



**BAB** TECHNOLOGY GmbH

# **COMPONENTBUILDER 2**

## Documentation

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# 1 GENERAL

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With the EIB**PORT** ComponentBuilder 2 you create individual visualisation elements that you can reuse again and again. You insert these created "free components" in the EIB**PORT** Editor like a normal visualisation element.

Place the Free Component with the mouse using drag 'n' drop and assign the KNX group addresses. Whether energy monitor, battery charge display, value display as a tachometer or special switch groups for individual multimedia controls - with ComponentBuilder 2 you can realise almost all visualisation wishes.

Each segment (cell) of a Free Component can be equipped with individual functions, value display, different data point types, group addresses and graphics. In addition, individual rules can be created for each cell in order to dynamically design the different functions for different states or displays. In this way, an action is not only performed statically, but also, for example, when the corresponding preconditions are fulfilled.

**Note:** The ComponentBuilder 2 is available from EIB**PORT** firmware version 3.9.6. The use of the ComponentBuilder 2 requires some training time.

The description should therefore be followed. The examples at the end of this documentation help with familiarisation.



## 1.1 ABOUT THE COMPONENTBUILDER 2 AND THE FREE COMPONENTS

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The ComponentBuilder 2 in the EIB**PORT** is a software tool for creating "free components". It is an integrated web browser application with which own elements for the visualisation can be created. These are compatible with the EIB**PORT** "CONTROL L" and "JAVA CONTROL" visualisation.

The appearance of the free components can be freely designed. In addition to the design, different functions or actions can also be defined.

In this way, the ComponentBuilder 2 for the EIB**PORT** makes it possible to implement completely individual requirements for a visualisation element.

The structure of the Free Components is defined as a grid. This grid consists of cells. The smallest Free Component consists of a single cell and the largest possible consists of 20 x 20 cells. The actual size (in pixels) of a cell is freely adjustable from 5px to 200px. The cells are always arranged in a rectangular grid.

Each cell can be assigned to one of four element types, which differ in function. The four element types are "Static element", "Display element", "Simple control element" and "Complex control element".

As soon as the Free Component has been created and saved, it is available in the EIB**PORT** Editor. It can then be inserted into a visualisation page and linked to KNX group addresses.

## 1.2 OPEN COMPONENTBUILDER 2

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The ComponentBuilder 2 is integrated in the EIB**PORT** and does not require any additional software. It is a web application.

The ComponentBuilder 2 is called up via the BAB STARTER or directly with a web browser via the EIB**PORT** start page.

The same login data are used as for the EIB**PORT** Editor, Logic Editor or ConfigTool.

**Note:** ComponentBuilder 2 is part of the EIB**PORT** from firmware version 3.9.6. If an older firmware is installed on the EIB**PORT**, the ComponentBuilder 2 can be installed subsequently via a free update. To access the ComponentBuilder 2 via the BAB STARTER, at least BAB STARTER version 1.1.7 is required.

## 1.3 NOTES ON VERSION 1 COMPONENTS

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ComponentBuilder 2 is compatible with the free components of version 1, the previous version of ComponentBuilder. This means that version 1 components can be imported into ComponentBuilder 2 without any problems.

It is important to note that Free Components from both Version 1 and Version 2 can still be imported directly via the EIB**PORT** Editor.

However, it should be noted that Free Components imported directly are not available (and thus editable) in the ComponentBuilder 2.

It is therefore advisable to import free components into the EIB**PORT** via the ComponentBuilder 2 to enable subsequent editing.



## 1.4 COMPONENTBUILDER 2 A FIRST OVERVIEW

After successful login, the ComponentBuilder 2 overview is displayed. In this view, all free components available in ComponentBuilder 2 are listed at the beginning (see the following illustration in the field "List of all components").

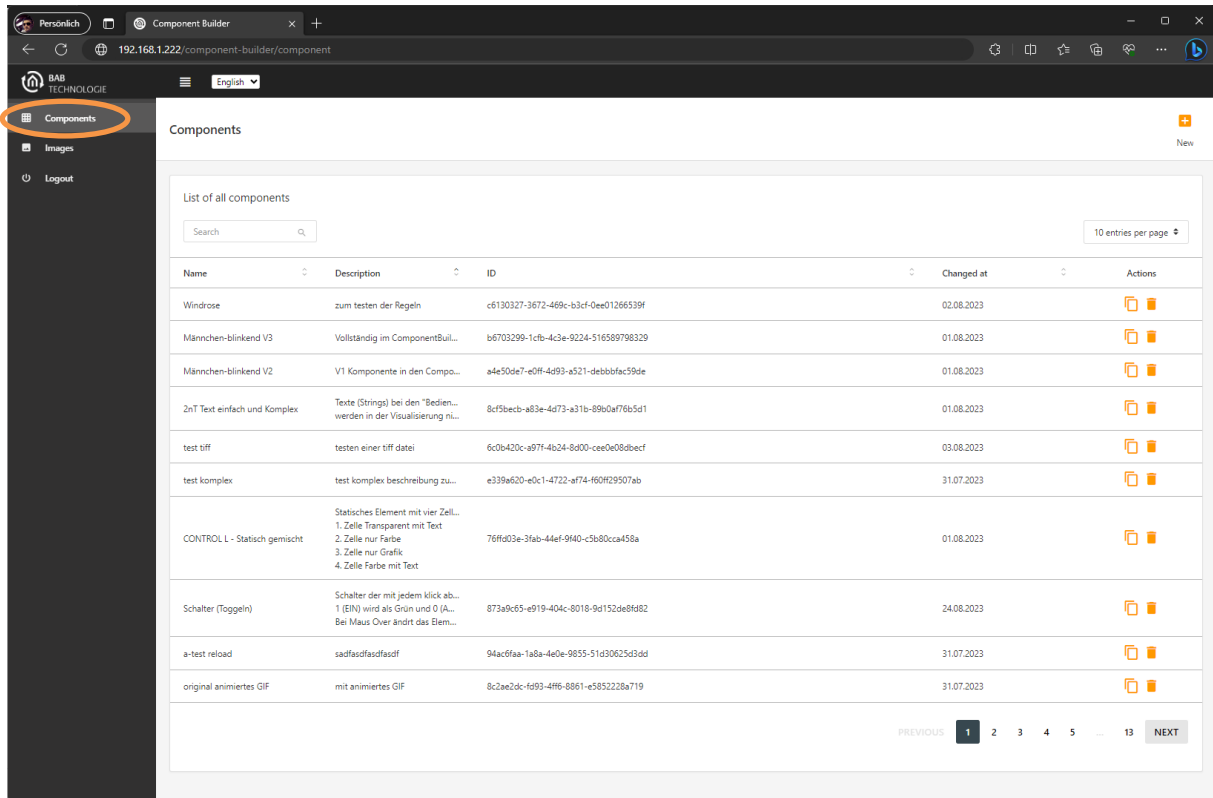


Figure 1 ComponentBuilder 2 - Overview

### 1.4.1 THE MAIN MENU

The main menu is always located on the left-hand side of ComponentBuilder 2. The menu items "Components", "Images" and "Logout" can be found in this column.

#### FOLD IN

To create more space for the editor area, this column can be collapsed and expanded. The action is carried out via the "burger" symbol (consisting of three horizontal lines).

#### CHANGE LANGUAGE

The ComponentBuilder 2 is multilingual. The language of the ComponentBuilder 2 can be changed at any time.

To change the language, select the desired language from the drop-down list.

Available languages are German and English.



### 1.4.1.1 COMPONENTS

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Under this menu item, all Free Components available in the EIB**PORT** are listed on the right-hand side of the view.

The actual editor area, in which the free components are created or edited, opens via the "New" button or by selecting one of the existing free components.

The detailed description of the editor area can be found in the following chapter.

The following functions are available under this menu item:

- **New.**  
New free components are created via the "New" button.
- **Edit.**  
Existing free components are opened for editing by clicking on the respective entry.
- **Duplicate and delete.**  
The listed free components can be "duplicated" (copy icon) and "deleted" (bin icon) in this view using the corresponding icons.  
Duplicated free components appear in the list with the addition "(copy)" at the end of the name.
- **Sort and search.**  
All listed free components can be sorted via the column headings ("Name", "Description", "ID" and "Created on"). In addition, a search term ("Search" text field) can be used to search for free components.
- **Entries per page.**  
The number of the list can be limited and listed page by page. For this purpose, there is a drop-down list for the "Number of entries per page" in the upper right corner.

The view shown on this page is accessed via the "Components" button (left menu column).

### 1.4.1.2 IMAGES

---

In ComponentBuilder 2 the images for all free components are managed centrally. An overview of all imported images can be found under the menu item "Images".

In this view, new images can be imported or existing ones can be deleted via the recycle bin icon.

This view is called up via the "Images" button (left menu column).

**Note:** Images of Free Components imported into ComponentBuilder 2 are not displayed in this view.

### 1.4.1.3 LOG OUT

---

The currently logged-in user logs out of ComponentBuilder 2 via this button.





## 2 THE EDITOR AREA

This chapter gives an overview of the different areas and describes the functions of the editor.

### 2.1 EDITOR GENERAL AREA

The following figure shows the actual editor of the ComponentBuilder 2.

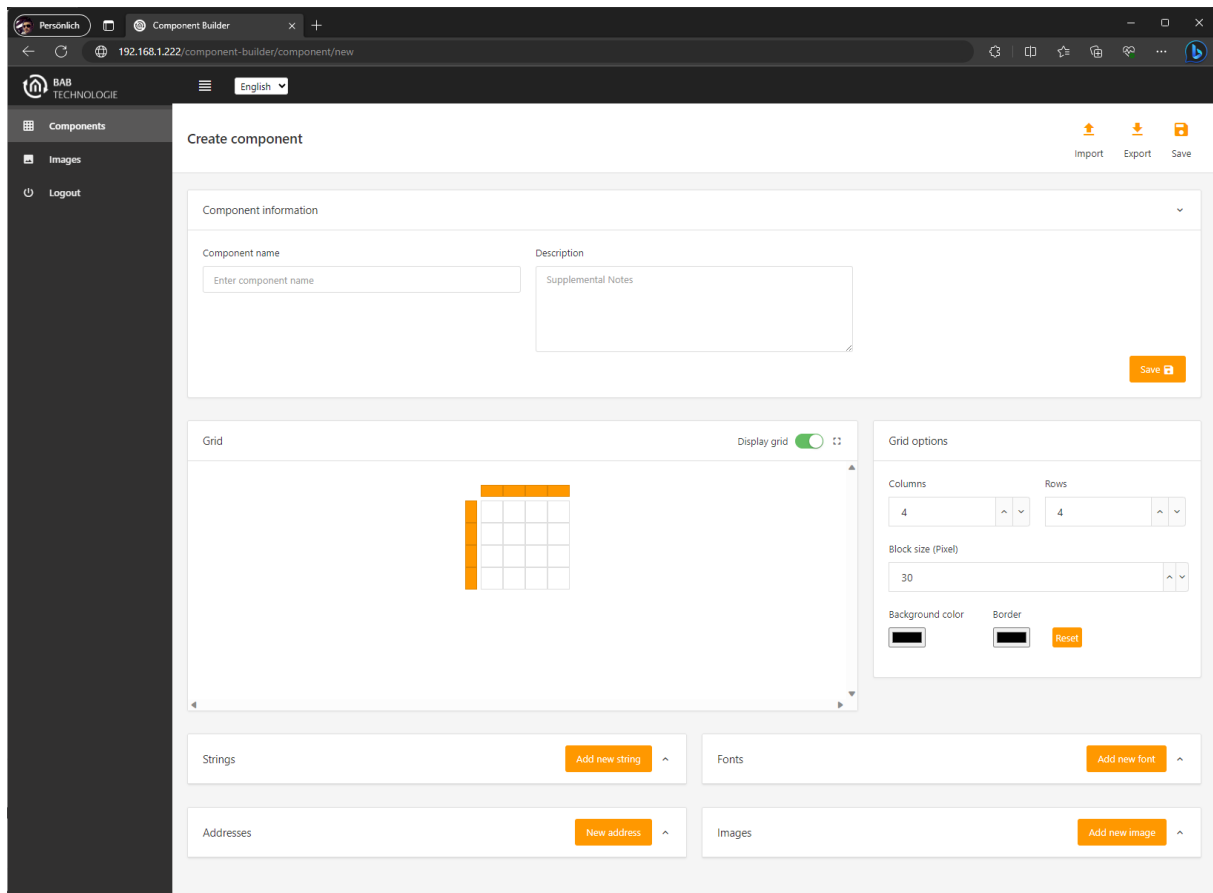


Figure 2 ComponentBuilder 2 - "Editor" overview



## 2.1.1 SAVE AND IMPORT/EXPORT FUNCTION

---

- **Import** Import of free components (file extension ".btn").
- **Export** Export created free components.
- **Save** Saves the free component and closes the editor.

### IMPORT / EXPORT

---

The "Import" and "Export" functions are used to upload or download existing Free components to the **EIBPORT**.

Import function: To load free components (e.g., from another **EIBPORT**) into the ComponentBuilder 2.

Export function: Download free components from the **EIBPORT** to archive them or transfer them to another **EIBPORT**.

**Note:** The import function is only available for "New" free components. The import into ComponentBuilder 2 is also allowed for free components of version 1.

### SAVE

---

This function saves the current status of the Free component in order to make it available for the **EIBPORT** Editor or to temporarily store the current status.

After the successful saving process, the editor is closed and the overview is called up.

**Note:** The saved free components are only available after the **EIBPORT** Editor is opened or the updating of the free components in the **EIBPORT** Editor is triggered manually.

## 2.1.2 CONFIGURATION

---

The configuration of the Free Component is divided into fields on this view. The individual fields are (sorted from top to bottom):

- **Component Information** Name and description of the Free Component.
- **Raster** Display of the Free Component.
- **Grid options** Number of columns/cell, size, ....
- **Cell configuration** Element type and configuration selection
- **Data fields** Creating texts, text forms, graphics and addresses

The description of these fields is described on the following pages.



## 3 STRUCTURE OF THE FREE COMPONENT

A Free Component is always constructed as a grid and consists of cells.

The number of cells for the Free Component can be freely adjusted and is defined by the number of columns and rows.

The smallest configurable Free Component consists of only one cell and the largest of up to 20 by 20 cells.

The actual size of a cell is freely adjustable from 5px to 200px. The cells are always arranged in a rectangular grid.

The following section explains the configuration options of the Free Component itself, as well as the grid.

### 3.1 COMPONENT INFORMATION

The upper field is intended to give the Free Component a **name** and a **description**.

The name is used in the EIB**PORT** Editor, in the list of visualisation elements, as the identifier of the Free Component.

**Tip:** The description is used in the EIB**PORT** Editor as a tooltip for the free component. This can be used to store notes and information on the use of the free component.

The screenshot shows a dialog box titled "Component information". It has two main sections: "Component name" and "Description". The "Component name" section has a text input field containing "my first component". The "Description" section has a larger text area containing "Switch shows two states with two different graphics. Additional graphic for mouse over". In the bottom right corner, there is an orange "Save" button with a small icon.

Figure 3 Free component - component information

**Note:** The information on the free component is saved via the "Apply" button!

## 3.2 GRID (VIEW)

In the "Grid" field, the created free component can be seen and also serves as a preview.

The slide switch "Show grid" hides the grid lines and markers for columns and rows to display the Free Component without the grid.

With the icon located directly to the right, the Free Component is displayed in full-screen mode. This is helpful if there is not enough space in this field.



Figure 4 Free Component - Grid and Grid Options

## 3.3 GRID OPTIONS

The grid for the free component is defined in the "Grid options" field.

The configuration of the grid includes the number of columns and rows, as well as the block size.

### Available grid options

- **Columns** (number) Number of columns (maximum 20 cells vertical)
- **Rows** (number) Number of rows (maximum 20 cells horizontal)
- **Block size** (in pixels) Height/width of a cell, maximum 200px.  
No longer applies if the row height or column width has been changed.
- **Background/grid lines** To make the content of the cells more visible, the background colour and the colour of the grid lines can be changed.  
The "Reset" button resets the default.
- **Cell operation** "Connect cells" and "Unmerge cells" (disconnect cells). This operation allows you to connect several cells to one cell and vice versa to disconnect them.
- **Column width and row height** As soon as a whole column or row is marked, the height or width is displayed.

### 3.3.1 NUMBER OF COLUMNS AND ROWS

The number of cells can be set as desired for each free component. For this purpose, the number of columns and rows can be changed (also subsequently) via the input fields "Columns" and "Rows", in the field "Grid options".

The minimum and maximum number for columns and rows can be set between 1 and 20.



### 3.3.2 BLOCK SIZE

The block size defines the size of the cell. The size is changed via the input field "Block size (pixels)", in the field "Grid options".

The minimum side length is 5px and the maximum side length is 200px.

**Tip:** Use the arrow keys to change the size in 5px steps.

The pixel-precise size can also be entered directly and accepted with the Enter or Return key.

### 3.3.3 COLUMN WIDTH AND ROW HEIGHT

To change the width of a whole column or the height of a whole row, a whole column or row can be marked via the "Column headers" or "Row headers".

The "column headers" or "row headers" are coloured orange and placed slightly apart from the actual grid of the free component (following figure; orange arrow shows selection for the second column).

As soon as a column or row is marked with the mouse, the corresponding input field appears in the "Grid options" field.

**Tip:** Since the height and width of the cells can always be set to the same value via the block size, a rectangular cell (with different height and width) can be created in this way.

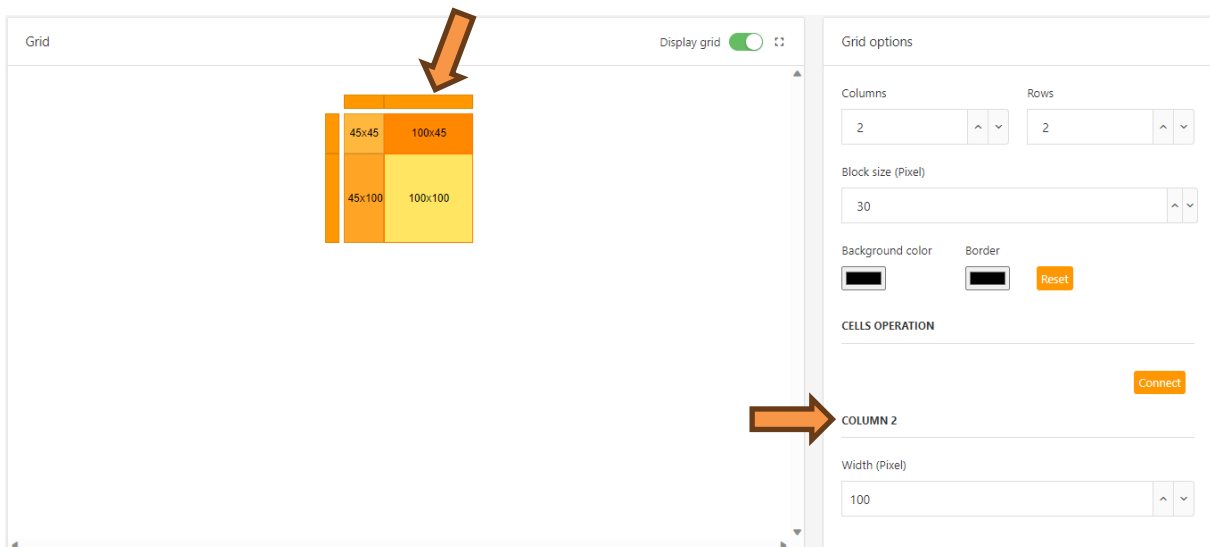


Figure 5 Free component - Change column and rows

The current cell size is displayed as soon as a cell is selected. For this purpose, an "Information" section is shown in the "Grid options" field, which displays the size information.

**Note:** Depending on how the trestle size is subsequently changed, the individually set column width and row height can also be changed.

### 3.3.4 CONNECT CELLS

This function allows a flexible grouping of several cells, which allows an individual design and structuring of cells.

For this purpose, several cells can be connected horizontally or vertically to form a rectangle or square.

The newly created cell is treated as a single cell in the further configuration. Regardless of how many cells are connected to each other.

The process is initiated by first selecting a cell and then clicking on the "Connect" button (found in the "Grid Options" area) to open the corresponding dialogue window.

In this dialogue window (following figure) the complete grid is shown in order to add the further cells for the grouping by a mouse click.

The selection is completed via the "Accepted" button.

**Tip:** Clicking again on an already selected cell removes it from the selection.

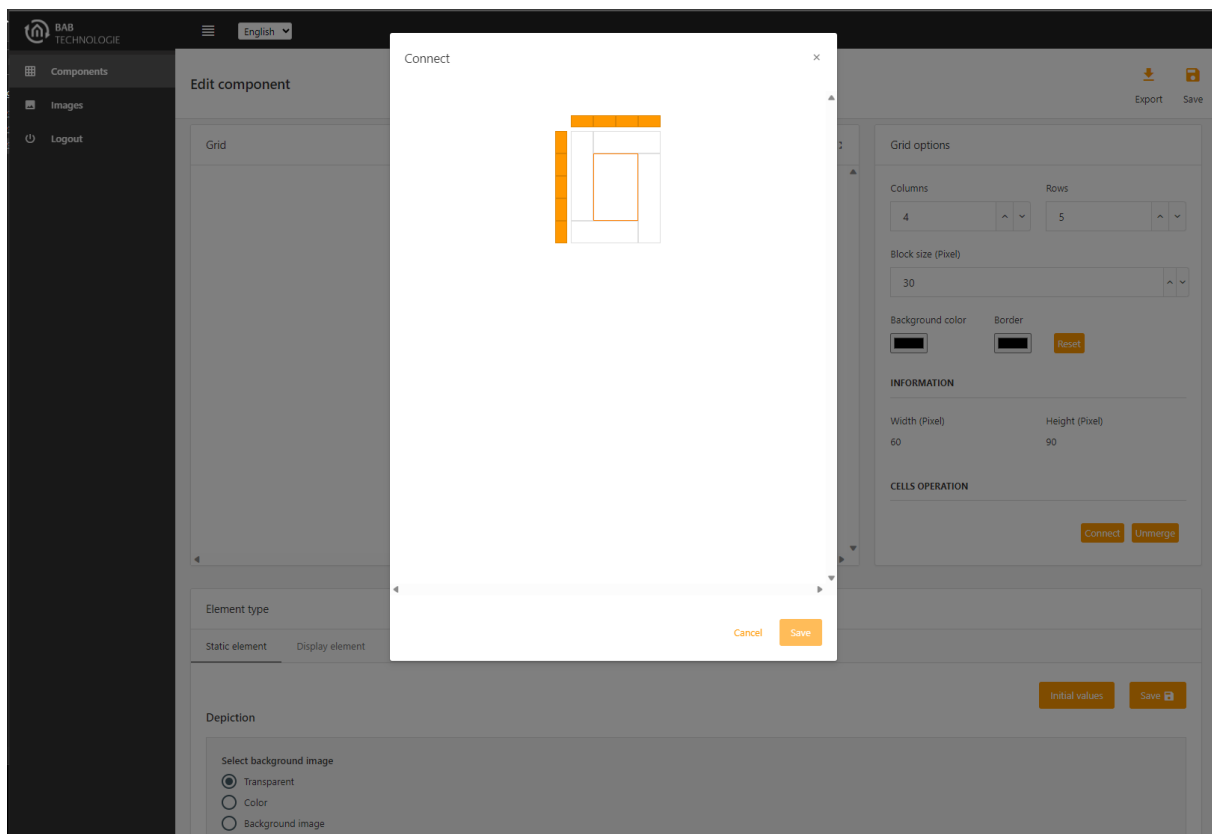


Figure 6 Free Component - Connecting Cells

**Note:** It should be noted that only cells that together form a gapless, rectangular grouping can be connected. Diagonal connections or connections via corners are not possible.

If the grouping of the cells is no longer necessary, the connected cells can be returned to their original individual division using the "Unmerge" function. This function is only visible when an already connected cell is selected.



## 4 THE DATA FIELDS

Four data fields are placed in the lower half of the editor view. These data fields are used to prepare and manage the required data for the Free Component.

This data includes the specification of addresses, texts (strings), fonts and images. These are to be specified individually for each Free Component.

The exception is the data field for images. The images imported into the ComponentBuilder 2 are available for all free components.

This concept means that the data created once can be accessed again and again for each cell and thus saves having to enter the data again and again.

Below is an overview of all four data fields:

Strings			Fonts		
ID	Text		ID	Font type	Size
str1	[istTemp;0] °C / [sollTemp;0] °C		default	Arial	12
str2	Set Point Temperature: [sollTe...		font2	Arial	16
str3	Current Temperature: [istTemp;...				
str4	Wind speed: [windKMh;0.0] k...				

Addresses				Images		
Name	EIS-type	Factor	Offset	Preview	Name	Actions
default	1	1.0	0.0		Ventilato 0	
istTemp	5	1	0		Ventilaton 1	
sollTemp	5	1	0		Ventilaton 2	
windKMh	5	1	0		Ventilaton 3	

Figure 7 Data fields

### DATA FIELDS ARE:

- **Strings** Definition of strings (texts and value display)
- **FontsSetting** the font styles
- **AddressesCreate** the addresses and define the data point types for Group addresses.
- **Images** Overview and management of the images imported in ComponentBuilder 2.

## 4.1 STRINGS

The function of strings is to prepare texts, values or both combined in this data field to be used later when creating the Free Component.

Strings allow both static text and values (received from the created addresses) to be displayed.

Strings are created by pressing the button "Add String".

In the dialogue that appears (see small illustration on this page), the desired text is entered in the input field "Text to be displayed".

With the button "Add value to string" the previously selected address with the set number of places before and after the decimal point is inserted into the "Text to be displayed" at the text cursor position. Further text (e.g., identifier or unit) can also be added before and after this inserted placeholder.

**Tip:** It is possible to subsequently adapt the strings in the EIB**PORT** Editor. In this way, the string can be translated individually into another language, a unit can be added/removed or abbreviated if there is a lack of space.

Here the data field Strings and the corresponding dialogue to add a new string.

The screenshot shows the 'Strings' data field interface. At the top, there is a title 'Strings' and an orange button 'Add new string' with a dropdown arrow. Below this is a table with columns 'ID' and 'Text'. The table contains four rows:

ID	Text	
str1	[istTemp;0] °C / [sollTemp;0] °C	
str2	Set Point Temperature: [sollTe...	
str3	Current Temperature: [istTemp;...	
str4	Wind speed: [windKMH;0.0] k...	

Below the table is a dialog box titled 'Add new string'. It has a close button 'x' in the top right corner. The dialog contains the following fields:

- 'Text to display': A text input field with the placeholder 'Enter text'.
- 'Places before the decimal point': A numeric input field with the value '1' and up/down arrows.
- 'Places after, separated by a period': A numeric input field with the value '2' and up/down arrows.
- 'Address': A dropdown menu with the selected value 'default'.

At the bottom of the dialog, there are three buttons: 'Insert value into the string' (orange), 'Cancel', and 'Save' (orange).

Figure 8 Data field - strings





## 4.2 FONTS

This data field allows you to define your own styles for the texts (strings) in advance and to save the settings as a "font".

These "fonts" can then be easily selected during cell configuration to format the strings accordingly in order to emphasise them according to the rule.

For each "font", the font **type**, **font size** and **style** (bold / italic) can be selected.

If no selection is made for a "font" in the cell configuration, the "default" font is automatically set.

**Note:** It is recommended to use mainly standard fonts so that the visualisation can use the font on the different operating systems.

**Tip:** The text colour is deliberately not available for selection here. In order not to restrict the use of the "Fonts" too much, the selection of the text colour is part of the cell configuration.

ID	Font type	Size	
default	Arial	12	
font2	Arial	16	

Add new font

Font type: Arial

Size: 18

Bold  Italic

Cancel Save

Figure 9 Data field - Fonts

## 4.3 ADDRESSES

**Important note: Only numbers and letters are allowed for the name of the "address". The name must start with a letter and must not contain any blank spaces!**

In the "Addresses" data field, the required data for the free component are created in advance and form the connection to the KNX bus. Each "Address" is defined by the EIS type, factor and offset. The actual KNX group address is assigned later in the EIB**PORT** visualisation editor.

These addresses are available for selection in the further course of the cell configuration of the Free Component for strings, rules and actions.

Via the addresses, telegram values for the comparison operations are received and/or stored or calculated telegram values are sent during actions. Another function of the addresses is to provide received telegram values for strings in order to display them in a cell.

The following EIS types are supported:

- EIS1 1 Bit Switch (0, 1)
- EIS2 4 Bit relative dimming
- EIS3 3 Byte Time (hh:mm:ss)
- EIS4 3 Byte Date (dd:mm:yyyy)
- EIS5 2 Byte floating point (-671 088.64 ... 670 433.28)
- EIS6 1 Byte (0% ... 100%)
- EIS9 4 Byte floating point (4-octet; IEEE 754)
- EIS10 2 Byte Integer (-32.768 ... 32.767)
- EIS11 4 Byte Integer (-2.147.483.648 ... 2.147.483.647)
- EIS14u 1 Byte Integer (0 ... 255)
- EIS15 14 Byte String (14 characters)
- URL

Name	EIS-type	Factor	Offset
default	1	1.0	0.0
istTemp	5	1	0
sollTemp	5	1	0
windKMH	5		

Neue Adresse

Name  
Name eingeben

Typ auswählen  
EIS 9 (32 bit float)

Faktor: 1    Offset: 0

Abbrechen    Übernehmen

Figure 10 Data field - Addresses



## 4.4 IMAGES

The available images for the Free Components are listed in this data field. These images are available for selection in the cell configuration and can be used as background for the cells or assigned to rules. Image files in the image formats: "jpeg" / "jpg" / "gif" (also animated gif) and "png" are supported.

Images can be deleted from the ComponentBuilder 2 via the "trash" icon on the right.

Via the menu item "Pictures" in the left menu column of the ComponentBuilder 2, pictures can also be imported into the ComponentBuilder 2.

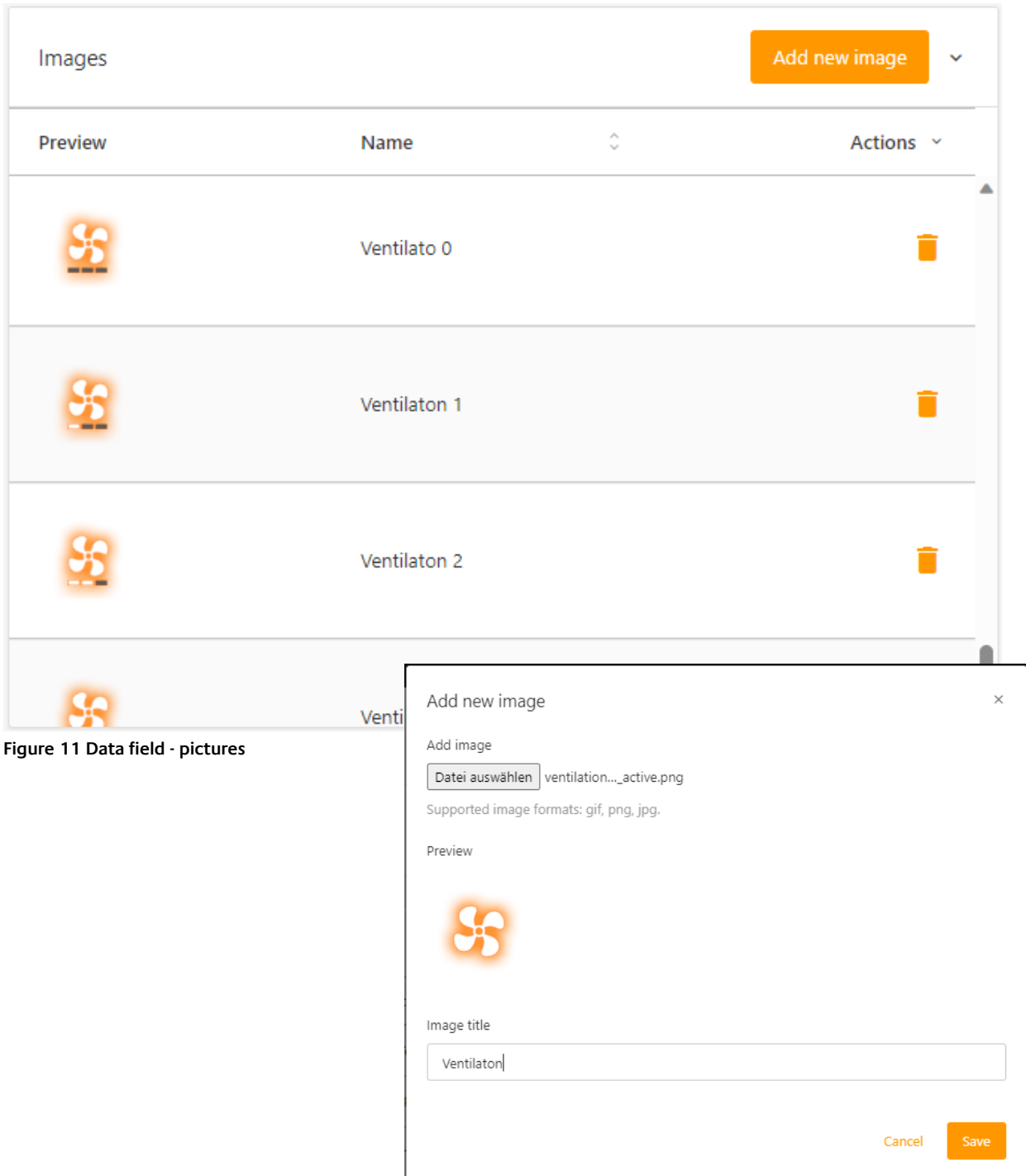


Figure 11 Data field - pictures

## 5 ELEMENT TYPES

---

Each cell can be assigned to an element type that differs in function. The four element types are "**Static element**", "**Display element**", "**Simple control element**" and "**Complex control element**".

The element type is set by first marking the cell with the mouse and then selecting the desired element type from one of the four tabs.

Although the element types differ in function, the configuration for the display is identical for all four element types.

Therefore, the configuration of the display as well as generally valid points are explained first and only then the four element types.

**Note:** The configuration field for the element type is only displayed when a cell is selected.

### 5.1 GENERAL FOR ALL ELEMENT TYPES

---

The configuration and description in this chapter applies generally to all element types and cell configuration.

These include the points:

- Define element type (all element types)
- Cell configuration (all element types)
- Display rules (display element and operating element complex)
- Background and caption (all element types)
- Rule and priority order (display element and control element complex)

#### 5.1.1 DEFINE ELEMENT TYPE

---

In a newly created free component, all cells are defined as static elements with a transparent background.

The selection of the element type for the currently selected cell is done simply by selecting the corresponding tab.

If a cell is defined otherwise, the element type can be changed simply by selecting the tab.

**Note:** The configuration of the cell is only saved by the "Apply" button!

#### 5.1.2 CELL CONFIGURATION

---

The configuration for the selected cell is placed under each tab for the element types. Here you will find the configuration for display, rules and/or actions.

Depending on the element type, the following fields are available:

- Static element: display only
- Display element: Rules and display (preview)
- Control element Simple: Configuration (actions) and display (preview)
- Complex control element: rules, configuration (actions) and display (preview)



### 5.1.3 SHOW RULE

Above the list view "Rules for the controls", there is a drop-down list "Show rules".

Via this selection, all existing rules in the "Grid" field can be called up for visual inspection. This makes it possible to check the different representations of each rule.

Exceptions are the configurations for "mouse over" and "mouse pressed". These cannot be visualised in ComponentBuilder 2.

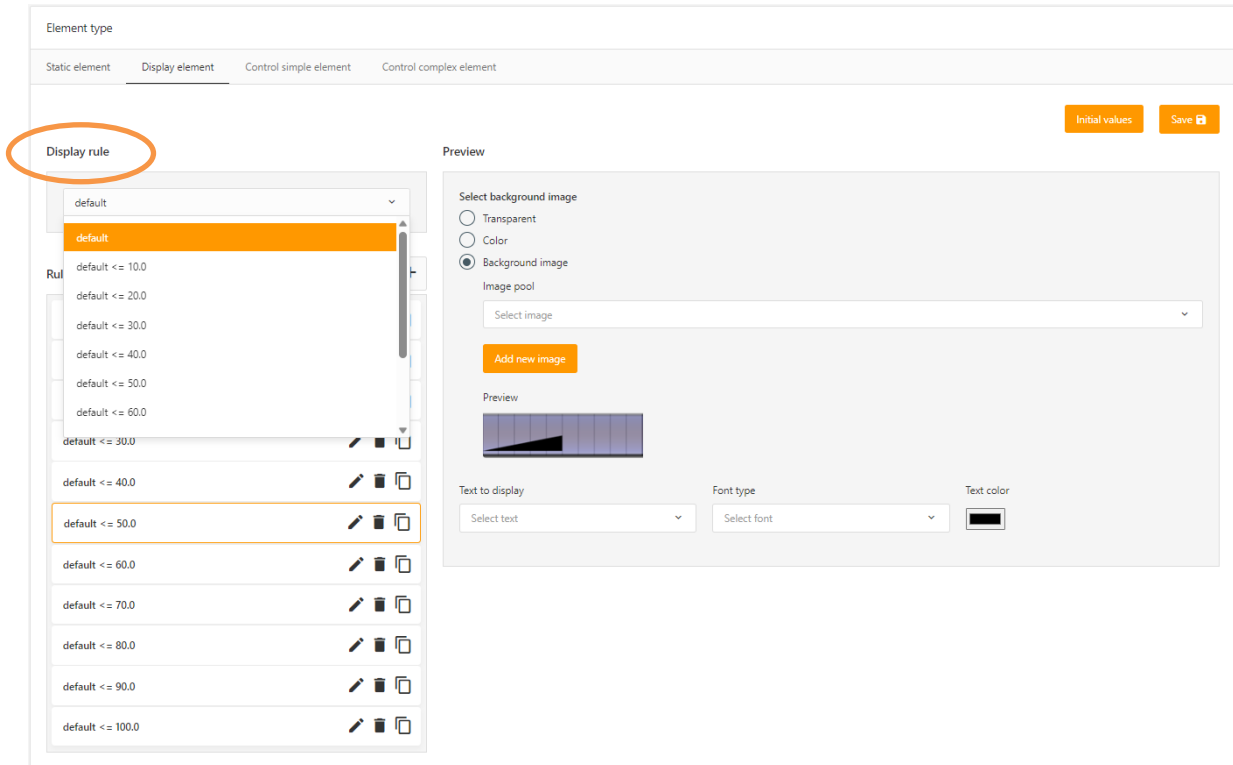


Figure 12 Cell configuration - Show rule

### 5.1.4 RULES AND PRIORITY ORDER

If several rules are fulfilled at the same time, the rule with the highest priority takes effect. The priority is set as follows:

1. Fixed comparisons  $(\mathbf{input1 = x})$
2. Value ranges  $(\mathbf{x < input1 > y})$
3. greater / smaller Compare  $(\mathbf{input1 < x})$

If the priority is identical, then the rules are weighted via a ranking.

- For value ranges, the rule that defines the narrower value range has the higher ranking.
- In case of greater / smaller - ranges, the rule whose difference to the value on Input1 is the smallest "wins".

## 5.1.5 BACKGROUND AND LETTERING

For all element types, the display of the cells can be defined individually with regard to the "background and labelling". The following options are always available

- To set **transparent**,
- to be coloured with one **colour**
- or assign a **background image**.

Depending on the element type, this display is also possible for the events "mouse over" or "mouse pressed".

Independent of the background, a text (configured in advance in the data field "String") can be added to the centre (horizontal/vertical) of the cell. The selected string can be assigned a font style (configured in the data field "Font") and a text colour.

The set representation is only displayed in the "Grid" field when the configuration is accepted. The display of the cell is reset via the "Initial values" button.

The following figure shows the cell configuration for the element type "Static element".

The screenshot shows a configuration window titled "Element type" with four tabs: "Static element", "Display element", "Control simple element", and "Control complex element". The "Static element" tab is active. In the top right corner, there are two orange buttons: "Initial values" and "Save". Below the tabs, the section "Depiction" contains three radio buttons for "Select background image": "Transparent" (selected), "Color", and "Background image". Below this, there are three fields: "Text to display" (a dropdown menu with "Select text" selected), "Font type" (a dropdown menu with "Select font" selected), and "Text color" (a color selection box showing black).

**Figure 13 Cell configuration - background and labelling**

To assign a cell to this element type, first select the desired cell with a mouse click and select the "Static element" tab.

The configuration is then shown under the tab.

**Note:** The configuration of the cell is only saved by the "Apply" button!



### 5.1.5.1 SELECT BACKGROUND

#### Transparent:

The cell is displayed transparently in the visualisation. Any visualisation elements behind it, graphics or backgrounds of the visualisation page, are visible in this case.

#### Colour:

The cell is fully coloured with the selected colour. The colour is selected via a dialogue window that opens with a mouse click on the colour field.

To select the colour, you can choose between RGB, HSL and HEX value. In addition, a "colour pipette" function is available which selects the desired colour by mouse click.

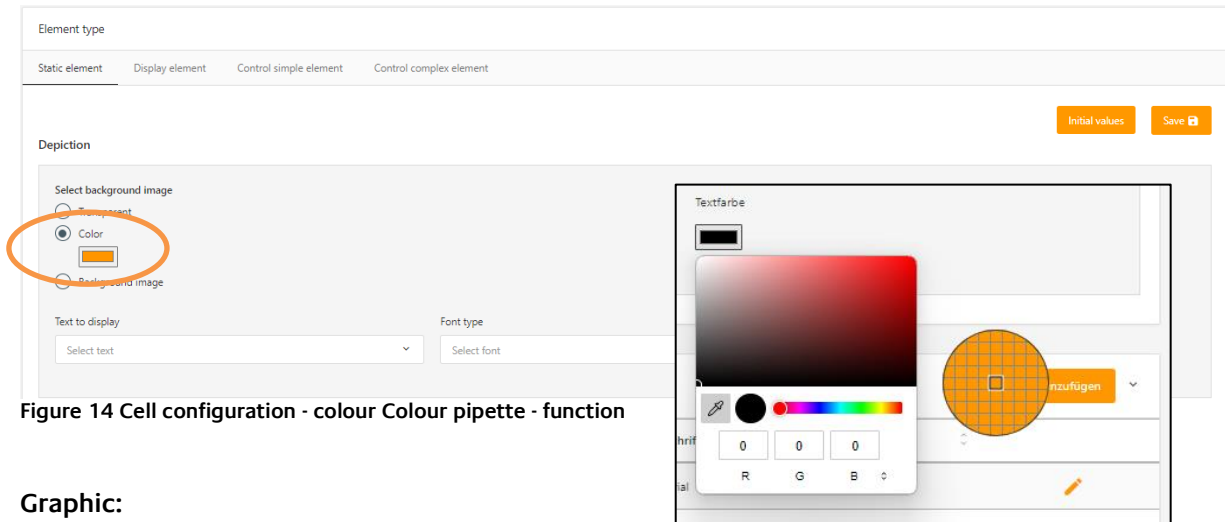


Figure 14 Cell configuration - colour Colour pipette - function

#### Graphic:

With this selection, the cell is deposited with the selected graphic. The image for this cell is selected via the drop-down list "Image pool" (following figure).

All imported images are listed in the data field "Images". In this data field and in the cell configuration itself, pictures can also be imported subsequently while the Free Component is being created ("Add new picture" button).

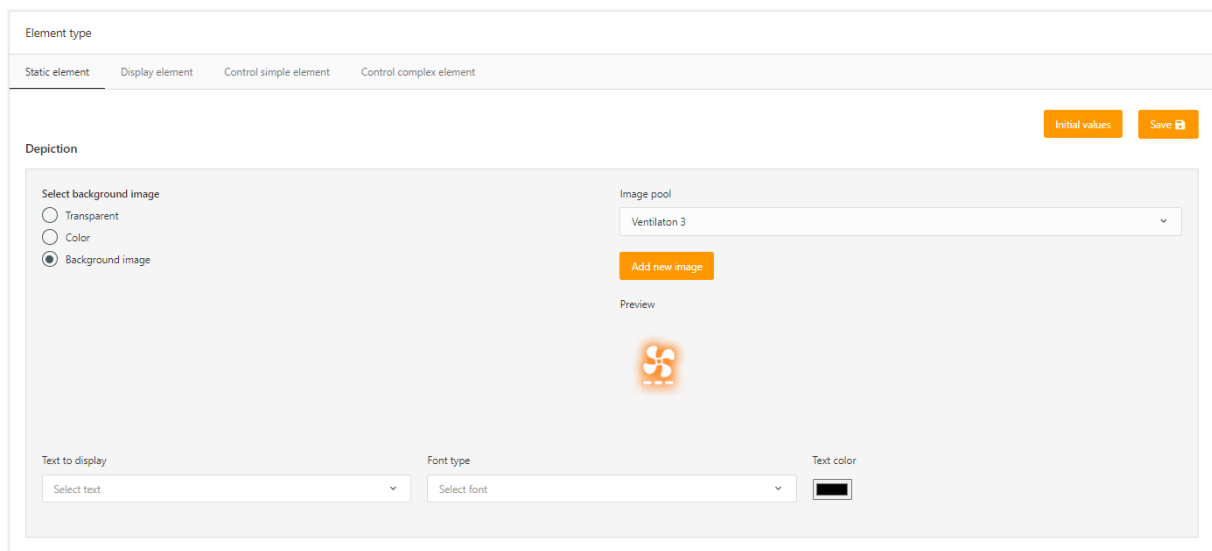


Figure 15 Cell configuration - background image

## 5.1.5.2 TEXT TO BE DISPLAYED

### Select text

In the associated drop-down list, the string previously created in the data field "String" can be selected. In this way, a label or a value display, for example, is added to the cell.

### Font

In order to assign a font to the selected text ("String") for this cell, one of the predefined fonts (data field "Fonts") can be selected via the associated drop-down list.

### Text colour

In addition to the font, the colour of the text ("String") can also be changed here. A mouse click on the corresponding colour field opens a dialogue in which the colour can be selected. To select the colour, you can switch between RGB, HSL and HEX value. In addition, a "colour pipette" function is available which selects the desired colour by mouse click.

The screenshot shows the 'Cell configuration' interface for 'Text to be displayed'. At the top, there are tabs for 'Element type' (Static element, Display element, Control simple element, Control complex element) and buttons for 'Initial values' and 'Save'. The main area is titled 'Depiction' and contains three sections: 'Select background image' with radio buttons for 'Transparent' (selected), 'Color', and 'Background image'; 'Text to display' with a dropdown menu showing 'Scene Start'; and 'Font type' with a dropdown menu showing 'default'. To the right of the font type dropdown is a 'Text color' section with a dropdown menu and a green color swatch, which is circled in orange.

Figure 16 Cell configuration - Text to be displayed





## 5.2 ELEMENT TYPE - STATIC ELEMENT

Static elements have no functional properties and remain unchanged in their appearance. This element type is used to graphically design cells in the Free Component.

By using a static element, it is possible, for example, to create a frame or a graphic separation in the Free Component. This allows important areas to be highlighted or cells to be separated from each other.

This element type is also suitable for placing symbols, graphics, labels and value displays in the Free Component.

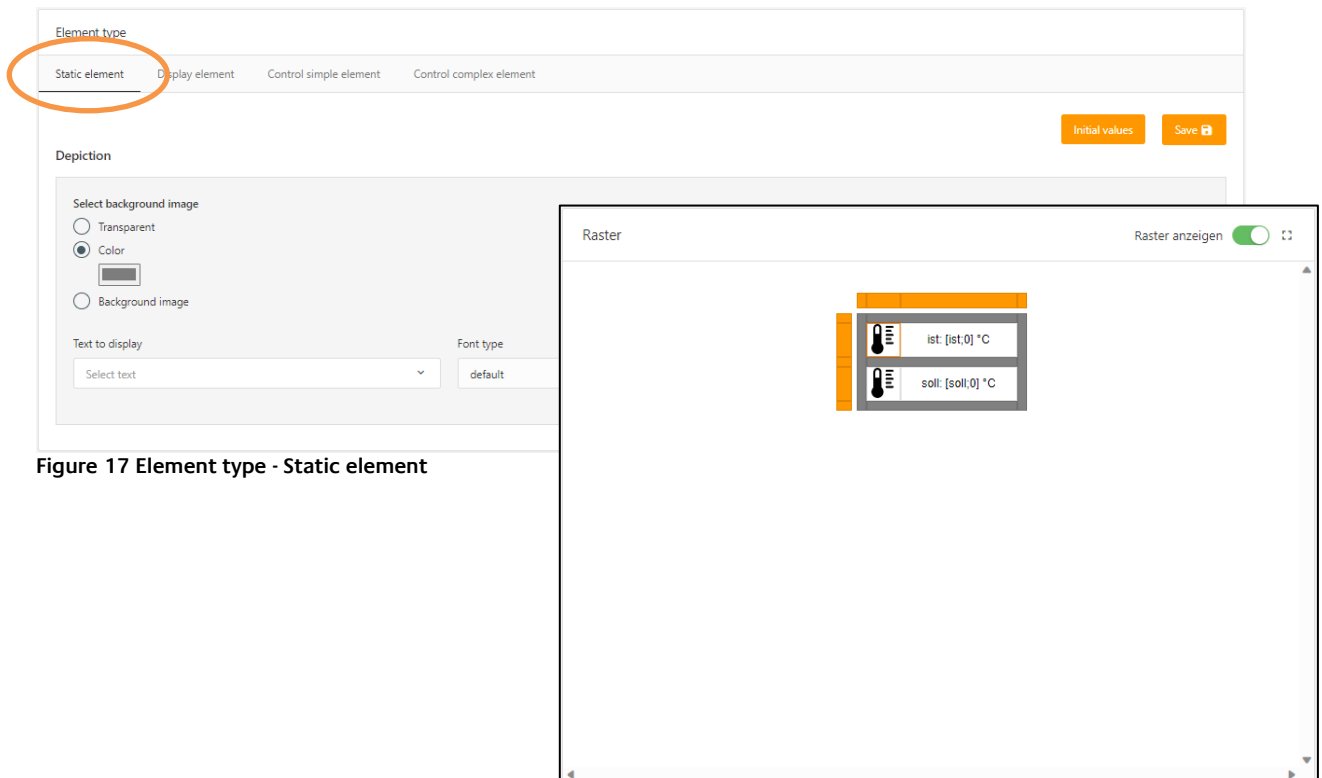


Figure 17 Element type - Static element

### 5.2.1 DEFINE STATIC ELEMENT

Since the Static Element has no rules or actions, only the "Background and Caption" can be configured. This is described in the previous chapter.

**Example:** The Static element is used in this Free Component to add two temperature values, a frame to separate the values and a symbol to complement the two values.

## 5.3 ELEMENT TYPE - DISPLAY ELEMENT

In contrast to the static element type, the element type "Display element" has the property of changing its appearance. An essential difference is therefore that the configuration for "Background & Caption" can be defined not only once, but many times for the selected cell.

These representations are called up at runtime via rules (conditions). As soon as a rule is fulfilled, the assigned configuration for "background and caption" is applied.

In this way, states can be signalled by different symbols, graphics or colours, depending on the telegram value.

Independent of the background design, it is also possible to additionally select a caption or a text for each individual rule. The selected string can remain unchanged, display a value or combine both (i.e. placeholder for the telegram value and, in addition, the unit or caption).

This configuration opens the possibility to realise a value display where the background or the text colour changes depending on whether a limit value is exceeded or not.

The cell configuration for this element type consists of two columns (following figure). An overview of all created rules for the currently selected cell is located in the list view "Rules for the control elements".

These rules can be displayed in the "Grid" field via the "Show rule" drop-down list above them.

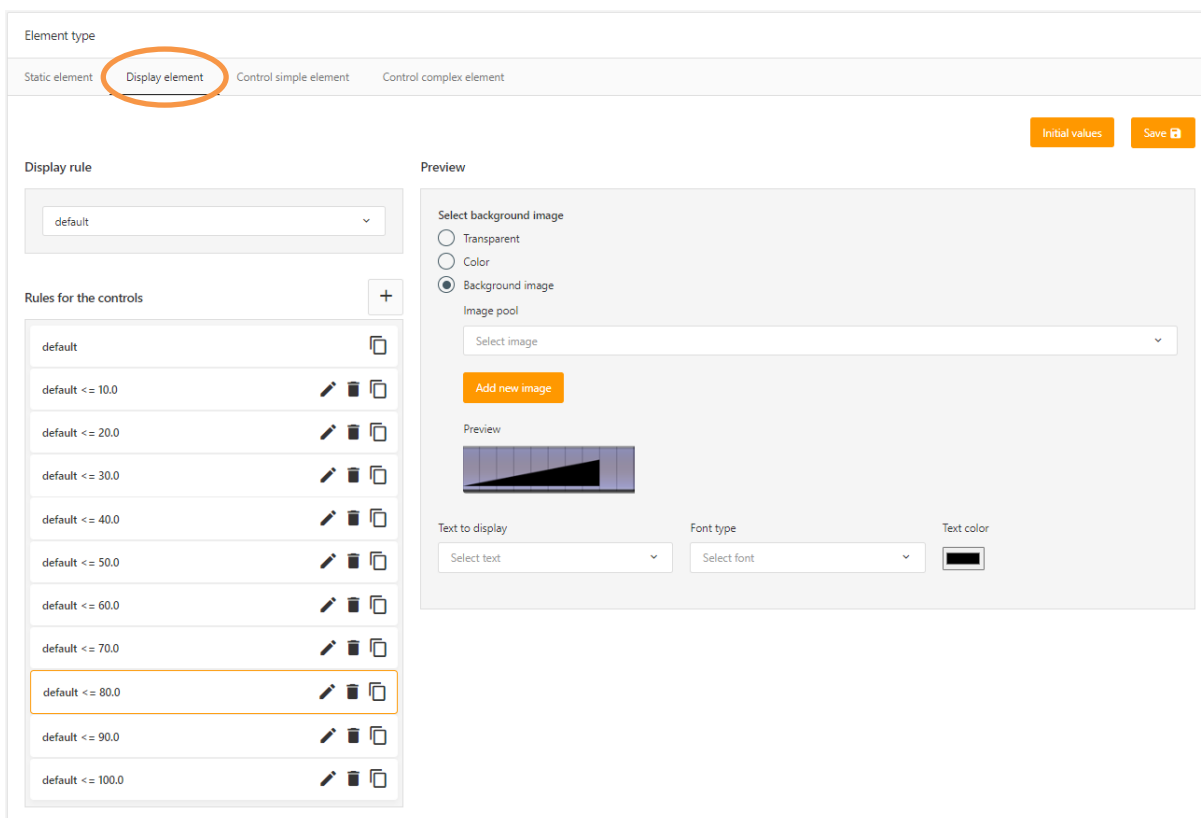


Figure 18 Element type - Display element



## 5.3.1 DISPLAY ELEMENT - DEFINE RULES

---

Each rule consists of

- the "Background and labelling" configuration
- and one condition.

There are 16 different operations to choose from to compare with a fixed given or received value, as well as value range.

**Tip:** By selecting a rule in the list "Rules for the controls", the associated configuration for "Background and labelling" is called up on the right-hand side (see previous illustration). The selected rule is outlined in orange.

### RULE "DEFAULT"

---

The display element always has a "default" rule by default. This rule always takes effect if none of the other created rules apply. This ensures that the cell always uses a display. The "default" rule provides the same scope of configuration of "background and caption" and cannot be deleted.

**Example:** The display element is predestined to show different states with a free component or cell. An example of this is assigning different symbols to different states/telegram values. These are visualisation elements such as state of charge, "energy traffic light" or value display in the form of a speedometer or bar display.

### NEW RULE

---

There are two different ways to create a new rule:

Either by clicking on the "Plus" symbol in the "Rules for controls" list to create a new rule, or via the "Copy" symbol to take the configuration from an already existing rule as a template and adapt it.

### EDIT

---

A click on the "pencil" symbol opens a dialogue to edit the corresponding rule. In this dialogue, the address and the rule (comparison operations) are selected and the values are specified.

### DELETE

---

Clicking on the "trash can" symbol deletes the corresponding rule.

### COPY

---

When copying rules, the configuration for the "background and caption" is taken over as a template. Thus, the rule only needs to be adjusted if the configuration for the "background and labelling" and the rule do not differ greatly.

The rule is copied via the "Copy" symbol (two sheets on top of each other), the configuration dialogue opens automatically to adjust the condition.

## 5.3.2 CONFIGURATION

When a new rule is created, a dialogue (see figure below) appears with the configuration. The same dialogue also appears when an existing rule is edited. The configuration is called up for existing rules via the "pencil" symbol.

The comparison operation is selected in the upper half of the dialogue. All 16 available comparison operations are listed here.

Figure 19 Element Type - Display Element - Configure Rule

The configuration of the rule also includes the specification of addresses and values. These specifications are set in the lower part of the dialogue. Depending on the type of comparison operation, the number of input fields differs.

**Addresses:** All addresses created under the data field "Addresses" are listed here in a drop-down list and selected for this rule.

**Values:** The specification of fixed values, threshold values or value ranges are specified via an input field. The desired value can also be set via a plus and minus switch, in 0.1 steps.

The configuration is not saved until the "Apply" button is pressed!

**Note:** As soon as a rule is selected in the "Rules for controls" list, the assigned configuration for "Background and caption" appears on the right side in the "Preview" field. The configuration for "Background and caption" is explained in a separate chapter.



## 5.4 ELEMENT TYPE - CONTROL ELEMENT SIMPLE

Cells of element types "Control element simple" behave like switches and buttons. These cells can only perform one action when the mouse is pressed and/or released.

For the actions "When pressed" and "When released", different fixed values can be specified or an arithmetic function (addition and subtraction) can be applied to a telegram value. The value range is specified by the selected data point type.

The configuration "Background and labelling" of the control element Simple is also possible for different states with this element type.

These additional states are "standard", "mouse over" (when the mouse pointer hovers over the cell) and "mouse pressed" (when the cell is pressed with the mouse). These can be configured under the tabs of the same name under "Preview".

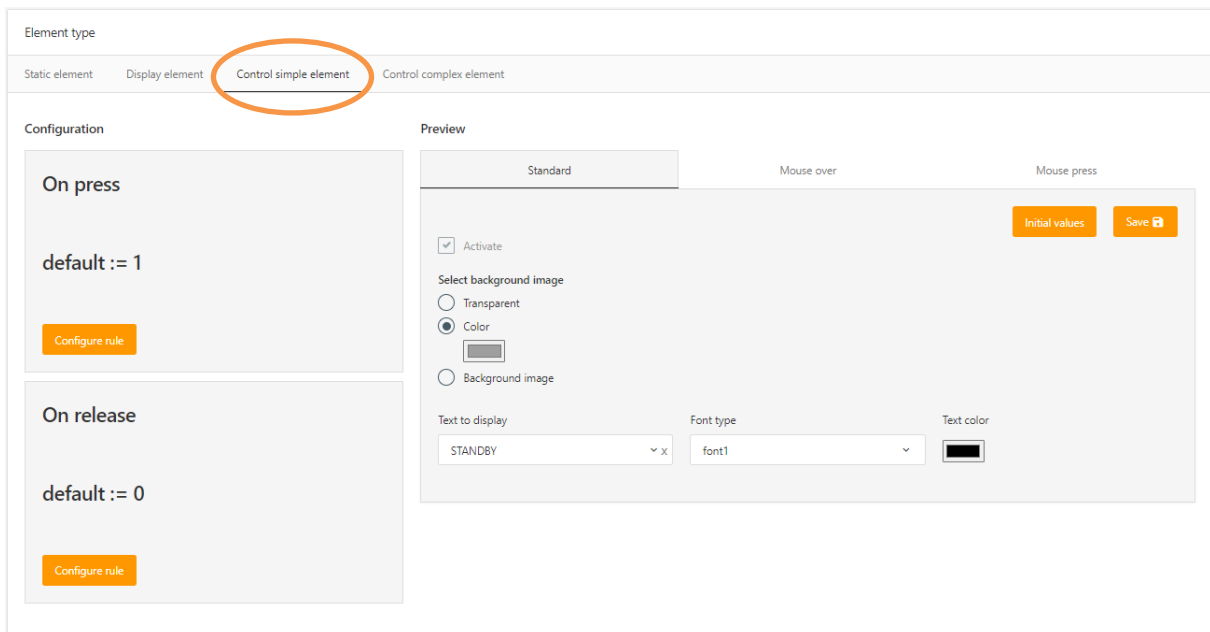


Figure 20 Element type - control element Simple

## 5.4.1 CONTROL ELEMENT SIMPLE - DEFINE RULES

The "Simple control element" allows only one action to be defined for "When pressed" and "When released". The configuration of the display is identical for both cases.

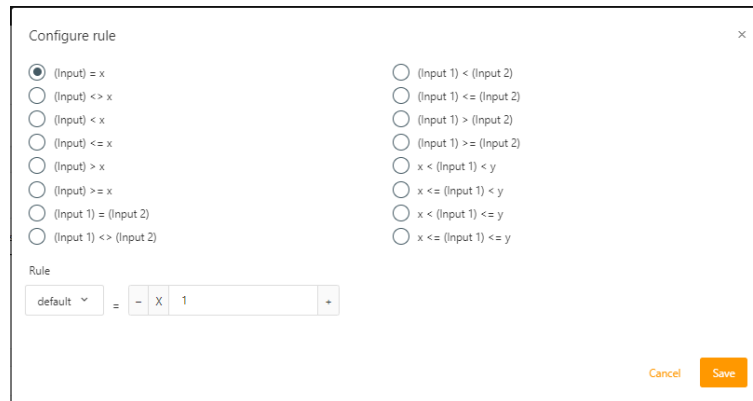


Figure 21 Element Type - Control Element Simple - Configure Rule

The action (rule) is selected in the upper part of the dialogue.

In the lower part, input fields corresponding to the selected rule are displayed. At this point, the addresses are selected and the values are chosen. Depending on the type of rule, the number of input fields differs.

Addresses: All addresses created under the data field "Addresses" are listed here in a drop-down list.

Values: The specification of fixed values, threshold values or value ranges are specified via an input field. The desired value can be set directly or via plus and minus switches, in 0.1 steps.

The "Apply" button saves the configuration of the rule and closes the dialogue,

**Example:** Together with these two actions, a button can be realised that sends a "1" when pressed and a "0" when released.

### WHEN PRESSING

Here you define which value is sent when the button is pressed. This can be a fixed value or a calculated value.

A click on the button "Configure rule" in the field "When pressed" opens a selection of possible actions.

In the example shown (above), a "1" is sent to the address "switch" each time this cell is pressed.

It is also possible to carry out a subtraction or addition with a fixed value or a value received via an address before sending the telegram.

An example is to increase the telegram value to be sent by the value 5 with each mouse click.

The configuration made here is executed with every mouse click ("mouse pressed").

### WHEN LETTING GO

The configuration here is identical. The difference is that this action is only triggered when the cell is released after the mouse click.



## 5.4.2 CONFIGURE

---

The special feature of this element type is that the representations are possible for up to three states. The states are, besides the "standard" display, also a separate one for "mouse over" and "mouse pressed".

By default, these states are deactivated and are only taken into account with the "Activate" option.

### STANDARD

---

This configuration of "Background and caption" is the default display for this cell.

### MOUSE OVER

---

This display is only called up in the visualisation when the control element is "hovered over" with the mouse pointer. It can be used to highlight the element, to show a measured value or state only when the mouse hovers over the cell.

### MOUSE PRESSED

---

This display has the same configuration option as "Mouse over" and is displayed as long as the mouse is pressed/held down on the cell. This way, a graphic signalling is created.

This display offers the same configuration options as the "mouse-over" display and remains visible as long as the cell is held down with the mouse. In this way, visual feedback is created which is different from the "mouse over".

## 5.5 ELEMENT TYPE - CONTROL ELEMENT COMPLEX

Simply explained, the element type "Control element complex" represents a fusion of a "Display element" and a "Control element simple".

This combination allows the "control element simple" to be defined separately for each rule of the "display element" independently.

This allows the display to be defined for different states (display element) and an associated action to be assigned (control element Simple).

The cell configuration therefore contains the identical settings of both element types described above. The following figure shows this cell configuration consisting of three columns.

The left column contains the configuration part of the "display element", while the two columns on the right contain the configuration of the "control element simple".

The configuration is structured in such a way that the rules (conditions) are created in the left column and the settings for action and display are defined for each of these rules in the columns on the right.

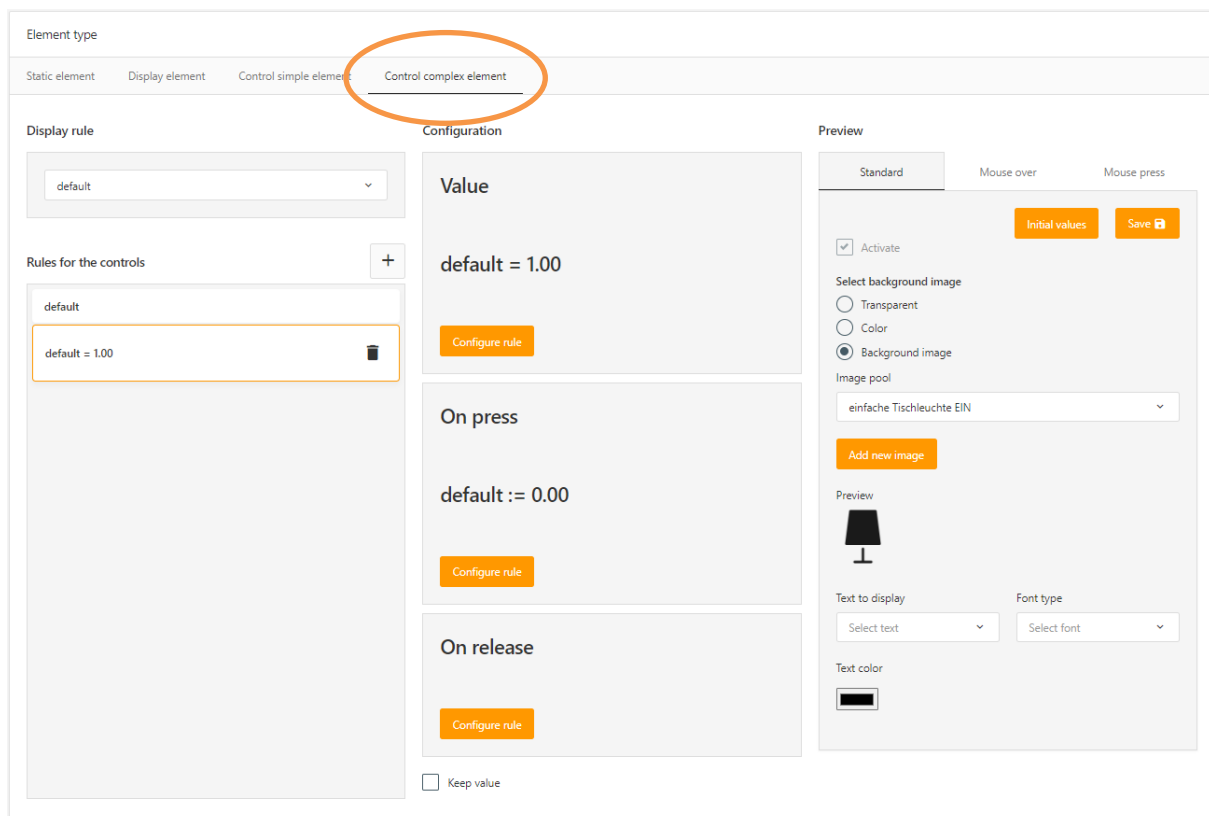


Figure 22 Element type - Control element complex





## 5.5.1 DEFINE CONTROL ELEMENT COMPLEX

---

With this element type, each rule contains

- the configuration for the action and display (equal to the "control element simple")
- and a condition (equal to the "display element").

The configuration thus consists of the steps Action and Presentation.

### CONFIGURATION

---

To make the configuration of this element type as simple as possible, the configuration options have been taken over from the existing element types.

The procedure for configuring and creating rules is the same as for the display element (see corresponding chapter).

And the configuration of the actions and displays also corresponds to the procedure for the "control element simple" (see associated chapters).

### ADDITIONAL OPTION "KEEP VALUE "

---

If this option is set, the current rule also applies if the input value changes between the "mouse pressed" and "mouse over" or the rule is no longer valid during the actuation.

## 6 USE FREE COMPONENTS

The created Free Components are automatically made available in the EIBPORT Editor in order to use them in the visualisation.

**Note:** The Free Components are always loaded by the ComponentBuilder 2 when the EIBPORT Editor is opened. Newly created free components can be reloaded via the "Update" function while the EIBPORT Editor is open.

Subsequent changes to Free Components that have already been placed in the visualisation are only visible or updated after restarting the EIBPORT Editor. Alternatively, without restarting the EIBPORT Editor, the desired free component can be deleted and added again after the manual update.

### 6.1 FREE COMPONENTS IN THE EIB PORT EDITOR

Free components are provided and handled in the EIBPORT Editor like normal visualisation elements.

The Free Components are listed in a separate section ("Free Components") in the "Elements" window, where all Standard and Advanced Visualisation Elements are also located.

#### IMPORT

A manual transfer of the created free components from the ComponentBuilder 2 into the EIBPORT Editor is not necessary.

With each start of the EIBPORT Editor, the list with the free components from the ComponentBuilder 2 is updated.

This process can be triggered manually by pressing the "Refresh" button (placed directly at the top of the list).

This way, new free components can be fetched into the EIBPORT Editor without a restart.

**Note:** On the subject of compatibility of the Free Components, see also "Note on Version 1 Components".

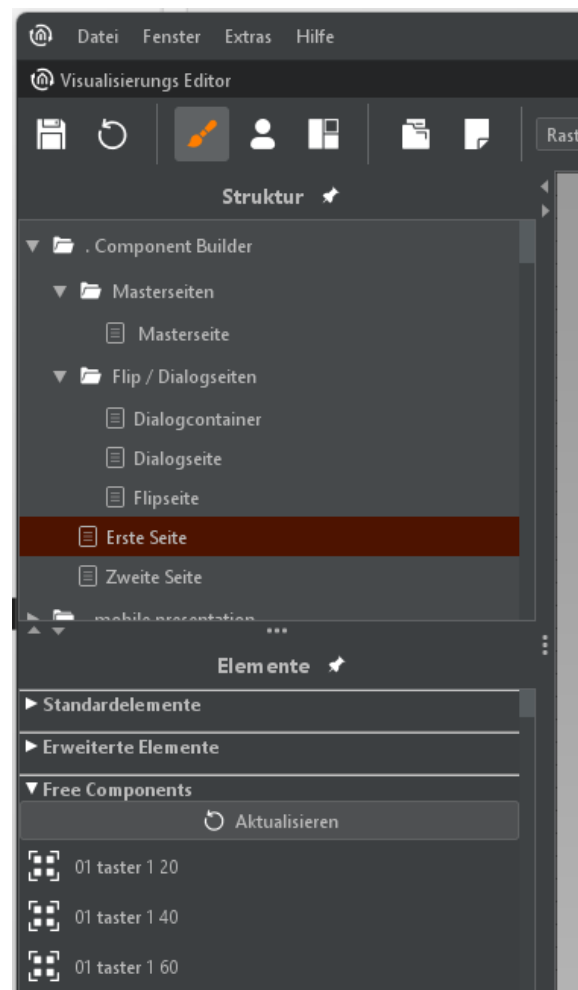


Figure 23 EIB PORT Editor - "Free Components" list



## 6.2 CONFIGURE FREE COMPONENTS

The Free Components are selected like visualisation elements and placed on a visualisation page with the mouse.

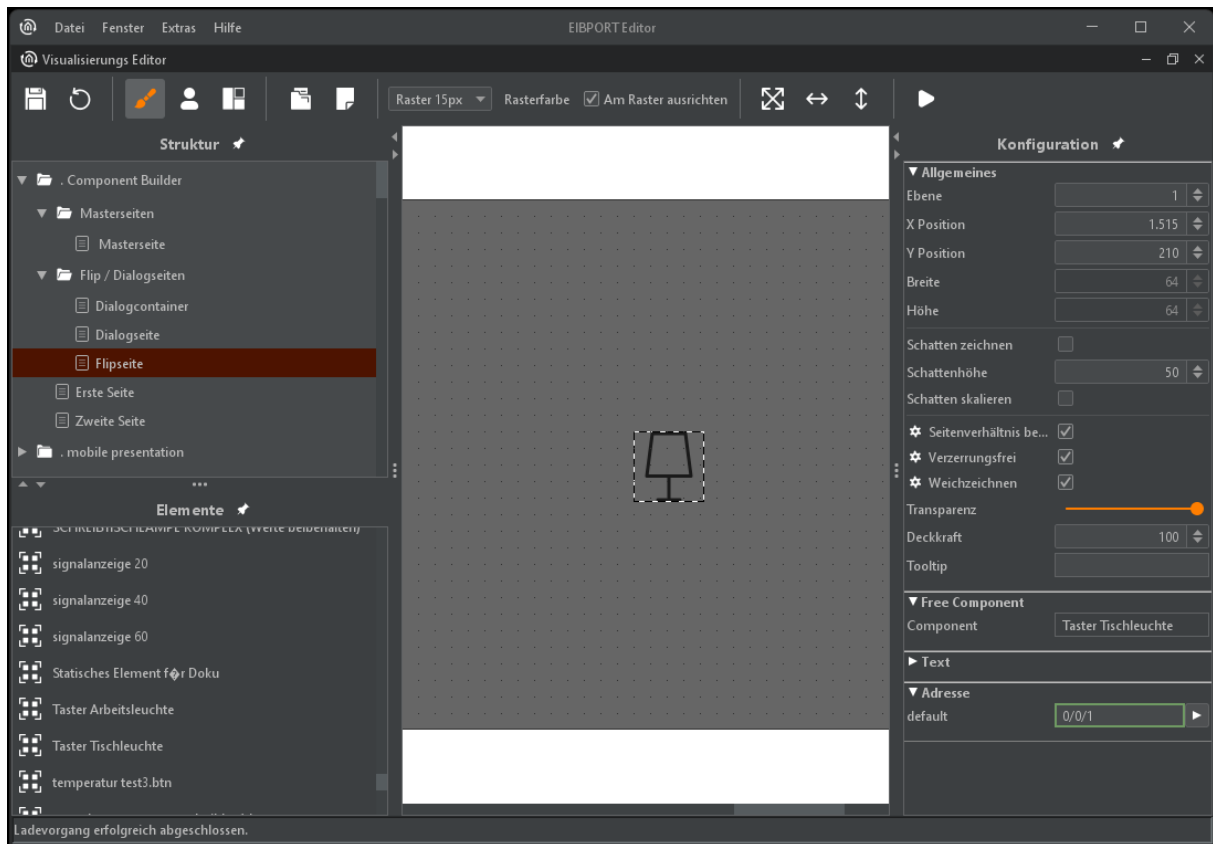


Figure 24 EIB PORT Editor - Free component in visualisation and addresses

The configuration in the EIBPORT Editor is limited to the assignment of the KNX group addresses for the Free component.

The addresses created in ComponentBuilder 2 are listed here in the editor with the assigned identifier.

In addition to the addresses, the strings created are also shown in the configuration (see illustration on the right).

At this point, the identifiers can be adapted or translated.

**Note:** The name for placeholders of the addresses (telegram values) must not be changed.

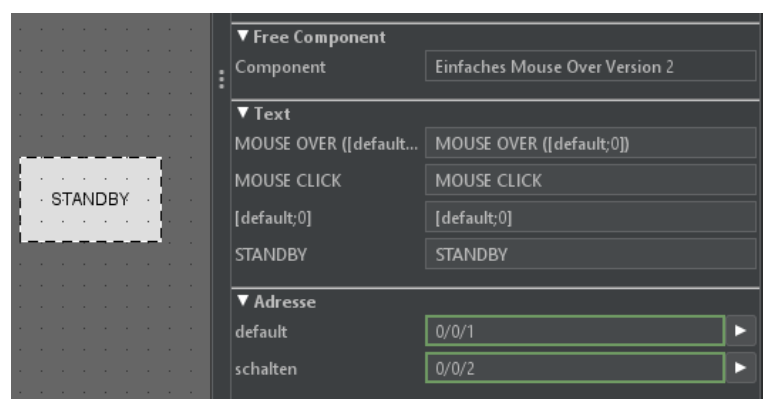


Figure 25 EIB PORT Editor - Free component and strings

## 7 EXAMPLES

This chapter contains examples, including a short tutorial, to help you gain initial experience with the ComponentBuilder 2 and the structure of Free Components.

**Tip:** The examples shown and graphics used here are available as samples.

### 7.1 BATTERY CHARGE INDICATOR (DISPLAY ELEMENT)

The display of the battery charge requires only one cell. The element type to be used is the "display element".

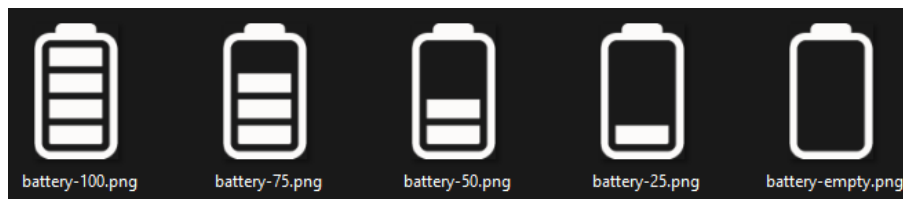
In this example shown, the charge is divided into 20% steps and thus displayed in 5 steps.

This example can easily be extended if necessary. It is possible to add a finer resolution with more graphics or an additional value display.

#### IMAGES

Five graphics are used in this example to display the battery charge. Thus, the charge can be displayed in 20% steps ("empty",  $\frac{1}{4}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$  to "full").

The graphics are uploaded to the image pool to be linked to rules later.



**Tip:** Since all graphics are embedded in the Free Component, it is important to keep the file size of the graphics as small as possible. This helps to avoid long loading times of the visualisation.

#### ADDRESSES

In this example, only one address is needed. The address is used to provide the value for the battery charge in the Free Component for the rules.

This address is parameterised as follows:

- Name: "charge"
- EIS type: EIS 6
- Factor: 1
- Offset: 0

The screenshot shows a dialog box titled 'Adresse bearbeiten' with a close button (X) in the top right corner. The dialog contains the following fields and controls:

- Name:** A text input field containing 'ladung'.
- Typ auswählen:** A dropdown menu showing 'EIS 6 (1 0-100%)'.
- Faktor:** A numeric input field containing '1' with up and down arrow buttons.
- Offset:** A numeric input field containing '0' with up and down arrow buttons.
- Buttons:** 'Abbrechen' (grey) and 'Übernehmen' (orange) buttons at the bottom right.



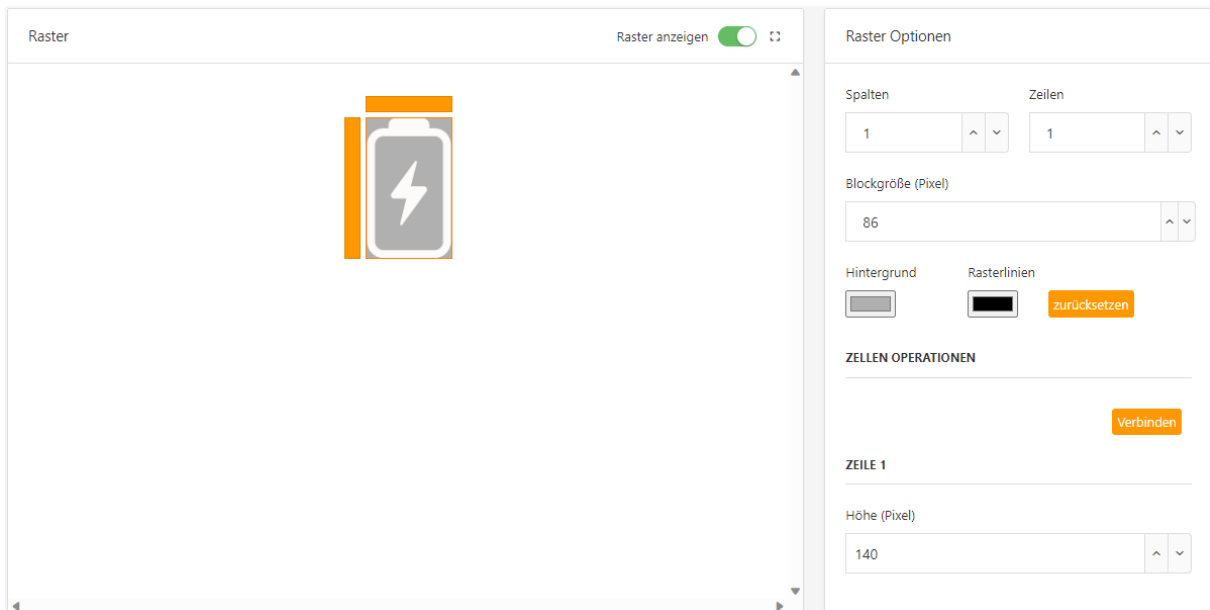
## SET CELLS AND SIZE

The grid for this display consists of one cell (number of rows and columns is 1).

At this point, the size of the free component is also set by the block size (or column width and row height).

In this case, the imported graphics have a size of 86\*140px (width\*height). Therefore, the block size was set to 86px and the height was adjusted to 140px via the line height.

**Tip:** If the imported graphics are not visible on the white background, the background colour can be changed (as in this example).



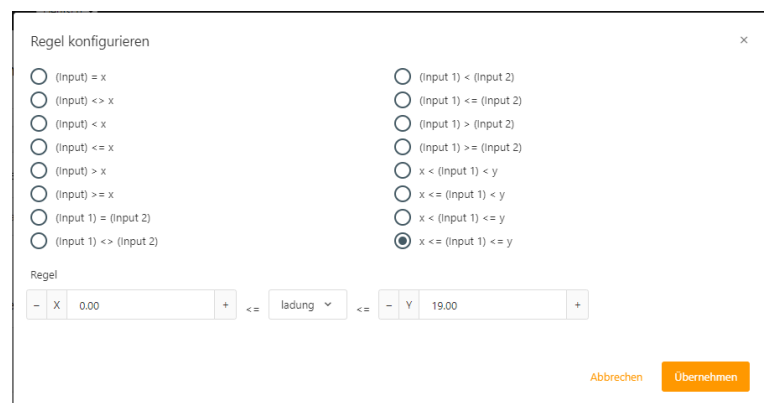
**Note:** The correct way is to adjust the size of the graphic used. This way the free component is displayed without distortion. It is possible to change the size of the free component later. In this case, the graphic may be displayed blurred or distorted in the visualisation.

## RULES

As already mentioned, the battery charge (from 0% to 100%) is displayed with the help of five graphs. Thus, five rule (condition) are needed.

The condition (comparison operation) used to compare on a range of values is:

$$x \leq (\text{Input 1}) \leq y$$



The "default" rule can also be used for a required value range.

Alternatively, the "default" rule can also be used as an indicator for invalid values or which are not caught by the remaining rules.

Next, the value range (0 - 100) is divided into five equal parts. This results in the following value ranges and thus the conditions:

1.  $0 \leq (\text{charge}) \leq 19$
2.  $20 \leq (\text{charge}) \leq 39$
3.  $40 \leq (\text{charge}) \leq 59$
4.  $60 \leq (\text{charge}) \leq 79$
5.  $80 \leq (\text{charge}) \leq 100$

These conditions represent the rule that must be applied.

These rules also include a corresponding graphic that is displayed when the rule is fulfilled.

Below is the final configuration for this example:

Left column lists all rules. Right column shows the configuration for the display.

The screenshot shows the configuration interface for a component. At the top, there are tabs for 'Elementtyp' (Statisches Element, Anzeigeelement, Bedienelement einfach, Bedienelement komplex) and buttons for 'Ausgangswerte' and 'Übernehmen'. The main area is divided into two columns: 'Regel anzeigen' and 'Vorschau'.

**Regel anzeigen:** A dropdown menu shows 'default'. Below it, a list of rules for the control elements is shown, each with a plus icon for adding and a trash icon for deleting:

- default
- 0.00 <= ladung <= 19.00
- 20.00 <= ladung <= 39.00
- 40.00 <= ladung <= 59.00
- 60.00 <= ladung <= 79.00
- 80.00 <= ladung <= 100.00

**Vorschau:** This section shows the visual configuration for the selected rule. It includes:

- Hintergrund wählen:** Radio buttons for 'Transparent', 'Farbe', and 'Hintergrundbild' (selected).
- Bilderpool:** A dropdown menu showing 'battery-loading' and a 'Neues Bild hinzufügen' button.
- Vorschau:** A preview of a battery icon with a lightning bolt.
- Anzeigender Text:** A dropdown menu for 'Text auswählen'.
- Schriftart:** A dropdown menu for 'Schrift auswählen'.
- Textfarbe:** A color selection box.



## 7.2 DYNAMIC VALUE DISPLAY (DISPLAY ELEMENT)

As an extension to the existing visualisation element "Value display" in the EIBPORT Editor, the ComponentBuilder 2 allows to create a value display with dynamic background. This means that the background can be defined by several rules.

The purpose of this function is to highlight value indications in colour when a limit value is exceeded or not reached.

An example is to display a measured value with a green background (value OK) until the specified limit value is exceeded and the background colour changes to red.

**Extension:** It is also conceivable to add an additional cell in this free component to also display a "warning" symbol.

### ADDRESSES

In this example, an address is needed to provide the measured value for the string and to change the background for the rules.

This address is parameterised as follows:

- Name: "temperature"
- EIS type: EIS 5
- Factor: 1
- Offset: 0

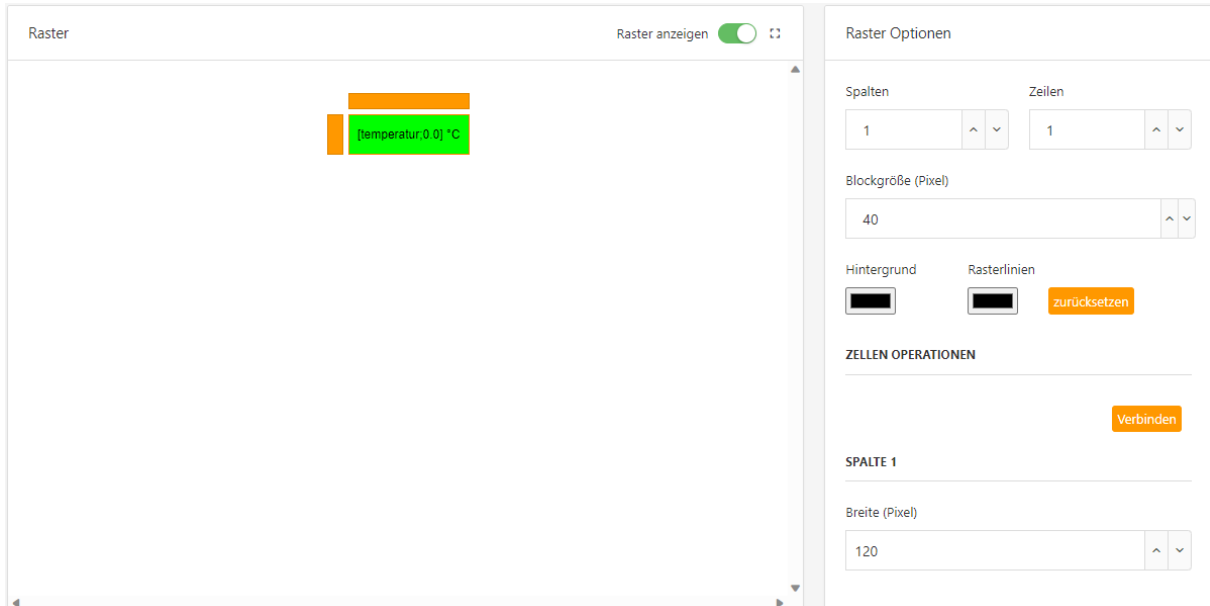
### STRING

In order for the received temperature value to be displayed in the cell, a string is necessary for this. Here the temperature value is inserted with one place before and after the decimal point and extended by the unit "°C".

## SET CELLS AND SIZE

The grid for this display consists of one cell.

The size is to be determined in such a way that there is sufficient space for the previously created string. The size in this example is set to 120px \* 40px.

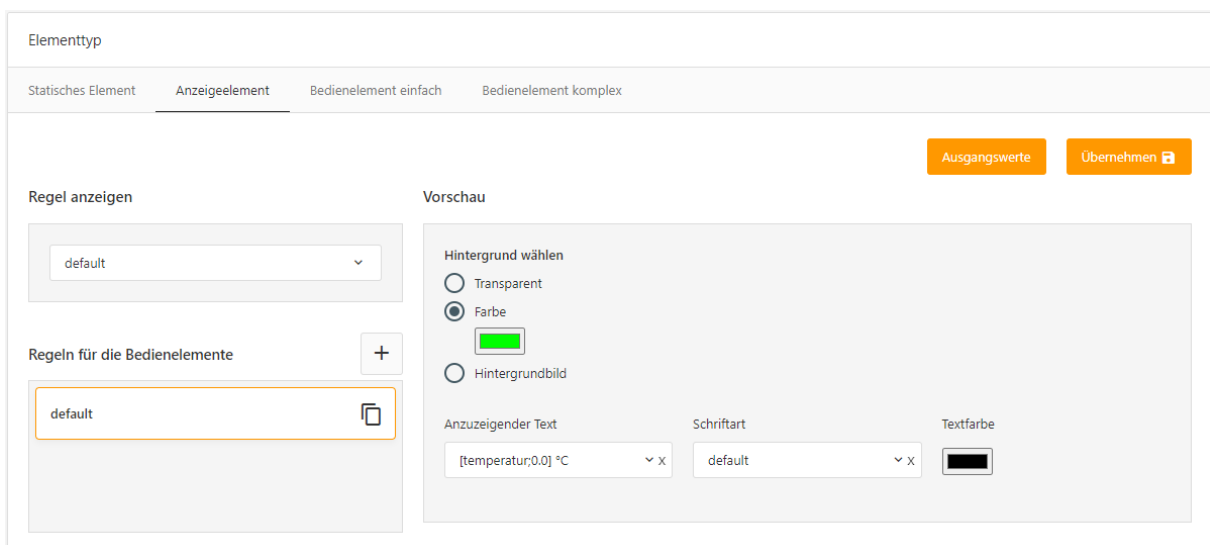


**Tip:** If a different font or font size is desired, this can be adjusted under the data field "Fonts".

## RULES

To ensure that the measured value is always displayed with a green background by default, it is advisable to use the "default" rule for this.

Here the colour for the "default" rule is set to green and the previously prepared string for "Text to be displayed" is selected.

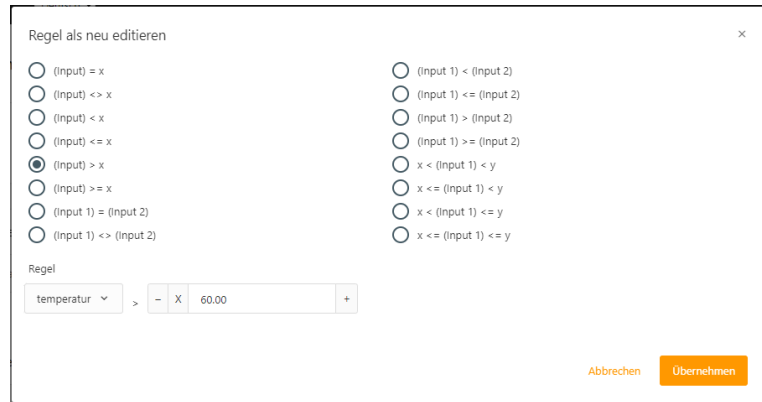






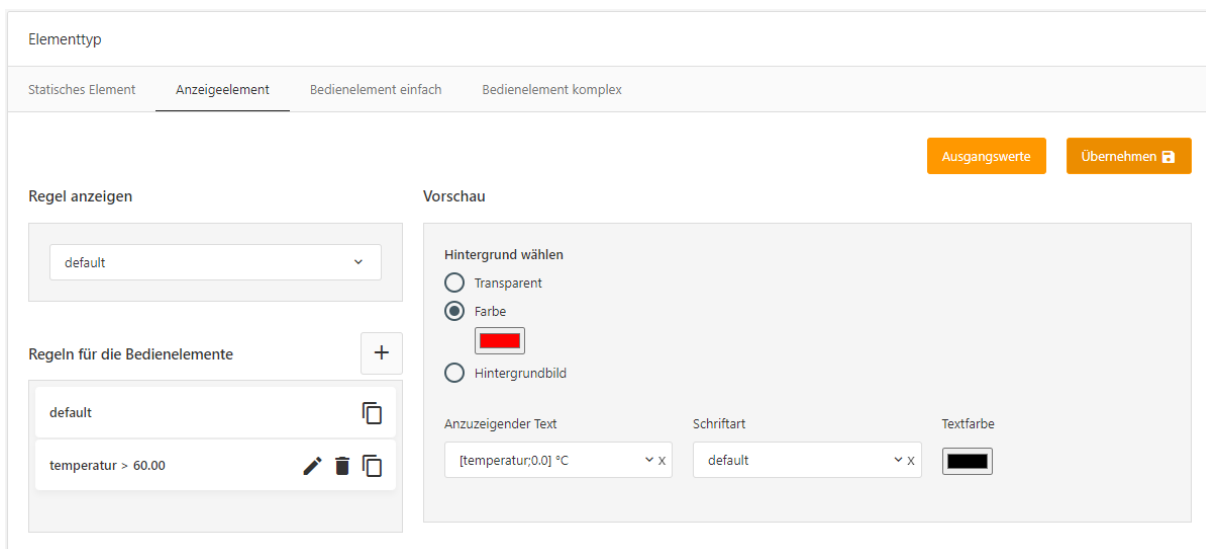
To create the new rule that changes the background from a certain threshold, the already configured "default" rule can be duplicated and used as a template. The advantage is that only the colour has to be changed.

In the new rule, the condition (comparison operation) is defined first, as well as which address is to be used for this condition.



In this example, the limit value is set to 60.00. Thus, the required rule is **temperature > 60.00**

Finally, select the new background colour for the newly created rule (following figure).



**Tip:** It is conceivable to extend this example with further rules according to your own requirements or to use different fonts (e.g., bold) instead of different colours.

## 7.3 SWITCH (CONTROL ELEMENT COMPLEX)

For a switch that alternately sends the states ON and OFF with each mouse click, one cell is sufficient. The element type for this cell is to be selected as a control element complex. The function of the control element complex is a prerequisite for specifying a different value for two alternating states (separate ON and OFF rule). In concrete terms, this means that the cell sends the telegram value OFF for the ON state and vice versa.

To make the assignment of the configuration easier to understand, this example uses colour and text for the different states (ON/OFF, "mouse over" and "mouse pressed"). However, different graphics for all states are also conceivable.

**Tip:** Compared to the existing visualisation elements "Button" and "Switch", the Free Component also allows a display with "mouse over".

### ADDRESSES

For this example, one address is sufficient for switching in the visualisation.

This address is parameterised as follows:

- Name: "switch"
- EIS type: EIS 1
- Factor: 1
- Offset: 0

### STRING

In order to assign the states ON/OFF, "mouse over" and "mouse pressed" as text to the states in the further course, these must first be created here.

The illustration shows all the strings needed.

ID	Text	
str1	EIN	
str2	AUS	
str3	OVER	
str4	PRESSED	



## SET CELLS AND SIZE

The size can be freely set here according to the requirement. However, it must be at least large enough for the intended strings to fit completely into the cell.  
In this example the size is set to 80px \* 40px

## RULES

Two rules are needed for the described function. One rule for the "ON" state and one rule for the "OFF" state.

One of the two rules can be configured in the "default" rules to save one rule.

Here is the cell configuration.

The "default" rule (left column in the cell configuration) is intended for the "OFF" state. Since a comparison operation is not provided for the "default" rule, only the telegram value and representation to be sent need to be defined.

For the "default" rule (state OFF), the telegram value to be sent is "1" and the background "red" is selected.

The screenshot shows the configuration interface for a button element in ComponentBuilder 2. The interface is divided into several sections:

- Elementtyp:** Shows the selected element type as "Bedienelement komplex".
- Regel anzeigen:** A dropdown menu showing "default".
- Regeln für die Bedienelemente:** A list of rules for the button. The "default" rule is selected and highlighted. Below it, a rule "schalten = 1.00" is visible with a trash icon.
- Konfiguration:**
  - Wert:** Shows "default".
  - Beim drücken:** Shows the action "schalten := 1.00" with a "Regel konfigurieren" button.
  - Beim loslassen:** Shows a "Regel konfigurieren" button.
  - Werte beibehalten
- Vorschau:**
  - Buttons: "Ausgangswerte" and "Übernehmen".
  - Aktivieren
  - Hintergrund wählen:**
    - Transparent
    - Farbe (Selected, showing a red color swatch)
    - Hintergrundbild
  - Anzuzeigender Text:** "AUS" (Selected)
  - Schriftart:** "default" (Selected)
  - Textfarbe:** Black (Selected)

In the middle column of the cell configuration (shown in the previous figure), there are three areas.

**Upper area** the indication when this rule is selected. The rule is defined with the help of a comparison function.

The "default" rule is not configured because this rule is always present. This rule always applies when none of the other rules apply.

In the **middle** and **lower area**, the configuration is placed, which defines what happens "When pressed" and "When released".

In order to determine the telegram value to be sent "When pressing", the button "Configure rule" opens a dialogue for the configuration.

A telegram value "On release" is not necessary in this example.

After configuring the telegram value (in the middle column), the representation is selected in the right column.

In this example, the background under the "Standard" tab is set to red. The background for the states "mouse over" and "mouse pressed" is set to yellow and green.

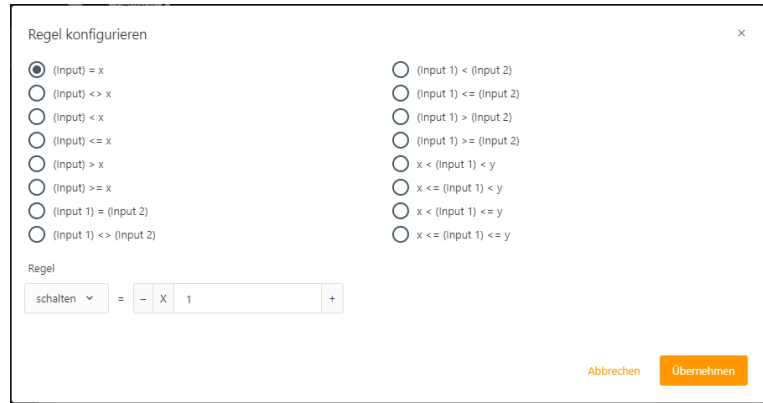
Parallel to the background colour, a text can also be selected. Under the drop-down list "Text to be displayed" all created strings are listed under the data field of the same name.



The second rule is created with the plus symbol (in the first column of the cell configuration).

In the new rule, first the condition (comparison operation), as well as the address (in this example "switch") are defined.

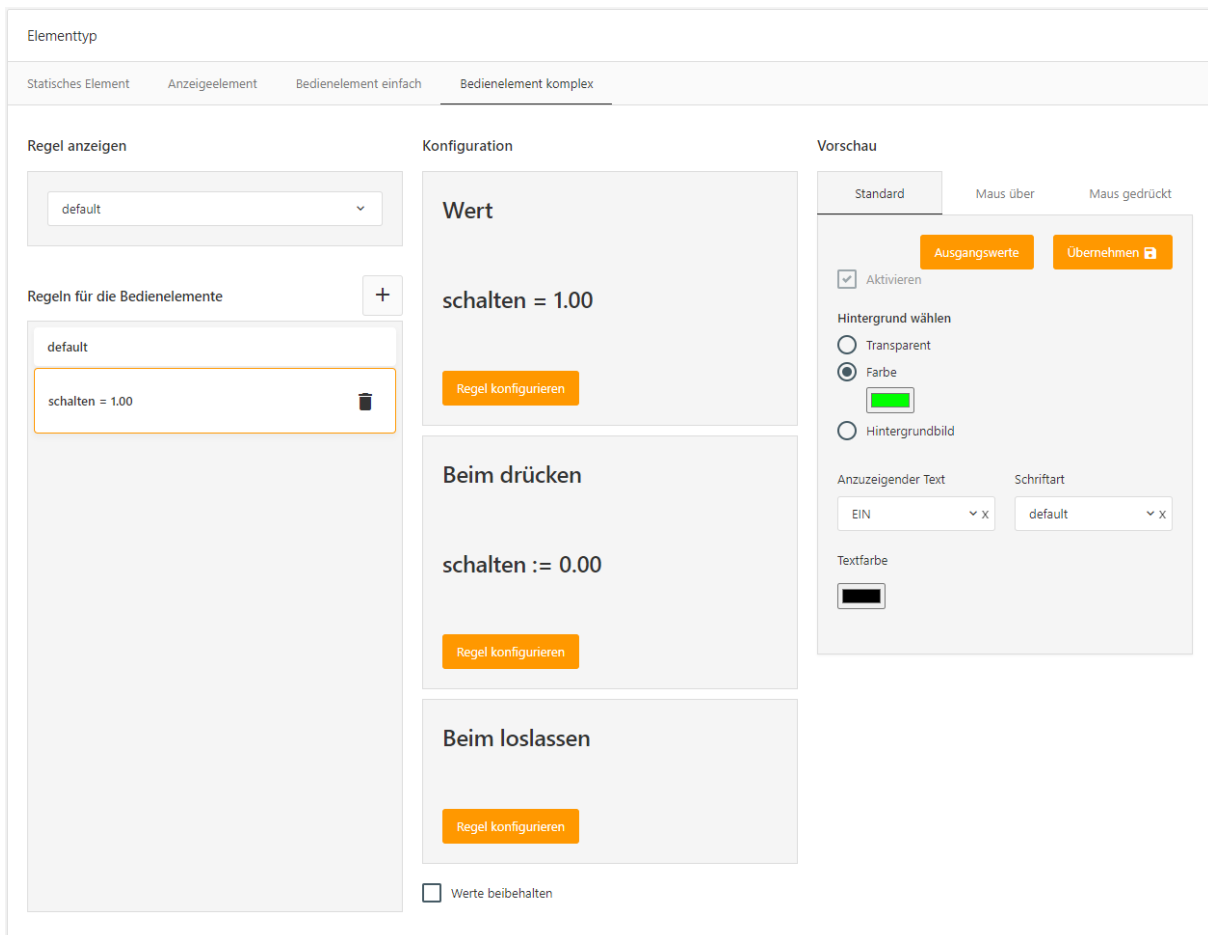
Since the "default" rule is already intended for the OFF state, this rule compares to the ON state.



The configuration for the background is then set. The default configuration that applies to this rule is for the address "switch" with the value ON. Therefore, the colour in this state is green.

Parallel to the "default" rule for "mouse over" also yellow and for "mouse pressed" in this rule red (since "When pressed" the telegram value OFF is sent).

Here, too, the corresponding strings for the three states are assigned.



**Tip:** It is possible to extend this example with further rules. With this possibility, functions can be realised that were previously only possible together with jobs or logic groups. One example is to increase or decrease the fan speed with a mouse click.