).
	Edit	Edits the selected data field (see also section 10.3).

13.3 Data Sources

13.3.1 Manual Data Source (Default)

For each layout **TFORMer** provides a manual data source (see ❶). This data source is always available. It allows you to enter the required data directly into the data grid.

Figure 65: Edit Data Manually

To insert a new record place the cursor in the last data row ❷ (which is marked with a " *"), enter the required data and confirm with enter. If a data field has assigned a default value, this value is displayed inside the according cell (see ❸). It will be used, if no other value is entered.

To change an existing value in the data grid, select the required cell with the mouse and press *F2* (or *double-click* on the cell). This allows you to place the cursor at the required position inside the cell and to edit the content.

A new line within a cell is inserted by pressing *Ctrl+Enter*. Please note that this line break is not visualized in the data grid view. Though, it will be inserted on the print-out.

To select a row, click on the record number in the first column "#". It is possible to select more than one row by holding down the *Shift* or the *Ctrl* key. The selection can be deleted (press the *Del* key) or it can be copied and pasted into any of the other rows (*Ctrl+C* and *Ctrl+V*).

► Only the manual data source allows you to edit the data within **TFORMer Designer** directly. For all other data sources (ODBC, flat text files and XML) the data grid is read-only.

► Read-only cells are marked with gray background color.

► Inserting new records is only possible in the last row ❷. You cannot perform an insert operation between two existing rows.

If required, you can create a new data field by clicking on the command *Data Fields | New* ④ in the ribbon menu or by clicking inside the column *<New Data Field…>* ❹.

▪ For the manual data source, the content of the new data field can be edited immediately.
▪ When using an external data source (e.g., ODBC) you need to provide the content for the new data field via source field binding (see section 13.4).

To edit an existing data field, click inside the respective row and then use the command *Data Fields | Edit* in the ribbon menu. Alternatively, you can also *double-click* on the respective column header.

► The field *"Copies"* ❺ is not an actual data field. It is used to determine how often a single record is printed.

13.3.2 External Data Sources

In addition to the manual data source you can specify one or more of the following external data sources:

- ODBC Data Source – see section 13.3.3
- Flat Text File (CSV, TSV, …) – see section 13.3.4
- XML File – see section 13.3.5

For managing these data sources use the operations described below:

13.3.2.1 Create a New Data Source

To create a new data source, select the command *Data Source | New* ❶ from the menu. Alternatively, you can also select *<Create New Data Source…>* from the drop-down list in ❷, or you right-click on the tree item *"Data Sources"* and select *New Data Source…* from the pop-up menu ❸.
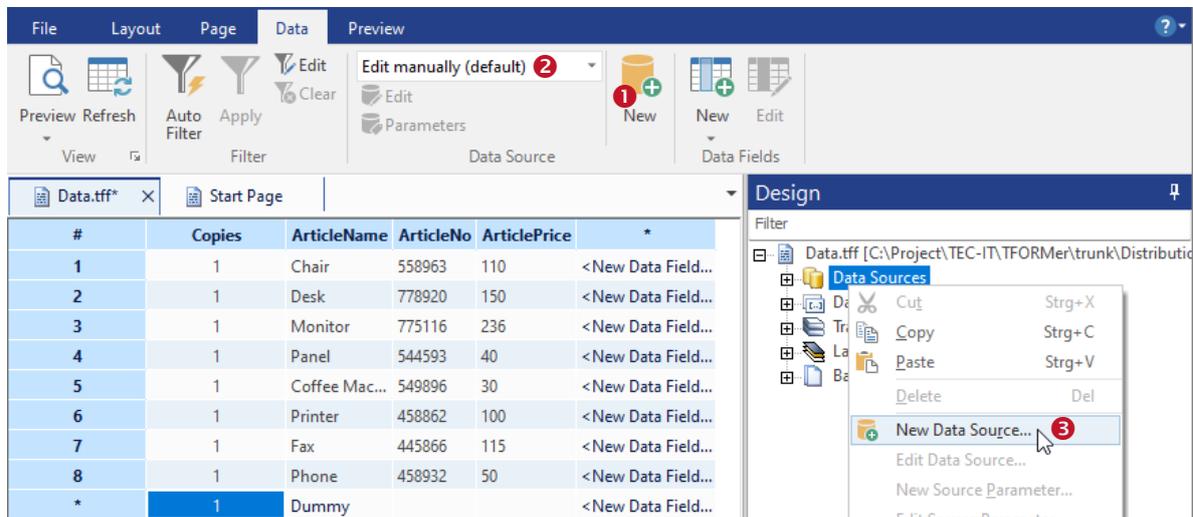
Figure 66: Create New Data Source

The dialog *"New Data Source"* will appear:

Choose one of the data source types in ❹. Specify a name (❺) and an optional description (❻) for the data source. Then confirm with *OK*.

A dialog for setting up the respective data source will appear. Setting up the different types of data sources is described in sections 13.3.3 to 13.3.5. Additional adjustments (which apply to all of these data sources) are discussed subsequently in sections 13.4 to 13.6.

Once the data source is inserted and set up you will find an appropriate entry in the design tree.
A newly created data source is set as the active data source automatically.

Figure 67: Dialog "New Data Source"

13.3.2.2 Loading Data and Progress Bar

For all external data sources **TFORMer** caches the data locally in order to provide a stable set of data for printing (you see the cached data in the data view). This means the data source is read completely, before a print-job or the rendering of the print preview is started.

Whenever a new data source is created or when switching to an existing data source (see sections 13.3.2.1 and 13.3.2.6) the data from this source is read automatically. However, it is also possible to manually force a reload on the data source (see section 13.3.2.7).

For large amounts of data, sometimes the loading may take several minutes. While loading the records **TFORMer** displays a progress bar:
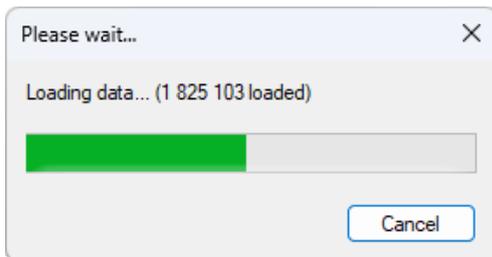
This bar shows the progress of the loading operation.

By clicking *Cancel* you have the possibility to cancel the operation:
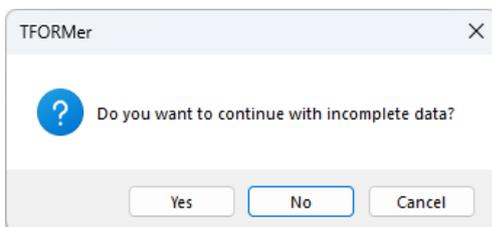
Yes aborts loading immediately. All data read so far is kept in the data cache. This results in an incomplete data cache. An appropriate notification text will be displayed at the bottom of the data view or preview (see ❶ below).

No aborts loading immediately. All data read so far is discarded. This results in an empty data cache. An appropriate notification text will be displayed at the bottom of the data view or preview (see ❷ below).

Cancel continues loading.

13.3.2.3 Edit a Data Source

First make sure that the respective data source is set active (see also 13.3.2.6). Then select the command *Data Source | Edit* from the menu. Alternatively, you can also right-click on the data source item in the design tree and select *Edit Data Source…* from the context menu, or just *double-click* on the data source.

13.3.2.4 Rename a Data Source

To rename a data source select it in the design tree and thereafter press *F2* (or click again on the data source with the left mouse button). Now you can directly edit the data source name. Alternatively, use the properties window to rename a data source.

13.3.2.5 Delete a Data Source

To delete a data source select it in the design tree and then press the *Del* key. You can also right-click the data source and select *Delete* from the context menu.

13.3.2.6 Switch between Data Sources

To switch to a specific data source, use the menu command *Data Source |* Edit manually (default) and select the respective item from the drop-down list (see also Figure 64, ①). Alternatively, you can also right-click on the data source in the design tree and select *Set as Active Data Source* from the context menu.

13.3.2.7 Reload a Data Source

You can refresh the cached data any time by selecting *Data Source | Update* from the menu or by pressing the shortcut *F5*.

13.3.3 ODBC Data Source

ODBC data sources are used to retrieve data from a database (Microsoft Access, SQL Server, Oracle,…). Each database with a suitable ODBC driver is supported. On Microsoft Windows the drivers for Microsoft Access and SQL Server are pre-installed. For more information on how to install additional ODBC drivers please refer to the documentation of the database system in question.

13.3.3.1 DSN (Database Selection)

In the *DSN* tab specify the ODBC connection:
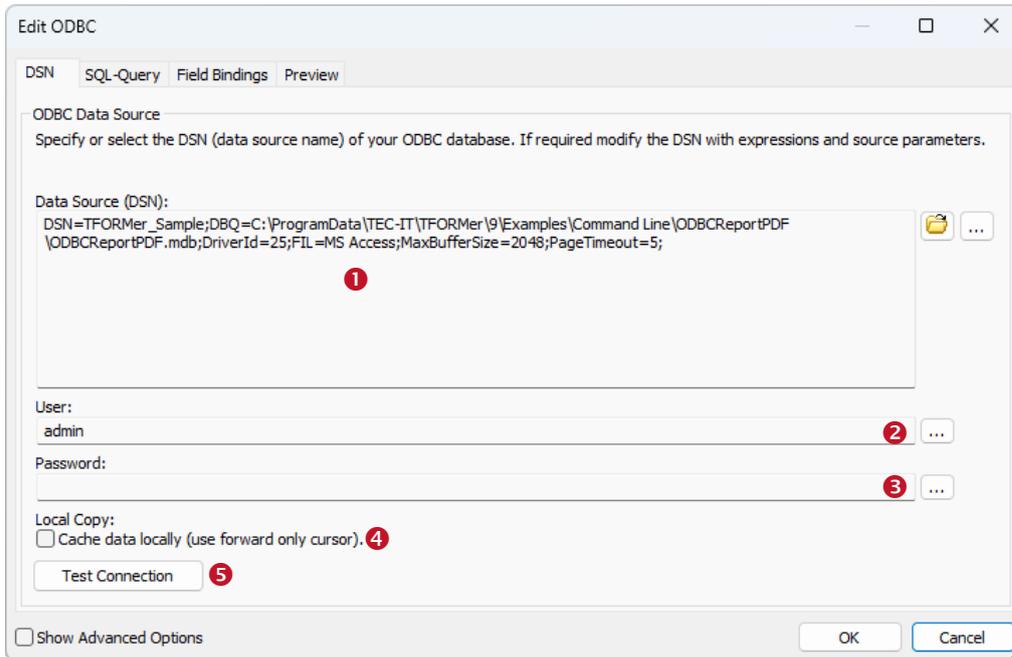
Figure 68: Data Source (DSN)

- **Data Source (DSN) ❶**
  Enter the connection string which identifies your required ODBC connection. You can select from a list of available data sources as defined under Microsoft Windows *(Control Panel ► Administrative Tools ► Data Sources (ODBC))* by pressing the button ⬚. Or you can enter the string manually by pressing the button ⬚.

- **Username ❷**
  Enter a username for the database connection by pressing the button ⬚.

- **Password ❸**
  Enter a password for the database connection by pressing the button ⬚.

- **Cache data locally ❹**
  Select this option if you want to cache the data locally.

- **Test Connection ❺**
  Use this button to test the connection settings.

► For advanced users: With the help of expressions and source parameters you have the possibility to build dynamic connection strings (e.g., use a variable data source (DSN), user name and/or password). First open the expression builder for the respective field in ❶, ❷ or ❸ by clicking the button ⬚, then use the button *Insert Source Parameter…* or *Insert Expression…*. For details on expressions and source parameters see chapter 11 and section 13.5.2.

13.3.3.2 SQL-Query

In the *SQL-Query* tab you specify the SELECT statement for fetching the data:
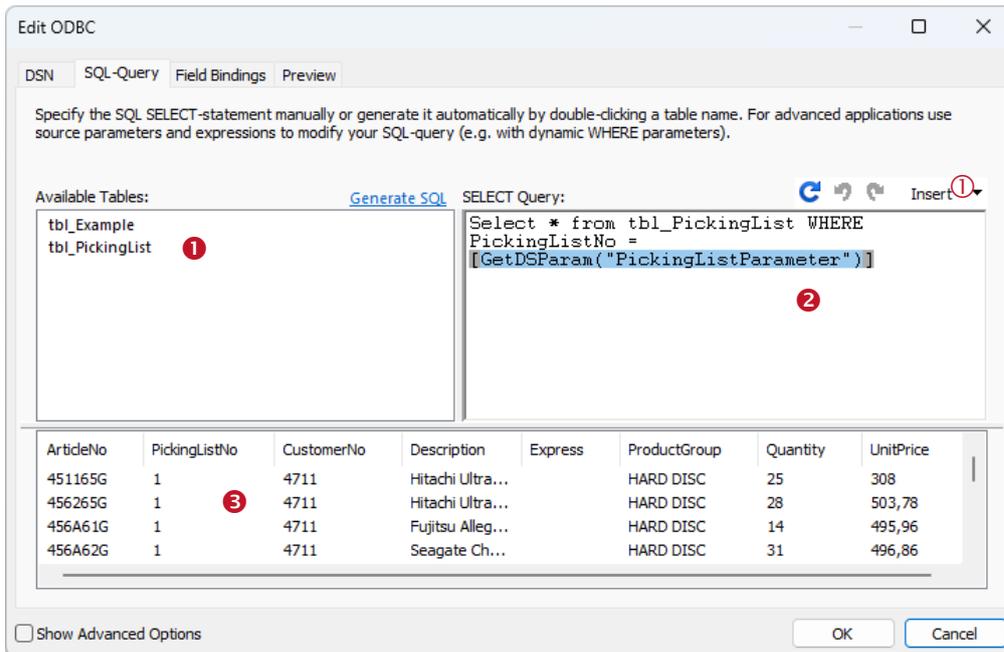
Figure 69: SQL-Query

- *Available Tables* ❶
  This window lists all available tables for the ODBC connection specified in the DSN tab.
- *SELECT Query* ❷
  The SQL query is used for data selection. The statement can be typed manually. Alternatively, you can also generate a "Select *" statement by double-clicking the table name in ❶ (or by selecting the table and clicking on the link Generate SQL).
- *Preview* ❸
  A preview of the selected data is displayed. To update the preview, press the button ⟳.

> ► For advanced users: With the help of expressions and source parameters you have the possibility to build a dynamic SQL SELECT statement. First place the cursor in ❷ on the required text position, then use the *Insert* button ① to insert an expression or a source parameter. For details on expressions and source parameters see chapter 11 and section 13.5.2.

13.3.3.3 Field Bindings

To complete the setup of the data source, adjust the required field bindings (see section 13.4).

13.3.4 Flat Text Files (CSV, TSV, …)

Text file data sources are used to retrieve data from a file (CSV, TSV, …).

13.3.4.1 File

In the *File* tab you specify the text file to be loaded:
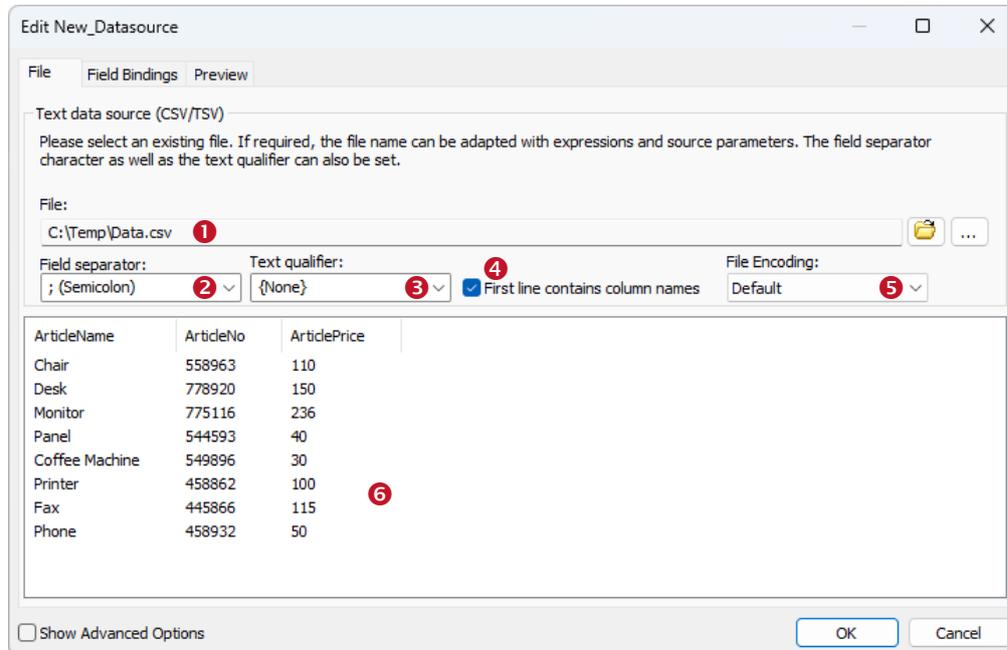
Figure 70: Text Data Source

- ▪ *File* ❶
  Enter the name of the file which you want to use as data source. You can select a file by pressing the button 📁 or you can enter the file path manually by clicking the button ⋯.
- ▪ *Field separator* ❷
  The field separator specifies the character used to separate the fields in the text file. Select a predefined separator character from the list or enter a custom separator character.
- ▪ *Text qualifier* ❸
  The text qualifier specifies the character which is used to enclose data values in the file (e.g., data values may be enclosed in quotes). This may sometimes be necessary to differentiate field values from the separator character. Select a predefined text qualifier cha-racter from the list or enter a custom character.
- ▪ *First line contains column names* ❹
  Specifies whether the first line in the text file contains the column names or not. If selected **TFORMer** does not treat data in the first line as data values. Instead, these names are used as the names of the source fields.
- ▪ *File Encoding* ❺
  The character encoding of the file. For UTF-8 and UTF-16 with a Byte Order Mark (BOM) the encoding can be detected automatically. In this case, the setting will be ignored.
- ▪ *Preview* ❻
  A preview of the data source values is displayed.

> ► For advanced users: With the help of expressions and source parameters you have the possibility to build a dynamic file path and/or file name. First open the edit dialog for ❶ by clicking the button ⋯, then use the button *Insert Source Parameter…* or *Insert Expres-sion….* For details on expressions and source parameters see chapter 11 and section 13.5.2.

13.3.4.2 Field Bindings

To complete the setup of the data source adjust the required field bindings (see section 13.4).

13.3.5 XML File

XML file data sources are used to retrieve data from a well-formed XML file. In addition to the XML file you can specify an optional transformation file (XSLT file). This file may be used to transform a custom XML file into a structure accepted by **TFORMer**.

13.3.5.1 File
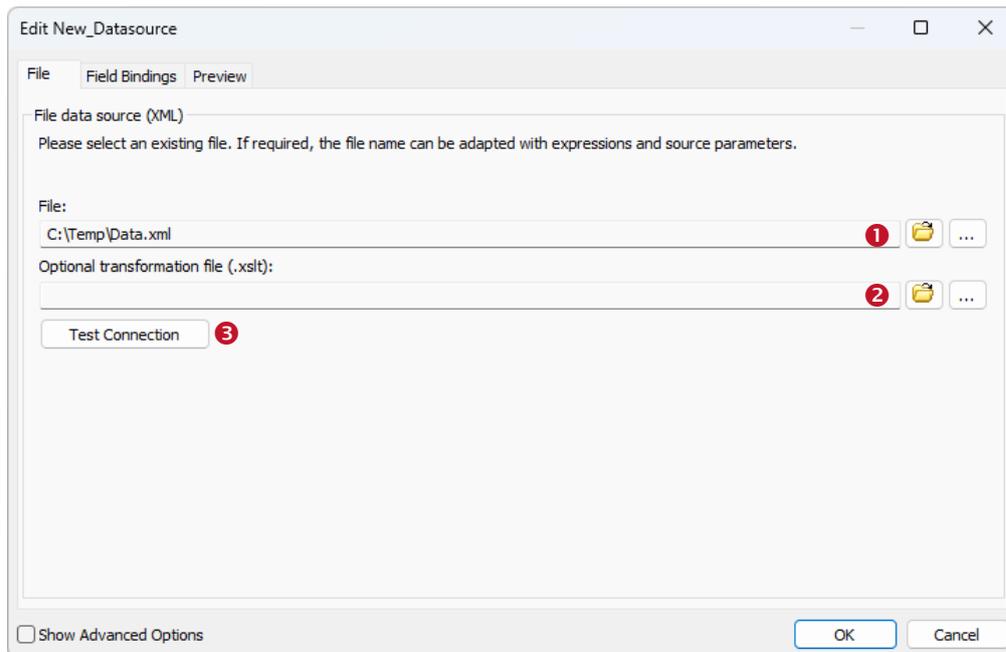
Figure 71: XML Data Source

- ▪ *File* ❶
  Select the XML file which you want to use as data source. You can select a file by pressing the button 🗁 or you can enter the file path manually by clicking the button ….
- ▪ *Optional transformation file (.xslt)* ❷
  Select an optional transformation file which should be applied to the XML file. Select the XSLT file via 🗁 or enter the file path manually by clicking the button ….
- ▪ *Test Connection* ❸
  Use this button to check if the XML file exists and if the transformation was successful.

> ► For advanced users: With the help of expressions and source parameters you have the possibility to build a dynamic file path and/or file name for the XML file and for the XSLT file. First open the edit dialog for ❶ or ❷ by clicking the button …, then use the button *Insert Source Parameter…* or *Insert Expression…*. For details on expressions and source parameters see chapter 11 and section 13.5.2.

13.3.5.2 Field Bindings

To complete the setup of the data source adjust the required field bindings (see section 13.4).

13.4 Field Bindings

Whenever you edit an external data source it is essential to specify the field bindings. In this step you associate the required source fields of the external data source with data fields. Only data fields can be used as placeholders within text boxes, barcodes, images etc. Source fields are not directly available in the layout.

> ► All source fields that you want to use in the layout must be bound to data fields.

To edit the field bindings, switch to the tab *Field Bindings* in the *"Edit Data Source"* dialog. There you see all available source fields and their data field bindings. Directly after the creation of a new data source by default no bindings are specified.
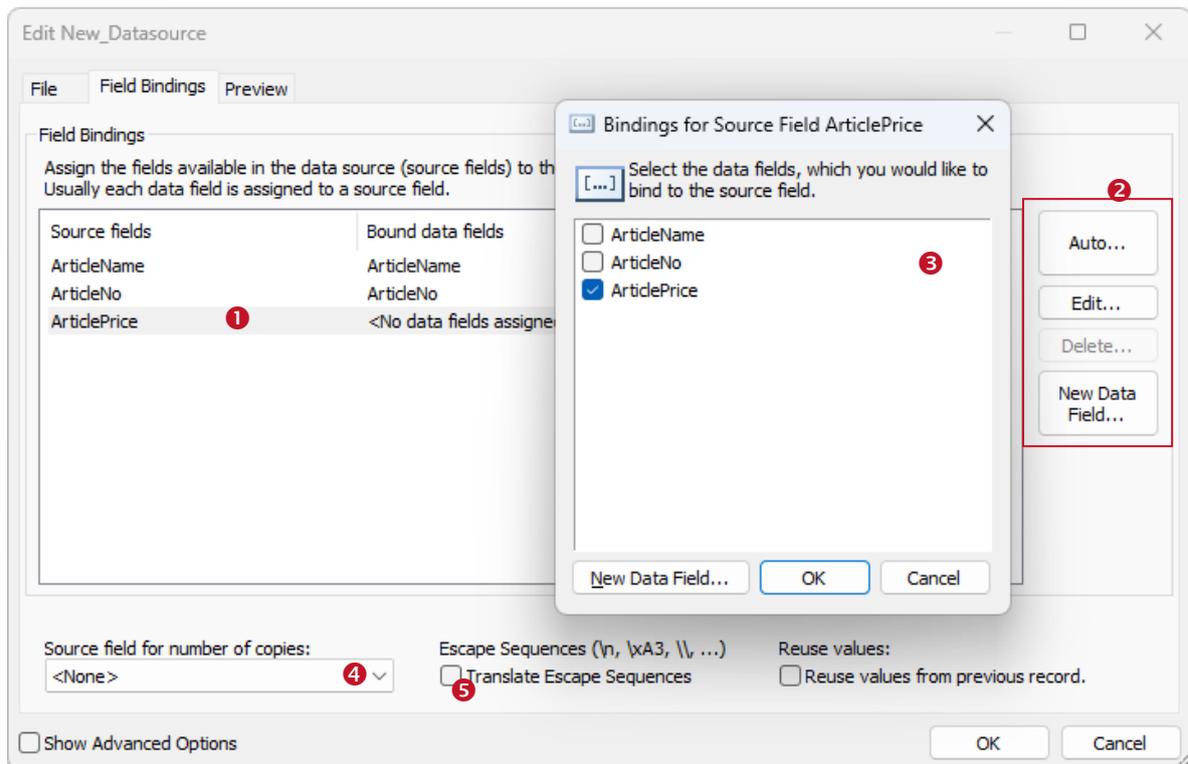
Figure 72: Field Bindings Settings

- **Source fields ❶**
  This list shows all available source fields and their assigned data fields. One source field can be associated with one or more data fields. In order to edit or delete the field bindings use the buttons in ❷:
  - *Auto…*
    This button is used to create field bindings automatically. It binds all source fields to existing, equally named data fields. If no appropriate data field exists, **TFORMer** prompts you, if you want to create a new data field with a suitable name.
  - *Edit…*
    This button opens the dialog ❸. In this dialog select one or more data fields, which you want to bind to the selected source field.
  - *Delete…*
    This button deletes the bindings for the selected source field. Alternatively, press the *Del* key on the keyboard.
  - *New Data Field…*
    This button creates a new data field. A newly created data field is automatically bound to the currently selected source field.

▪ *Source field for number of copies* ❹
The drop-down list ❹ specifies the source field which is used as *"Copies"* column. The field *"Copies"* specifies how often a record is printed. If no source field is specified, **TFORMer** prints each record once.

▪ *Escape sequences* ❺
This option tells **TFORMer** whether escape sequences should be translated or not. An escape sequence is an in-text placeholder for special characters. It always starts with a backslash ("\") followed by a character or character code.
Example: The escape sequence "\n" is a placeholder for a newline character.

> ► Please note: If escape sequences are activated you must use the sequence "\\" in the data source to encode a single backslash "\"!

13.5 Advanced Options

When enabling the checkbox *Show Advanced Options* at the bottom of the *"Edit Data Source"* dialog the following additional tabs will be shown:

▪ Computed Fields (see section 13.5.1)
▪ Source Parameters (see section 13.5.2)

13.5.1 Computed Fields

A *computed field* adds an additional column to a data source. The content of this column is either specified as a constant value or it is computed using an arbitrary expression. In the expression you may refer to other source fields and computed fields as basis for calculation.

The usual purpose of a computed field is to compute values which are based on source fields or other computed fields. For example, you might convert the content of an existing source field to uppercase, or remove leading and trailing spaces. You can also concatenate multiple source fields into a single source field. Or you can perform numerical computations (e.g., add the Value Added Tax, VAT). For examples, see section 13.5.1.1.1.

In addition, computed fields support aggregation functions. Thus, it is pretty simple to calculate running sums and averages which are not directly available as fields in the data source. However, please note: If the aggregation value is not necessarily required as source field, you may also calculate it via a computed data field in the layout (see section 10.3.2).
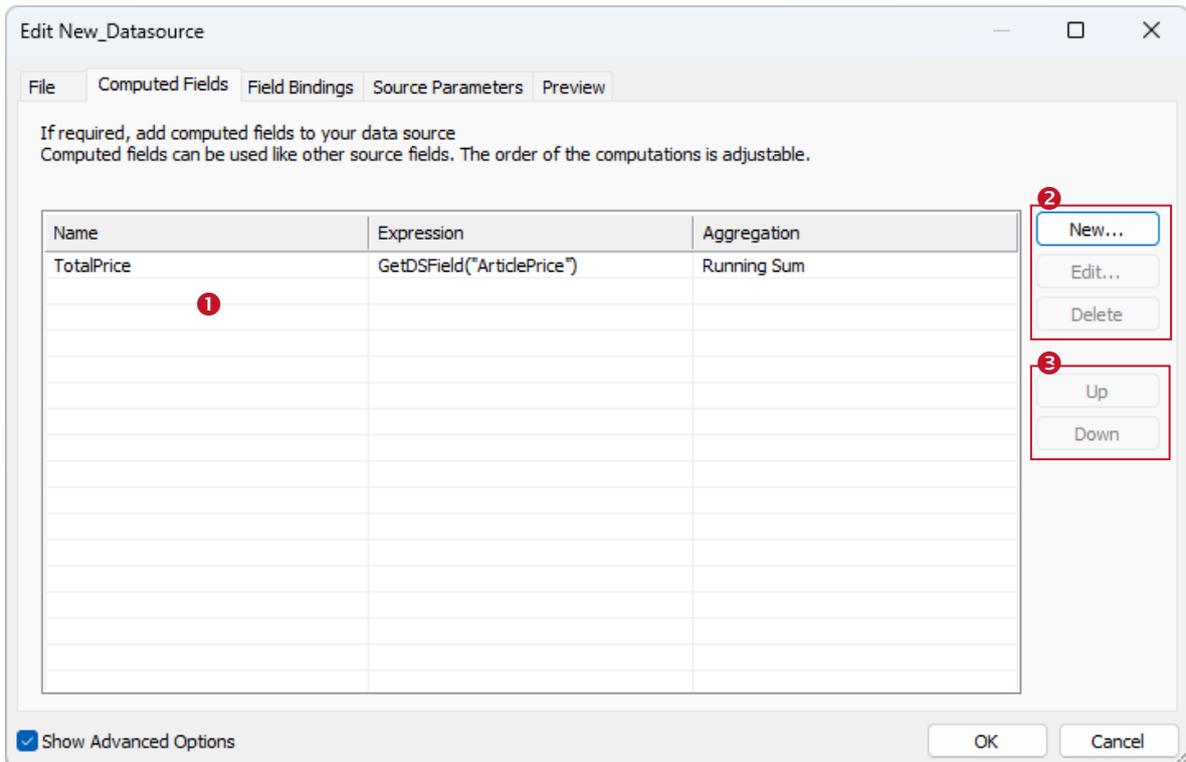
Figure 73: Computed Fields

- **Computed Fields ❶**
  The list of computed fields is empty by default. Use the buttons in ❷ to create, edit and delete computed fields:
  - *New…*
    Create a new computed field (see next section).
  - *Edit…*
    Edit the computed field which is selected in ❶.
  - *Delete*
    Delete the computed field which is selected in ❶

- **Computation Order ❸**
  TFORMer computes the fields from top to bottom (as listed in ❶). To change this computation order use the buttons in ❸. Setting the correct computation order is essential if computed fields depend on each other.
  - *Up*
    Move the selected item up one position.
  - *Down*
    Move the selected item down one position.

| ► | After a computed field was created, it is treated exactly like every other source field. It has to be bound to a data field before it can be used in the layout (see section 13.4). |
| ► | Computed fields are not available in the manual data source. |

13.5.1.1 Create a Computed Field

When clicking the *New…* button the following dialog will appear:

In ❶ specify the name for the computed field. The name is used to identify the field. It has to be unique within the data source.

In ❷ an optional comment can be entered.

The expression in ❸ provides the values for the computed field. You can enter the expression directly or you can open the expression builder by pressing button [...]. For details see section 13.5.1.1.1.

The aggregation function ❹ allows you to build running sums and running averages. For details see section 13.5.1.1.2.

The filter expression ❺ can be used to exclude records from the computation. For details see section 13.5.1.1.3.

Figure 74: New Computed Field

13.5.1.1.1 Expression

The expression in ❸ specifies the content of the computed field. It may return a constant value (e.g., to simulate a source field which is not available in the current data source), or it can perform arbitrary computations.

The expression can be entered directly in ❸, or you can open the expression builder by pressing the button [...]. For more information about the expression builder, please refer to section 11.2.

Common applications are:

- Modify a source field (convert it to uppercase, remove leading and trailing spaces, …).
  Example: *Trim (GetDSField("ArticleName"))*
- Concatenate multiple source fields into a single source field.
  Example: *"Group:" + GetDSField("ProductGroup") + "Desc: " + GetDSField("Description")*
- Perform computations based on a source field (like evaluating the Value Added Tax, VAT).
  Example: *GetDSField("UnitPrice") * 0.2*
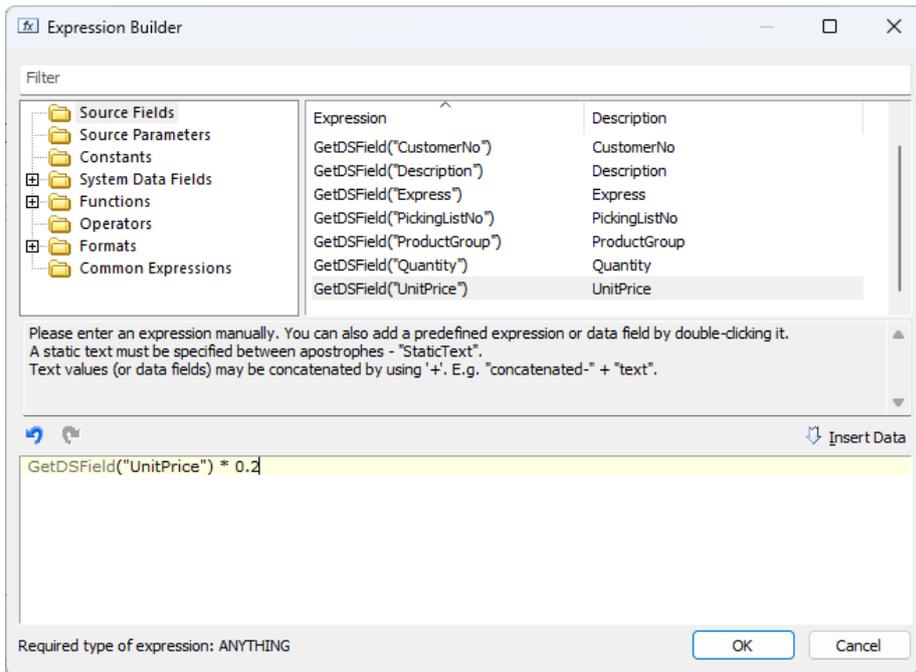
Figure 75: Example of an expression for a computed field

> ► To access a source field from within an expression, use the function *GetDSField("Source-FieldName")*.
>
> ► Accessing data fields is not possible.

13.5.1.1.2 Aggregation

For more advanced applications (like computing totals for the whole report) **TFORMer** supports aggregation functions. The following aggregation methods are available. You can choose from the drop-down list ❹ (see Figure 74).

▪ None (default)	No aggregation function is used.
▪ Running Average	**TFORMer** computes the mean value of all expression results up to the current record. For the first record the running average is the value itself. For the *n*-th record the running average is the average of the first *n* records. Example: If you want to provide the running average for the source field "ArticlePrice", use the following settings: Expression: *GetDSField("ArticlePrice")* Aggregation: *Running Average*
▪ Running Sum	**TFORMer** computes the sum of all expression results up to the current record. For the first record the running sum is the value itself. For all subsequent records the values are added. Example: If you want to provide a serial number which is incremented by "1" for each record, use the following settings: Expression: *1* Aggregation: *Running Sum*

13.5.1.1.3 Aggregation Filter

When using a filter in field ❺, single values will only be considered if the expression returns true. Thus you can define, which values are considered for the aggregation, and which not.

Example:

```
GetDSField("ArticlePrice") > 100
```

This filter instructs **TFORMer** to consider only records where the "ArticlePrice" is greater than 100.

13.5.2 Source Parameters

Source parameters provide the possibility to implement dynamic data source definitions. Thus you do not have to change the data source definition each time for fetching different data. Source parameters can be used to parameterize ODBC data sources and file-based data sources. Besides, they can be used in computed fields.

A typical example for the use of source parameters is the parameterization of the SQL SELECT statement for an ODBC data source. Thus, the user (or developer) has the possibility to instruct **TFORMer** to fetch only specific records or to change the sorting order per parameter.

Using source parameters requires the following steps:

- Create the source parameter (see section 13.5.2.1)
- Assign the source parameter (see section 13.5.2.2)
- Set a value for the source parameter (see section 13.5.2.3)

In the following sections we demonstrate the use of source parameters by means of the picking list example as included in the **TFORMer** setup. Please note: This sample already includes all the adjustments as described below! To open the sample, select *File ► New…* from the menu. Then open the folder *"(6) Samples"* and select *"Picking List"*.

13.5.2.1 Create a Source Parameter

To create a new source parameter first make sure that the required data source is set active (see also 13.3.2.6). Then select the command *Data Source | Parameter* from the menu. Alternatively, you can also right-click on the data source item in the design tree and select *New Source Parameter…* from the context menu.

The following dialog will appear:
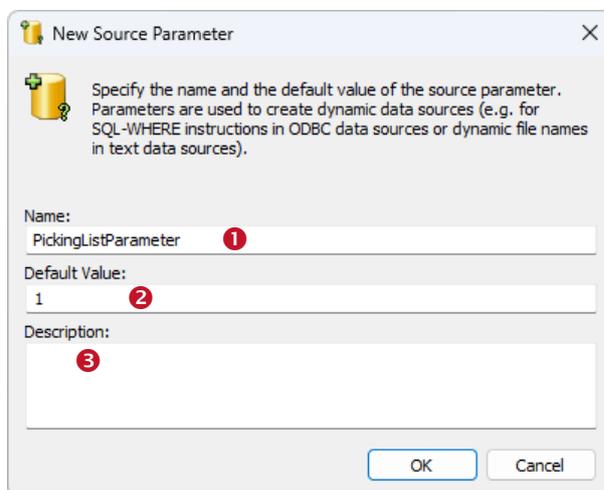
In ❶ enter the name for the source parameter.

The default value ❷ is used to initialize the source parameter after the layout was loaded.

In ❸ you may enter an optional description.

Figure 76: New Source Parameter

13.5.2.2 Assign the Source Parameter

After creation of the source parameter, it can be used

- as placeholder in an ODBC data source (in the DSN, username, password and SQL SELECT statement),
- as placeholder in a file-based data source (in the file name and file path),
- in computed fields.

In this example we use the source parameter to parameterize the *SELECT Query* in an ODBC data source. Assuming the ODBC data source is already created (see also sections 13.3.2 and 13.3.3), open the *"Edit Data Source"* dialog (e.g., by setting the data source active and selecting *Data Source | Settings* from the menu) and switch to the *SQL-Query* tab.
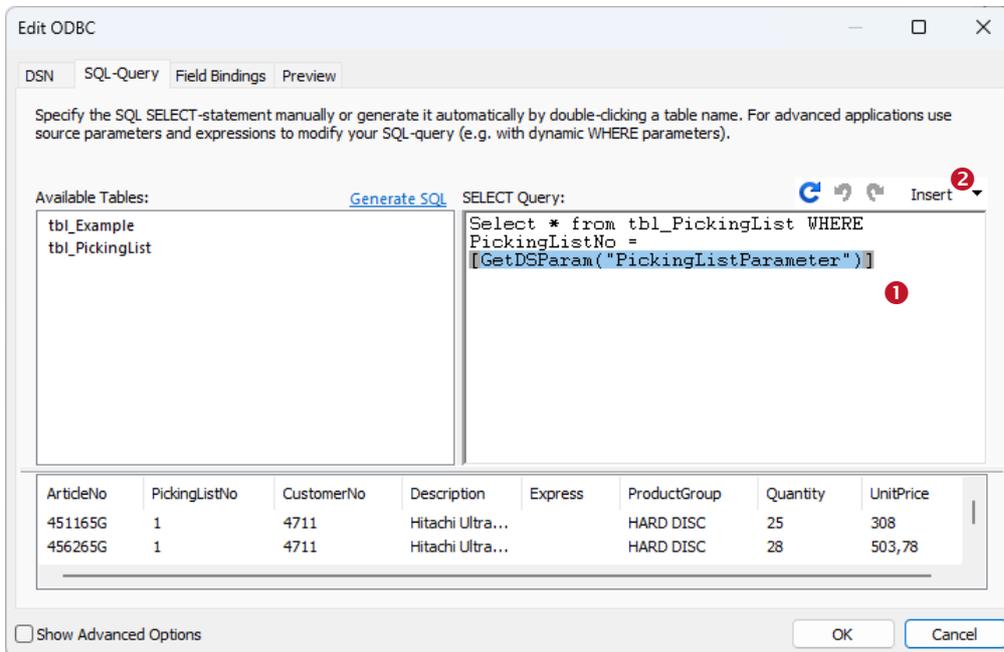
Figure 77: SQL-Query tab

To insert a source parameter in the SQL query place the cursor on the required position in ❶ and then click on ❷ *Insert ► Source Parameter….*. The following dialog will appear:
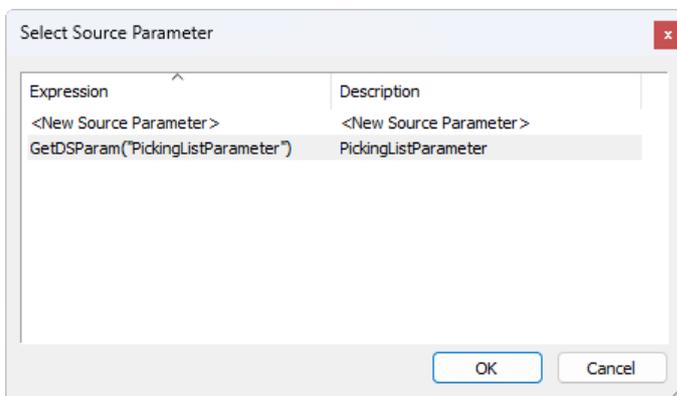
Figure 78: Select a Source Parameter

Select the required source parameter and confirm with *OK.*

In this example the source parameter "PickingListParameter" will be used in the WHERE clause of the SQL query to retrieve the data for a specific picking list only. When **TFORMer** is fetching data from the data source the expression *[GetDSParam("PickingListParameter")]* is substituted with the actual value of the source parameter. Thus, the resulting SQL SELECT fetches only records from the database which matches the specified picking list number.

E.g., if the "PickingListParameter" is set to 1, the SQL Query

```
SELECT * FROM tbl_PickingList WHERE PickingListNo = [GetDSParam("PickingListParameter")]
```

will internally be evaluated as:

```
SELECT * FROM tbl_PickingList WHERE PickingListNo = 1
```

13.5.2.3 Set a Value for the Source Parameter

For the correct parameterization of the data source the according source parameter values have to be set:

First make sure that the respective data source is set active (see also 13.3.2.6). Then select *Data Source ► Parameters* from the menu. Alternatively, you can also right-click on the data source in the design tree and select *Edit Source Parameter…* from the pop-up menu. The following dialog will appear:
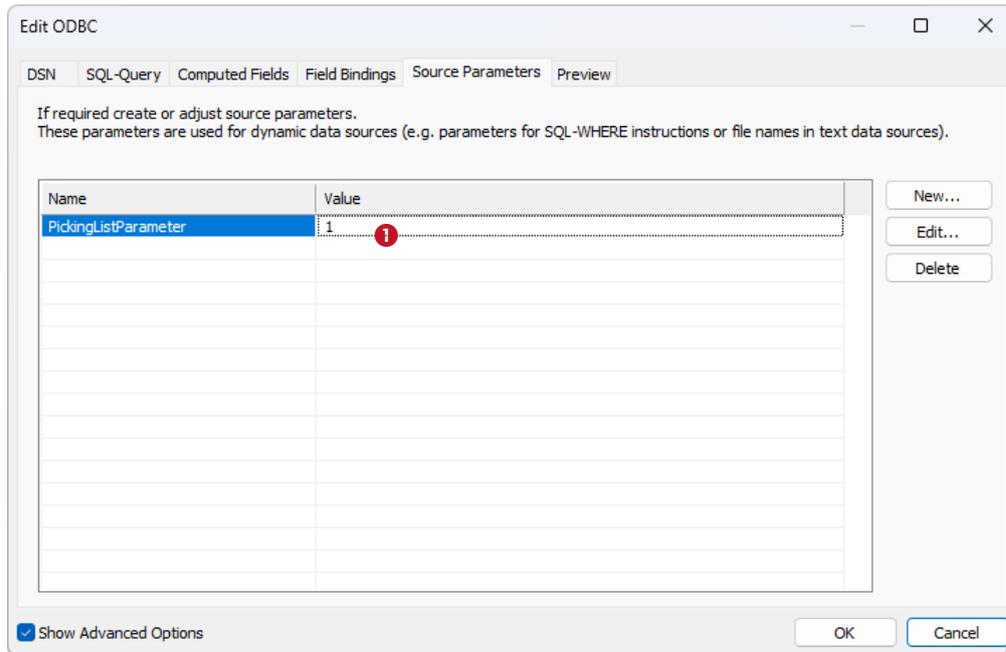
Figure 79: Edit a Source Parameter Value

Enter the required value for the source-parameter in ❶. Then confirm with *OK*.

Using the settings as shown above, **TFORMer** will only fetch records where the *PickingListNo* is equal to *'1'*.

#	Copies	ArticleNo	CustomerNo	Description	Express	PickingListNo
1	1	451165G	4711	Hitachi Ult...		1
2	1	456265G	4711	Hitachi Ult...		1
3	1	456A61G	4711	Fujitsu Alle...		1
4	1	456A62G	4711	Seagate C...		1
5	1	456A65Y	4711	Seagate C...		1

Figure 80: Data for PickingListNo = 1

Changing the source-parameter to *'2'* results in different data:

#	Copies	ArticleNo	CustomerNo	Description	Express	PickingListNo
1	1	456365G	4711	Hitachi Ult...		2
2	1	456A64G	4711	Fujitsu Alle...		2
3	1	456A65G	4711	Seagate C...		2
4	1	456A65S	4711	Fujitsu Alle...		2
5	1	456A66G	4711	Fujitsu Alle...		2

Figure 81: Data for PickingListNo = 2

> ► Source parameters can also be used by software developers via the API or with the command line utility **TFPrint**. Please refer to the appropriate documentation for details.

13.6 Filter

The filter is used to limit the records in the active data source. You can:

- Create a filter – see section 13.6.1
- Apply a filter – see section 13.6.2
- Clear the Filter – see section 13.6.3
- Print with a filter – see section 13.6.4
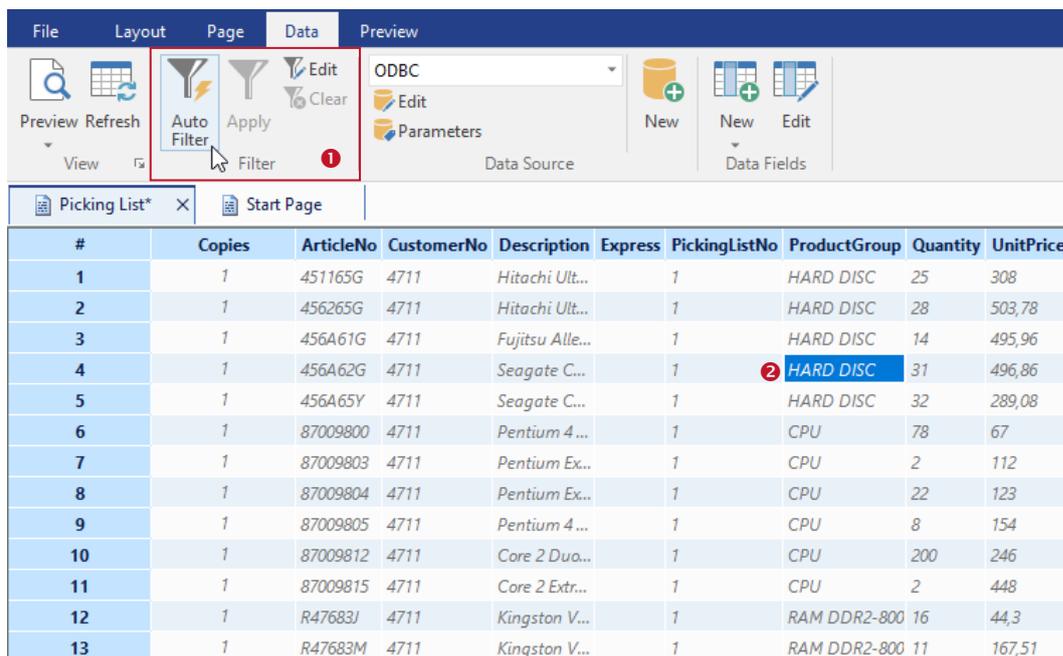
Figure 82: Filter

The ribbon menu (see ❶) offers the following filter commands:

	Auto Filter	Creates a new filter which is based on the current selection in the data grid.
		Place the cursor inside the row and on the value for which you want to filter. Alternatively, you can also select a specific record by clicking on the line number on the left side. Then click Auto Filter.
		Please note that multiple selection is possible as well (hold down the *Shift* or the *Ctrl* key). You can also filter several times in order to refine the result.
	Apply	Enables or disables the filter.
	Edit	Edits the filter expression.
	Clear	Removes the existing filter.

13.6.1 Create a Filter

You can create a filter in two different ways:

- Manually edit the filter expression – see 13.6.1.1
- Automatically create the filter expression based on the current selection – see 13.6.1.2

13.6.1.1 Create a Filter Manually

To create (or edit) a filter manually select *Filter ► Edit* from the menu or right-click somewhere in the data grid and select *Filter ► Edit…* from the pop-up menu.

The following dialog will appear:
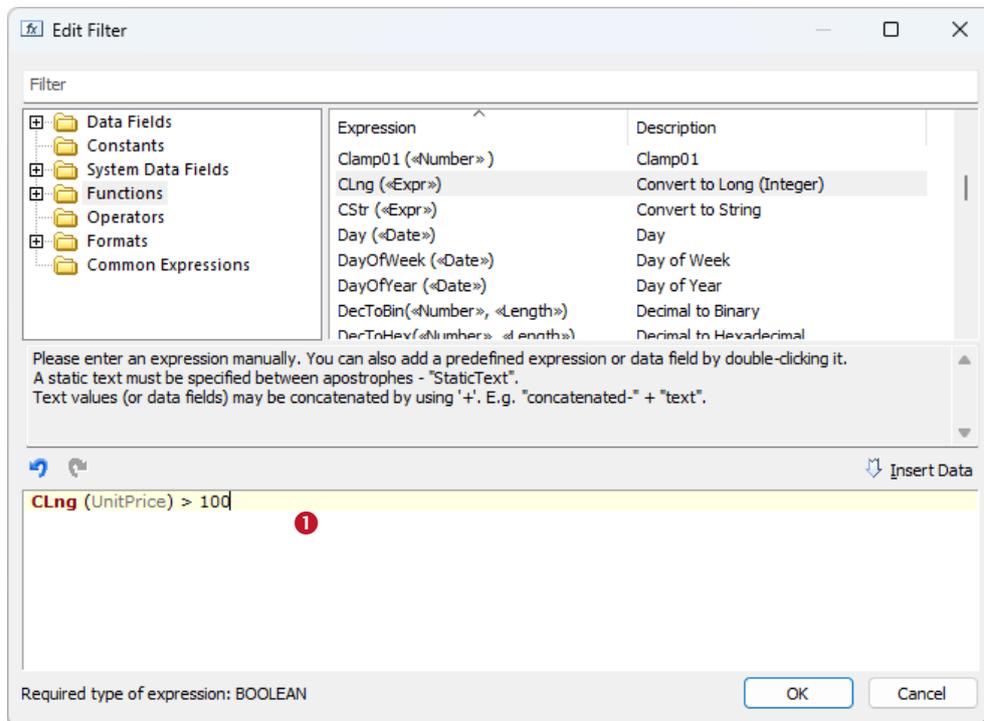
Figure 83: Edit a Filter

Enter the required expression in ❸. Then confirm with *OK.* The filter will be applied to the current data source. An active filter can be identified by the activated command *Filter | Apply* in the menu.

The filter criterion is specified with a Boolean expression (see also chapter 11): Only records for which the filter expression returns *true* remain visible in the data view. All other records are masked out. Masked out records are neither used for the preview nor for printing.

Example:
When using the filter expression below, only records with an *UnitPrice* greater than 100 will be printed.

```
CLng(UnitPrice) > 100
```

13.6.1.2 Create a Filter Automatically (Selection-Based)

In order to automatically generate the filter expression, first select the required field values and/or records (use the *Shift* respectively *Ctrl* key for multiple selection), then click *Auto Filter*.

Example:
If you want to filter for *ProductGroup=”HARD DISC”,* first select the cell with the respective value (see Figure 82, ❷), then click *Auto Filter*.

Please note: If you want to refine the filter result you can also call the auto filter command successively for several times.

13.6.2 Apply a Filter

To apply or to cancel a previously defined filter select *Filter | Apply* from the menu.

13.6.3 Clear the Filter

To clear the current filter expression, select *Filter | Clear* from the menu.

13.6.4 Print with a Filter

To start the printing process, press *Ctrl+P* or select *File ► Print* from the menu. Alternatively, you can also click on the *Print* command in the quick access toolbar (or in the ribbon menu if you have the preview open). The dialog below will appear.
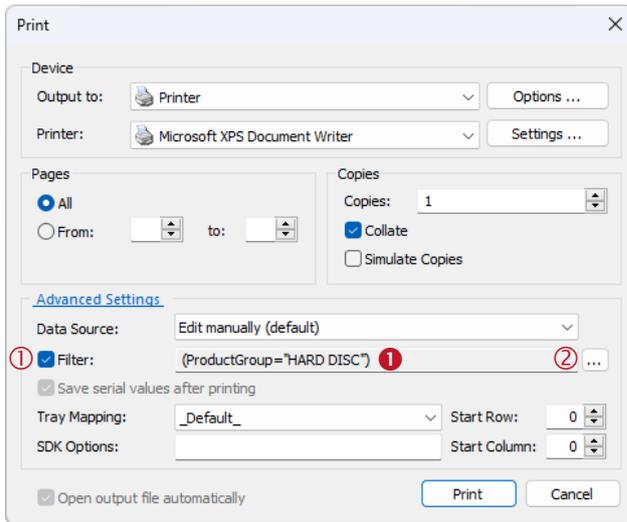
Figure 84: Print with a Filter

On the printing dialog select the target printer, the data source, etc.

If you have already adjusted the filter in the data view or in the print preview, no additional adjustments are required. However, you have the possibility to

- enable/disable (①) or to
- edit (②)

the current filter expression in ❶.

To edit the filter expression, click on the button …. The expression builder (see section 11.2) will open.

Confirm with *Print* to start printing.

For general information on printing, please refer to chapter 15.

Example:

The following output is based on the picking list example *(File ► New… ► (6) Samples ► Picking List).* To print only items in the product group "HARD DISC" we use the following filter expression:

```
ProductGroup = "HARD DISC"
```

TFORMer will only print records where the content of the field *ProductGroup* is equal to the string "HARD DISC":

Figure 85: Picking List, filtered for ProductGroup = "HARD DISC"

14 Preview

14.1 Introduction

TFORMer offers a *preview* which instantly renders the output based on the current layout and the active data source. This view offers functions for printing, for page navigation, and more.
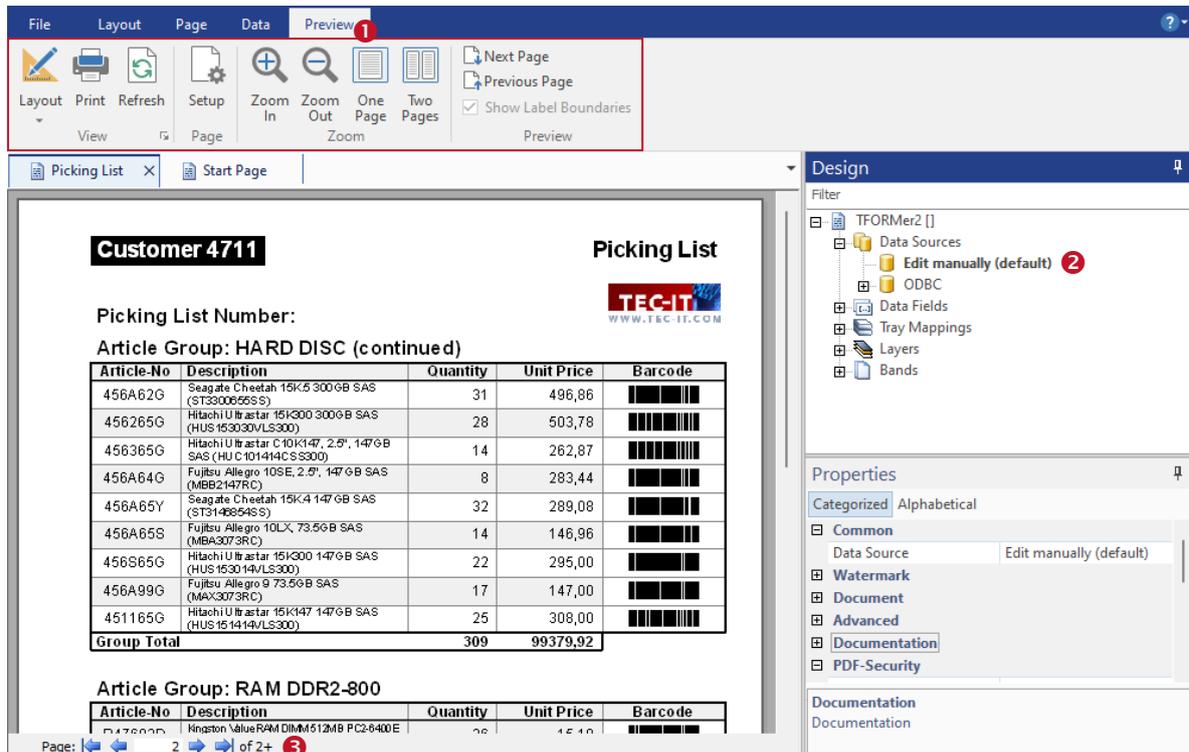
Figure 86: Preview

To switch to the preview, click on the *Preview* tab in the ribbon (see ❶) or use one of the other methods as described in section 4.4. You can also use the keyboard shortcut *Ctrl+Space*.

14.2 Menu Functions

The commands in the ribbon menu ❶ allow you to create a print-out, to reload the data from the data source and to adjust the page setup. You can zoom the preview, you can switch between single page and double-page preview, you can turn pages and you can show/hide the label boundaries (labels only).

If you switch the data source (e.g., by double-clicking on the respective item in the tree view – see ❷), **TFORMer** reloads the data and updates the preview immediately.

14.3 Page Navigation

The page navigation ❸ allows you to navigate between pages or to directly jump to a user-defined page.

15 Printing

15.1 Introduction

The term printing in the context of this document incorporates generating output in general.

Besides direct printing (via a printer-driver in Microsoft Windows), **TFORMer** also supports the creation of PDF documents, HTML files, PostScript files, images, vector images (SVG), ZPL-II output (for ZEBRA printers) and ASCII output.

All output formats are generated directly. There is no need for third party software. This might particularly be interesting for PostScript or ZEBRA output (see below).

15.2 Printing Manually

To open the print dialog press *Ctrl+P* or select *File ► Print* from the menu. Alternatively, you can also click on the print icon in the quick access toolbar.
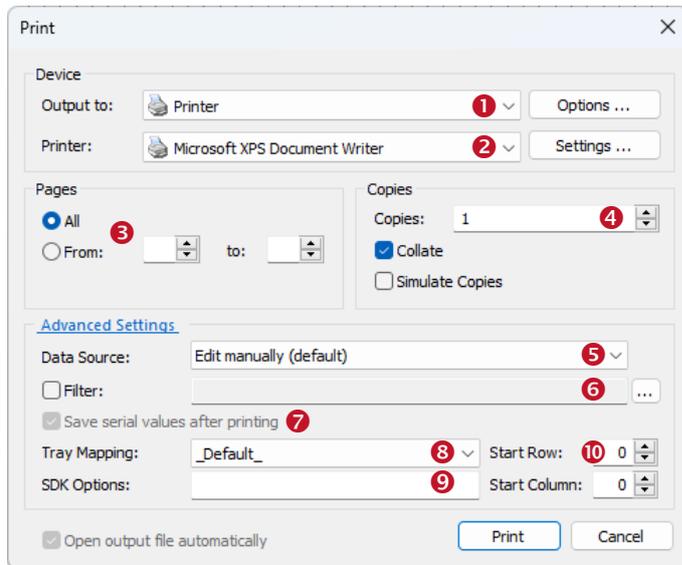
Figure 87: Print Dialog (with Advanced Settings enabled)

In this dialog specify all output parameters as discussed below. When finished click *Print* to send the job to the printer (or to create the output file).

15.2.1 Output Format and Device

❶	Output to	⌄	Selects the output type: ▪ Printer (via a printer driver) ▪ ZEBRA (ZPL-II) ▪ PDF, PDF/A, ZUGFeRD ▪ PostScript ▪ HTML ▪ Text (pure ASCII)

			• BMP, GIF, JPG, PCX, PNG, TGA, TIF or multipage TIF • XML[2] • SVG, SVGZ
		Options …	Depending on the output type you can specify different output options. These are the same options as in the program settings (see sections 17.4 to 17.10): • Printer: Different barcode rendering methods • Other: Paper size, resolution, color mode, image compression, etc. • For PDF, there is an additional tab with security settings. Here you can override the presets from the document properties (see sections 6.4 and A.1.6) for the current print job.
❷	Printer	⌄	Depending on your selection in ❶ you can select one of the Windows printers or the target file.
		Settings …	Opens the Windows system dialog "*Print Setup*" for the selected printer.

15.2.1.1 Printing on PostScript and ZEBRA printers

TFORMer generates PostScript or ZEBRA output directly. This means that you can use such printers without any proprietary printer driver – you have two options:

- Print via a generic ASCII printer driver
- Print via a PostScript or ZEBRA driver

In both cases the print data is generated by **TFORMer**. The printer driver is only used to send the data to the required device (comparable to pass through mode). No driver functionality is used.

15.2.2 Pages

❸	Pages	Specifies the range of output pages. Examples: • All (prints all pages) • From: "1" to: "1" (prints the first page only).

15.2.3 Copies

❹	Copies	Specifies the number of copies.
	Collate	If enabled, always the complete range of pages will be printed at once (one complete printout for each copy). If disabled, all copies of the first page are printed, then all copies of the second page are printed, and so on.
	Simulate Copies	If enabled, the number of copies is not passed as printer command but each page is repeatedly sent to the printer. Choose this option if the printer driver does not support copies.

15.2.4 Data

❺	Data Source	Selects the data source to be used for printing. Please note: Before printing **TFORMer** always reloads the data from the adjusted data source. This guarantees that the actual data is used.
❻	Filter	Here you can optionally apply a filter expression. If a filter is set, only the records for which the filter expression returns *true* are printed. All other records are ignored. In order to apply the filter the checkbox "Filter" must be activated. Examples for filter expressions: • `Record <= 3`

---

[2] The XML printer generates an XML file that describes output elements and positions. This is no standardized output format. No immediate graphical visualization possible. It can be used for analyzing and testing.

		Prints the first three records only.
		▪ `ProductGroup = "HARD DISC"` Prints only records, where the data field "ProductGroup" has the value "HARD DISC". For more detailed information on the filter see section 13.6.
❼	Save serial values after printing	If you are generating persistent serial numbers (see section 10.3.3, ⑤), **TFORMer** will store the values from the current print-out and continue with the first unused number when printing the next time (= check box is enabled). If you disable the check box **TFORMer** will suspend saving the serial values for the current print-out (e.g., for a test print).

15.2.5 Additional Settings

❽	Tray Mapping	Here you can select one of the predefined tray mappings (see also section 12.6). If you want to print on the default printer tray, this selection is obsolete.
❾	SDK Options	Here you can enter additional **TFORMer** SDK options (e.g., printing offset, …). For more detailed information, please contact TEC-IT.
❿	Start Row, Start Column	For label printing the *"Start Row"* and the *"Start Column"* can be specified. Use this setting if you want to leave the first labels on the sheet blank. Example: ▪ Start Row=2 ▪ Start Column=0 Print order *"Down, then Across:*. The first two labels in the left column will be left empty. Print order *"Across, then Down":* The first two rows will be left empty.
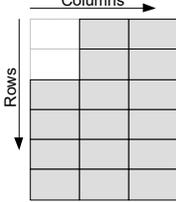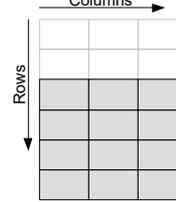
15.3 Printing Programmatically

Software developers can print layouts created with **TFORMer Designer** as part of their applications using **TFORMer SDK.**

TFORMer SDK is available for Microsoft® Windows® and for almost all Linux® and UNIX® platforms. The following kinds of integration are possible:

- Command-line based printing application (TFPrint)
- Software component (DLL, COM component, .NET component and shared library)

For details, please refer to the Developer Manual or to the API References of the **TFORMer SDK.**

15.4 Advanced

15.4.1 Dynamic Output File Names

TFORMer determines the name for the output or spool file (under Microsoft Windows) as follows: It uses the first available of these three names

1. The filename specified when printing (if available)
2. The value of the *"Document Name"* property (if available – see section 6.4.2)
3. The *layout filename*

Using the document property *"Document Name",* you can specify a user-defined file name for printing. The *"Document Name"* is either a fixed text or an expression that will be evaluated at runtime.

Please note:

- Output to a printer:
  The "*Document Name"* overrides the default Windows spool file name (= the *layout filename*).
- Output to a file:
  The "*Document Name"* cannot override the specified output file name by default.
  However, in the **TFORMer SDK** there is the option to specify only the directory (without the filename) for printing.
  Furthermore, the SDK option `eval-file-name-per-page` (see **TFORMer SDK** documentation) can be used to force the use of the "*Document Name"* as output file name (**TFORMer Designer** and **TFORMer SDK**). This SDK option is only available for images and SVG files (and therefore only for output formats that support no more than one page per output file).

15.4.2 Custom ZPL Commands

With ZPL printers, you have the option to embed custom ZPL commands into the print output:

- ZPL-Header and ZPL-Footer
  Use the according document properties in the *"Advanced"* category to insert native ZPL code at the beginning and at the end of each print-job (see sections 6.4 and A.1.4).
- Additional ZPL Commands
  The ZPL layout element (see section 4.3.2.3) allows you to insert custom ZPL code at the beginning of the printed label (page). The *ZPL* property specifies the commands. The *Printing Condition* can be used for further control of the output.

15.4.3 RFID-Labels

Programming RFID labels is an experimental **TFORMer** feature. It can only be used in combination with ZPL printers. A special RFID printer with the appropriate labels is also required. Otherwise, the Control-Commands are ignored or have no effect. Windows GDI printers cannot address or write RFID chips.

By using the RFID layout element (see section 4.3.2.3), you can specify data to be written on the RFID-chip. The according ZPL commands will be inserted at the beginning of the printed label (page). The *Printing Condition* can be used for further control of the output.

16 Repositories

16.1 Introduction

TFORMer offers two different possibilities for organizing layouts:

16.1.1 Stand-Alone Forms

> ► Stand-alone forms are the simplest way to create and to print layouts. Each stand-alone form designed with **TFORMer** can be used on its own.

A stand-alone form contains all the necessary information which is required for printing. As long as no repository is used, **TFORMer** always creates stand-alone forms when selecting *File ► New…* from the menu.

A stand-alone form is using the file extension *.tff*. Organizing multiple stand-alone forms in the file system is completely up to the user. In this context, please note that images are not embedded in the .tff file, but saved as file references. In order to store layout and images together in one file, use the container format *.tfz* or *.zip*. However, these container formats are not yet supported when importing into the repository.

16.1.2 Repositories

If you prefer to organize your layouts and data fields in a structured way or if you plan to create multiple layouts which share the same data basis (same data fields) the use of a so-called *repository* is recommended. A repository is a central database for layouts, data sources, data field definitions and tray mappings.

Layouts and data field definitions are stored within a repository on a per *"Project"* base. A project defines data sources and data fields and it contains layouts. Each of the data sources and data fields defined in a project is accessible from every layout within the same project. Besides the user defined projects there is also one special *global project*. Data sources and data fields which are defined within the global project (*global data sources and global data fields*) may be used in all layouts in all projects.

> ► A repository is used for organizing multiple layouts within a structured data base. A repository holds *tray mappings* and is divided into *projects*. A project maintains *data sources, data field definitions* and *layouts.*

A repository is saved with the file extension *.tfr* (and the forms inside the repository with the file extension *.xmd*). All projects are stored in subdirectories. Please, take care to maintain this directory structure. Do not change it manually!

16.2 Structure

In a repository you will find the following entries (see also Figure 88 below):

① *Tray Mappings*
These tray mappings are available for all layouts in all projects.
② *Global Data Sources*
These data sources are available for all layouts in all projects.
③ *Global Data Fields*
These data fields are available for all layouts in all projects.

③ *Projects*
Each project contains a collection of layouts, data fields and data sources. Data sources and data fields are valid in the respective project only.

16.3 User Interface
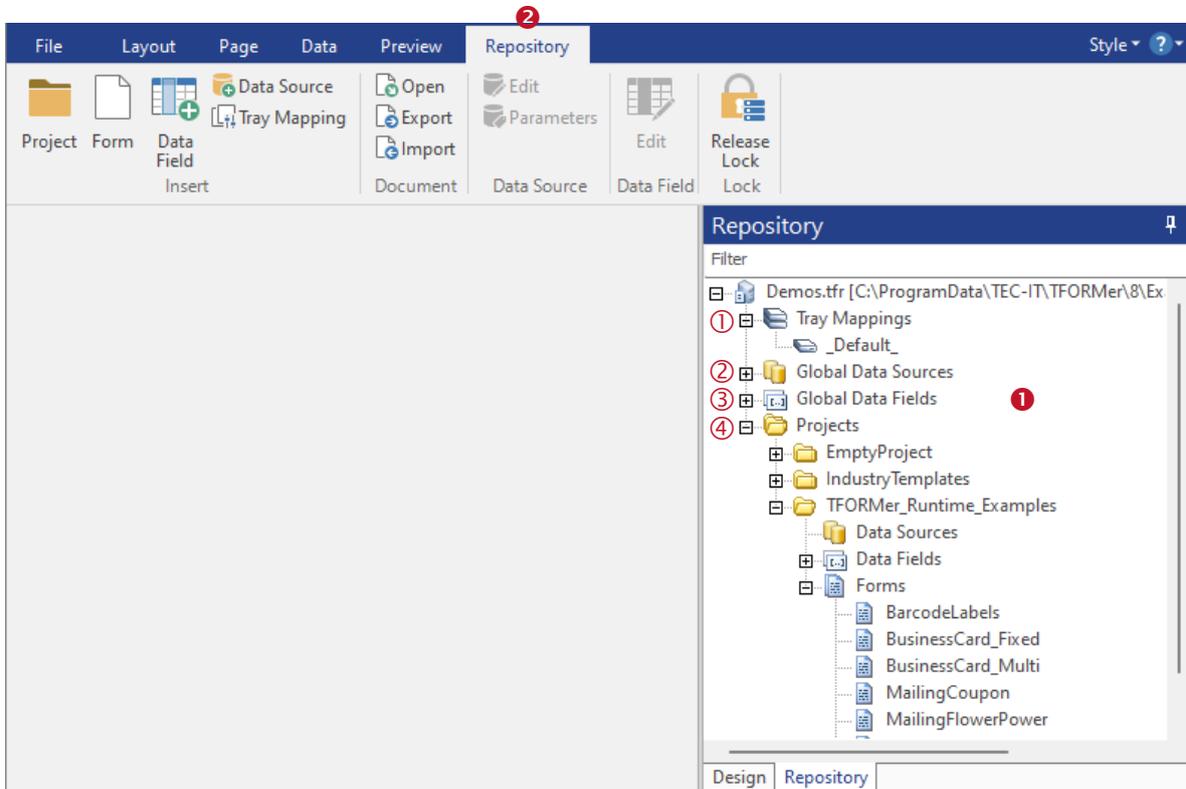
Figure 88: Repository

The tree view window ❶ shows the repository structure. In order to edit the repository right click on one of the tree items and a context menu will appear. This menu provides a list of all available commands for the selected repository object. Also consider that the most important editing commands are available via ribbon menu ❷, as well.

16.3.1 Menu Commands

16.3.1.1 Insert

	Project	Inserts a new project into the repository.
	Form	Inserts a new layout into the repository.
	Data Field	Inserts a new data field into the repository. For more information on data fields see chapter 10.
	Data Source	Inserts a new data source into the repository. For more information on data sources see section 13.3.
	Tray Mapping	Inserts a new tray mapping into the repository. For more information on tray mappings see section 12.6.

16.3.1.2 Document

	Open	Opens the layout which is selected in the tree view (inside the current repository).
	Export	Exports the layout which is selected in the tree view into a new stand-alone form.

		See section 16.4.5.
	Import	Imports an existing stand-alone form into the repository. See section 16.4.4.

16.3.1.3 Data Source

	Edit	Edits the data source (analogous to section 13.3.2.3).
	Parameters	Edits the data source parameters (analogous to section 13.5.2.3).

16.3.1.4 Data Field

	Edit	Edits the selected data field (see also section 10.3).

16.3.1.5 Lock

	Get Lock	Tries to get a lock on the repository (see section 16.6.4).
	Release Lock	Releases the lock on the repository (see section 16.6.5).

16.4 Basic Operations

16.4.1 Open an existing Repository

To open a repository, select *File ► Repository | Open Repository…* from the menu. Alternatively, you may also use the standard command *File ► Open…*.

In the file dialog select the repository and confirm with *OK.* Once opened, the repository is displayed in the design tree and the ribbon menu shows an additional *"Repository"* tab – see figure above.

16.4.1.1 Demo Repository

The **TFORMer** installation includes a demo repository. This repository is named "Demos.tfr" and can be opened via the *Windows Start Menu* by selecting *TEC-IT TFORMer 9 ► Demo Repository.*

16.4.2 Create a New Repository

To create a new repository, select *File ► Repository | New Repository…* from the menu. In the appearing file dialog enter a suitable filename and click *Save.*
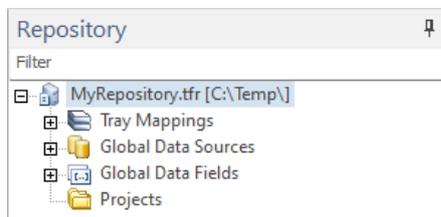
The new repository will be displayed in the design tree. Furthermore, an appropriate "Repository" tab will be displayed in the ribbon menu (see Figure 88).

> ► Important: Each repository has to be stored in a separate folder! Otherwise, it will lead to problems. So, when creating a new repository, you should always create a folder first, then save the repository there.

16.4.3   Save a Repository

Make sure that the repository view is activated by clicking the "Repository" tab in the ribbon menu (or in the design tree window). If more than one repository is open select the desired repository in the design tree. Then press *Ctrl+S* (or select *File ► Save* from the menu).

16.4.4   Import a Stand-alone Layout into a Repository

You can import existing stand-alone layouts into the repository by following these steps:

In the design tree select the desired project. Then click *Document | Import* in the ribbon menu. Alternatively, you can also right-click on the project and select *Import Form…* from the pop-up menu. The dialog below will appear:
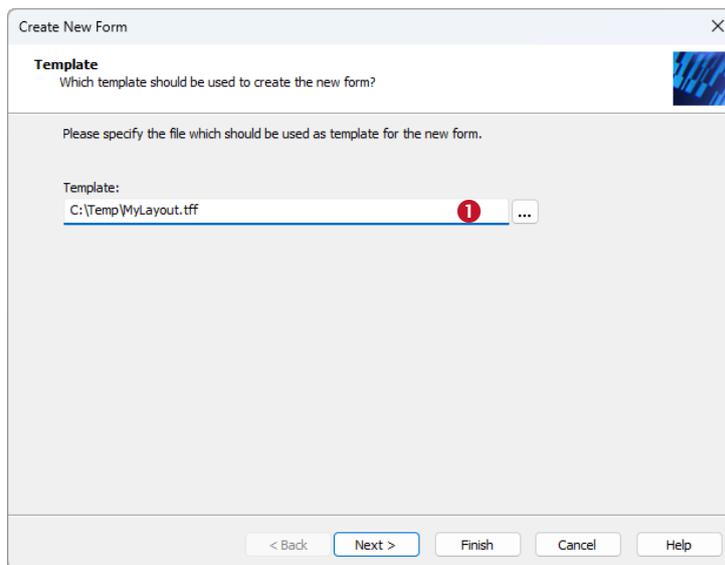
In ❶ select the file that you want to import.

Then click *Next* or *Finish.*

If you click *Next,* you can assign a name and a description for the layout in the repository.
By default, the name of the imported file will be used as layout name.

16.4.5   Export a Layout from the Repository

Exporting a layout from a repository creates a stand-alone layout.

In the design tree locate the desired layout inside the respective project. Then click *Document | Export* in the ribbon menu. Alternatively, you can also right-click on the layout and select *Export Form…* from the pop-up menu. The layout will be opened in the layout view.

Finally save the layout using the menu *File ► Save*.

16.4.6   Close a Repository

Mark the repository in the design tree (the root item). Then right-click on it and select *Close Repository* from the pop-up menu. Alternatively, you can also use the menu *File ► Repository | Close Repository.*

16.5 Working with a Repository

16.5.1   Projects

Before you can add layouts and data field definitions, first you have to create a project: Make sure that the ribbon menu shows the *Repository* tab. Then select the menu command *Insert | Project*. Alternatively, you can also right-click on the item *"Projects"* in the design tree and select *New Project* in the pop-up window. A new project is inserted.

To rename the project select it and press the *F2* key. Alternatively, you can also use the properties window to edit the name and the description for the project.

16.5.2 Insert a Layout

In order to insert a new layout, use the command *Insert | Form* in the ribbon menu or right-click on the item *"Forms"* in the design tree and select *New Form…* from the pop-up menu. The following wizard will appear:

In this dialog you can select whether you want to create a stand-alone form (❶), or if you want to add a form to a repository (❷).
Select option ❷.

If more than one repository is opened choose the desired repository in ❸.

Click *Next.*
The following dialog will appear:

Select the project in ❹.

Then click *Next.*

In this dialog you select the desired template (analogous to section 6.2.2).

Use the button *Next* for additional adjustments or click *Finish* to accept.

The selected layout template will be added to the selected project in the repository.

16.6 Multi-User Operation (Locking)

16.6.1 General

TFORMer support parallel access to repository files via locking mechanisms (request lock / release lock / open in read-only mode).

There are two levels at which these locks are applied:

▪ **Repositories**
Global and project-specific data sources, data fields and tray mappings.
In order to edit these entries, a lock on the respective repository file is required.

▪ **Forms**
Individual forms within the repositories.
In order to edit a form layout, a lock on the respective form file is required.

That means that data sources, data fields and tray mappings can only be edited by one person at the same time. Whereas two different form layouts, A and B, can be edited simultaneously by two different users.

16.6.2 Locking

When using the standard settings, **TFORMer** manages locks as follows:

▪ On file open, a lock is automatically requested.
▪ The first user to open the file receives write access.
Other users can open the repository (or form) in read-only mode, request a lock, or retry to get the lock at a later time.
▪ On file close, the lock is automatically released.

In the general program settings (see section 17.12), you have the following additional configuration options:

> ► Disable the option „Automatically lock repository files on open" if you want to force a manual request for the lock.
>
> ► Enable the option „Release repository files after saving" if you want to prevent users from unintentionally holding a file locked for an extended period of time after saving their changes.

16.6.3 Read-Only Mode
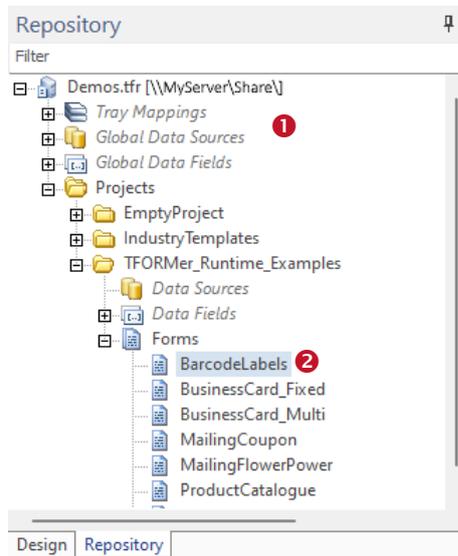
In read-only mode, all global and project-specific entries are greyed out (see ❶).

To make changes, you must obtain a lock on the repository.

The forms (❷) can be edited at any time, regardless of the repository lock. Forms have separate locks that are applied on the individual form files.

Figure 89: Repository in Read-Only Mode

> Please note:
>
> ► If you have opened a file in read-only mode, you should not make any changes to it.
>
> ► Even if you later obtain write access (granted or stolen), saving your changes means saving an older version (from your computer's memory) instead of the latest version. This will result in overwriting the changes from the other user (see confirmation dialog when saving).

16.6.4 Get Lock
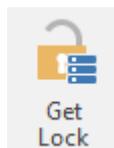
To get a lock, click the button in the ribbon menu (see picture on the left side). Alternatively, you can also right-click on the root element in the tree view ► *Get Lock.* Getting the lock always refers to the repository, not to single form layouts.

If the repository is already locked by another user, you have the following possibilities:

- Continue in read-only mode
- Steal the lock from current owner
- Retry

> Please note:
>
> ► When stealing the lock from another user (whether when opening or afterwards), you accept to overwrite any changes from the other user (see confirmation dialog when saving).

16.6.5   Release Lock

To release the lock, click the button in the ribbon menu (see picture on the left side). Alternatively, you can also right-click on the root element in the tree view ► *Release Lock.*

By releasing the lock, you allow other users to edit the global and project-related repository entries. Forms must be closed separately, before they can be edited by other users.

17 General Settings

17.1 Options Dialog

In the options dialog you can customize common **TFORMer** settings. To open the dialog select *Files ► Options | Options…* from the menu or use the respective item in the drop-down menu in the quick access toolbar.
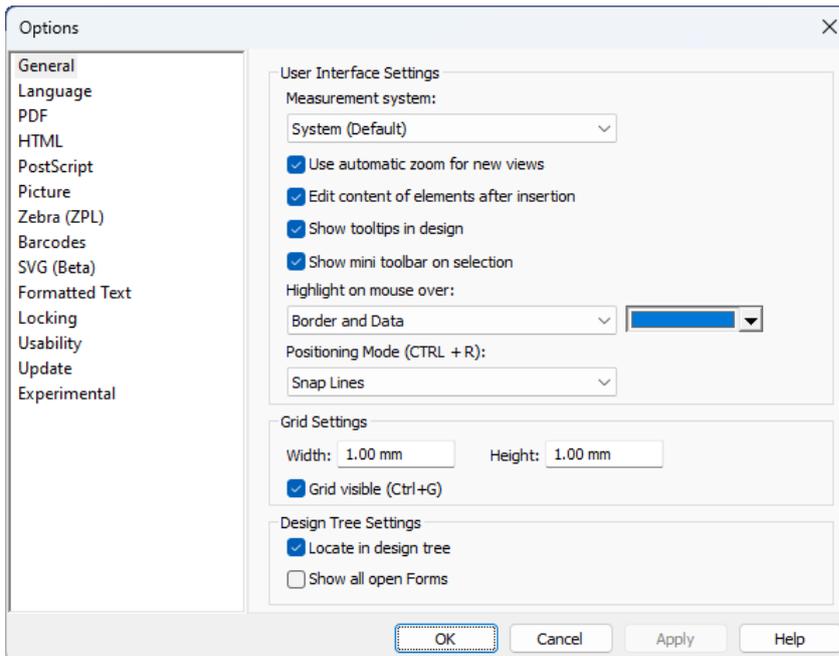
Figure 90: Options Dialog

Please note:

► All settings which apply for the output generation (see sections 17.4 to 17.11) are stored in the configuration file *„TFORMer.xml"*.

► These settings are used for **TFORMer Designer, TFORMer SDK** and for **TFPrint**.

► For more information on the configuration file see section E.2.

17.2 General

17.2.1 User Interface Settings

Measurement system	The measurement system can be set to: ▪ System (Default) Uses the measurement system that is specified in the regional options of your operating system. ▪ Metric (mm) ▪ U.S.-System (inch)
Use automatic zoom for new views (y/n)	If enabled, all files that are opened will be set to *"Automatic"* zoom level (= fit the width of the layout window). By default, this option is disabled.
Edit content of elements after insertion (y/n)	If enabled, upon insertion of a new text, barcode or picture element the dialog for editing the content will be opened automatically (see section 9.3). By default, this option is enabled.
Show tooltips in design (y/n)	If enabled, **TFORMer** will display tooltips when hovering the mouse cursor over design elements or bands. These tooltips show information about assigned data, comments and

	printing conditions. By default, this option is enabled.
Show Mini Toolbar on selection (y/n)	If enabled, **TFORMer** will display a mini toolbar with common format settings for selected design elements. By default, this option is enabled.
Highlight on mouse over	Specifies the type of highlighting and the highlighting color for elements which have the mouse focus in the design view. The following options are available: ▪ No ▪ Border ▪ Border and Data (Default)
Positioning Mode	Specifies the positioning behavior which applies when inserting/moving/resizing elements. The following modes are available: ▪ Fine Positioning ▪ Snap to Grid ▪ Snap Lines (Default) Hint: If one of the two snapping modes (grid, lines) is enabled you may position elements off the grid as well: Just press the *Alt* key during positioning. Keyboard shortcut (switch modes): *Ctrl+R*

17.2.2 Grid Settings

Width	Horizontal resolution of the grid.
Height	Vertical resolution of the grid.
Grid visible (y/n)	Shows or hides the grid in the layout view. Keyboard shortcut: *Ctrl+G*

17.2.3 Design Tree Settings

Locate in Design Tree (y/n)	If enabled, **TFORMer** will automatically locate each element in the design tree which was selected it in the layout view. By default, this option is disabled.
Show all open forms (y/n)	If enabled, the design tree shows the contents of all open documents. Otherwise, it is populated with the contents of the current layout only. By default, this option is disabled.

17.3 Language

Language	The language to be used in menus and dialogs.

17.4 PDF

17.4.1 Properties

Page Layout	The page size (Letter, A4, …) for PDF output.
Orientation	The orientation (portrait or landscape) for PDF output.
Color Mode	The color mode for PDF output: "Color", "Grayscale" or "Black & White".

17.4.2 Fonts

Embed as ___ (y/n)	If this option is enabled, all used fonts will be embedded within the PDF file. This option ensures, that the PDF document is always displayed correctly, even if the required fonts are not installed on the system where the document is viewed. Embedding fronts increases the size of the generated PDF document. By default, this option is enabled. You can choose the method for font-embedding: ▪ *TrueType:* The complete TrueType font is embedded in the PDF file. ▪ *TrueType-Subgroups:* Only the required parts of a TrueType font are embedded in the PDF file (smallest output size). ▪ *Type3:* Fonts are embedded as type 3 fonts in the PDF file. Type 3 fonts should only be used when printing the resulting PDF on high resolution devices.
Simulate bold fonts if not available (y/n)	If this option is enabled, **TFORMer** will simulate the bold font in the resulting PDF file if the bold typeface is missing. By default, this option is enabled.

17.4.3   Image Resolution

Reduce to ___ (y/n)	If enabled, all images of which the resolution is larger than the specified value will be re-sampled. Smaller images are stored in their original resolution. If disabled, all images are embedded in their original size.

17.4.4   Image Compression

Method	The compression method that is used for storing images in the PDF output:
	▪ Auto
	  All images which are provided as JPEG are embedded as JPEG. All other images (.bmp, .tif, …) are stored as Zip compressed bitmap data.
	▪ Zip
	  All images are stored as Zip compressed bitmap data.
	▪ Jpeg
	  All images are stored as JPEG images using the specified compression quality.

Quality	The compression factor for JPEG images.

17.5 HTML

Page Layout	The page size (Letter, A4, …) for HTML output.
Orientation	The orientation (portrait or landscape) for HTML output.
Output Resolution	The output resolution (in dpi) for rendering HTML pages. The pre-set value is the screen resolution 96 dpi.
Optimal barcode resolution (y/n)	If enabled, the module width of barcodes will be optimized for the (rather small) output resolution of HTML pages. This option guarantees optimal barcode readability. Please note: As a result, the size of the barcode may be reduced!

17.6 PostScript

17.6.1   Properties

Page Layout	The page size (Letter, A4, …) for PostScript output.
Orientation	The orientation (portrait or landscape) for Postscript output.
Color Mode	The color mode for PostScript output: "Color", "Grayscale" or "Black & White".
Duplex	Single-sided and double-sided printing: ▪ Printer Default (uses the settings from the printer driver) ▪ Simplex (single-sided printing) ▪ Vertical (double-sided printing using a vertical page turn) ▪ Horizontal (double-sided printing using a horizontal page turn)

17.6.2   Image Resolution

Reduce to ___ (y/n)	If enabled, all images of which the resolution is larger than the specified value will be re-sampled. Smaller images are stored in their original resolution. If disabled, all images are embedded in their original size.

17.6.3   Image Compression

Method	The compression method that is used for storing images in the PostScritpt output:
	▪ Automatic
	  The compression method is selected automatically. The user can control whether the JPEG and/or the Flate algorithms are basically allowed.
	▪ JPEG
	  1 bit images are auto compressed. All other images are JPEG compressed.
	▪ Flate
	  All images are flate compressed.
	▪ RLE
	  All images are run length encoded.

	▪ None All images are embedded without any compression.
Enable JPEG compression (y/n)	Enables JPEG compression.
Quality	The compression factor for JPEG images.
Enable flate compression (y/n)	Enables flate compression (requires PostScript Language Level 3 support).

17.7 Picture

Page Layout	The page size (Letter, A4, …) for image output.
Orientation	The orientation (portrait or landscape) for image output.
Output Resolution	The output resolution (in dpi) for rendering images. The pre-set value is the screen resolution 96 dpi.
Color Mode	The default color mode for image output: ▪ Color ▪ Grayscale ▪ Black & White (Scattered Dither, Ordered Dither, Threshold)
Font Anti-aliasing (y/n)	If enabled, all fonts are anti-aliased. By default, this option is enabled.
TIFF Compression	The compression method which is used for creating TIFF output. Depending on the selected *Color Mode*, different of the following options are available: ▪ None ▪ LZW ▪ JPEG ▪ Packbits ▪ CCITT3, CCITT4, CCITT Fax
JPEG Compression	The compression factor which is used for creating JPEG output.

17.8 Zebra (ZPL)

Page Layout	The page size (Letter, A4, …) and the orientation (portrait or landscape) for ZPL-II output.
Orientation	The orientation (portrait or landscape) for ZPL-II output.
Resolution	The resolution (in dpi) of the used printer. The pre-set value is "8 dots/millimeter (203 dpi)".
Scaling (^JM)	Selects the scaling factor for the output. Switch to *Doubled* if the resulting output is half of the required size. ▪ Normal (default) ▪ Doubled Please check out your ZPL-II manual for the ^JMA and ^JMB commands for details.

Compression	Selects the compression method that is used for compressing the bitmap which is sent to the ZEBRA printer. The following options are available:
	▪ None
	  The bitmap will not be compressed. This kind of transfer may be very slow but it is supported by all ZEBRA models.
	▪ RLE
	  The bitmap will be RLE compressed. This option is supported by most ZEBRA models.
	▪ PNG
	  The bitmap will be PNG and base64 encoded. This option is supported by newer ZEBRA models respectively newer ZEBRA firmware versions.
	▪ ZIP
	  The bitmap will be ZIP-compressed and base64 encoded. This method is the default setting in **TFORMer** 8.5 and later. It is supported by most ZEBRA printers.

Dither Mode	Selects the method used for simulating color output on a black & white printer. The following options are available: ▪ Scatter (grayscale simulation method 1, this is the default) ▪ Ordered (grayscale simulation method 2) ▪ Threshold (no grayscale pattern, just black or white)

Do not dither Text (y/n)	If enabled, colored text is never dithered. By default, this option is enabled.

17.9 Barcodes

Barcode Printing on Windows-Printers	For the output on Windows-Printers **TFORMer** offers the following barcode rendering methods:
	▪ Default method
	  This method is given through the barcode DLL. Currently the default method is the quality mode – please, see below. However, it may change in later versions.
	▪ Compatibility mode, supported by all printers
	  This method may result in suboptimal output quality, but it is compatible to nearly all printers. It uses the GDI rectangle functions for drawing the barcode symbols.
	▪ Quality mode, supported by most printers
	  This method results in the best quality but may not be supported by all printers. It uses advanced GDI drawing methods.
	▪ Dual, a combination of above modes
	  This method produces correct output on most printers but might decrease drawing speed.

17.10 SVG

17.10.1 Properties

Page Layout	The page size (Letter, A4, …) for PostScript output.
Orientation	The orientation (portrait or landscape) for Postscript output.
Color Mode	The color mode for PostScript output: "Color", "Grayscale" or "Black & White".

17.10.2 Image Resolution

Reduce to ___ (y/n)	If enabled, all images of which the resolution is larger than the specified value will be re-sampled. Smaller images are stored in their original resolution. If disabled, all images are embedded in their original size.

17.10.3 Image Compression

Method	The compression method that is used for storing images in the SVG output:
	▪ Automatic
	  All JPEG images are embedded as JPEG. All other images (.bmp, .tif, …) are embedded as PNG.
	▪ JPEG
	  Transparent images and pure black and white images (no grayscale) are embedded as PNG images (JPEG not possible). All other images are embedded as JPEG images using the specified compression quality.
	▪ Png
	  All images are embedded as PNG images.

Quality	The compression factor for JPEG images.

17.11 Formatted Text

Hyphen used for output	Specifies the separator character, which is used in case of a conditional word break. Select one of the list items or enter your own character (or string).
Additional soft hyphens	The standard character for conditional word breaks is the so called "soft hyphen" character (ASCII: 173 or ADh; Unicode: 00ADh; HTML: &#173 or ­). Whenever this character is encountered in a string a word break may be inserted at this position. Thus, **TFORMer** can better utilize the available space within one text line. You can also define your own characters to be used as conditional hyphens (e.g., the negation character ¬). Just enter the respective characters into the field *"Additional soft hyphens"*. Please note:

	▪ Whenever a conditional word break is applied the specified separator character (see above) is printed. ▪ The soft hyphen itself (standard or user defined) is never printed! If you specify a dash as conditional hyphen, the output of all(!) dashes will be suppressed!

17.12 Locking

17.12.1 Locking

Automatically lock repository files on open	TFORMer supports parallel access to repository files, using locking mechanisms for repositories and forms (get lock / release lock / open read-only). If enabled, TFORMer will lock the repository on open (default).
Suppress the "steal lock" prompt…	If enabled, TFORMer will automatically open a locked repository in read-only mode. If disabled (default), you will be prompted for the following options: ▪ Continue in read-only mode ▪ Steal the lock from the current owner ▪ Retry
Release repository files after saving	If enabled, repository files will be released after saving. This helps to prevent users from unintentionally holding a file locked for an extended period of time (= the program/file wasn't closed, and the lock wasn't manually released). The default behavior is that files are released when closed.

17.12.2 Monitor

Monitor locks of open files	If enabled, the locks of open files are monitored (default). This way, it is detected when the lock is stolen/released from a form or repository.
Interval	The time interval for checking the locks of opened files.
Monitor locks of all repository forms	If enabled, all forms within an opened repository are monitored. Otherwise, the status is only checked on form open. Locked forms are marked accordingly in the tree view. This feature may affect performance for files located on the network.

17.13 Usability

Application Default Printer	Specifies which printer should be used after app start. The following options are available: ▪ System (Default) ▪ Restore last used printer on application start ▪ User defined
Store last used directories	If enabled, TFORMer remembers the last used directories for the next app start.
Cache images from remote drives	If enabled, TFORMer caches images from network drives for the layout design and for the preview The initial loading may take a little longer, but this improves performance when editing the layout.
Store last window layout	If enabled, TFORMer saves and restores the placements for the properties and workspace windows.
Confirmation dialog on delete	If enabled, TFORMer shows confirmation dialogs for the deletion of data fields, data sources, data source parameters and repository elements (default). If disabled, the confirmation dialogs will be suppressed.
Format TFORMer files for readability	If enabled, the saved TFORMer files will be formatted for readability (line breaks, indentation).

17.14 Update

Check for updates on application start	If enabled, TFORMer will automatically check if a newer version is available on app start.

17.15 Experimental

Enable experimental features	Enables/disables all experimental settings below.
Allow previous print engine (SDK option PreviousEngine)	Since version 8, **TFORMer** uses a new printing engine. This new engine has been thoroughly tested. However, it is possible that the print output in the new version differs from that of the previous version. This setting allows you to continue using the old printing engine in newer **TFORMer** versions by specifying the SDK option "PreviousEngine". You can do this, for example, as follows: ▪ In the print dialog (in the Advanced Settings) – see section 15.2 ▪ When printing via the **TFORMer SDK**
Allow adding RFID components	If enabled, RFID elements can be inserted (see also section 4.3.2.3).

18 Licensing

18.1 License Types

Please visit www.tec-it.com/order for available license types and pricing.

18.2 Entering your License Data

Select *File ► Options… | License…* from the menu to open the licensing dialog and to enter the *Activation Key* received from TEC-IT.

> Please note:
> ► The activation process requires internet access.
> ► If your system has no internet access or if you want to avoid the online activation for any other reason, please get in touch with our support or visit our online activation portal license.tec-it.com.

In the licensing dialog you can switch between two different views:

- *Activate*
  Select this option to activate your **TFORMer** installation.
  For detailed information, please refer to the following sections:
  - Online Activation using an Activation Key – see section 18.2.1
  - Renew your Activation – see section 18.2.2
- *License Info*
  This option allows you to view the license information – see section 18.2.3

18.2.1 Online Activation using an Activation Key

On the left side of the licensing dialog select *Activate* ❶.
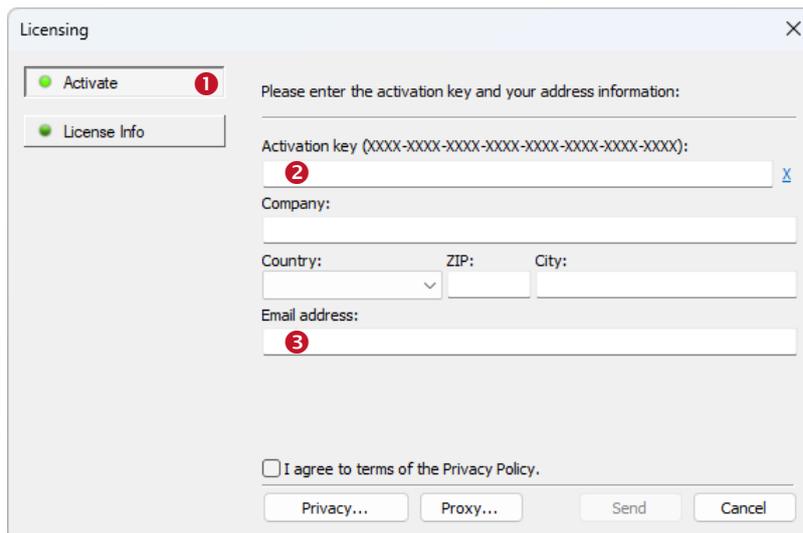
Figure 91: Licensing Dialog – Activate

The following steps are required to license the product:

1. Enter the activation key in field ❷.

2. Enter your email address in field ❸.
   This email may be used for license-related notifications and portal access.
3. Fill in the remaining fields (company, country, postal code and city). All fields are required for a successful activation.
4. Confirm the entered information by agreeing to the Privacy Policy and click *Send.*

You will receive a confirmation message upon a successful activation. If you encounter any issues or errors, please contact TEC-IT for assistance.

18.2.2 Renew your Activation

If you have previously activated your license successfully, but it has now expired, you can renew it. When starting **TFORMer Designer,** it will automatically check for updated license information. Alternatively, you can also trigger a new activation in the licensing dialog.

> ► Important: Please make sure that you have a valid license **before** renewing your activation! If necessary, renew your license subscription or purchase an update.

Figure 92: Licensing Dialog – Renew Activation

When opening the licensing dialog your current activation data is displayed.

1. If your details have changed, please update them.
2. If your activation key has changed, press *X* (❷) to clear the field and enter the new activation key.
3. Confirm the entered information by agreeing to the Privacy Policy and click *Send*.

You will receive a confirmation message upon a successful activation. If you encounter any issues or errors, please contact TEC-IT for assistance.

18.2.3 View License Info

For viewing information about the purchased license, select the *License Info* option ❹ on the left side of the licensing dialog.
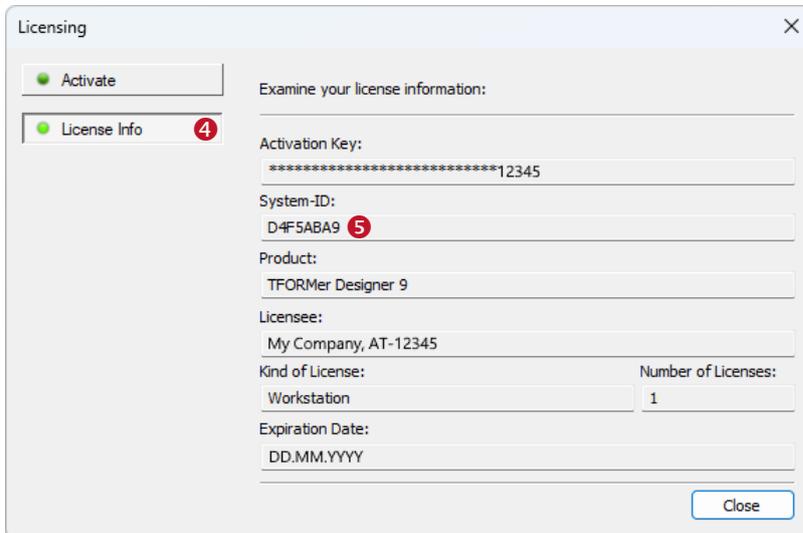
Figure 93: Licensing Dialog – License Info

> In the license info you find the so-called *System ID* of your computer (see ❺). For specific licensing options, you will be asked to send us the System ID of your target computer.

18.3 Subscriptions

As soon as the subscription nears its end or has expired, you are notified about the expiration date and are given the option to extend your subscription.

When you open **TFORMer Designer**, a splash dialog will appear, offering the option to request an extension of your subscription online. As soon this is done, you can renew your activation (see section 18.2.2).

18.4 Temporary Trial Licenses

You have the option to obtain a temporary trial license that allows you to use **TFORMer** without restrictions for a limited period of time.

When you open **TFORMer**, you will see a splash dialog with the option to request a trial license online.
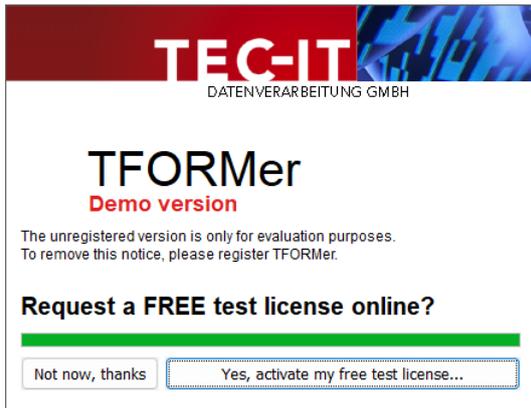
Figure 94: Request Trial License

If you click *YES*, the license information will be submitted automatically. In case of any problems, please contact TEC-IT.

Figure 95: Demo Version Unlocked

If you have successfully obtained a trial license, you will be notified of the remaining trial period each time you start the application.

18.5 Notes

TFORMer stores the license data in the registry of the current user.

Another possibility to license **TFORMer** is to use a license file named "TFORMer.ini". This license file must be stored in the same directory as "TFORMer.exe". Alternatively, it can also be copied to the user's AppData directory.

For details, or if you need machine-wide licensing (for multiple users on the same computer), please contact TEC-IT.

19 Contact and Support Information

TEC-IT Datenverarbeitung GmbH

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Appendix A: Properties

A.1 Form Properties

A.1.1 Common

Data Source	Select the data source which is used for printing. By default, the manual data source is selected. Whenever you change the data source (e.g., in the data view), this setting is changed.

A.1.2 Watermark

The watermark is a background picture which is printed per output page.

Picture	The file name of the picture. Same also picture properties in section A.3.1.4.
Picture Mode	The display mode of the picture. See also picture properties in section A.3.1.4.
Picture Alignment	The alignment of the picture on the printed page. See also picture properties in section A.3.1.4.

A.1.3 Document

Document Name	This is used as name for the generated output or spool file (under Microsoft Windows). See also sections 6.4.2 and 15.4.1.
Title	This is used as meta information for PDF, HTML, PostScript and File/Printer output.
Subject	This is used as meta information for PDF and HTML output.
Author	This is used as meta information for PDF and HTML output.
Keywords	This is used as meta information for PDF and HTML output.
Creator	This is used as meta information for PDF, HTML, PostScript and File/Printer output. The default value (auto) is "*<Name> - <Version>*" of the **TFORMer** version that was used for printing.
Producer	This is used as meta information for PDF and HTML output. The default value (auto) is "*TEC-IT Datenverarbeitung GmbH (www.tec-it.com)*"
ZUGFeRD-XML	Specifies the XML file to be embedded in the ZUGFeRD invoice. If left empty, the user will be prompted to select a ZUGFeRD invoice (XML file) on printing. The XML file can also be specified using the SDK option *"zugferd-xml"*. The SDK option takes precedence over the document property.

A.1.4 Advanced

ZPL-Header	Native ZPL code that is inserted before each print-job.
ZPL-Footer	Native ZPL code that is inserted after each print-job.

A.1.5 Documentation

Comment	An arbitrary comment. For documentation purposes.

A.1.6 PDF-Security

Open Password	Password for opening the PDF document.
Permission Password	Password for modifying document permissions, like modifying text or printing the document.
Printing Allowed	Specifies if printing of a protected document is allowed, and if so, at what resolution. Will be ignored if no permission password is set. Possible values: ▪ (default) ➔ uses the setting from TFORMer.xml ▪ None

	▪ Low Resolution ▪ High Resolution
Changes Allowed	Specifies if modification of a protected document is allowed. Will be ignored if no permission password is set. Possible values: ▪ (default) ➔ uses the setting from TFORMer.xml ▪ None ▪ Inserting, deleting and rotating pages ▪ Commenting ▪ Any
Copying Allowed	Specifies if text, images and other content can be copied. Will be ignored if no permission password is set. Possible values: ▪ (default) ➔ uses the setting from TFORMer.xml ▪ Yes ▪ No
Text Access for Screen Readers	Specifies if screen readers can access the text. Will be ignored if no permission password is set. Possible values: ▪ (default) ➔ uses the setting from TFORMer.xml ▪ Yes ▪ No
Encrypt Content	Specifies the content of the PDF file that should be encrypted. Will be ignored if no permission password is set. Possible values: ▪ (default) ➔ uses the setting from TFORMer.xml ▪ All ▪ All content except metadata

A.2 Band Properties

A.2.1 Common

Group By[3]	The records of a data source will be grouped based upon this expression: Every time, the computed value of the expression changes, a new group will be started. Group by expressions do not change the order of the records in the data source! Group headers are printed when a group starts, group footers are printed after a group ends.
Page Break[4]	Determines whether a page break will be inserted before and/or after this band. Possible values: ▪ None ▪ Before this Band ▪ After this Band ▪ Before and After this Band
Row/Column Break[4]	Determines whether a row/column break will be inserted before and/or after this band (only available for *Columnar Reports* and *Complex Reports*). Possible values: ▪ None ▪ Before this Band ▪ After this Band ▪ Before and After this Band
Pre-Evaluation	This expression will be evaluated before the band is printed (see section 12.4).
Post-Evaluation	This expression will be evaluated after the band is printed (see section 12.4).

A.2.2 Advanced

Most settings in the group *Advanced* are available for *Complex* report and label layouts only.

Tray	For every single page of the output, you can dynamically select a tray on the target printer. E.g., this might be useful for printing the first page of an invoice on a letterhead. The tray selection is performed by the first band on a new page (e.g., by the *page header)*. The tray that is entered in the property of this band will be selected: ▪ Tray 0 is the default tray (uses the setting of the current printer driver). ▪ Tray 1 to 10 can be pre-configured *(Tray Mappings ► Trays).* For more details, please refer to section 12.6.
Type	The band type (Report Header, Page Header, …).
Output Area[5]	The area, in which the band shall be printed (only available for *Complex Labels/Reports* and *Columnar Reports*): ▪ Page ▪ Label
Print at Bottom[6]	By default, the report footer will be printed directly after the last *detail band.* By setting this value to *True,* the report footer will be printed at the bottom of the page (before the page footer).

A.2.3 Control

Printing Condition	The printing condition decides at print-time, whether the band is printed or not (see section 12.2).

A.2.4 Position

Height[7]	The band height.

---

[3] For *group headers* and *group footers.*
[4] Not for *page headers* and *page footers.*
[5] For *report headers, page headers, page footers* and *report footers.*
[6] For *report footers.*
[7] Availability depends on the layout type and on the band type.

Width[7]	The band width.
Can Grow[8]	Specifies, whether the height of the band is increased if required. This is useful if the band contains elements with dynamic size (possible for text and picture elements). Allowed values are: ▪ No ▪ Height
Can Shrink	Specifies, whether the height of the band is decreased if possible. This is useful if the band contains elements with dynamic size (possible for text and picture elements). Allowed values are: ▪ No ▪ Height
Print across Pages[4]	Specifies if the band may be printed across pages: ▪ Yes (the band will be continued on the next page, if it does not fit in the remaining space on the current page) ▪ Avoid (the band will be split only if it does not fit on an empty page) ▪ No (the band will be clipped if it does not fit on an empty page)
Position Control	Specifies the band placement and the output direction. ▪ Default ➔ The band is printed from the current cursor position downwards, then the print cursor is moved to the end of the band. ▪ Overlay ➔ The area overlays previously printed areas and is printed from bottom to top at the current print position. The current print position is not changed. ▪ Ignore ➔ The band is output normally but the print position is not changed. Subsequent bands overprint this area. ▪ Reverse ➔ The band is printed at the current position from bottom to top, then the print position for subsequent bands is set to the start position of this band.

A.2.5   Documentation

Name	The name of the band (used for display only).
Comment	An arbitrary comment. For documentation purposes.

A.2.6   Columns

The group *Columns* is available for *detail bands* only.

Columns	Specifies, how many columns are used for printing the detail bands. If activated, each new record (respectively each record copy) is printed in a subsequent column. When designing the layout, you have to consider, that only the respective percentage of the column width may actually be used for design elements (e.g., for 2 columns you may only cover 50% of the width). The Row/Column Break has to be removed.
Gap	The gap between the columns.
Width	The width of a column.

For the alternating output of two or more detail bands, you have to consider, that each involved detail band must have the same column settings!

---

[8] Not for *page headers*.

A.3   Element Properties

A.3.1   Common

A.3.1.1   Text Elements

Text	The text to be printed.
Output Format	Specifies the output format (number, currency, date/time, etc.). See also section 9.9.1.
Font	Selects the font style and size.
Text Direction	Text direction (0°, 90° CW, 90° CCW or 180°).
Text Color	The color of the text.
Fill Color	The color and the pattern of the text background.
Line Color	The color and the pattern of the bounding rectangle.
Line Width	The width of the bounding rectangle.
Line Style	The line style for the bounding rectangle (solid, dashed, …).
Alignment	The alignment of the text within the bounding rectangle. The following values are possible: | Top, Left	Top, Center	Top, Right
Center, Left	Center	Center, Right
Bottom, Left	Bottom, Center	Bottom, Right	
Justify	Turns justify on/off.
Word Wrap	Automatically wrap words dependent on the given element width (y/n)? If disabled long text lines will be clipped.

A.3.1.2   Barcode Elements

Barcode Data	The data which is encoded as barcode symbol. The barcode data may contain static data and/or dynamic data (e.g., data fields).
Barcode Type	The barcode type (symbology).
Check Digit	Selects the check digit computation.
Barcode Color	The color of the bars.
Font	Selects the font style and size.
Text Color	The color of the text.
Fill Color	The color and the pattern of the background.
Human Readable Text	The position of the human readable text (Above, Below, No).
Human Readable Text Distance	The distance between the barcode and the human readable text.
Alignment	The alignment of the barcode within the bounding rectangle. The following values are possible: | Top, Left	Top, Center	Top, Right
Center, Left	Center	Center, Right
Bottom, Left	Bottom, Center	Bottom, Right	
Direction	Barcode direction (0°, 90° CW, 90° CCW or 180°).

A.3.1.3   Line, Rectangle, Ellipse

Fill Color	The color and the pattern of the text background. (This property is not available for line elements.)
Line Color	Line color and pattern.
Line Width	The line width.
Line Style	The line style (solid, dashed, …).
Radius	The radius of the rounded corner. (This property is only available for rounded rectangles.)

A.3.1.4 Picture

File Name	The image file name.
	The following file formats can be used: .bmp, .gif, .ico, .jpg, .pcx, .png, .psd, .tga, .tif.
	File names can be specified using one of the following formats:
	▪ Windows file format (e.g., "C:\temp\sample.png")
	▪ URL format (only available under windows!) (e.g., "https://www.tec-it.com/pics/sample.png")
	You can use absolute file names (e.g., "C:\sample.jpg") and relative file names (e.g., "sample.jpg" or "img\sample.jpg"). As base for relative path specifications the path of the **TFORMer** file (.tff or .xmd) is used.
Alignment	The alignment of the picture within the bounding rectangle.
	The following values are possible:
	Top, Left / Top, Center / Top, Right / Center, Left / Center / Center, Right / Bottom, Left / Bottom, Center / Bottom, Right
Direction	Picture direction (0°, 90° CW, 90° CCW or 180°).
Mode	The display mode:
	▪ Clip (The picture will be printed in its original size and might be clipped by the bounding rectangle.)
	▪ Stretch (The picture will be stretched to fit the bounding rectangle, regardless of its aspect-ratio.)
	▪ Zoom (The picture will be enlarged to its maximum possible size within the bounding rectangle, keeping its aspect-ratio.)
	▪ Tile (The picture will be replicated row- and column-wise inside the bounding rectangle.)
Transparent Color	All regions in the image that are filled with the selected color will be printed transparently.
Suppress Error Messages	Enables or disables printing error messages (instead of an image) if the image is not available or invalid.

A.3.1.5 RFID

Data Type	The type of the data to be encoded:
	▪ Text (ASCII)
	▪ Hexadecimal
Data to Encode	The data to be encoded.
	Depending on the selected type, the provided data has to be either a text or a hexadecimal string.

A.3.1.6 ZPL

ZPL	Custom ZPL commands to be embedded in the print job.
	These commands will be inserted at the beginning of the printed label (page).

A.3.2 Advanced

A.3.2.1 Text Elements

Auto Font Size	If set to *True,* **TFORMer** automatically selects the biggest possible font size, for which the text to fits into the bounding rectangle without being cropped.
Auto Font Size Minimum	Specifies the lower font size limit (in percent), if *Auto Font Size* is enabled.
Auto Font Size Maximum	Specifies the upper font size limit (in percent), if *Auto Font Size* is enabled.
Optimize Spaces	If enabled, multiple consecutive spaces will be printed as one single space character. Sample: "**TFORMer Designer **" will be printed as "**TFORMer Designer**".
Suppress Blank Lines	If enabled, empty lines in a multiline text will not be printed. Sample: "**TFORMer** **Designer**" will be printed as "**TFORMer Designer**"

Line Spacing	The spacing between text lines.

A.3.2.2 Barcode Elements

For more information on the following properties, please refer to the Barcode Reference, which is available for download on www.tec-it.com.

Escape Sequences	Turn the translation of escape sequences on/off.
Hex Data	Enable this property if your barcode data is provided as hex-string. **TFORMer** will convert it to ASCII characters automatically. Example: The hex-string "34373131" will be converted into the barcode data "4711".
Codepage	This setting allows you to specify the codepage for encoding characters outside of the standard ASCII range (0-127). This means this setting is relevant for specific 2D barcodes only (others do not support the respective character range). Please note: If you choose any other page than the default codepage the characters might get mixed up or even unreadable. For public applications you should therefore always use the default codepage. If you try to encode special characters (like Ä or Ñ), please make sure that the 2D symbology is able to encode these characters with the default codepage.
Format	The format property is used for formatting the utilizable data of the barcode. It is specified via a string that operates with substitute symbols to indicate how the data shall be structured. Specifying a format string, you can: ▪ Select subsets for Code 128 and UCC/EAN-128. ▪ Define the desired Start/Stop characters for CODABAR. ▪ Reposition the Check-Digit (in special cases). ▪ Encode the date, preamble, service class, postal and country code into the barcode data (MaxiCode).
Bearer Bar	Specifies which bearer bars should be printed: above and/or below, or around the barcode.
Bearer Bar Width	Specifies the width of the bearer bars: 0 inch (or mm) … no line x inch (or mm) … use the specified line width
Quiet Zone	The quiet zone is the clear space around the barcode, which must remain free of text or graphics. 1, 2, or 4 values can be specified.
Module Width	The module width is the width of the narrowest bar.
Notch Height	The notch height specifies how far the synchronization bars should jut out from the remaining barcode. (E.g., the EAN code has synchronization bars on the left, in the middle and on the right.)
Bar:Space Ratio	This property is used to specify the relationship between the widths of the single bars and spaces of a barcode. The input format depends on the selected barcode type. – For Code 2OF5 Interleaved you could specify the ratio "1:2:1:2", e.g.
Suppress Error Message	In case of an error during the printing of a barcode (e.g., wrong input data), an error message will be printed. This option allows you to suppress the error message. The space will be left blank instead.
Optimal Resolution	Automatically adjust the module width of the barcode (decrease it) to avoid aliasing problems on the output device. The module width is set to a multiple of the smallest available printing unit.
Bar Width Reduction	When printing on inkjet printers, the ink that is absorbed by the paper tends to diffuse. Setting the bar width reduction allows you to work against this spreading of ink. The bar width reduction is specified in percent of the module width. E.g., when setting this value to 20 all bars will be narrowed by 20 percent of the module width.
Encoding	Specifies how the characters should be encoded inside the barcode. This setting is available for most 2D barcodes. (The barcode must be capable of encoding binary data.) Possible values: ▪ automatic (**TFORMer** tries to minimize the barcode data) ▪ binary
Barcode Options	Sets the barcode option string. The option string consists of name/value pairs separated by space characters. For a list of supported options refer to the **TBarCode SDK** manuals.

A.3.3 Design

Locked	Specifies that the element cannot be selected with the mouse. The output of such elements

	is not affected. Can be temporarily disabled by pressing the *Ctrl-key*.

A.3.4   Control

Printing Condition	The printing condition decides at print-time, whether the element will be printed or not (see section 12.2).
Layer	Assign the element to one of the predefined layers (see section 12.3).

A.3.5   Position

Left	The left most coordinate of the element.
Top	The top most coordinate of the element.
Width	The width of the element.
Height	The height of the element.
Rotation	The rotation of the element in degrees. Note: For simple rotations of text, barcode and picture elements in 90° steps we recommend the use of the property "Direction" (see also section A.3.1). It may simplify the positioning of the element, because not the element itself is rotated, but only its content.
Can Grow[9]	Specifies, whether the dimensions of the element are adjusted according to its content. If a text is clipped inside the frame (relevant for dynamic content only) you can use the property *Can Grow.* The size of the text element will be increased automatically as required. Available options: ▪ No ▪ Height ▪ Width ▪ Height and Width If the height of the band which contains this element should grow accordingly, enable the "Can Grow" property of the band.
Can Shrink[9]	Specifies, whether the dimensions of the element are adjusted according to its content. Available options: ▪ No ▪ Height ▪ Width ▪ Height and Width If the height of the band which contains this element should shrink accordingly, enable the "Can Shrink" property of the band.
Flush Top	Adjust the top border to the specified band edge. Useful for drawing column separator lines in tables. Available options: ▪ No ▪ Last Printed Band
Flush Bottom	Adjust the bottom border to achieve a common baseline. Useful for aligning an element to the bottom position of the band or other elements. Available options: ▪ No ▪ Elements ▪ Band
Flush Right	Adjust the right border to achieve a common vertical line to the right. Useful for aligning the right border of an element to the right position of the band or other elements. Available options: ▪ No ▪ Elements ▪ Band
Shift Mode	This property is used to move elements relative to other growing or shrinking elements. "Always" considers size-changes of other elements immediately. "When overlapped" only avoids intersections.

---

[9] For *text* and *picture* elements

	Available options: ▪ Always ▪ Don't shift ▪ When overlapped

A.3.6   Margins

These properties are available for *Text Elements* only:

Margin Left	These margins are used to confine the printing area within a text element.
Margin Top	
Margin Right	
Margin Bottom	

A.3.7   Documentation

Name	The name of the element.
Comment	An arbitrary comment. For documentation purposes.

A.4   Layer Properties

A.4.1   Common

Name	The name of the layer.
Display Color	If *Layout ► Layers	Show Layers* is enabled, all elements within this layer will be drawn in the specified color.
Visible	Here you can toggle all elements of one layer visible or invisible. Please note: This is for editing purposes only! – The output will not be affected.
Locked	Specifies that elements assigned to this layer cannot be selected with the mouse. The output of such elements is not affected. Locking can be temporarily disabled by pressing the *Ctrl* key.

A.4.2   Control

Printing Condition	The printing condition decides at print-time, whether the elements, which are assigned to that layer, will be printed or not (see section 12.2).

A.4.3   Documentation

Description	A simple description. Only for documentation purposes.
Comment	An arbitrary comment. For documentation purposes.

A.5   Data Field Properties

A.5.1   Common

A.5.1.1   Data Field

Name	The name of the data field. This name can be used to address the data field in expressions.
Data Type	The type of the data field. Available options: ▪ Text ▪ Integer ▪ Floating-point We recommend the general use of the data-type *"Text"*.
Default Value	The default value for the data field. This value will be returned, if no other value is given.

| Trim Whitespace | Specifies how the provided data is trimmed:
▪ No Trim
▪ All
▪ Left
▪ Right |

A.5.1.2   Computed

Name	The name of the data field. This name can be used to address the data field in expressions.
Data Type	The type of the data field. Available options: ▪ Text ▪ Integer ▪ Floating-point
Expression	The expression which is used to compute the value for the data field.
Compute Per	Choose if the data field is re-computed for every: ▪ Record ▪ Record copy
Trim Whitespace	Specifies how the provided data is trimmed: ▪ No Trim ▪ All ▪ Left Right

A.5.1.3   Serial

Name	The name of the data field. This name can be used to address the data field in expressions.
Data Type	The type of the data field. Available options: ▪ Integer ▪ Floating-point
Start Value	The start value for the serial number. If the "Store last value" property is enabled (see below), the start value will be updated auto-matically after each print-job.
Step Size	The step size in which the serial number is incremented.
Store Last Value (y/n)	If enabled **TFORMer** remembers the last printed value. The next unused value will be as-signed as start value for the next print job automatically.
Update on	Choose the trigger, on which the serial number is incremented: ▪ Record ▪ Record copy ▪ Document ▪ Page ▪ Label
Update Condition	An optional condition controlling the increment of the serial number. If a condition was entered, the serial number will only be increased if the result of the ex-pression is true.

A.5.2   Aggregation (Computed)

The *Aggregation* group is only available for computed data fields.

Aggregation Type	Selects one of the available aggregation functions or disables aggregation. Available values are: ▪ None ▪ Running Average ▪ Running Sum
Aggregation Region	If aggregation is enabled, select the region for which the aggregation values are calculated: ▪ All (do one aggregation within the whole range of the print-job) ▪ Page

	(do a separate aggregation within the range of each new page) ▪ Label (do a separate aggregation within the range of each new label) ▪ Group (do a separate aggregation within the range of each new group)
Group	If the aggregation region is set to "Group", use this field to enter the grouping condition. Enter the same condition as specified in the group header or group footer.
Aggregation Filter	An optional filter for aggregation values. If a filter was entered, single values will only be considered, if the expression returns true. Thus, you can define which values are considered for the aggregation, and which not.

A.5.3   Validation (Data Field)

The *Validation* group is only available for normal data fields.

Validation Rule	This rule is verified when importing data.
Validation Message	If the validation rule is violated, this message will be prompted.

A.5.4   Advanced

Caption	These properties may be queried with the **TFORMer SDK** API. They have no functionality for printing.
Display Order	This property is used by the data grid of **TFORMer Designer** and by the tool **QuickPrint** to determine the order in which data fields are displayed. By default, **TFORMer** sorts the data fields alphabetically.

A.5.5   Documentation

Description	A simple description. Only for documentation purposes.
Comment	An arbitrary comment. For documentation purposes.

A.6   Tray Mapping Properties

A.6.1   Common

Name	The name of the tray mapping.

A.6.2   Trays

Tray 1	For each of the 10 logical trays in **TFORMer** you can assign a device-specific printer tray. You can assign tray names or paper format names.
…	
Tray 10	

A.6.3   Documentation

Description	A simple description. Only for documentation purposes.
Comment	An arbitrary comment. For documentation purposes.

A.7   Repository

Description	A simple description. Only for documentation purposes.
Comment	An arbitrary comment. For documentation purposes.

A.8   Tray Mapping Properties (Repository)

Same as the *Tray Mapping Properties* described in A.6.

A.9   Global Data Fields (Repository)

Same as the *Data Field Properties* described in A.5.

A.10 Projects (Repository)

A.10.1 Common

Name	The name of the project.

A.10.2 Documentation

Description	A simple description. Only for documentation purposes.
Comment	An arbitrary comment. For documentation purposes.

A.11 Forms (Repository)

A.11.1 Common

Name	The name of the form.
SDK Options	Default **TFORMer SDK** options used when printing this form. The available options can be found in the **TFORMer SDK** documentation.
File	The file name of the form.

A.11.2 Documentation

Description	A simple description. Only for documentation purposes.
Comment	An arbitrary comment. For documentation purposes.

Appendix B: Supported HTML Tags and Entities

B.1   HTML Tags

B.1.1   Standard

Tag	Description
<a>	Anchor. Used for embedding links. Only the href attribute is supported. E.g., Link to Google
, <strong>	Bold text. Everything between the start tag and the end tag is rendered bold.
 	Line break. Inserts a line break.
<font>	Font. The following attributes are supported: ▪ color Only hexadecimal values, no color names. E.g., <font color="#ff0000">. ▪ name Selects a typeface. E.g., <font name="Helvetica"> ▪ size Use one of the predefined HTML font sizes within the range from 1 to 7. E.g., <font size="2"> ▪ style Supports the "font-size" attribute only. E.g., <font style="font-size: 12pt">
<i>	Italic text. Everything between the start tag <i> and the end tag </i> is rendered italic.
<p>	Paragraph. starts a new paragraph. ends the paragraph.
<strike>	Strike through text. Everything between the start tag <strike> and the end tag </strike> will be striked through.
<sub>	Subscript. Everything between the start tag _{and the end tag} will be subscript.
<sup>	Superscript. Everything between the start tag ^{and the end tag} will be superscript.
<u>	Underlined text. Everything between the start tag <u> and the end tag </u> will be underlined.

Table 1: Supported HTML Tags

B.1.2   TFORMer-Specific

Tag	Description
<Expr>	Used by TFORMer internally. This tag embeds expressions.
<HtmlExpr>	Used by TFORMer internally. This tag embeds expressions, which are returning HTML.

Table 2: Supported HTML Tags (TFORMer-Specific)

B.2   Named Entities

Named Entity	Character	Description
&	&	Ampersand.
©	©	Copyright.
°	°	Degree.
>	>	Greater than.

«	«	Left angle quotation mark.
<	<	Less than.
µ	µ	Micro symbol.
·	·	Middle dot.
		Non breaking space.
±	±	Plusminus.
»	»	Right angle quotation mark.
®	®	Registered Trademark.
§	§	Section sign.
­		Soft hyphen.
™	™	Trademark.
&zws; &zerowidthspace;		Zero width space.

Table 3: Supported HTML Entity Names (incomplete list)

Appendix C: Function Reference

C.1 Functions

Return	Function	Description
long	Abs («Number»)	Returns the absolute value of a number.
date	AddDays («Date», «Days»)	Adds or subtracts the specified number of days to/from a date value.
date	AddMonths («Date», «Months»)	Adds or subtracts the specified number of months to/from a date value.
date	AddWeeks («Date», «Weeks»)	Adds or subtracts the specified number of weeks to/from a date value.
date	AddYears («Date», «Years»)	Adds or subtracts the specified number of years to/from a date value.
string	AnsiToBin («Text», «Length»)	Converts text to ANSI and encodes it as a binary string with the specified length.
string	AnsiToHex («Text», «Length»)	Converts text to ANSI and encodes it as a hexadecimal string with the specified length.
long	Asc («Text»)	Returns the ASCII value of a given character or of the first character of «text».
string	BinToHex («BinärerText», («Länge»)	Converts a binary string to a hexadecimal string with the specified length.
date	CDate («Text»)	Converts the string «text» to a date. Provides an empty date if no conversion is possible. The date format in «Text» depends on the regional settings on your computer. This setting is configured in the *Control Panel ► Region and Language* under „Formats". ▪ German: Format = "24.12.2025" ▪ English: Format = "12/24/2025"
date	CDateEx («Text», «Format»)	Converts a string into a date. The conversion format to be used is adjustable. For information on how to specify the format, please refer to the description of the function *Format («Date», «Format»)* below. Example: CDateEx ("31.12.2025", "dd.MM.yyyy").
double	CDbl («Expr»)	Converts any value to a double value (floating-point notation). The result is 0.00 when a conversion is not possible.
long	Ceil («Number»)	Calculate the smallest integer that is greater than or equal to a given number. Example: Ceil (2.4) = 3.0; Ceil (-2.4) = -2.0
char	CheckChar_ISO7064 Mod37_2 («Data»)	Calculates the check character according to ISO 7064 Mod 37-2.
string	CheckDigits («Method», «Text»)	Returns the check digit for the given string as text. Possible values for «Method» are: 2 (Modulo 10), 3 (Modulo 43), 4 (Modulo 47, 2 digits), 5 (DP Leitcode), 6 (DP Identcode), 7 (Code11, 1 digit), 8 (Code11, 2 digits), 9 (USPS PostNet), 10 (MSI, 1 digit), 11 (MSI, 2 digits), 12 (Plessey), 13 (EAN 8), 14 (EAN 13), 15 (UPC A), 16 (UPC E), 17 (EAN 128), 18 (Code 128), 19 (Royal Mail 4 State), 20 (Modulo-11, PZN), 21 (Modulo-11, W=7), 22 (EAN 14), 23 (Modulo 10, Korean PA), 24 (Modulo 10, Planet), 25 (Modulo 10, Italian Postal 2/5), 26 (Modulo 36, DPD Barcode), 27 (Modulo 16), 28 (Modulo 10, Luhn Algorithm).
long	CheckDP («Text»)	Returns the Deutsche Post check-digit (Leitcode, Identcode) of the specified value as long.
long	CheckMod10 («Text»)	Returns the Modulo 10 check-digit (weighted) as ASCII code. E.g., CheckMod10("1203") will return 52, which is the ASCII code for the character "4". Please, use the function *Chr(CheckMod10(..))* to get the result as a character.
char	CheckMod36 («Text»)	Returns the Modulo 36 check-digit of the specified value as character.
char	CheckMod43 («Text»)	Returns the Modulo 43 check-digit of the specified value as character.
char	Chr («Number»)	Returns the corresponding character for the specified ASCII value «Number».
double	Clamp («Number», «Min», «Max»)	Limits the given value between the specified minimum and maximum values.
double	Clamp01 («Number»)	Limits the given value between 0 and 1.

		Example: Clamp01 (0.4) = 0.4; Clamp01 (-5.4) = 0.0
long	CLng («Expr»)	Converts any value into a whole number. If a conversion is not possible, the result is 0.
string	CStr («Expr»)	Converts a value into a text.
long	Day («Date»)	Determines the day of the month [1..31].
long	DayOfWeek («Date»)	Returns the day of the week of a specified date [1..7]. 1=Sunday, 2=Monday, ...
double	DayOfYear («Date»)	Returns the day of the year of a specified date [1..366].
string	DecToBin («Number», «Length»)	Converts a decimal number to a binary string of the given length.
string	DecToHex («Number», «Length»)	Converts a decimal number to a hexadecimal string of the given length.
double	Exp («Number»)	Returns the value $e^{«Number»}$, where e is the base of the natural logarithms.
double	Exp10 («Number»)	Returns the $10^{«Number»}$.
long	Find («Text», «SearchText», «Start»)	Searches the string «Text» for «SearchText» starting from Position «Start». Returns the position of the string or -1. The first character of a string is located at position 0.
long	FindReverse («Text», «SearchText», «Offset»)	Searches the string «Text» for «SearchText» in reverse order excluding «Offset» characters at the end. Returns the position of the string or -1. The first character of a string is found at position 0.
long	Floor («Number»)	Calculate the largest integer that is less than or equal to the given number. Example: Floor (2.4) = 2.0; Floor (-2.4) = -3.0
string	Format («Date», «Pattern»)	Formats «Date» according to the specified pattern string «Pattern». Format placeholders: dd day of month (01 – 31) MM month double-digit (01 – 12) MMM month three-digit (Jan – Dec) yy year double-digit (01) yyyy year four-digit (2001) Example: *Format (CDate("12/24/2025"), "MMM, dd yyyy")* returns *Dec, 24 2025*. See also section C.4 Formats.
string	Format («Number», «Pattern»)	Formats «Number» according to the specified pattern string «Pattern». Format placeholders: # digit or no value, 0 '0' or digit . decimal point , comma + - sign
string	FormatEx («Value», «Pattern»)	TFORMer attempts to format the given «Value» according to the specified «Pattern» (see above for supported format placeholders). If not applicable, the original value is returned. The value can be passed either as text or in its respective type (number, date).
string	FormatToBin («Format»)	Converts a format string to a binary string.
double	Fract («Number»)	Returns the fractional unit of «Number».
string	HexToBin («HexadecimalText», «Length»)	Converts a hexadecimal string to a binary string with the specified length.
long	Hour («Date»)	The hour of a specified date [00..23].
string	IIf («Condition», «TrueExpr», «FalseExpr»)	Returns the value of «TrueExpr» if «Condition» is evaluated as (TRUE or not equal to 0) . Returns the value of «FalseExpr» if «Condition» is evaluated as (FALSE or equals 0).
bool	IsDate («Text», «Format»)	Checks if the given string can be converted into a valid date using the specified conversion format. For information on how to specify the format, please refer to the description of the function *Format («Date», «Format»)* above.
bool	IsEmpty («Text»)	Test whether the string «Text» is empty or not.
bool	IsEven («Number»)	Returns TRUE if «Number» is even.
bool	IsInReportFooter ()	Returns TRUE when currently processing the report footer(s) of a job.
bool	IsInReportHeader ()	Returns TRUE when currently processing the report header(s) of a job.

bool	IsLastPage ()	Returns TRUE if the page being printed is the last page of the document.
bool	IsLeapYear («Date»)	Returns TRUE if the specified date occurs within a leap year.
bool	IsOdd («Number»)	Returns TRUE if «Number» is uneven.
string	KeepChars («Text», «KeepChars»)	Removes all characters in «Text» which are NOT included in «KeepChars».
string	LastValue («VarName»)	Returns the last value of a given data field (the value of the data field from the previous record).
string	Left («Text», «Length»)	Returns the first characters «Length» of a string.
long	Len («Text»)	Returns the length of the given string.
double	Lerp («a», «b», «t»)	Interpolates linearly between a and b by t. The parameter t is fixed to the range [0, 1]. Example: Lerp (0.0, 100.0, 0.5) = 50.0
double	LerpUnclamped («a», «b», «t»)	Interpolates linearly between a and b through t (with no limit on t). Example: Lerp (0.0, 100.0, 2.0) = 200.0
double	Log («Number»)	Returns the natural logarithm of «Number».
double	Log10 («Number»)	Returns the logarithm of «Number».
string	Lookup («Key», «NamedValues», «DefaultValue»)	Retrieves the value associated with the specified key. If the key is not found the default value is returned. Example: *Lookup ("KEY1", "key1=value1 key2=value2", "DefaultValue")* returns "value1".
double	Max («Number», «Number»)	Returns the maximum of two given values. Example: Max (5.0, 8.0) = 8.0
string	Mid («Text», «Start», «Lenght»)	Returns the substring of string «Text» starting at position «Start» with length «Length». The first character of a string is located at position 0.
double	Min («Number», «Number»)	Returns the minimum of two given values. Example: Min (5.0, 8.0) = 5.0
long	Minute («Date»)	The minutes of a specified date/time [00..59].
long	Month («Date»)	The month of the specified date [1..12].
date	Now ()	The actual date and time.
string	PadLeft («Text», «Length», «PaddingText»)	Left padding a string with another string (multiple times if necessary) until the resulting string reaches the specified length.
string	PadRight («Text», «Length», «PaddingText»)	Right padding a string with another string (multiple times if necessary) until the resulting string reaches the specified length.
double	Pow («Number», «Power»)	Returns the result of «Number» raised to the power of «Power».
double	RandomDbl («MinValue», «MaxValue»)	Generates a random number (type double) in the range [MinValue..MaxValue].
long	RandomLng («MinValue», «MaxValue»)	Generates a random number (type long) in the range [MinValue..MaxValue].
string	RandomStr («Length», «AllowedChars»)	Generates a random string of given length using the given characters. Example: *RandomStr (6, "0123456789ABCDEF")* might return "12AF42".
string	RemoveChars («Text», «RemoveChars»)	Removes all characters in «Text» which are included in «RemoveChars».
string	Replace («Text», «SearchText», «ReplaceText»)	Replaces each occurrence of «SearchText» in string «Text» with «ReplaceText».
string	Right («Text», «Length»)	Returns the last characters «Length» of a string.
double	Round («Number», «Precision»)	Returns «Number» rounded using precision digits. If 0 is «Precision» the result will be rounded to a whole number.
double	SafeDiv («Numerator», «Denominator»,	Returns «DivByZeroValue» if «Denominator» is 0, otherwise the result of the division of «Numerator» by «Denominator» is returned.

	«DivByZeroValue»)	
long	Second («Date»)	The second of a specified date/time [00..59].
double	Sqrt («Number»)	Returns the square root of «Number».
long	SumOfDigits («Number»)	The sum of all digits of «Number».
long	SumOfDigits1 («Number»)	Returns the one-digit sum of all digits of «Number».
string	TextToBin («Text», «Encoding», «Length»)	Converts text to a specific encoding (code page) and encodes it as a binary string with the specified length.
string	TextToHex («Text», «Encoding», «Length»)	Converts text to a specific encoding (code page) and encodes it as a hexadecimal string with the specified length.
string	ToLower («Text»)	Converts all character in the string «Text» to lower case.
string	ToUpper («Text»)	Converts all character in the string «Text» to upper case.
string	Trim («Text»)	Removes leading and trailing spaces.
string	TrimLeft («Text»)	Removes leading spaces.
string	TrimRight («Text»)	Removes trailing spaces.
double	Value («Text»)	Converts «Text» to a double value.
long	WeekOfYear («Date»)	The calendar week of a specified date/time [1..52].
long	Year («Date»)	The year of the specified date/time.

Table 4: Functions

C.2 System Data Fields

Function	Description
BandName	The name of the current band.
BandType	The type of the current band.
Column	The current column number (label printing) [0..x].
ComputerName	The name of the computer (hostname).
Copy	The actual number of copies [1..NumCopies].
Device	The name of output device (Printer).
Device Type	The type of the output device (usually Winspool).
Form	The name of the current form.
LogPage	The number of the current *logical page*[10] [1...NumLogPages]. Several logical pages can be printed per physical page.
NumCopies	The count of all copies [1..x].
NumLogPages	The count of all *logical pages*[10] [1...x]. Several logical pages can be printed per physical page.
NumPages	The count of all physical pages (sheets) [1..x].
NumPrintItems	Total number of items to be printed. Sum of the copy count of all records.
NumRecordCopies	The number of copies of the actual record.
NumRecords	The count of all input-records.
Page	The actual page number [1..NumPages]. Every printed physical page (sheet) increases the page number by 1.
PrintedItems	Number of currently printed items, including the current item.
Project	The name of the current project.
ProjectDir	The directory of the current project.
Record	The actual record number [1..NumRecords].

[10] A *logical page* is usually the area of a label on the output page. Every *Row/Column Break* starts a new logical page.

RecordCopy	The actual number of record copy.
Repository	The name of the current repository.
RepositoryDir	The directory of the current repository.
Row	The current row number (by Label print) [0..x].
tfDocumentAuthor	The „*Author*" from the document properties (see sections 6.4 and A.1.3).
tfDocumentCreator	The „*Creator*" from the document properties (see sections 6.4 and A.1.3).
tfDocumentKeywords	The „*Keywords*" from the document properties (see sections 6.4 and A.1.3).
tfDocumentName	The „*Document Name*" from the document properties (see sections 6.4 and A.1.3).
tfDocumentProducer	The „*Producer*" from the document properties (see sections 6.4 and A.1.3).
tfDocumentSubject	The „*Subject*" from the document properties (see sections 6.4 and A.1.3).
tfDocumentTitle	The „*Title* " from the document properties (see sections 6.4 and A.1.3).
tfProductName	TFORMer Designer
tfProductVersion	TFORMer Designer version number
tfServerJobFile	The job file of **TFORMer Server**.
tfServerJobID	The job ID of **TFORMer Server**.
tfServerJobTimesPrinted	For **TFORMer Server** only: How often has this server job already been printed.
XResolution	Horizontal device resolution in dots per inch (25.4 mm).
YResolution	Vertical device resolution in dots per inch (25.4 mm).

Table 5: System Data Fields

C.3   Common Expressions

Expression	Description
"- " + CStr (Page) + " -"	Inserts the current page number as *- 1 -*.
"EUR " + Format («Number», "########.00")	Formats a number as a EUR price.
"Page " + CStr (Page)	Inserts the current page number as *Page 1*.
"Page " + CStr (Page) + " of " + CStr(NumPages)	Inserts the page number and the total page count.
"USD " + Format («Number», "########.00")	Formats a number as a USD price.
CStr (NumPages)	Inserts the total page count.
Format (Now (), "hh':'mm':'ss tt")	Inserts the current time in 12-hour format.
Format (Now (), "HH':'mm':'ss")	Inserts the current time in 24-hour format.
Format (Now (), "yyMMdd")	Inserts the current date in YYMMDD format.
Now ()	Inserts the current date.

Table 6: Common Expressions

C.4   Formats

C.4.1   Numeric

Expression	Description
Trim(Format («Number», "#,###,##0.00+"))	Formats a number with a trailing sign (+ or -) (e.g., 1.299,20+).
Trim(Format («Number», "#,###,##0.00-"))	Formats a number with an optional trailing sign (only if negative) (e.g., 1.299,20-).
Trim(Format («Number», "*,***,**0.00-"))	Formats a number with leading starts and an optional trailing sign (only if negative) (e.g., ***1.299,20-).
Trim(Format («Number», "+#,###,##0.00"))	Formats a number with a leading sign (+ or -) (e.g., +1.299,20).
Trim(Format («Number», "-#,###,##0.00"))	Formats a number with an optional leading sign (only if negative) (e.g., -1.299,20).
Trim(Format («Number», "-0.000.000.00"))	Formats a number with an optional leading sign (only if negative) (e.g., -0.001.299,20).

Table 7: Number Formats

C.4.2 Date

Expression	Description
Format (Now (), "dd'-'MM'-'yy")	Formats the actual date (e.g., 29-01-25).
Format (Now (), "dd'-'MM'-'yyyy")	Formats the actual date (e.g., 29-01-2025).
Format (Now (), "dd'.'MM'-'yyyy")	Formats the actual date (e.g., 29. Jan '25').
Format (Now (), "dd'.'MM'.'yyyy")	Formats the actual date (e.g., 29.01.2025).
Format (Now (), "ddd', 'd'. 'MMM'. 'yyyy")	Formats the actual date (e.g., Mon., 29. Jan. 2025).
Format (Now (), "dddd', 'd'. 'MMM'. 'yyyy")	Formats the actual date (e.g., Monday, 29. Jan. 2025).
Format (Now (), "dddd', 'd'. 'MMMM yyyy")	Formats the actual date (e.g., Monday, 29. January 2025).
Format (Now (), "yyMMdd")	Formats the actual date (e.g., 250129).

Table 8: Date Formats

C.4.3 Time

Expression	Description
Format (Now (), "h'.'m'.'s tt")	Formats the current system time and appends am or pm (according to the language settings of your system) (e.g., 9:6:5 am/pm).
Format (Now (), "H'.'m'.'s")	Formats the current system time (e.g., 21:6:5).
Format (Now (), "h'.'mm'.'ss tt")	Formats the current system time and appends am or pm (according to the language settings of your system) (e.g., 9:06:05 am/pm).
Format (Now (), "H'.'mm'.'ss")	Formats the current system time (e.g., 9:06:05).
Format (Now (), "hh'.'mm'.'ss tt")	Formats the current system time and appends am or pm (according to the language settings of your system) (e.g., 09:06:05 am/pm).
Format (Now (), "HH'.'mm'.'ss")	Formats the current system time (e.g., 21:06:05).

Table 9: Time Formats

C.5 Operators

Please note that there may be more than one operator for identical operations. In this case you can select your preferred notation.

Operator	Description
!	Logical NOT.
!=	Comparative operator not equal.
%	Modulo.
&	Bitwise AND.
&&	Logical AND.
*	Multiplication.
+	Addition (add values, concatenate strings).
-	Subtraction.
/	Division.
<	Comparative operator smaller than.
<=	Comparative operator smaller than or equal.
<>	Comparative operator not equal.
=	Comparative operator equal.
==	Comparative operator equal.
>	Comparative operator greater than.
>=	Comparative operator greater than or equal.
^	Bitwise XOR.
and	Logical AND.

not	Logical NOT.
or	Logical OR.
xor	Bitwise XOR.
|	Bitwise OR.
||	Logical OR.
~	Bitwise NOT.

Table 10: Operators

C.6   Constants

Constant	Description
"\n"	Linefeed.
False	Logical value FALSE. This value is usually the result of a condition. If the condition is not fulfilled the resulting value is FALSE.
True	Logical value TRUE. This value is usually the result of a condition. If the condition is fulfilled the resulting value is TRUE.

Table 11: Constants

Appendix D: Layout Schemes

D.1 General

Basically, **TFORMer** distinguishes two layout types: Labels and Reports. Each of these two types allows different variations in the page layout:

- When printing Labels usually one detail band is printed on each label. A label is also referred to as logical page area. This area can be printed once or multiple times on each physical page.
- When printing Reports multiple details bands are printed underneath each other. The page (minus the headers and footers) is filled with detail bands. The area on which the detail bands are printed is internally also treated as logical page (= as label).

Figure 96 to Figure 104 use the following color keys for page areas and bands:

- □ The red frame marks the page area, which may, on demand, be divided into multiple labels.
- ⬚ The dashed frame marks one label (one logical area).
- ▨ Depending on the settings for this band, it is either printed inside or outside of the label area. (Applies to page headers, page footers, report headers and report footers.)
- ▨ This band is always printed inside of the label area. (Applies to detail bands, report headers and report footers.)

TFORMer fills each physical page with page headers, detail bands, page footers, etc. If no space is left a new physical page is started.

D.2   Report

For the layout type "Report" the following variations are available:

- Simple – see section D.2.1
- Columns – see section D.2.2
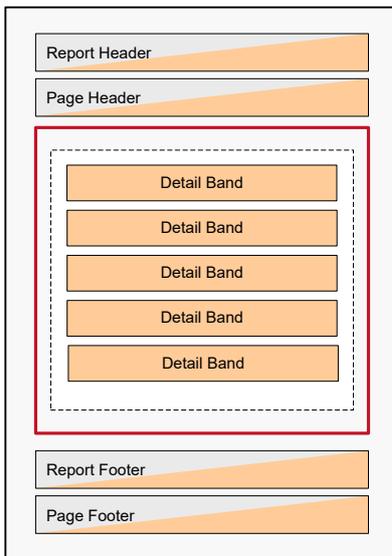- Complex – see section D.4

D.2.1   Simple

Figure 96: Simple Report

For a simple report start with the template *<Custom Report>* and select the variation *"Simple Report"* (see also 6.2.2.1).

In the page setup dialog you specify the paper size and the page margins.

Examples:
File ► New… ► (6) Samples ► Report_1
File ► New… ► (6) Samples ► Report_2

D.2.2   Columns

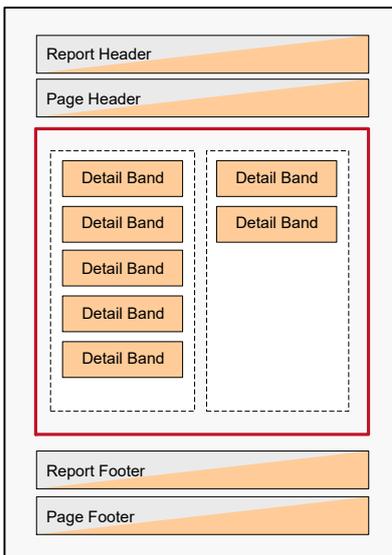*Figure 97: Report with Columns*

For a report with columns start with the template *<Custom Report>* and select the variation *"Columnar Report"*.

In the page setup dialog you specify the paper size, the page margins and the columns.

Hint:
When using a fixed number of columns and if you set *Width="0"* the available horizontal space is divided equally.

Example:
File ► New… ► (6) Samples ► Report_5

D.3   Labels

For the layout type "Label" the following variations are available:

- Label Printer– see section D.3.1
- Label Sheets – see section D.3.2
- Complex – see section D.4
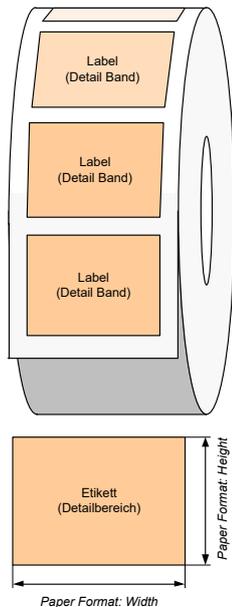
D.3.1   Label Printer

For printing on label printers (e.g., ZEBRA® thermo transfer printers) start with the template *<Custom Label>* and select the variation *"Label Printer"* (see also 6.2.2.3).

In the page setup dialog, you specify the label size.

Figure 98: Label Printer
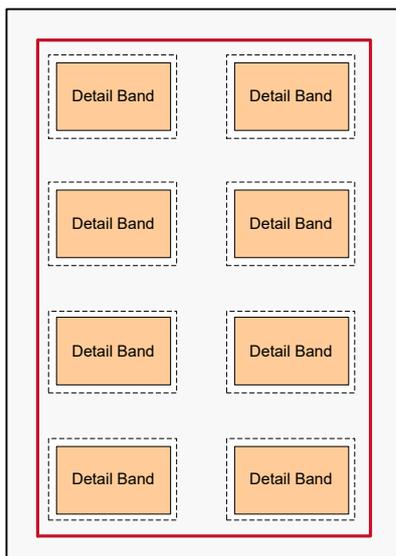
D.3.2   Label Sheets

For printing on label sheets (e.g. Avery® standard formats) start with the template *<Custom Label>* and select the variation *"Label Sheets"* (see also 6.2.2.2).

Hint:

If you intend to use different paper sizes for your printout you can set the number of rows and columns to "auto". In this case **TFORMer** will calculate the number of labels that fit on the output page.

Example:
File ► New… ► (6) Samples ► Label_1

Figure 99: Label Sheets

Figure 100: Label Sheets with Headers and Footers
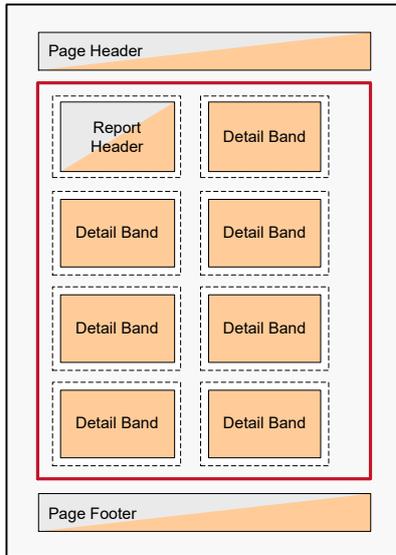
If required you can also insert additional page headers and footers respectively report headers and footers for label sheets:

Example:
File ► New… ► (6) Samples ► Label_2

D.4 Complex

For <Custom Label> and for <Custom Report> you can choose the layout variation "Complex" which refers to the same design mode in both cases. When using "Complex" you have full access to all band properties, even to those which are hidden in the basic layout types otherwise.

For implementing the following layout schemes it does not matter if you are starting with the template <Custom Label> or <Custom Report>. In both cases you have full control over the design. The only difference is the different base design you are starting with.

D.4.1 Labels with Headers and Footers
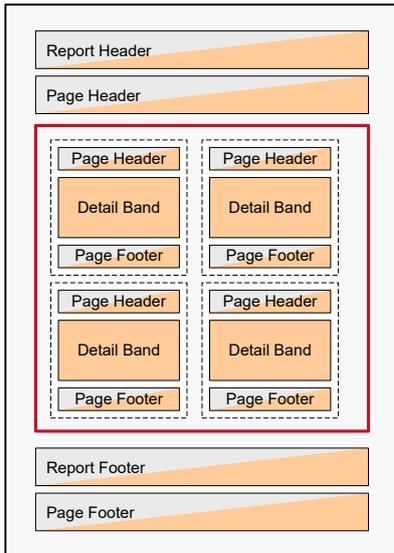
Figure 101: Label Sheets with Headers and Footers

If you want to print headers and footers on labels start with the template *<Custom Label>* and select the variation *"Complex Labels".* Insert the desired page headers and/or page footers.

When setting the *Output-Area* to *"Page"* (= default) **TFORMer** will print the header/footer across the whole physical page width.
When setting the *Output-Area* to *"Label"* (see ❶) **TFORMer** will print the header/footer within the label.

Header/ Footer:	Advanced	
	Output-Area	Label ❶

Please note:
You can also use more than one header (or footer) in your design. For example, you can use one page header which is printed per page and one page header which is printed per label.

D.4.2   Reports in Labels
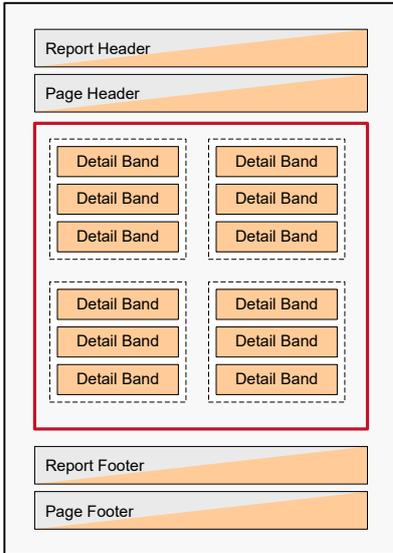
For printing multiple detail bands inside one label start with the template *<Custom Label>* and select the variation *"Complex Labels"*. Remove the *Row/Column Break* for the detail band (see ❶).

TFORMer will print as many detail bands as possible for the given row height.

Please make sure to use reasonable values for the label height and the detail band height ❷. If your label is 60 mm high and if your detail band is 20 mm high three detail bands will fit on one label.

Detail Band:	Common	
	Page Break	None
	Row/Column Break	None ❶
	Position	
	Height	20.000 mm ❷

Please note:
Headers and footers may be added as required (see also section D.4.1).

Examples:
File ► New… ► (6) Samples ► Report_3
File ► New… ► (6) Samples ► Report_4

Figure 102: Reports in Labels

D.4.3   Report with Detail Band Columns

Figure 103: Report with Detail Band Columns

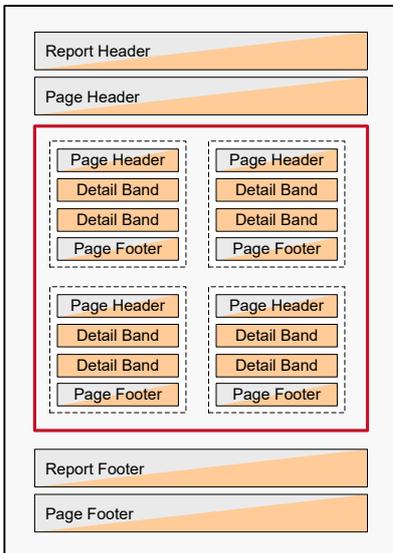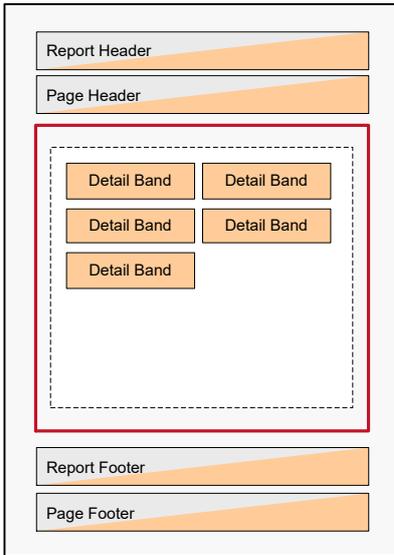In order to print a report with multiple detail bands in one line start with the template *<Custom Report>* and select the variation *"Complex Report".* (Please make sure not to change the predefined settings for the page subdivision, so the page will not be divided into multiple labels. The correct settings are: 1 row, 1 column, 0 width and 0 height).

Remove the *Row/Column Break* for the detail band (see ❶). In the section Columns ❷ enter the required column configuration. If you want to print multiple different detail bands in one line, you have to apply the same column settings for all of these bands. Otherwise line breaks will be inserted.

Variant A: Fixed number of columns with identical width

Detail Band:

Common	
Page Break	None
Row/Column Break	None ❶
Columns ❷	
Columns	2
Gap	0.000 mm
Width	(auto)

In this example the page width is divided in two equal columns (see also Figure 103, left). You can let **TFORMer** calculate the column width automatically or you can enter it manually.

Please note: In the layout the detail band is drawn over the whole page width. However, you may only use the part of the band which corresponds to the column width (in this case half of the band width).

Variant B: Multiple detail bands with individual widths

Detail Band:

Common	
Page Break	None
Row/Column Break	None ❶
Columns ❷	
Columns	(auto)
Gap	0.000 mm
Width	(auto)

In this case **TFORMer** automatically determines the space which is required for each detail band. Thus the page can be filled with detail bands that have different widths.

Example:
File ► New… ► (6) Samples ► Report_5

D.4.4 Labels with Detail Band Columns
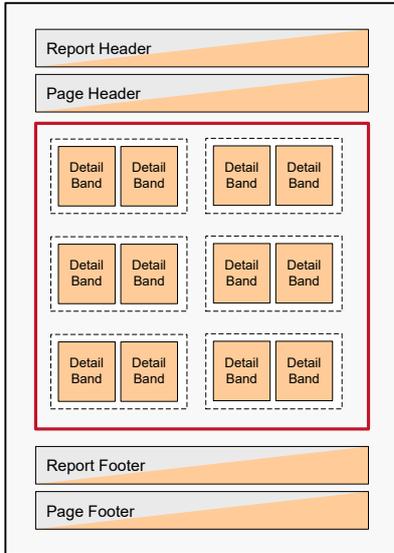
Figure 104: Label Sheets with Detail Band Columns

In order to print multiple columns per label start with the template *<Custom Label>* and select the variation *"Complex Labels"*.

Remove the *Row/Column Break* for the detail band (see ❶). In the section Columns ❷ enter the required column configuration (see also D.4.3).

In this example two columns with the same width are printed on the label.

Detail Band:

Common	
Page Break	None
Row/Column Break	None ❶
Position	
Height	50.000 mm
Width	80.000 mm
Columns ❷	
Columns	2
Gap	0.000 mm
Width	(auto)

Please note:
The width of the detail band is the same as the label width. When setting the number of rows to 2 the design on the detail band must not cover more than 50% of the detail band width (in this case 40.000 mm)!

Appendix E: Advanced Configuration

E.1 Template File Path

The file path for the template files can be set in the windows registry. You can find the appropriate settings either under HKEY_CURRENT_USER or under HKEY_LOCAL_MACHINE:

```
[HKEY_CURRENT_USER\Software\TEC-IT Datenverarbeitung GmbH\TFORMer\9\Directories]
TemplateDir="Some directory where the templates are stored"
```

When storing the setting under HKEY_LOCAL_MACHINE it is valid for *all users* on the computer:

```
[HKEY_LOCAL_MACHINE\Software\TEC-IT Datenverarbeitung GmbH\TFORMer\9\Directories]
TemplateDir="Some directory where the templates are stored"
```

E.2 Configuration File TFORMer.xml

All output specific settings from the options dialog (see chapter 16.6) are stored in the configuration file *TFORMer.xml*.

This file is located in the application data directory of the current Windows user:

```
%LocalAppData%\TEC-IT\TFORMer\9\TFORMer.xml
```

> Please note:
> ► Each Windows user account uses its own configuration file.
> ► The settings from the configuration file are used for **TFORMer Designer, TFORMer SDK** and for **TFPrint.**
> ► The standard settings (defaults on the first program start respectively in case of a missing TFORMer.xml file in the user application data directory) are taken from the global application data directory (see below).

The standard configuration file is located in the global application data directory:

```
%ProgramData%\TEC-IT\TFORMer\9\TFORMer.xml
```

For a complete description of the configuration file, please refer to the Developer Manual.

Appendix F: Creating CSV Files with Excel®

In order to create a CSV file with Microsoft® Excel®, please follow these steps:
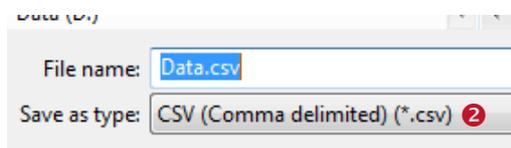
First create a table with the desired data. Make sure that every column has a column name (see ❶).

The column names should match the names of the data fields used in the layout.

Select *File ►Save as ►Other Formats* from the menu.
Navigate to the desired output folder and enter a file name (e.g., "Data"). Under ❷ choose *"CSV (Comma delimited) (*.csv)"*. Then click *Save.*

When opened in a text editor the CSV file should look like this. All columns must be separated by semicolons.

Appendix G: Keyboard Shortcuts

Files

	New Form.......................	*Ctrl+N*
	Open	*Ctrl+O*
	Save..............................	*Ctrl+S*
	Save as	*F12*
	Save All	*Ctrl+Shift+S*
	Close Form....................	*Ctrl+W, Ctrl+F4*

Switch between open Files

Click on the respective file tab or use the *layout picker* ▼. Alternatively, use the following keyboard shortcuts:

Next File.........................	*Ctrl+Tab*
Previous File	*Ctrl+Shift+Tab*

Layout and Printing

	Layout View	*Ctrl+L*
	Data View.......................	*Ctrl+D*
	Preview	*Ctrl+Space*
	Page setup.....................	*Ctrl+Shift+P*
	Print	*Ctrl+P*

The Page Setup can also be opened via double-click on the form selection area ❶ or via double-click on the gray area ①.

Editor Customization

Grid Visible (on/off).........	*Ctrl+G*
Positioning Mode	*Ctrl+R*
Zoom In	*Ctrl++*
Zoom Out	*Ctrl+-*
Zoom In/Out	*Ctrl+Mousewheel*
Auto Zoom......................	*Ctrl+0*
Zoom 100%....................	*Ctrl+1*
Zoom 200%....................	*Ctrl+2*
Zoom 300%....................	*Ctrl+3*
Zoom 400%....................	*Ctrl+4*
Zoom 50%......................	*Ctrl+5*
Scroll vertically	*Mousewheel*
Scroll horizontally	*Shift+Mousewheel*
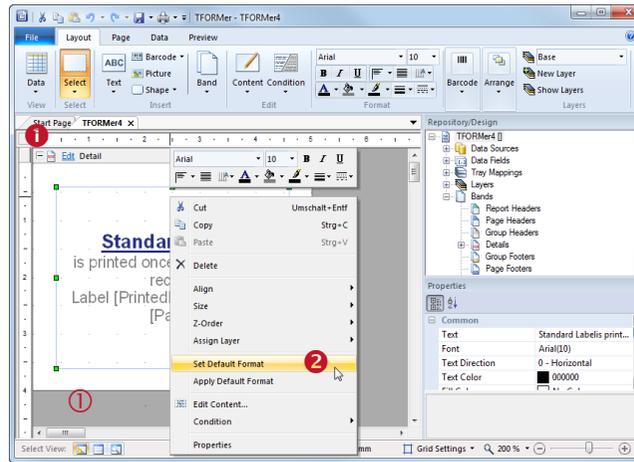
Right-Click – Context Menu

If you are unsure which operations can be performed on a selected object, open the context menu by clicking the right mouse button – see ❷.

Renaming

To change the name of a *data field, tray mapping, layer, band* or *design element,* select the respective item in the tree view window and click on the item once again (or press the *F2* key). The name can now be edited.

Layers

Double-click on the layer icon in the design tree to toggle the visibility.

Default Element Properties

You can save the current format styles (font style, color, line width, …). These styles will be applied automatically when inserting a new element. Use the context menu (right mouse button) to:

- *Set Default-Format* (based on current selection)
- *Apply Default-Format* (to current selection)

Editing

	Undo...............................	*Ctrl+Z*
	Redo...............................	*Ctrl+Y*
	Cut.................................	*Ctrl+X*
	Copy	*Ctrl+C*
	Paste	*Ctrl+V*
	Delete	*Del*
	Select all Elements	*Ctrl+A*

Mouse over (Hover) Element

Cycle through	*Ctrl+Shift+Mousewheel*
Next Element	*Ctrl+Shift++*
Previous Element	*Ctrl+Shift+-*

Element Content

Edit the content of selected text, barcode and picture elements	*F2*

Text Properties

B	Bold................................	*Ctrl+B*
I	Italic	*Ctrl+I*
U	Underline.........................	*Ctrl+U*

Move Elements

While dragging elements with the mouse you can use the following modifier keys:

Move horizontally/vertically	*Shift*
Copy Mode	*Ctrl*
Fine Positioning................	*Alt*

Insert/Resize Elements

While inserting or resizing elements with the mouse you can use the following modifier keys:

Square/Circle....................	*Shift*
Centered	*Ctrl*
Fine Positioning................	*Alt*

Align Elements (for multiple selection)

Align Left .... *Ctrl+←*
Align Right....................... *Ctrl+→*
Align Top......................... *Ctrl+↑*
Align Bottom.................... *Ctrl+↓*

Arrange Elements (Z-Order)

Move to Top .... *Ctrl+Home*
Move Up Right .... *Ctrl+Page Up*
Move Down .... *Ctrl+Page Down*
Move to Bottom .... *Ctrl+End*

Band Order (if a band is selected)

Move Up........................... *Alt+↑*
Move Down .... *Alt+↓*

Data Source

Reload data *F5*

Miscellaneous

TFORMer Help *F1*
Cancel operation .... *ESC*
(e.g., cancel a mouse
drag and drop)