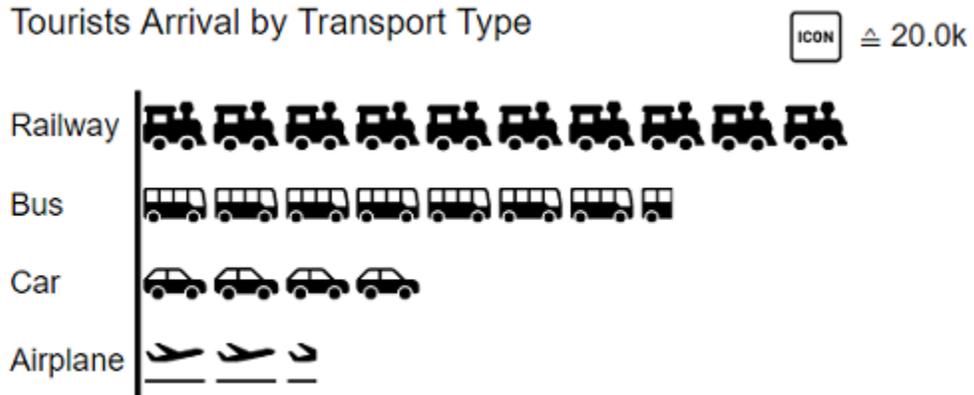


User Manual for the graphomate pictograms for Power BI



Version 2021.4 – as of December 2021

<https://www.graphomate.com>

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Introduction

Pictograms can be used to present "complex" facts quickly and understandably. Our pictograms therefore enrich your diagrams and dashboards with additional semantic elements. In the case of product groups, for example, the viewer can immediately recognize which products are involved. The quantification of important key figures in the form of pictograms also facilitates the comparison between different product groups.

Germany
Top 5 cities
registration of passenger cars and electric cars
2020



When dealing with pictograms, it's very likely to get to know the concept of Isotype. Otto Neurath and his team investigated in Austria from the 1920s onwards how they could make social and economic facts accessible to the working population with simple pictograms, often accompanied by a lower level of education.

The so-called isotype developed from the *Wiener Methode der Bildstatistik*. This acronym is composed of **I**nternational **S**ystem of **T**ypographic **P**icture **E**ducation. This was the first time that facts were conveyed in a more comprehensible, neutral and uniform way. The system includes a defined set of pictograms as well as a grammar. It determines the way the pictograms are combined.

In the following we describe the properties of the graphomate pictograms and the possibility to configure them in our user interface. This user interface is almost identical in all BI front ends - Power BI, Tableau, SAP Analytics Cloud and Lumira Designer. Formatting settings of graphomate pictograms can be stored on the graphomate server and used in other environments.

Installation

General notes on the use of graphomate extensions in Power BI

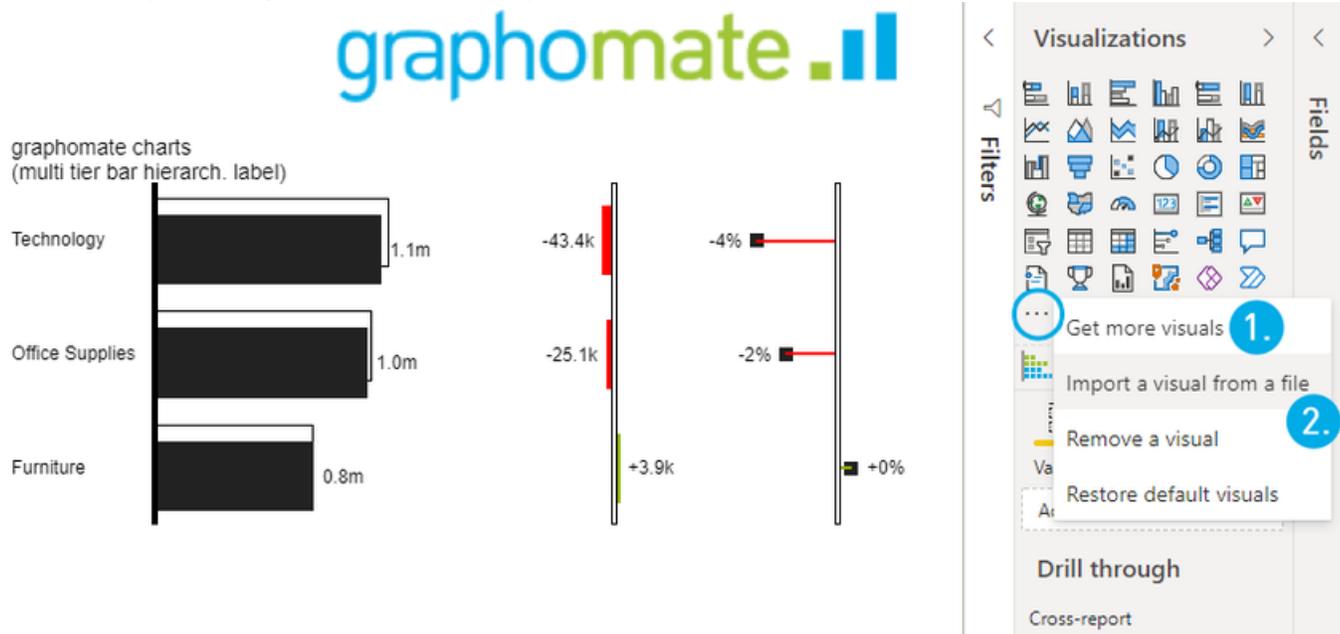
- The Power BI Report Server supports the use of graphomate extensions from version January 2020.
- The graphomate visuals must be imported for each new report if it's not provided as an organizational visual.

Organizational visuals

- Organizational visuals in Power BI. [Link](#) (Docu Power BI)
- Manage Power BI visuals admin settings. [Link](#) (Docu Power BI)
- The following article explains the handling and share options of visuals in the Power BI environment. [Link](#)

Insert a graphomate visual to a report

You have 3 ways to use graphomate visuals in your reports.



Option 1 - Installation from the AppSource

- In the visualization pane, please click on the three dots to open the dialog.
- Choose the option *Get more visuals*.
- You will be redirected to the AppSource and can filter for 'graphomate' via the search mask and add the visuals to your report with one click

Option 2 - Installation using a file

- In the visualization pane, please click on the three dots to open the dialog.
- Choose the option *Import a visual from a file*.
- In the next dialog you can select and install a locally stored version of the graphomate visual.

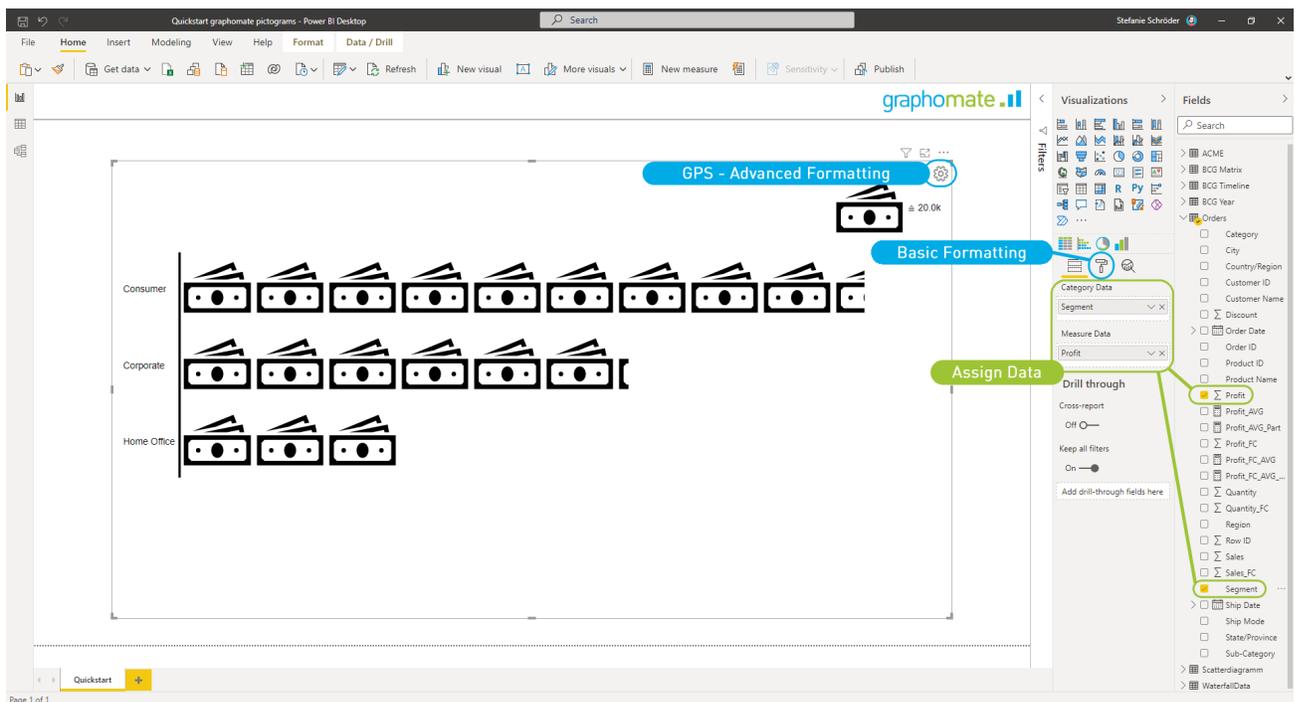
Option 3 - Deploy as organization visual

For the distribution of graphomate visuals as organizational visuals please follow the documentation of Power BI:

- General information about Organizational visuals in Power BI. [Link](#) (Docu Power BI)
- Manage Power BI visuals admin settings. [Link](#) (Docu Power BI)
- The following article explains the handling and share options of visuals in the Power BI environment. [Link](#)

Quick Start

1. If the graphomate visual is not included in your report as an organizational visual, install the visual by yourself. (See Installation)
2. The icon of the graphomate visual is displayed in the visualization pane. Clicking on the icon creates the graphomate visual on the drawing canvas of the report.
3. Link the data to the visual via the fields pane. Either activate the data by activating the dimensions or measures or assign the data to the respective data fields via drag'n'drop. (*Assign Data*)
4. Settings for the graphomate visual can be made in the visualization pane (Basic Formatting), but we recommend the configuration via the graphomate property sheet (GPS) (*Advanced Formatting*). Click on the gear wheel to open the GPS.

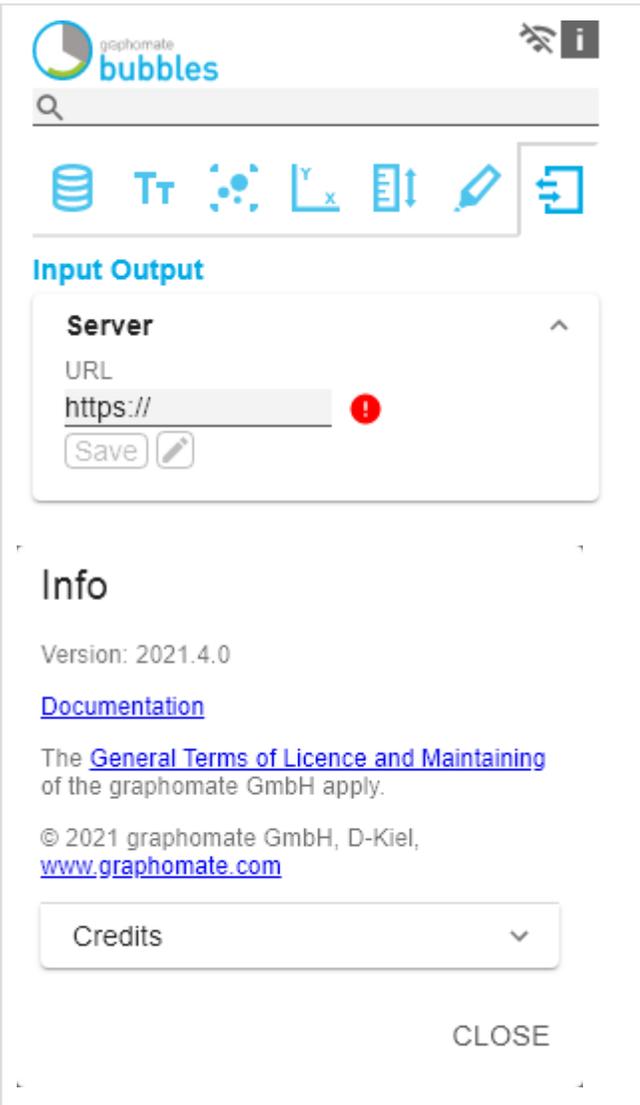
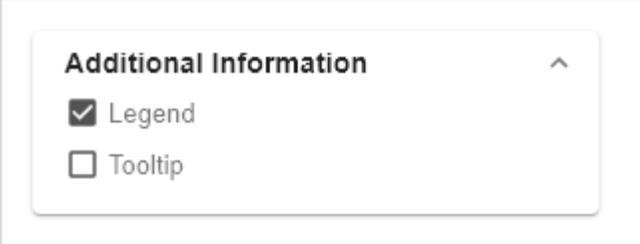


graphomate property sheet (GPS)

- [Start Tab](#)
- [Labels Tab](#)
- [Axes Tab](#)
- [Input Output Tab](#)

i We recommend configuring the graphomate visual using the graphomate property sheet. **Not** all settings for the graphomate visual are listed in the Power BI standard formatting pane.

The following usage structure can be found in all graphomate extensions with the graphomate property sheet (GPS):

<p>Search field</p> <p>Use the search field to quickly find a setting (example "Title") and change it.</p> <p>Connection to the graphomate server</p> <p> active connection to graphomate server</p> <p> no active connection to the graphomate server</p> <p>Info Tab</p> <p>In the header of the GPS there is an info symbol (). Click on the  icon to open a tab with relevant information:</p> <ul style="list-style-type: none"> • the version number of the installed extension (important information for the support) • link to the graphomate Support Desk • to the general terms and conditions • to the graphomate website and • a list of the software libraries used (Credits) 	 <p>The screenshot shows the 'graphomate bubbles' property sheet. At the top, there is a search bar and a toolbar with icons for database, text, chart, axes, labels, and input/output. The 'Input Output' section is expanded, showing a 'Server' configuration with a URL field containing 'https://', a 'Save' button, and a red error icon. Below this is an 'Info' section displaying the version '2021.4.0', a link to 'Documentation', and the 'General Terms of Licence and Maintaining' of the graphomate GmbH apply. It also shows copyright information for 2021 graphomate GmbH, D-Kiel, and the website 'www.graphomate.com'. A 'Credits' dropdown menu is visible at the bottom of the info section, and a 'CLOSE' button is at the very bottom.</p>
<p>Checkboxes</p> <p>An active property is indicated by a white check mark in the checkbox. To deactivate it, click on the checkbox again.</p>	 <p>This screenshot shows the 'Additional Information' section of the property sheet. It contains two checkboxes: 'Legend' which is checked, and 'Tooltip' which is unchecked.</p>

Color Picker

You can enter the color value as HEX code or click on the colored circle.

Use the Color Picker or enter color values as HEX, RGB, or HSL code. You switch between these color models using the small arrows on the right side of the color picker.

Deviations ^

Good Color
● #8CB400

Bad Color
● #FF0000

Invert

Good Color

#8CB400

HEX

OK

Adding new elements to lists

Click on the + icon to create new elements in a list.

Actions with elements of a list

When hovering over an entry, different icons may appear and cause the following action:

↓ ↑ Moves the entry up or down in the list

📄 Creates a copy of the entry

🗑️ . Click on the icon to delete the selected entry.

Scenario Definition ^

+

- ✎ ■ AC
- ✎ ■ PP
- ✎ □ BU

Import / Export
W3sic2hvcnQiOiJBQyIsIr

Filter Option

In some cases, it is necessary that several settings are only applied to certain key figures, dimensions or dimensional characteristics. You can use the filter option to define the combination to which the setting is to be applied.

In the example on the left, the desired setting is only applied to the key figure "budget". This can be, for example, a certain number formatting, a scenario or a certain icon for displaying the key figure.

Filter states can be defined in the following settings of graphomate extensions:

- graphomate matrix
 - Value Format
 - Calculations/Deviations
 - Scenario Assignment
 - Bar Chart Assignment
 - Pin Chart Assignment
 - Background Bar Assignment
- graphomate bubbles
 - Value Format
- graphomate pictograms
 - Pictograms/Icon Assignment

Measures

Dimension

Measures

Members

budget x

OK

Copy Filter

Filter settings on dimensions can be saved to the clipboard and reused in other graphomate extensions settings. Use the   symbols for this purpose.

aggregation

Enable

New Member Key

Overall

New Member Name

Overall

Target Dimension

Aggregation Type

Sum

Filter



no items

Description (optional)

OK

Input mode: Field / comma separated list (csv)

Properties with the  symbol allow the definition of settings on the graphomate property sheet in two

variants. The mode can be changed by clicking on the  symbol. The following modes are available:

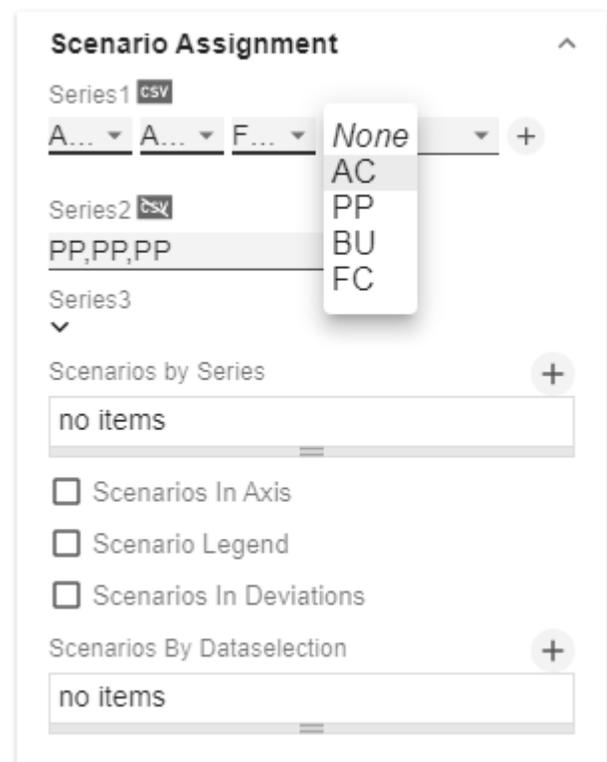
1. per field: The value is entered per field. After one field has been filled, another field is created automatically. For the Scenario Assignment (see picture) a list with all configured scenarios appears. By clicking on the scenario, the property for the element of the series is applied.
2. As a list: The entry is made as a comma-separated list.

Example: Application of the scenarios to elements of a series (see picture)

The first series contains two actual values (AC) and a forecast value (FC). The second series contains only values from the previous period (PP). You can enter the assignment of the scenarios as follows:

Variant per field for series 1: AC (field 1), AC (field 2), FC (field 3), AC (field 4, highlighted in the list)

Variant as list for series 2: PP,PP,PP,PP,



Start Tab

Diagram*Orientation*

You can use the pictograms horizontally and vertically aligned:

- horizontally for developments over time (*Time*),
- vertical for structural comparisons (*Structure*).

Dual Mode

When Dual Mode is activated, the first two measures are displayed on the opposite axis.

- i** For short loading time of pictograms the number of category elements is limited to 100 and in *Dual Mode* to 50 elements.

Legend Position

Specify the position of the legend that represents the value per icon. Possible settings are Header (top right), Footer (bottom right) and None (no legend).

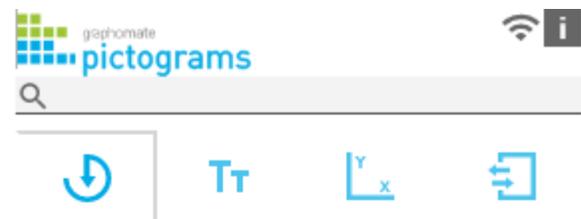
Padding

Sets a border around the pictogram. Select a CSS unit from the list (such as *10px*, *10em*).

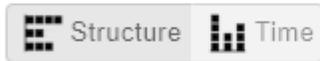
Pictogram*Icon Definitions*

Each entry represents an icon definition. This consists of the attributes *Source* and *Filter* as well as *Description*. Under *Source* you can select the source for an icon. In addition to preselected icons¹⁾, you can provide your own icon under the *Custom* entry. This can be a valid URL or data URL. The most common image formats (.svg, .png, .jpeg and .gif) are supported. For performance reasons, the selected image files should not be too large (ideally only a few kilobytes), since they must either be loaded via external requests or, in the case of a data URL, included in the source code.

Under *Filter*, select the dimension and the associated members for which the icon is to be drawn. If you do not set a filter, the icon is applied to all data points, since there is no restriction. If there is an overlap between icon definitions regarding dimensions and members, the last created icon definition has priority.

**Start****Diagram**

Orientation


 Dual Mode

Legend Position

Padding

Pictogram

Icon Assignment

Scale Mode

Max Icon Number

Icon Spacing

The *Description* option allows you to define your own description for the icon definition, which then appears together with the selected icon in the list of created icon definitions. If no *Description* is set, the selected dimension members are displayed next to the icon (if there is no restriction, All is displayed).

1) It is recommended to use the structural mode for the pre-selected icons.

Icon Definition Custom Icon URL

If the option 'Custom' is set in the Icon Definition under Source, an additional text field appears with the title Custom Icon Url. There are two ways to provide your own icon:

1) **Img-URI:** Geben Sie eine externe URL an, unter der das Icon gespeichert ist.

i External Image-URL
 Example: img url (svg bild by wikipedia commons)
<https://upload.wikimedia.org/wikipedia/commons/8/89/Dog.svg>

2) **Data URL:** With the help of a Data URL external sources can be directly integrated into html. In order for the image to be used in the pictograms, the data-url must be specified in the following format: data:[<MIME-Type>;base64,<Data>

i Representation of a red dot:

```
"data:image/png;base64,
iVBORw0KGgoAAAANSUUhEUgAAAAoAAAAKCAAAAAC
NMs+9AAAABGdBTUEAALGP
C
/xhBQAAAAlwSF1zAAALEwAACxMBAJqcGAAAAAd0
SU1FB9YGARc5KB0XV+IA
AAAddeVYdENvbW11bnQAQ3JlYXRlZCB3aXRoIFR
oZSBHSU1Q72Q1bgAAAF1J
REFUGNO9zL0Ng1AAxPEfdLTs4BZM4DIO4C7OwQg
2JoQ9LE1exdlYvBBz7jq
ch9
//q1uH4TLzw4d6+ErXMMcXuHWxId3KOEtnnXXV6
MJpcq2MLaI97CER3N0
vr4MkhoXe0rZigAAAABJRU5ErkJggg=="
```

 All

Source
 Car

Filter ↶ ↷ +

no items

Description (optional)

OK

 Action movies

Source
 Custom

Custom Icon URL
<https://upload.wikimedia.org/wikipedia/commons/8/89/Dog.svg>

Filter ↶ ↷ +

genre

Description (optional)
 Action movies

OK

genre

Dimension
 genre

Members
 Action x

OK

The expression `data:` indicates that the URL is a data URL. The MIME type (in the example: `image/png`) defines the type of content ;`base64` specifies the encoding of the data. After a `,` (comma) follows the actual image as base-64 encoded string. Under the Google search 'data-url generator' you can find various online services that encode image files as base64 encoded strings and then provide them as data URLs.

i Tip: Microsoft 365 contains an extensive collection of categorized pictograms that can be saved locally as vector graphics (svg).

Scale Mode

Determines the scaling mode for the pictograms.

Fix Icon Number(Default): Space is reserved for `n` (given by the Property *Max Icon Number*) icons, regardless of whether `n` icons are actually needed to display the maximum value. This scaling mode is recommended if the values can change dynamically over several orders of magnitude (e.g. during filtering), since the size of the icons does not change.

Full Width: The space reserved for the icons depends on the number of icons needed to display the maximum value. The required number is always less than or equal to the value from the property *Max Icon Number*. This mode is more suitable for static representations and uses the full width for the representation of the icons.

Note: The size of the **square** icons is exclusively based on the given width in both the temporal and structural representation of the pictograms.

Max Icon Number

Determine the maximum number of icons per data point. This affects the value that the icon represents. The system tries to find a value for each icon that makes the most sense so that the actual maximum number of icons is less than or equal to the number you specify.

Icon Spacing

Defines the distance between two icons (within a data point). Select a CSS unit from the list (such as `px,em`).

Tooltips

If this check mark is ticked, tooltips will be displayed on the pictograms at runtime, providing detailed information for the corresponding element.

Tooltips

Enable

<p>Selection</p> <p><i>Fade Out Opacity</i></p> <p>This value determines to what extent pictograms that are not highlighted should be hidden. The value starts at 0.0 (completely hidden) and ranges up to 1.0 (completely visible).</p>	<div data-bbox="878 247 1474 426"><p>Selection ^</p><p>Fade Out Opacity</p><p>0,2</p></div>
<p>License</p> <p><i>License Key</i></p> <p>Enter the license key here.</p>	<div data-bbox="878 520 1422 684"><p>License ^</p><p>License Key</p></div>

Labels Tab

Value Labels

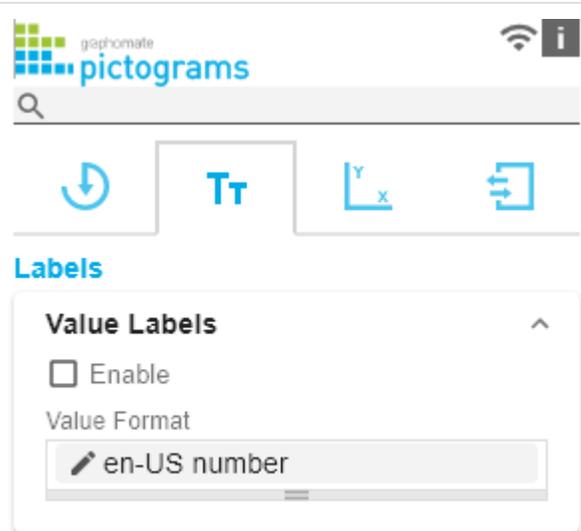
Here you can select whether you want value labels displayed.

Value Format

With the Value Format you define the way the values are displayed in the diagram area. You access the configuration by clicking on the element in the list.

Value Format Pop-Up

Define the number format using the following options:



- **Locale:** Defines abbreviations, decimal and thousand separators for the respective language. You can choose between *en*, *de*, *fr* and *auto*.
- **Format Type:** Defines the type of number output. You can choose between *number* (decimal number), *percent* (percentage), *ordinal* (ordinal number) and *Time* (time unit).
- **Abbreviations:** Defines the type of abbreviations for all numbers to be formatted. You can choose between *mean* (abbreviation of the mean value), *min* (abbreviation of the minimum value), *max* (abbreviation of the maximum value), *auto* (best-suited abbreviation for the respective number), *trillion* (trillion abbreviation), *billion* (billion abbreviation), *million*, *thousand* and *none* (no abbreviation at all).
- **Negative Sign:** Defines how negative numbers are displayed. You can choose between *minus*, *parenthesis*, and *none* (no sign).
- **Prefix:** The input value is placed before the number.
- **Suffix:** The input value is placed after the number.
- **Thousands Separator:** Replaces the thousand separator set by the selected *locale*.
- **Decimal Separator:** Replaces the decimal separator set by the selected *locale*.
- **Total Digits:** Defines how many digits the number may consist of. *Total Digits* is prioritized over *Decimal Digits*.
- **Decimal Digits:** Defines how many decimal places of the formatted number are displayed.
- **Scaling Factor:** The value of each data point is multiplied by the entered number to scale values.
- **Zero Format:** When the checkbox is activated, any data value equal to 0 (the number zero) is replaced by the entered value.
- **Null Format:** Any data value that equals *NULL* (no value) is replaced by the entered value.
- **Error Format:** If a data value is undefined or the result of an arithmetic error such as dividing by 0 (zero), the data value is replaced by the entered value.
- **Rounding Method:** Defines the rounding method. You can choose between *half up* (23.5 24, -23.5 -23), *commercial* (23.5 24, -23.5 -24) and *trim* (23.5 23, -23.5 23).
- **Explicit Positive Sign:** Defines whether a positive number should always be preceded by a + (plus sign).
- **Time Units:** If *Time* has been specified for the format type, the time units can be set here. The default setting interprets data values as seconds and displays them as hours and minutes with decimal places in the format *h:mm.m*
- **Description:** Defines a description for the set configuration.

Time Unit Pop Up

en-US number

Locale
en-US

Format Type
Number

Abbreviations
auto

Thousand Separator

Decimal Separator

Total Digits (approx.)

Decimal Digits
1

Scaling Factor
1

Prefix

Suffix

Zero Format

Null Format

Infinity Format
∞

Rounding Method
commercial

Negative Sign
minus

Explicit Positive Sign

Description (optional)

OK

For the Format Type *Time*, a system of units can be configured with the help of the Time Units Property, which in the default setting consists of hours and minutes. Each number formatted in this way is then splitted in its values for each unit. The order of the unit list defines their relationship from the largest unit (top) to the smallest unit (bottom). Each unit contains the following options:

- *Modulus*: defines the arithmetic relationship between the units. In terms of modular arithmetic, the number reflects how many entities of the next smaller unit fit into an entity of the current unit. If the current unit is the smallest of the unit system, the modulus establishes the reference to the raw value to be formatted. Thus, in the case of a unit system of hours and minutes with raw values that are given in minutes, the hours unit carries the modulus 60 and the minutes unit carries the modulus 1.
- *Prefix*: Defines the local prefix with which the value of this unit should begin. It can be used as a separator to values of larger units.
- *Suffix*: Defines the local suffix that should follow the value of this unit. For example, it can contain a unit abbreviation or be used as a separator to values of smaller units.
- *Omit If Zero*: Sets whether values of this unit should be omitted if they equal 0.
- *Leading Zeros*: Sets whether values of this unit should be displayed with one or more leading zeros (depending on the reference to the next larger unit).
- *Description*: Sets a description for the unit to make it easier to recognize in the list.

hours

Modulus
60

Prefix

Suffix

Omit if Zero

Leading Zeros

Description
hours

OK

Font

Size

Specify the font size here. Select a CSS unit from the list (such as *px*, *em*).

Family

Define the global font. You can choose between *Arial*, *Tahoma*, *Lucida Console*, *Verdana* and *Calibri* or type in the name of a font which is installed on your system.

Color

Specify the font color here.

Font

Size
12 px

Family
Arial

Color
● #000000

<p>Title</p> <p>If the <i>Enable</i> checkbox is activated, the title is displayed.</p> <p><i>Title Text</i></p> <p>Enter a <i>Title</i> for the pictograms here. Multiline texts will be rendered accordingly, i.e. the line break will be applied. The following HTML tags can be used for formatting: 'b', 'i', 'p', 'span', 'div', 'br', 'h1', 'h2', 'h3', 'h4', 'h5', 'h6', 'hr', 'ol', 'ul', 'li' and 'blockquote'.</p> <p>For the following result ACME Ltd. P&L by <i>Segment</i> 2021</p> <p>this input is necessary: ACME Ltd. P&L by <i>Segment</i> 2021</p> <p><i>Font Size</i></p> <p>Specify the font size here. Select a CSS unit from the list (such as <i>px</i>, <i>em</i>).</p> <p><i>Spacing</i></p> <p>Defines the distance of the header area to the pictogram. Select a CSS unit from the list (such as <i>px</i>, <i>em</i>).</p>	<div data-bbox="894 247 1466 695"> <p>Title ^</p> <p><input type="checkbox"/> Enable</p> <p>Title Text</p> <p>Font Size</p> <p>14 px</p> <p>Spacing</p> <p>10 px</p> </div>
<p>Category Labels</p> <p><i>Suppress Repeating Category Labels</i></p> <p>Controls whether repetitive category labels should be hidden or displayed.</p> <p><i>Members in Categories</i></p> <p>Specify whether the names of the members should be displayed in the category labels.</p> <p><i>Measures in Categories</i></p> <p>Specify whether the member name of the measure/value dimension should be displayed.</p> <p><i>Hierarchical Category Spacing</i></p> <p>Determines the distance between the hierarchical display of category labels. Select a CSS unit from the list (such as <i>px</i>, <i>em</i>).</p>	<div data-bbox="894 1220 1466 1545"> <p>Category Labels ^</p> <p><input type="checkbox"/> Suppress Repeating Category Labels</p> <p><input checked="" type="checkbox"/> Members in Categories</p> <p><input type="checkbox"/> Measures in Categories</p> <p>Hierarchical Category Spacing</p> <p>5 px</p> </div>

Footer*Footer Text*

Here you can define a text that appears below the pictogram.

Font Size

Specify the font size here. Select a CSS unit from the list (such as *px*, *em*).

Spacing

Defines the distance between the footer area and the pictogram. Select a CSS unit from the list (such as *px*, *em*).

Footer ^ Enable

Footer Text

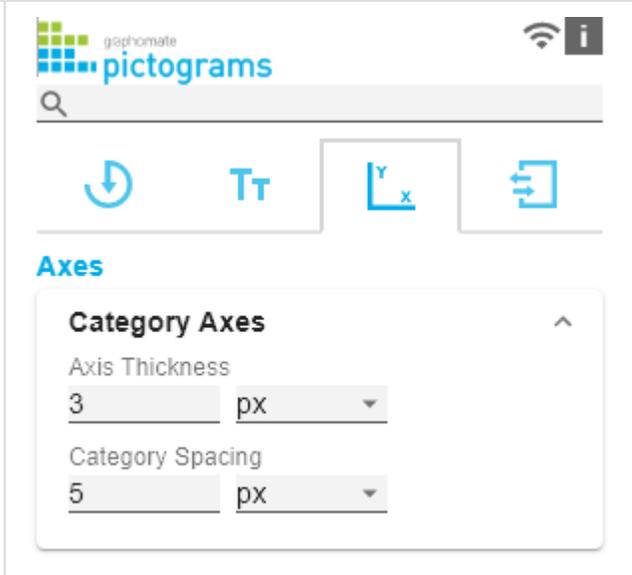
Font Size

14 px ▾

Spacing

10 px ▾

Axes Tab

<p>Category Axes</p> <p><i>Axis Thickness</i></p> <p>Specify the width of the category axis here. Select a CSS unit from the list (such as <i>px</i>, <i>em</i>).</p> <p>A specification of <i>0px</i> deactivates the category axis.</p> <p><i>Category Spacing</i></p> <p>Specifies the distance between two categories. Select a CSS unit from the list (such as <i>px</i>, <i>em</i>).</p>	 <p>The screenshot shows the 'graphomate pictograms' application interface. At the top, there is a search bar and navigation icons. Below the search bar, there are four icons: a circular arrow, 'Tt', a coordinate system with 'y' and 'x' axes, and a square with arrows. The 'Axes' section is expanded, showing a 'Category Axes' panel with two settings: 'Axis Thickness' set to '3 px' and 'Category Spacing' set to '5 px'.</p>
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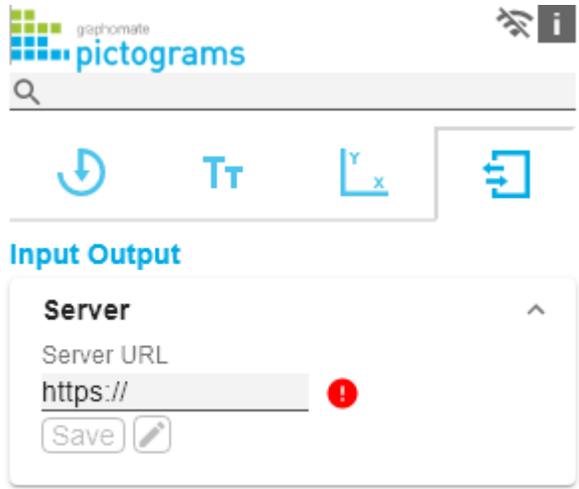
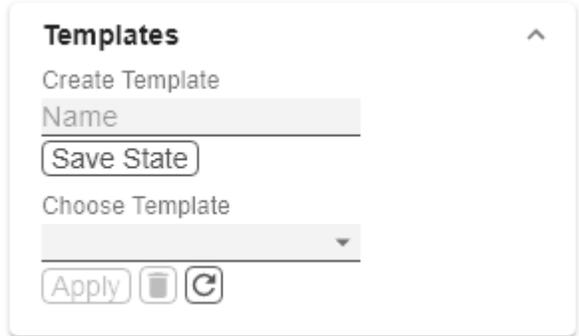
Input Output Tab

The functions of this tab are used to exchange templates for the graphomate pictograms.

Connect to the graphomate server - a free component of graphomate GmbH - to store or load a graphomate pictograms template.

In this way you can exchange preconfigured graphomate pictograms designs between BI front ends that support the graphomate server.

Currently these are: Power BI, Tableau and SAP Analytics Cloud.

<p>Server</p> <p>Here you enter the URL of the graphomate server to which the component should connect and from which you want to save or retrieve templates.</p> <p>If you have entered the URL to the server, a green check mark indicates that a connection could be established.</p> <p>If another server is used later, the button next to the save button can be pressed and the server URL can be edited.</p> <p>The hyperlink "<i>Admin</i>" allows you to jump to the admin area of the graphomate server.</p>	
<p>Templates</p> <p>If the current settings are to be saved as a template, a new template name can be entered in the input field labeled <i>Create Template</i> and confirmed by clicking the <i>Save State</i> button. If the entered name complies with the naming convention, the template is saved on the server and a toast with the corresponding message is displayed in the lower part of the graphomate property sheet. However, if the entered name does not meet the expected naming conventions, an error message with the permitted characters is displayed accordingly.</p> <p>With <i>Choose Template</i> templates stored on the server can be retrieved and applied. To do this, the desired template must be selected and the <i>Apply</i> button must be pressed. If you want to delete a template, you have to select the template in the list and press the <i>Delete (garbage bin)</i> button. If changes have been made to the templates on the server side, you have to click the <i>Refresh</i> button. Changes should then be visible.</p>	

Known Issues (pictograms)

There are currently no known known issues.

Known Issues (Power BI)

- Not supported
 - PDF Exports
 - own CSS classes
 - global scenarios, must be created for each graphomate visual (alternatively retrieve the definition via the graphomate server)
 - scripting
- In order to copy a graphomate visual, it's necessary to select the border or the title of the visual.