

Widget details and specifics

DCC, Data Collection Cloud

v. 5.3

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Revision History

Revision	Date	Author(s)	Description
1.0	22.01.04	MWB	Document created
1.1	06.08.19	MWB	Initial version, layout etc.
2.0	06.08.19	MWB	Added Icons, pdf export fixed, changed example from thermometer to graph for added context
2.1	06.08.19	MWB	Changed icons to correct ones with a higher resolution, finished graph explanation and added all illustrations
2.2	07.08.19	MWB	Wrote last overview text chunks, added images and examples
2.3	08.08.19	MWB	Updated text to reflect newest version
3.0	09.08.19	MWB	Completely finished and up to date as of this version, pdf compatibility and export, needs review
3.1	12.08.19	MWB	Fixed .docx word compatibility and formal spelling
4.0	12.08.19	MWB	Through read through, fixed some spelling and incorrectly placed pictures
4.1	19.12.19	MWB+AB	Proofread, fixed spelling and consistency
4.3	11.03.20	AB	Added OEE descriptions
5.0	03.04.20	MWB	Added new widgets and updated map, minor fixes to layout
5.1	23.04.20	AB	Added, updated and rearranged several widgets
5.2	23.07.20	AB	Converted documentation report to latex
5.3	09.10.20	AB	Added new widgets (Symbol and Text Formatter)
5.4	11.02.21	MM	Converted to .docx word document, edited text, updated photos, added Bar Chart and Logistics Info
5.5	21.5.21	MM	Added Fleet Management to menu. Added Fleet Table widget, and Fleet Map widget.

Further notes not added to document history: -Document should be kept updated to reflect the most up to date version of the DCC widget functions as it is due to change with time - This document has been linked from origin document, 'Using the Dashboard Function'. -The index hereunder is set up for easy addition of widgets, it may currently be a bit clunky but helps with keeping everything easy and simple long term.

Chapter 1

Introduction

This document serves to explain and go in depth with each widget's operation, configuration and application; Including how to use the widget configurator and how it may change depending on which widget is being edited.

The document is set up in sections, the first of which is the introduction, where this text is currently located, the second section will go over how to access and configure widgets, it will detail how to use the configurator and sidebar, if further information on widget usage is needed or how the widget configurator works for an exact widget please consult section 3, in which there are detailed accounts of all widgets currently available on the dashboard. To find a specific widget please consult the above index.

Chapter 2

How to access and configure widgets

This section will go through how to access and configure widgets, that includes the sidebar and widget configurator, this section does not contain specifics on widgets but rather generalizations to show the general operation of these functions, please go to section 3 for specific details on widgets.

2.1 Sidebar Access

The sidebar is the main toolbox for adding, saving and navigating the dashboard.

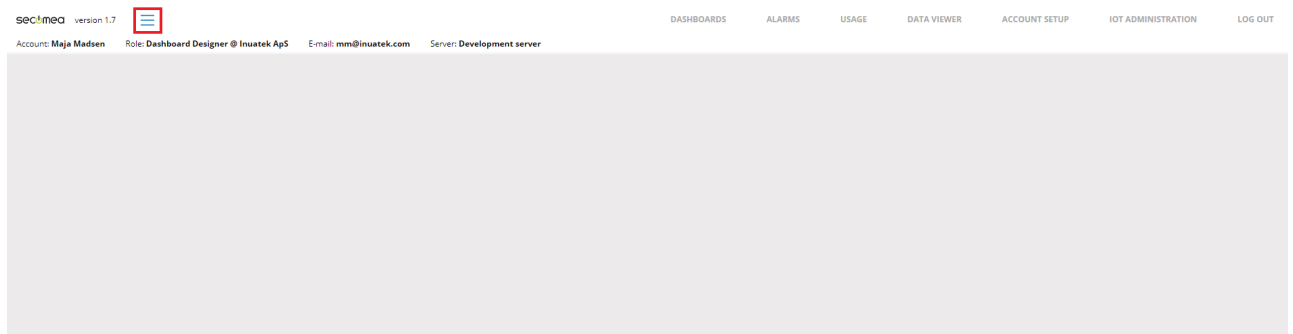


Figure 2.1: The sidebar is located in the top left corner of the browser window as seen above. To activate the sidebar, click the button that is to the right of the Secomea logo (marked with red above).

The sidebar will then open. It looks like this:

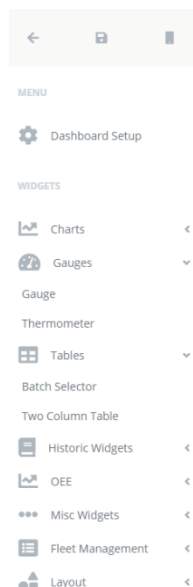


Figure 2.2: After the sidebar is opened it will present the function buttons and access to widgets.

2.1.1 Function buttons

The sidebar has its main function buttons located at the top of the sidebar.

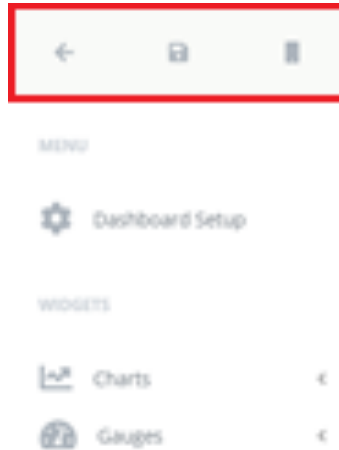


Figure 2.3: The Function buttons are as follows:

- Close sidebar (Left).
- Save the dashboard (Middle).
- Mobile view (Right).

2.1.2 Mobile view

While the other function buttons are quite self-explanatory, the mobile view is a bit more finicky at first glance, but make no mistake, it is a powerful tool that allows a desktop user to create a dashboard for a mobile device and see how it will look beforehand, simulating a phone screen.

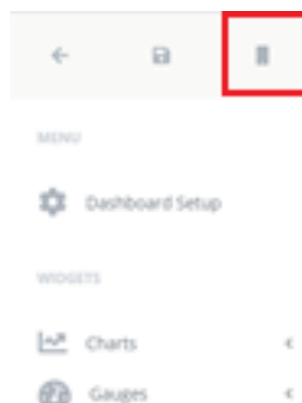


Figure 2.4: Mobile view button pictured to the right of the function buttons.

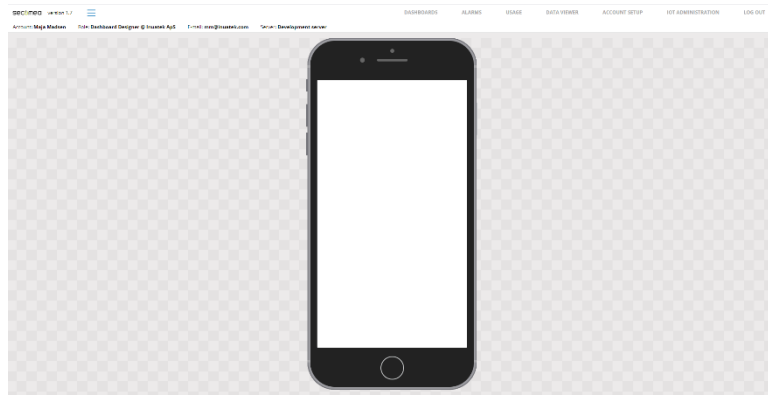


Figure 2.5: Enabling the mobile view turns the workspace into a phone model simulating the space and look of a mobile dashboard.

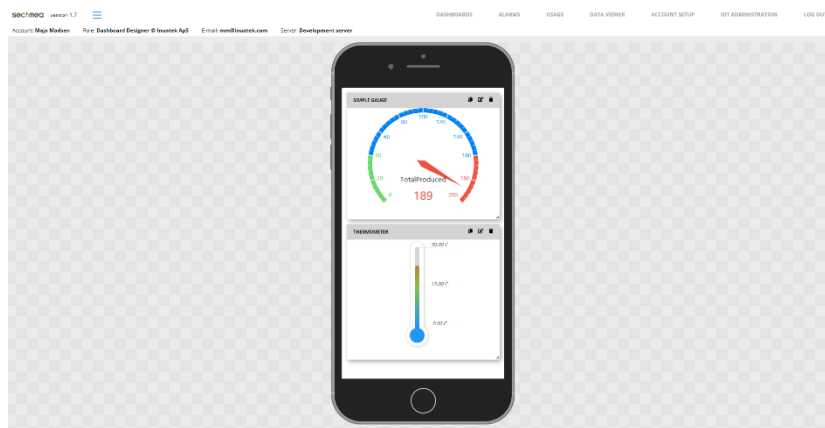


Figure 2.6: Here a dashboard can be designed with mobile usage in mind.

2.1.3 Dashboard Setup

The dashboard setup provides options for changing various settings regarding the dashboard.

The screenshot shows a configuration interface for a dashboard, divided into four main sections:

- Details:** Contains three text input fields: 'Title' (with the value 'Dashboard for documentation'), 'Description' (with the value 'Dashboard description'), and 'Parent Dashboard' (with a dropdown menu set to 'None').
- DCM Replacement Tool:** Contains two dropdown menus labeled 'From:' and 'To:', both currently showing 'Select...'. Below them is a 'Replace' button.
- Dashboard style:** Contains a 'Background image (JPG or PNG format, max 5 MB):' section with 'Import' and 'Clear' buttons. Below this is a 'Background Image Options:' dropdown menu set to 'Select...'. It also has two input fields for 'Static Width [px]' and 'Static Height [px]', both set to '0'. A 'Background color:' section features a color picker showing a light gray color. At the bottom, it has 'Mobile width [px]' (411) and 'Mobile height [px]' (790) input fields.
- Widget style:** Contains three checked checkboxes: 'Shadow', 'Header', and 'Frame'. Below these are 'Background color:' and 'Font color:' sections, each with a color picker. The 'Background color' picker shows white, and the 'Font color' picker shows black.

Figure 2.7: Change the title and description of the dashboard. Decide if the current dashboard should be placed under a Parent Dashboard.

If the dashboard has been duplicated from another dashboard, it is possible to change all sample points under "DCM Replacement Tool" if the new DCM has the same setup (Collector name and sample point) as the existing DCM.

It is possible to add a background image by clicking "import" and remove it again by clicking "Clear". The image settings can be altered by using the drop down menu underneath, or by writing a static width or height.

Pick a specific background color for the entire dashboard.

Create a standard for all the widgets added. This includes shadow, header and frame on the widgets as well as background and font color. Within font or background color the opacity can be changed as well.

2.1.4 Adding a widget

Adding a widget and choosing what data to visualize is simple. For this example a Basic Gauge will be created. First, open the sidebar like established previously.

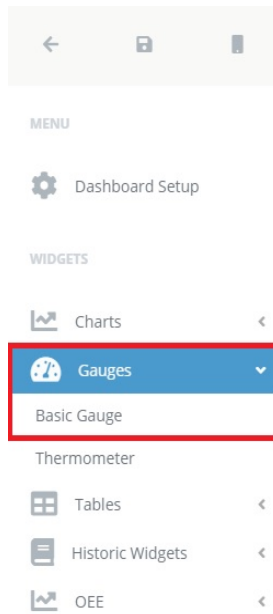


Figure 2.8: Second, click the drop down that is needed, a Basic Gauge falls under Gauges. Click this.

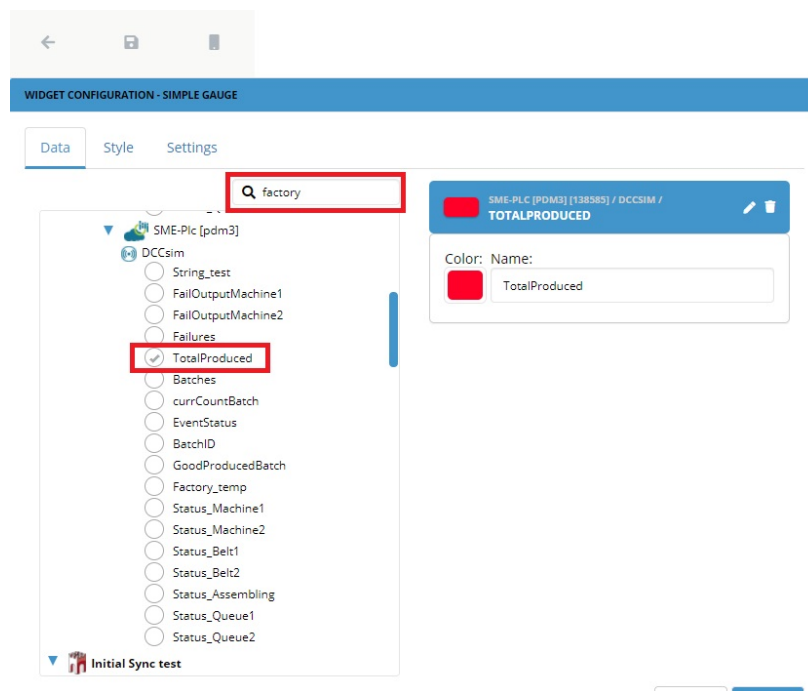


Figure 2.9: Once a widget has been added to the dashboard, the widget configurator will automatically open to the tab called “Data”. This tab looks the same for every widget. The widget configurator is the essential tool edit widgets.

From here a sample point is selected. The sample points has previously been set up by a user with an administrator role in the DCC. The sample point selected will provide the data that is visualized via the gauge.

A search bar is available at the top of the list of DCMs. From here a DCM or sample point can be searched.

For the sake of this demonstration “factory” has been searched and the sample point called “TotalProduced” is selected. The data name can be renamed by clicking the pen in the blue square.

2.2 Widget Configurator: Style

From the Style tab it is possible to change the style of an individual widget. This tab looks the same for every widget.

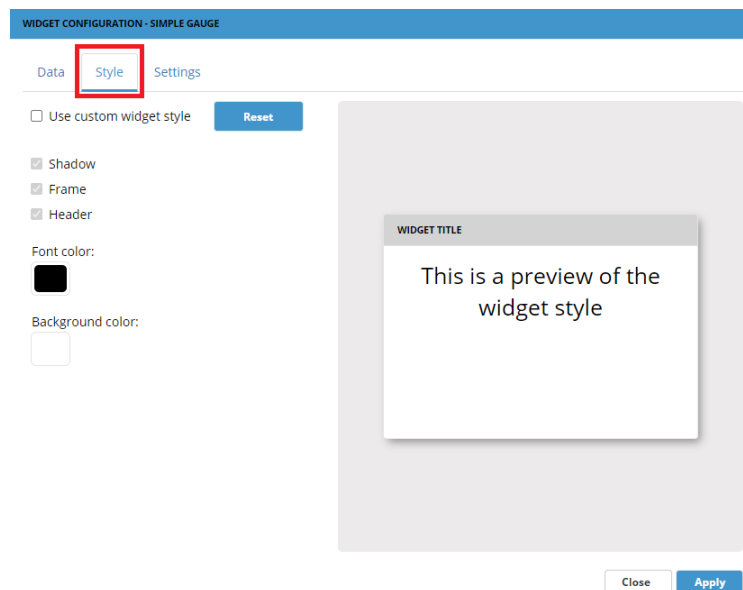


Figure 2.10: Use the standard widget style specified in the dashboard settings or change the style of the specific widget in question by checking off the box next to “Use custom widget style”. The standard style settings available includes shadow, frame, header and font and background color.

2.3 Widget Configurator: Settings

It is from the Settings tab that the configuration of the widget is done.

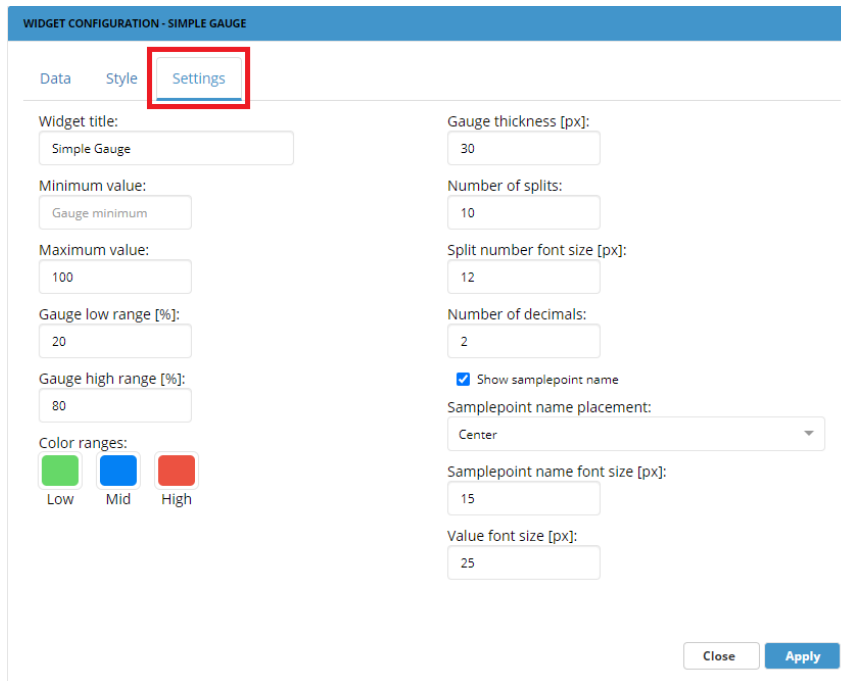


Figure 2.10: Widget Configurator for Basic Gauge standard settings are pictured above. See Chapter 3.4 on Gauges for further information on this.

It is important to note that the settings tab will look different based on what widget is being configured. Find information on the individual widgets in Chapter 3.



Figure 2.11: Lastly there is the function buttons of the widget configurator, “Close” to close the configurator and “Apply” to apply changes. Always remember to click “Apply” before closing to save the changes.

Chapter 3

Widgets

In this section a generalization of the widgets, a breakdown of the widget configurator and a more detailed breakdown of each widget and how to use them will be found.

3.1 Generalization

This section will be a generalization of widgets, how to read and interact with them. Further along Chapter 3 there will be a detailed description of each widget that goes a lot further in depth about how each widget operates and their example implementation.

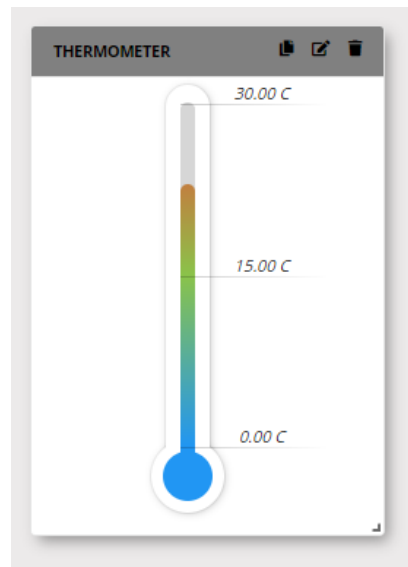


Figure 3.1: Widgets have a head and a body. In the header, the name of the widget and top-level function buttons, duplicate, edit and delete can be found (left, middle and right icon respectively). By clicking the edit button the widget configurator opens. It can also be opened by right-clicking the widget and choosing “Edit widget”.

The header is also draggable such that the widget can be moved around. The widget can also be moved by right-clicking the widget and keep holding “Move widget” while moving the widget to the desired position.

Underneath the header, the body is found. Here the graph, table, map etc. will be located.

In the bottom right corner there is a small icon, this icon can be dragged to make the widget larger or smaller depending on need.

This is a thermometer widget with shadow, header and frame. Just to demonstrate the many options of the design, the same widget could also look like the following figure:

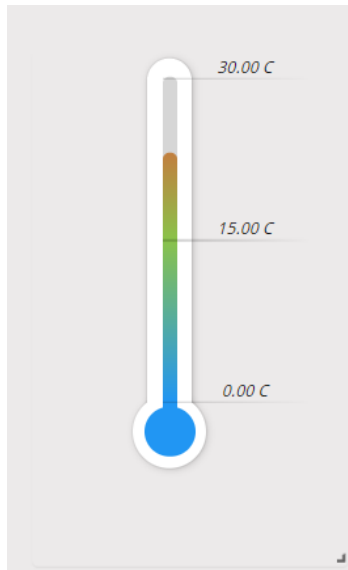


Figure 3.2: For this design the shadow has been removed as well as header and frame and the opacity has been changed for the background color to 0%. This is of course done in the widget configurator under the style tab (or the dashboard settings the look applies to all widgets).

3.2 Individual widgets

This section will go in depth with individual widgets and provide a detailed description of each widget that will aid in operation, configuration and application; This section includes how to use the widget configurator and how it may change depending on which widget is being edited.

This section is set up with widgets appearing as they do in the sidebar, including dropdown, such that in the future if an widget is added under one of these dropdowns it can easily be added into the document.

3.3 Charts

Clicking “Charts” on the sidebar will unfold “Line Chart” and “Bar Chart”.

Supported data types for Line Chart and Bar Chart:

- double
- bool
- float
- int16

- uint16
- int32
- uint32
- int64
- uint64
- byte
- sbyte

3.3.1 Line Chart

The Line Chart serves to visualize data over time.

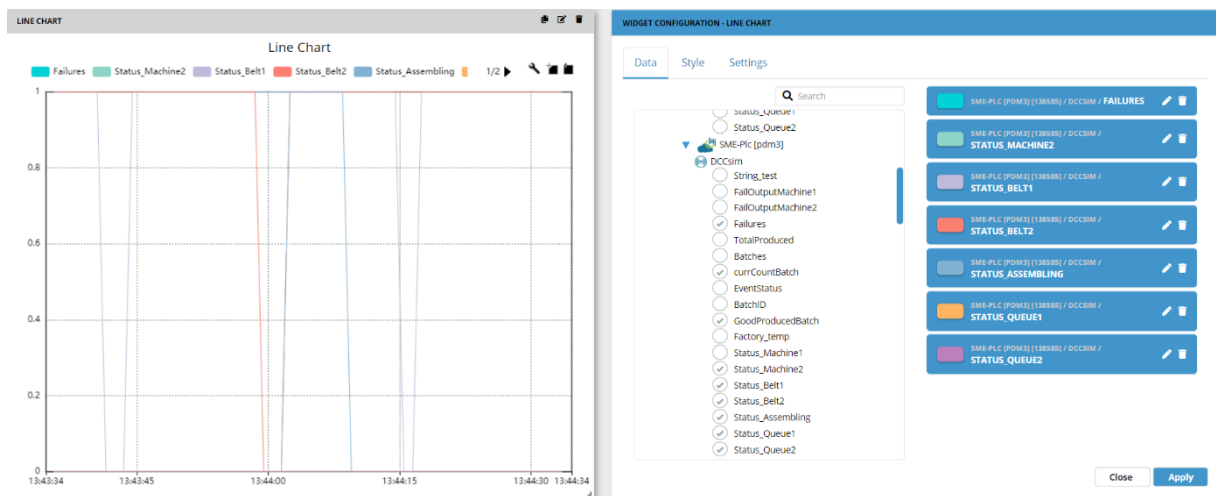


Figure 3.3: The Line Chart input is the most versatile of all the widgets currently available for use in the dashboard. The Line Chart is able to track multiple DCM sample inputs at once by color coding each line such that it grants easy overview. It is possible to select multiple sample points.

The “Settings” for Line Chart from the top:

WIDGET CONFIGURATION - LINE CHART

Data Style **Settings**

Widget title:

Title font size [px]:

Title behind chart

Legend placement:

Enable sampling ⓘ

Fixed margins to axis ⓘ

Y-Axis max:

Y-Axis min:

Set maximum expected sample period in seconds: ⓘ

Real-time Batch selection Time interval

The span of the chart in seconds:

Figure 3.4: 1st input is a title for the widget, this input is universal with all widgets. Next the Title font size can be changed as well as the placement of the legend. This can be placed at the top, bottom, right or left side. The title can also be placed behind the chart.

The “Enable sampling” setting presents data in clusters instead of individual data informations. This has no visual effect but is relevant in case of large amounts of data. Enabling this helps the web browser run smoothly and minimizes the CPU-usage on the device. It is recommend having this enabled unless there is a specific need not to. Therefore it is checked off as default.

WIDGET CONFIGURATION - LINE CHART

Data Style **Settings**

Widget title:

Title font size [px]:

Title behind chart

Legend placement:

Enable sampling ⓘ

Fixed margins to axis ⓘ

Left: [px] Right: [px]

Top: [px] Bottom: [px]

Y-Axis max:

Y-Axis min:

Set maximum expected sample period in seconds: ⓘ

Real-time Batch selection Time interval

The span of the chart in seconds:

Figure 3.5: The “Fixed margins to axis” feature makes it possible to align axis between multiple charts. Once this is checked off the ability to change the pixel value becomes available.

Next, set a maximum and minimum value to the Y-Axis in the chart. It is possible to set a negative number.

The next setting available visually discards missing data on the chart. For instance, if the machine is turned off during night time. Write the number of seconds where data is missing to let the system know when this feature should activate.

At the bottom of the Line Chart Settings page is the options to view the data in Real-time, via Batch selection or as a Time interval.

Real-time Batch selection Time interval

The span of the chart in seconds:

Figure 3.6: When selecting Real-time, the option to edit how long the span of the chart should be in seconds appears. This essentially edits the X-Axis.

Real-time Batch selection Time interval

Select batch selector widget:

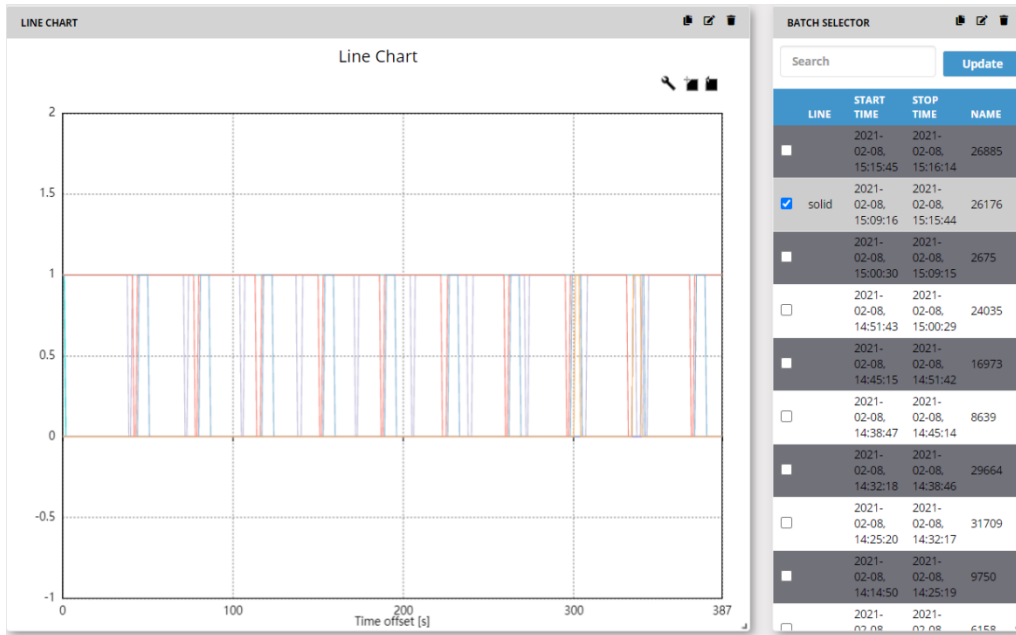


Figure 3.7 & 3.8: If the Batch selection is selected a list of the Batch-selector-widgets within the dashboard appears. Thereby the two widgets are connected, and the batch data can be read via the Line Chart. More on the Batch Selector widget under Chapter 3.5 Tables.

Real-time
 Batch selection
 Time interval

Use Date Range Widget

From: To:

Figure 3.9: The last option regarding the Line Chart Settings is “Time interval” where a specific time interval can be viewed in the Line Chart. It is possible to connect the Line Chart to the Date Range widget via checking the box. This would make sure that whenever changes were made in the Date Range widget, they would be visualized on the Line Chart. More on the Date Range widget under Chapter 3.6 Date Range.

3.3.2 Bar Chart

The Bar Chart serves to visualize data over time as well as accumulated values.

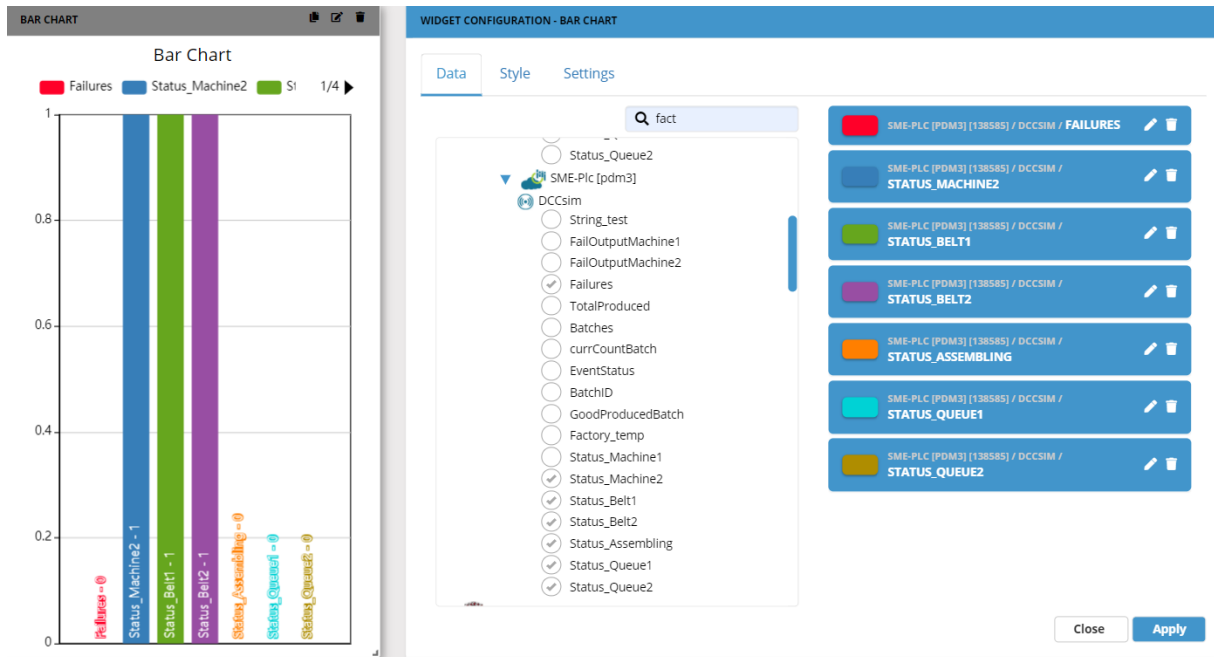


Figure 3.10: The Bar Chart is able to track multiple DCM sample inputs at once by color coding each line such that it grants easy overview. It is possible to select multiple sample points.

Taking the “Settings” for Bar Chart from the top:

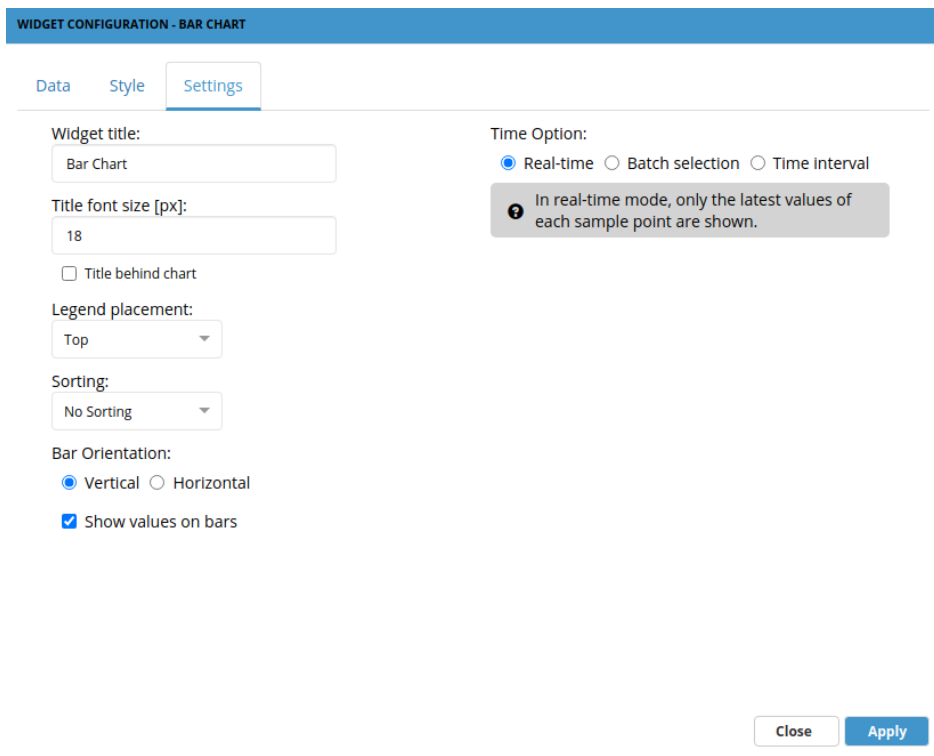


Figure 3.11: Widget title, title font size, title behind chart as well as legend placement is self-explanatory and similar to Line Chart Settings. The Sorting feature places the highest values

at the far right/bottom when “Ascending” is applied and highest values at the far left/top when “Descending” is applied. If “No Sorting” is applied, the sorting will be as indicated under the “Data”-tab.

Bar Orientation changes the bars from a vertical to a horizontal direction.

“Show values on bars” can be checked off if this is not wanted. The values are still visible through a hovering mouse-over.

In figure 3.11 “Real time” has been selected. In this state, the widget will show the latest values of each sample point only.

Time Option:

Real-time Batch selection Time interval

? In batch selection mode, each OEE value is displayed as separate bars.

Select batch selector widget:

Batch Selector

Use samplepoint value instead of manual entry?

Seconds per unit produced:

Seconds per unit produced

Figure 3.12: Batch selection is dependent on the OEE. Go to Chapter 4.1 Batch Selector to learn more.

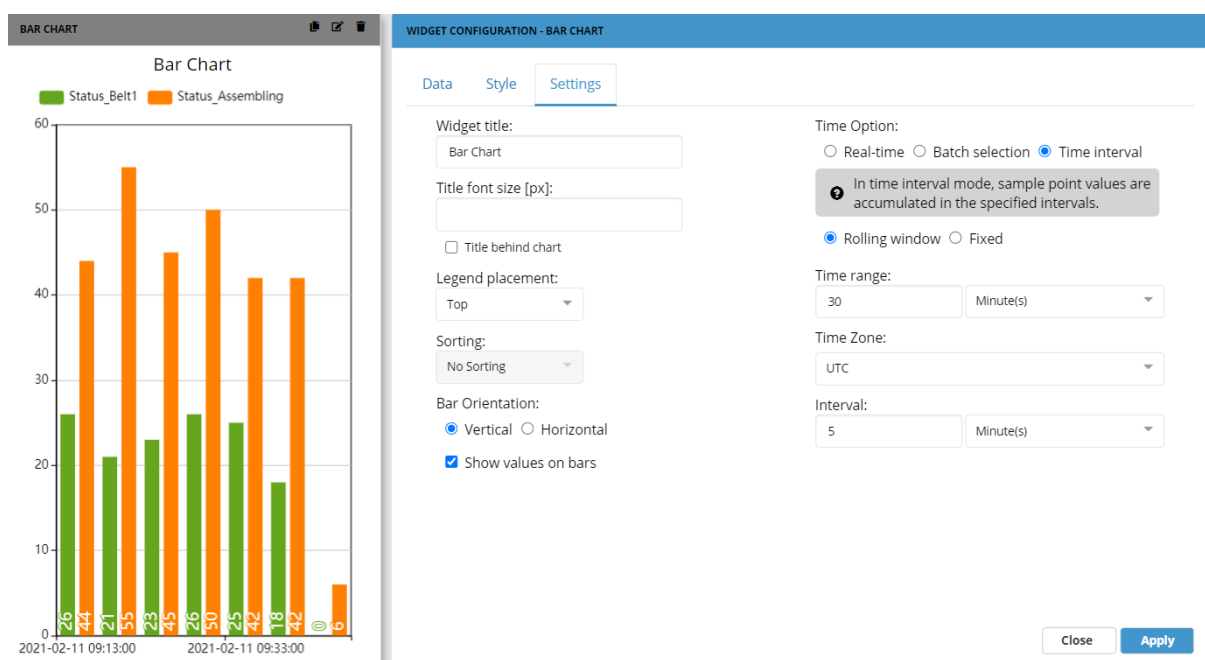



Figure 3.13: If Time-interval is marked it is possible to view accumulated data from within a specific time-period. Marking “Rolling window” allows the user to pick from a time range (minutes, hours, days). Here the time range is 30 minutes, which shows the accumulated time from now and 30 minutes back.

Time zones can be altered from the “Time zone” menu.

Interval indicates how the data is represented. The choices are between minutes, hours and days here as well. In the example, data from 30 minutes back in a five-minute interval are shown. There are therefore six bars pr. sample point.

Time Option:

Real-time Batch selection Time interval

 In time interval mode, sample point values are accumulated in the specified intervals.

Rolling window Fixed

Use Date Range Widget

From: To:

Time Zone:

Interval:

Figure 3.14: Marking “Fixed” allows the user to show data from a specific time (not only the past “30 minutes”). Time zone and interval works the same as previously explained. Note that the Date Range Widget works with this feature as well. More on that in Chapter 3.6.1.

3.4 Gauges

A gauge could be used for visualizing pressure, rotations per minute, temperature etc.

Supported data types for Simple Gauge and Thermometer:

- double
- bool
- float
- int16
- uint16
- int32
- uint32
- int64
- uint64
- byte
- sbyte

3.4.1 Simple Gauge

The simple gauge is a visual gauge representing that of which would be found on machinery, being able to, for example, show pressure effectively at a glance, or revolutions per minute.

Let us take a look at the settings for the Simple Gauge from the top:

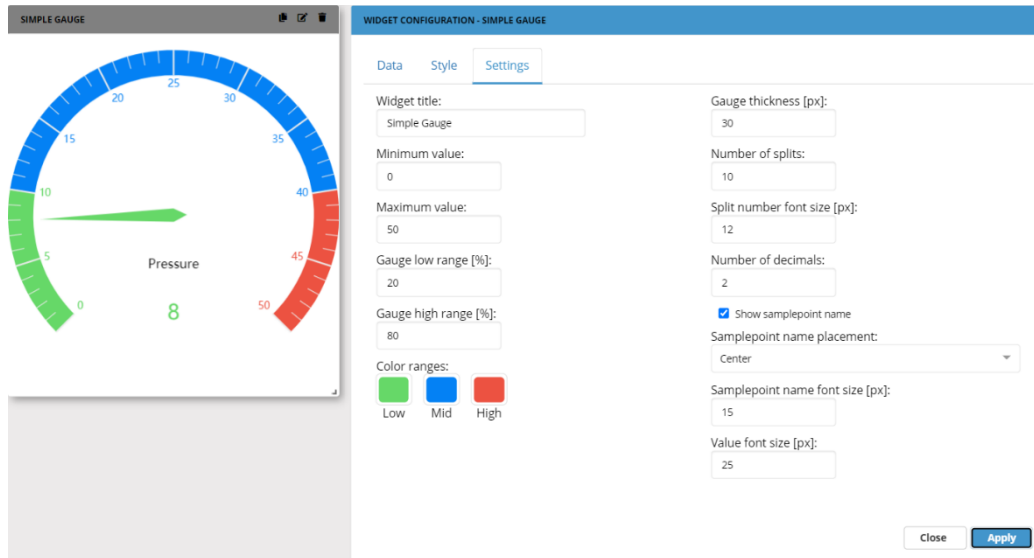


Figure 3.15: The first option is to change the widget title that is shown in the header of the gauge.

2nd and 3rd is the minimum and maximum value which defines how low the gauge goes, including negative values, so for example, -50 to 100 (here 0-50).

The user can decide what percentage of the value should be marked as “low” and “high”, and what colors they should have to indicate this. The high range works opposite that of the low range when typing in the percentage. With the low range the user sets the percentage where it stops, with 30% being 30%, with the high range it is reversed, with 70% typed being 30% coverage.

In the example above, the “low range %” has been set to 20%, which out of the maximum value “50” would be 10. The color green marks when the value is within the low range. In figure 3.15 the arrow of the Gauge is green. The color of the arrow changes color according to what range it is pointing to.

At the other end of the spectrum, the “high range %” begins at 80%. Since the maximum is 50, 80% starts at the value 40 and is marked red. This makes everything between 20% and 80% “mid range”. That area is therefore marked blue.

The next setting is the thickness of the gauge in pixels as well as the number of splits and the size of the numbers for these. The number of decimals can be altered, should this be

needed.

Show or hide the sample point name and alter the placement of this (top, center, bottom) and what font size it should have.

Lastly change the font size of the value (the number in the middle on figure 3.15).

3.4.2 Thermometer

The thermometer is a great tool to show heat, for example, system temperature.

The thermometer does not support more than one sample point.

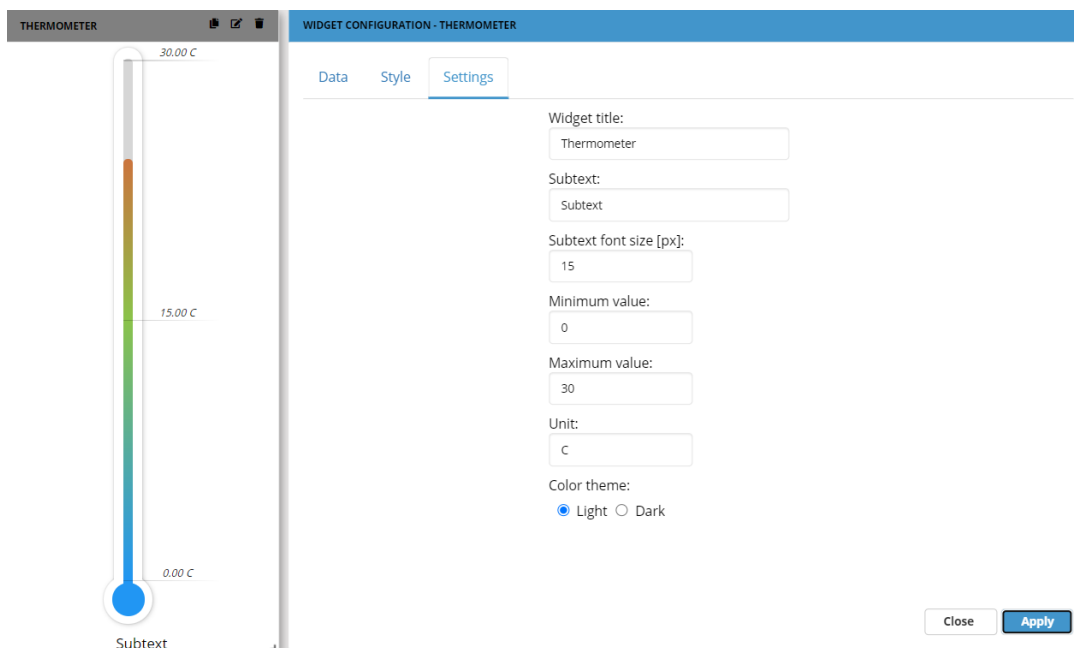


Figure 3.16: Standard thermometer setup for system temperature with Unit set as °C (Celsius). The unit of measurement can be set as anything as it is currently just a text input.

These settings are fairly self-explanatory. The subtext is set as “Subtext” to visualize where the text will appear.

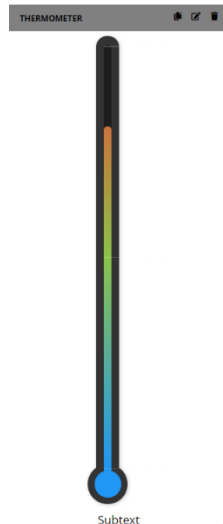


Figure 3.17: For this widget light and dark theme has been added as a feature. Light theme is showed in figure 3.16 and dark theme is showed above. Of course dark theme works a lot better if the background color is dark as well.

3.5 Tables

3.5.1 Batch Selector

The batch selector is used to import and display batch numbers, it is normally used in conjunction with a graph to display a single, or several, batches over a period of time.

Supported data types for Batch Selector:

- double
- bool
- float
- int16
- uint16
- int32
- uint32
- int64
- uint64
- byte
- sbyte
- string

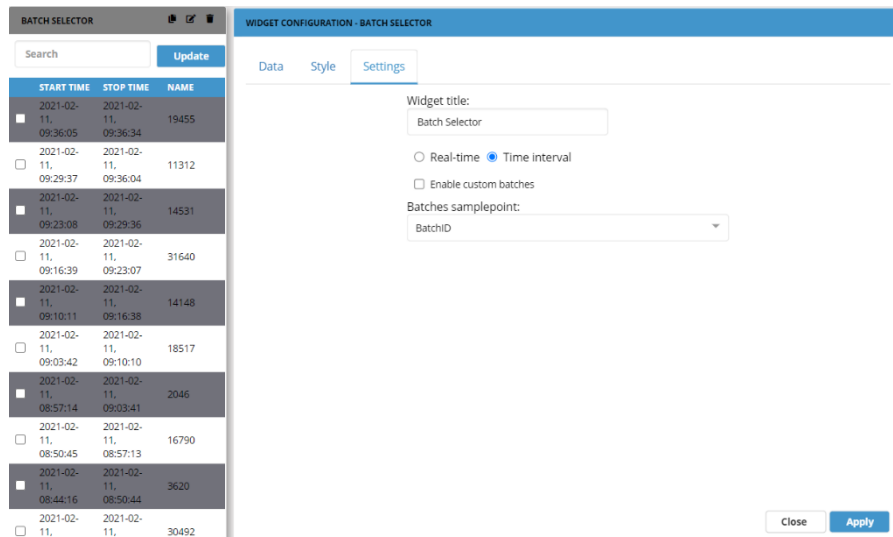


Figure 3.18: The Batch Selector can show specific batches of data within Time interval (as shown above) or within Real-time. For the Batch Selector to function properly, it is important that the sample point matches on all widgets.

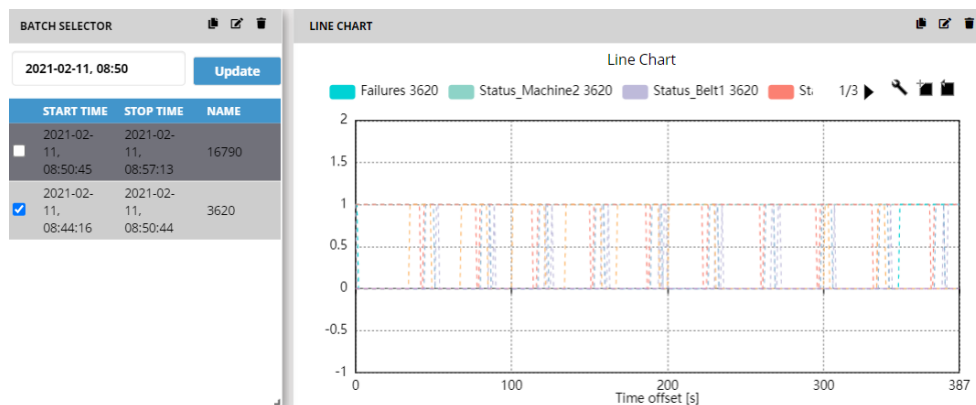


Figure 3.19: The batch selector can be used in conjunction with a graph to display a batch over time, a single chart can actually display the output of multiple batch selectors at once. Search for specific batches within the widget itself. Mark the batch in question and view this on a Line Chart for instance – given that the Line Chart is linked to the correct Batch Selector. This is demonstrated in Chapter 3.3.1 Line Chart.

The Batch Selector can also be used in regards to the OEE as well as with the Report Generator widget.

3.5.2 Two Column Table

The two column table or just column table is a simpler version of the batch selector, instead of importing batches it shows all data types in a text format instead of graphically like the chart.

Supported data types for Two Column Table:

- double

- bool
- float
- int16
- uint16
- int32
- uint32
- int64
- uint64
- byte
- sbyte

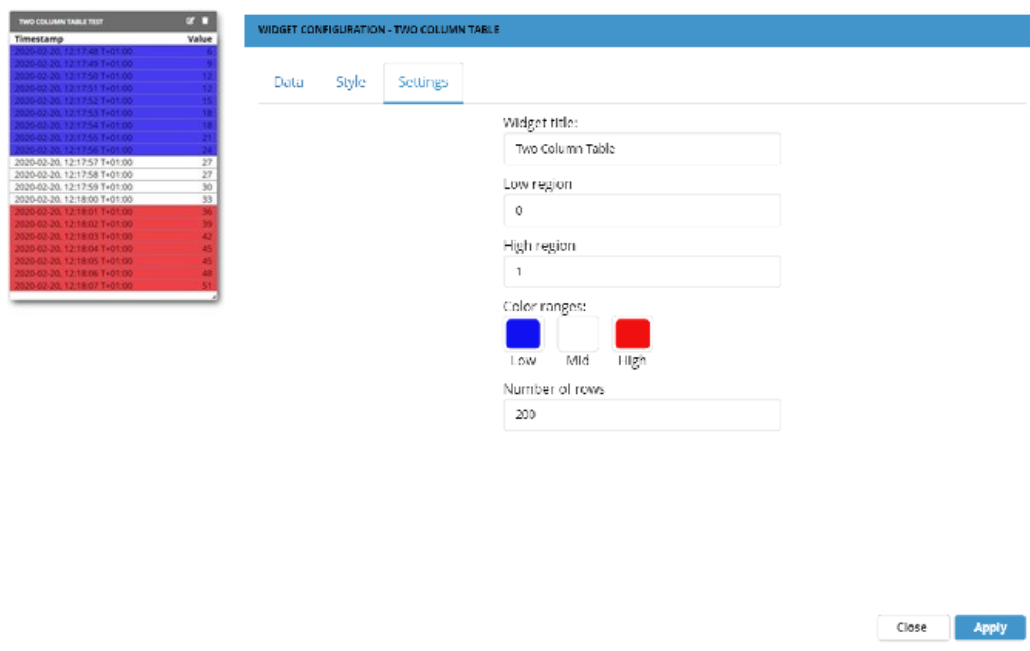


Figure 3.20: The Two Column Table widget automatically updates the data shown and there can be set a low and high region like the gauge – in this example the low range is the color blue and the color red is the high ranges. Of course, everything in between will be the mid range – and in this example that would be white.

At the bottom, a setting regarding the number of rows that is being shown at once in the widget is available. 200 rows are the standard amount.

3.6 Historic Widgets

Historic widgets serve to show data over a longer interval of time.

3.6.1 Date Range

The Date Range widget is used to control several different widgets in relation to a specific time.

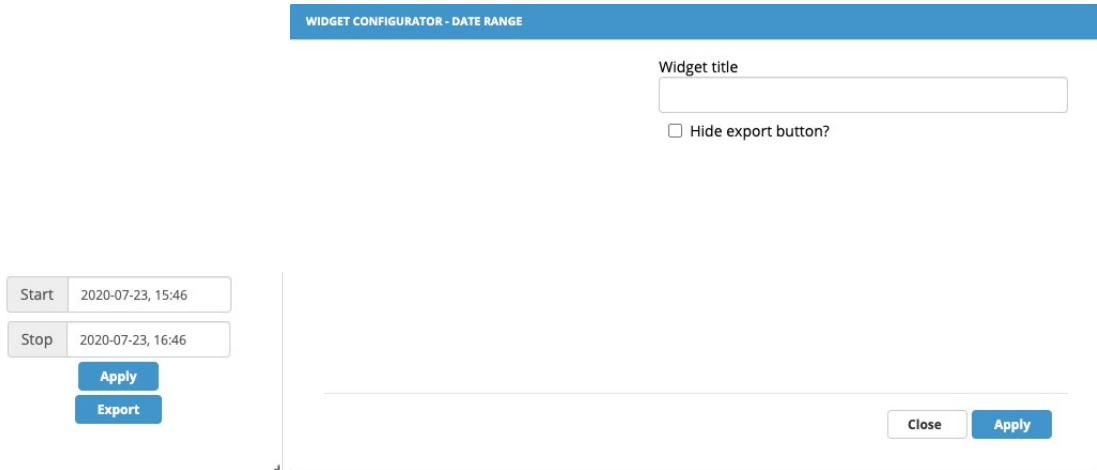


Figure 3.21: When the date range is added to a dashboard, it becomes possible to select the Date Range as input for Line chart under Time interval in the editor

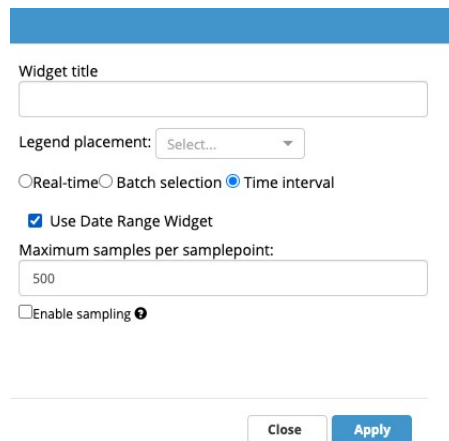


Figure 3.22: Please note that if the export function is used in the Date Range, only data presented in the dashboard will be exported.

3.6.2 Report Generator

Generates an excel report in .csv format, it takes data from all selected sample points within the date range specified.

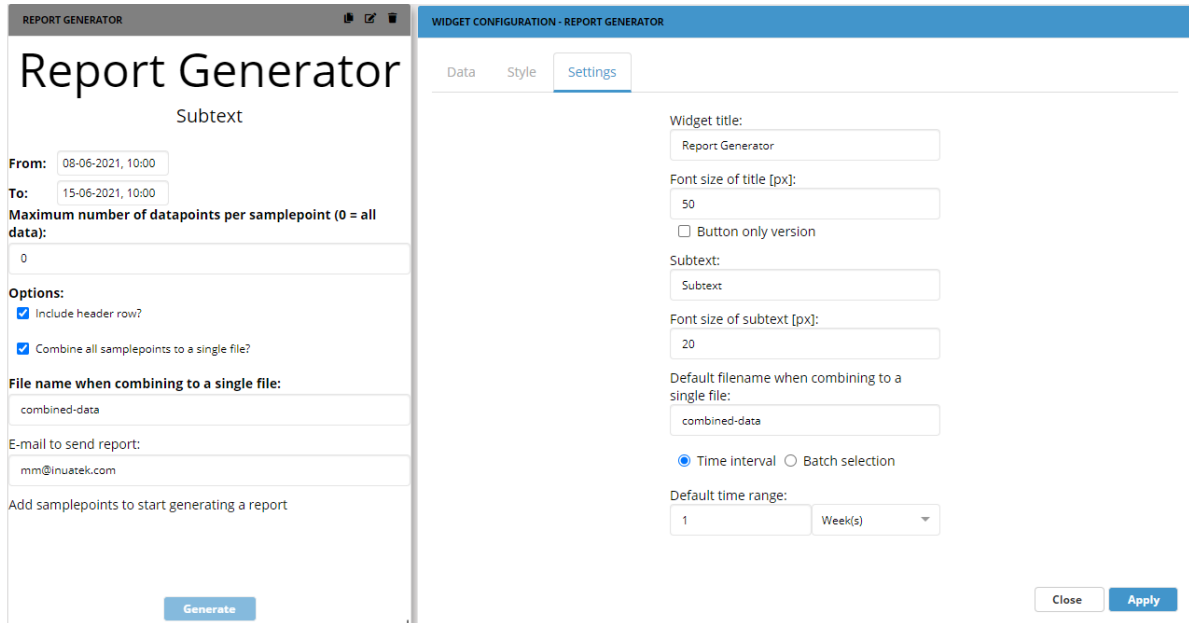


Figure 3.23: 1st input specifies the title for the widget, this may be used such that a dashboard can have multiple report generators while keeping them distinct and descriptive at a glance.

2nd input is the font size of the above described title, see image above for visual description. 3rd input is for subtext; this may be used to describe in detail the function of that individual report generator.

4th input is for the font size of the above described subtext, see image for visual description. 5th input concerns the Default filename when the report is generated.

The next input is the default time range of sample points, this changes the default From and To range within the widget without having to manually change the range, this input can be changed to specify time ranges between minutes to years.

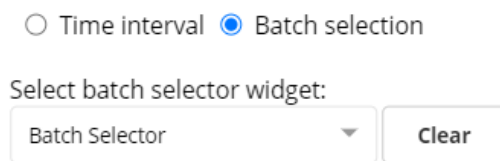


Figure 3.24: Have the report generated around a batch as well. To do so it is important to have a corresponding Batch Selector widget.

Within the widget itself there is a number of settings for the report as well:

The screenshot shows a web interface for a 'Report Generator'. At the top, there is a dark header with the text 'REPORT GENERATOR' and three small icons. Below the header, the main title 'Report Generator' is displayed in a large font, followed by the subtitle 'Subtext'. The form contains several input fields and options: 'From:' with a date-time input '08-06-2021, 10:00'; 'To:' with a date-time input '15-06-2021, 10:00'; a label 'Maximum number of datapoints per samplepoint (0 = all data):' followed by a text input containing '0'; an 'Options:' section with two checked checkboxes: 'Include header row?' and 'Combine all samplepoints to a single file?'; a label 'File name when combining to a single file:' followed by a text input containing 'combined-data'; an 'E-mail to send report:' label followed by a text input containing 'mm@inuutek.com'; and a text input for 'Add samplepoints to start generating a report'. At the bottom center, there is a blue 'Generate' button.

Figure 3.25: Report generator widget.

The 1st input is the From and To, if the default time range has not been changed within the widget configurator then it can be manually changed here.

2nd input is the maximum allowed sample points within the date range, if the amount of sample points exceeds the amount specified as max, then the latest samples will be prioritized. In addition to the above described inputs, there are two options.

“Include header row?”, if selected it will use the selected sample point from the widget generator as the header for the row.

“Combine all samplepoints to a single file?”, if selected it will combine all selected sample points from the widget configurator into a single file, if not selected an individual report will be generated for every sample point selected.

The following inputs are self-explanatory.

There needs to be a sample point selected for the “Generate” button to be available. If not it will look like it does in Figure 3.25. To select a sample point, open the widget configurator, go to the data tab and select the needed sample points.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	date (UTC)	oscillator	date (UTC)	sawtooth	date (UTC)	counter	date (UTC)	sine	date (UTC)	text			
2	11/03/2020 10:24	22	11/03/2020 10:24	26	11/03/2020 10:24	3983040	11/03/2020 10:24	5.88E+14	10/03/2020 09:24	00952531 text string	and with 0952531 data		
3	11/03/2020 10:24	20	11/03/2020 10:24	28	11/03/2020 10:24	3983042	11/03/2020 10:24	6.38E+14	10/03/2020 09:25	00990858 text string	and with 0990858 data		
4	11/03/2020 10:24	22	11/03/2020 10:24	30	11/03/2020 10:24	3983044	11/03/2020 10:24	6.85E+14	10/03/2020 09:25	00985832 text string	and with 0985832 data		
5	11/03/2020 10:24	20	11/03/2020 10:24	32	11/03/2020 10:24	3983046	11/03/2020 10:24	7.29E+14	10/03/2020 09:25	01046150 text string	and with 1046150 data		
6	11/03/2020 10:24	22	11/03/2020 10:24	34	11/03/2020 10:24	3983048	11/03/2020 10:24	7.71E+14	10/03/2020 09:25	00916088 text string	and with 0916088 data		
7	11/03/2020 10:24	22	11/03/2020 10:24	36	11/03/2020 10:24	3983050	11/03/2020 10:24	8.09E+14	10/03/2020 09:25	01040495 text string	and with 1040495 data		
8	11/03/2020 10:24	22	11/03/2020 10:24	38	11/03/2020 10:24	3983052	11/03/2020 10:24	8.44E+14	10/03/2020 09:25	00944991 text string	and with 0944991 data		
9	11/03/2020 10:24	20	11/03/2020 10:24	40	11/03/2020 10:24	3983054	11/03/2020 10:24	8.76E+14	10/03/2020 09:26	00947504 text string	and with 0947504 data		
10	11/03/2020 10:24	22	11/03/2020 10:24	42	11/03/2020 10:24	3983056	11/03/2020 10:24	9.05E+14	10/03/2020 09:26	00954416 text string	and with 0954416 data		
11	11/03/2020 10:24	20	11/03/2020 10:24	20	11/03/2020 10:24	3983058	11/03/2020 10:24	9.3E+14	10/03/2020 09:26	01001540 text string	and with 1001540 data		
12	11/03/2020 10:24	22	11/03/2020 10:24	22	11/03/2020 10:24	3983060	11/03/2020 10:24	9.51E+13	10/03/2020 09:26	00970124 text string	and with 0970124 data		
13	11/03/2020 10:24	20	11/03/2020 10:24	24	11/03/2020 10:24	3983062	11/03/2020 10:24	9.69E+14	10/03/2020 09:26	00967610 text string	and with 0967610 data		
14	11/03/2020 10:24	22	11/03/2020 10:24	26	11/03/2020 10:24	3983064	11/03/2020 10:24	9.82E+14	10/03/2020 09:26	00950017 text string	and with 0950017 data		
15	11/03/2020 10:24	20	11/03/2020 10:24	28	11/03/2020 10:24	3983066	11/03/2020 10:24	9.92E+14	10/03/2020 09:27	00960699 text string	and with 0960699 data		
16	11/03/2020 10:24	22	11/03/2020 10:24	30	11/03/2020 10:24	3983068	11/03/2020 10:24	9.98E+14	10/03/2020 09:27	00960071 text string	and with 0960071 data		
17	11/03/2020 10:25	20	11/03/2020 10:25	32	11/03/2020 10:25	3983070	11/03/2020 10:25	1E+15	10/03/2020 09:27	00956929 text string	and with 0956929 data		
18	11/03/2020 10:25	22	11/03/2020 10:25	34	11/03/2020 10:25	3983072	11/03/2020 10:25	9.98E+14	10/03/2020 09:27	00940593 text string	and with 0940593 data		
19	11/03/2020 10:25	20	11/03/2020 10:25	36	11/03/2020 10:25	3983074	11/03/2020 10:25	9.92E+14	10/03/2020 09:27	00955044 text string	and with 0955044 data		
20	11/03/2020 10:25	22	11/03/2020 10:25	38	11/03/2020 10:25	3983076	11/03/2020 10:25	9.82E+14	10/03/2020 09:27	00955672 text string	and with 0955672 data		
21	11/03/2020 10:25	20	11/03/2020 10:25	40	11/03/2020 10:25	3983078	11/03/2020 10:25	9.69E+14	10/03/2020 09:28	00952531 text string	and with 0952531 data		
22	11/03/2020 10:25	22	11/03/2020 10:25	42	11/03/2020 10:25	3983080	11/03/2020 10:25	9.51E+14	10/03/2020 09:28	00970124 text string	and with 0970124 data		
23	11/03/2020 10:25	20	11/03/2020 10:25	20	11/03/2020 10:25	3983082	11/03/2020 10:25	9.3E+14	10/03/2020 09:28	00992115 text string	and with 0992115 data		
24	11/03/2020 10:25	22	11/03/2020 10:25	22	11/03/2020 10:25	3983084	11/03/2020 10:25	9.05E+14	10/03/2020 09:28	00962584 text string	and with 0962584 data		
25	11/03/2020 10:25	20	11/03/2020 10:25	24	11/03/2020 10:25	3983086	11/03/2020 10:25	8.76E+14	10/03/2020 09:28	00965097 text string	and with 0965097 data		
26	11/03/2020 10:25	22	11/03/2020 10:25	26	11/03/2020 10:25	3983088	11/03/2020 10:25	8.44E+14	10/03/2020 09:28	00966982 text string	and with 0966982 data		
27	11/03/2020 10:25	20	11/03/2020 10:25	28	11/03/2020 10:25	3983090	11/03/2020 10:25	8.09E+14	10/03/2020 09:29	00946248 text string	and with 0946248 data		
28	11/03/2020 10:25	22	11/03/2020 10:25	30	11/03/2020 10:25	3983092	11/03/2020 10:25	7.7E+14	10/03/2020 09:29	00967610 text string	and with 0967610 data		
29	11/03/2020 10:25	20	11/03/2020 10:25	32	11/03/2020 10:25	3983094	11/03/2020 10:25	7.29E+14	10/03/2020 09:29	00994000 text string	and with 0994000 data		
30	11/03/2020 10:25	22	11/03/2020 10:25	34	11/03/2020 10:25	3983096	11/03/2020 10:25	6.84E+14	10/03/2020 09:29	00941221 text string	and with 0941221 data		
31	11/03/2020 10:25	20	11/03/2020 10:25	36	11/03/2020 10:25	3983098	11/03/2020 10:25	6.37E+14	10/03/2020 09:29	00966354 text string	and with 0966354 data		
32	11/03/2020 10:25	22	11/03/2020 10:25	38	11/03/2020 10:25	3983100	11/03/2020 10:25	5.88E+14	10/03/2020 09:29	00958186 text string	and with 0958186 data		
33	11/03/2020 10:25	20	11/03/2020 10:25	40	11/03/2020 10:25	3983102	11/03/2020 10:25	5.36E+14	10/03/2020 09:30	00977035 text string	and with 0977035 data		
34	11/03/2020 10:25	22	11/03/2020 10:25	20	11/03/2020 10:25	3983104	11/03/2020 10:25	4.82E+14	10/03/2020 09:30	00954416 text string	and with 0954416 data		
35	11/03/2020 10:25	20	11/03/2020 10:25	22	11/03/2020 10:25	3983106	11/03/2020 10:25	4.26E+14	10/03/2020 09:30	00982690 text string	and with 0982690 data		
36	11/03/2020 10:25	22	11/03/2020 10:25	24	11/03/2020 10:25	3983108	11/03/2020 10:25	3.68E+14	10/03/2020 09:30	00957557 text string	and with 0957557 data		
37	11/03/2020 10:25	20	11/03/2020 10:25	26	11/03/2020 10:25	3983110	11/03/2020 10:25	3.09E+14	10/03/2020 09:30	00941849 text string	and with 0941849 data		
38	11/03/2020 10:25	22	11/03/2020 10:25	28	11/03/2020 10:25	3983112	11/03/2020 10:25	2.49E+14	10/03/2020 09:30	00971380 text string	and with 0971380 data		

Figure 3.26: An example of a report with multiple sample points selected

3.7 Misc. Widgets

Widgets in this category are miscellaneous widgets that do not fall into other categories previously specified.

3.7.1 Bool Monitor

The Bool Monitor Widget is quite simple, it can only accept Boolean data, which can only be true or false, and displays this information at a glance.

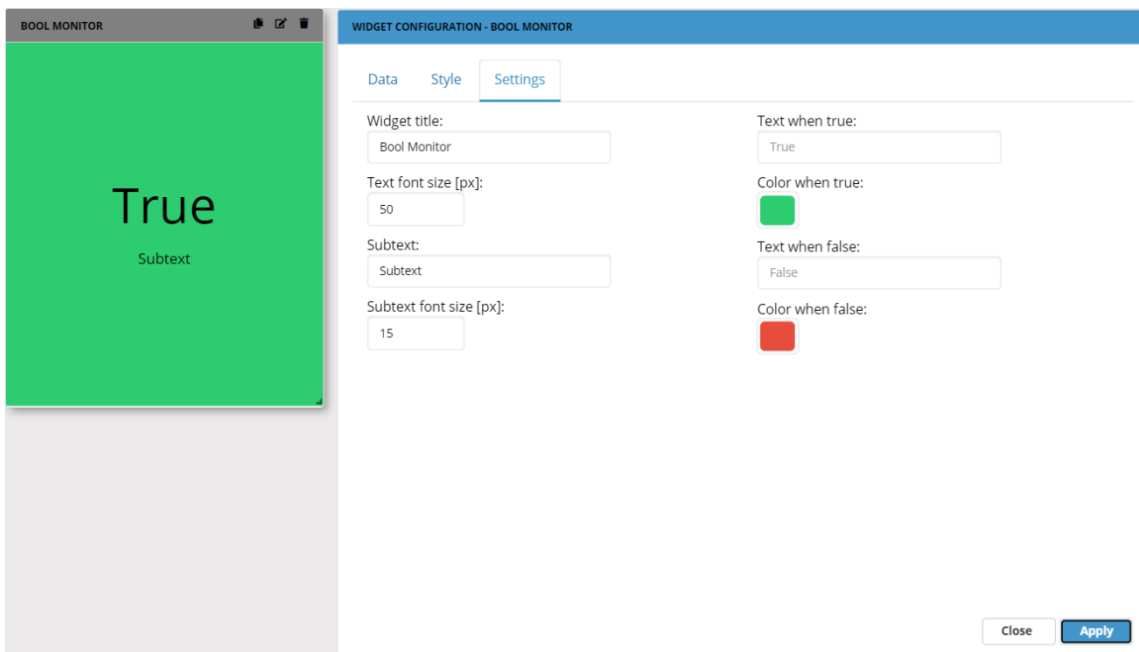


Figure 3.27: 1st input from the top, is the title for the widget.
2nd input is for the size of the text displayed for True/False outputs.
3rd input is for setting a subtext. Could be used to specify one bool monitor from another if multiple is in use.
4th input specifies the size of the subtext.
5th input specifies the text displayed if the output is true. This will as a standard be “True”.
6th is the color if true. Standard will be green.
7th and 8th specifies the same if false. Standard text and color will be “False” and red.

Supported data types for Bool Monitor:

- bool

3.7.2 Clock

The clock is rather simple. There are two ways of viewing the clock; digital or analog.

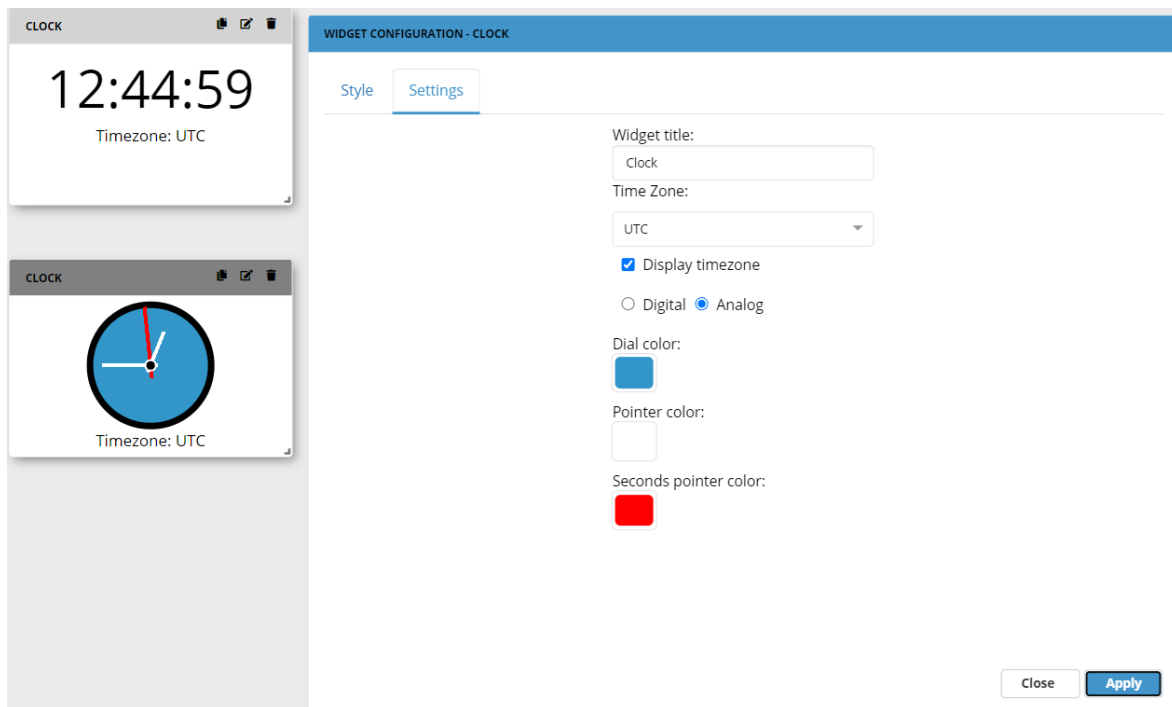


Figure 3.28: The clock has all time zones and a search functionality built into the dropdown. The rest is self-explanatory.

3.7.3 Map

The regular map is used to show where a DCM or SiteManager is located physically.

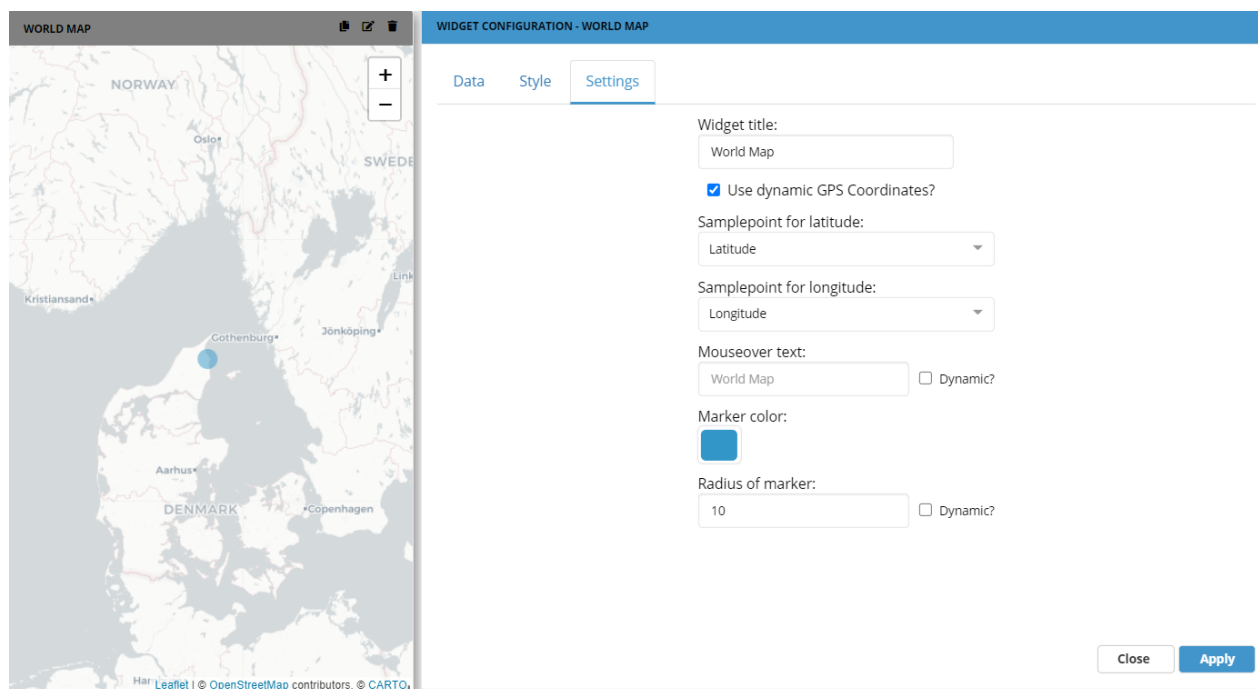


Figure 3.29: 1st input from the top, is the title for the widget, can be used to specify one map from another if multiple is in use.

2nd and 3rd input is latitude and longitude of the location of a sample point marker, by clicking on the inputs the different selected sample points can be selected, by doing so it will automatically place the marker on top of the SiteManager/Sample point selected.

To make the drop-down menus appear select “Use dynamic GPS Coordinates?”

If this is not marked, selection of a DCM is available.

4th input is for mouseover text of the marker, this can be used as a short summary for the individual marker or just to keep track of multiple markers, if “Dynamic?” is selected, then it will automatically apply the name of the SiteManager/Sample point chosen.

5th input is selecting the colour of markers, a good tip is to use a colour that contrasts to white and grey.

6th input is the size of the marker, this will change the size of the marker on the map, it is highly suggested to have “Dynamic?” on, as otherwise it may be near impossible to find a smaller marker.

Supported data types for Map:

- double
- bool
- float
- int16
- uint16
- int32
- uint32
- int64
- uint64
- byte

- sbyte

3.7.4 Value

The Value widget is used to display the last known value.

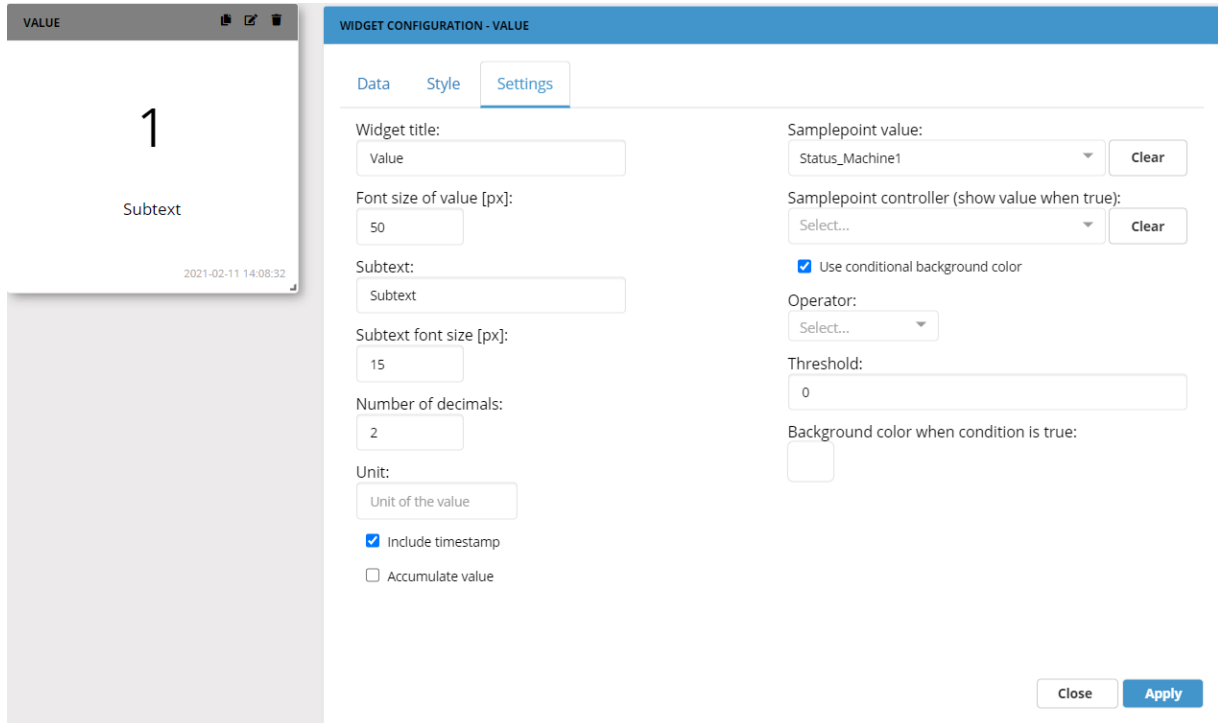


Figure 3.30: 1st input from the top, is the title for the widget, can be used to specify one Value widget from another if multiple is in use.

2nd input is for the size of the text displayed.

3rd and 4th input is for subtext and the size of the subtext displayed.

5th input is the number of decimals shown, if relevant.

6th is the unit of the value.

Include the time stamp if wanted.

Make the value an accumulated value. The data can be accumulated over the last second(s), minute(s), hour(s) or day(s).

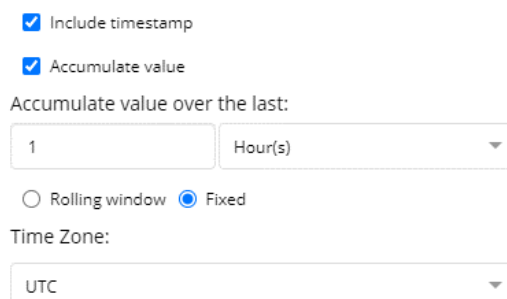


Figure 3.31: If accumulated value is chosen, show the data as “Rolling window” or as “Fixed”. Rolling window will show the value of the data from second to second accumulated over the last passing hour (in this example).

“Fixed” will show the value of the data from the last hour on an hourly basis, so to speak. This makes it possible for the user to view the accumulated data from day to day if needed. When selecting “Fixed”, the choice of time zone becomes available, making it possible to view machines from all over the world within their own time zone.

Next, select the desired sample point for the value.

The widget can further depend on a Boolean that controls whether the last known value is displayed or whether the widget should just be blank if it does not receive data.

Select the desired sample point for the controlled Boolean, if desired.

A changed background color depending on the value can be chosen by using "Use conditional background color".

Once this is marked “Operator” and “Threshold” as well as background color appears.

The operator describes how to compare the value to the sample point value, determining whether the widget should trigger. The value can be more than, less than, equal to etc. the sample point value.

Threshold marks the threshold for the Boolean reaction.

Supported data types for Value:

- double
- bool
- float
- int16
- uint16
- int32
- uint32
- int64
- uint64
- byte
- sbyte
- string

3.7.5 Symbol

The symbol widget allows for the introduction of icons, images or GIFs in relation to an incoming value. When x number of sample points is selected it is possible to set up different scenarios. First, the image for default trigger value is added, this image is displayed when no data is received. For best results, use an image with a transparent background.

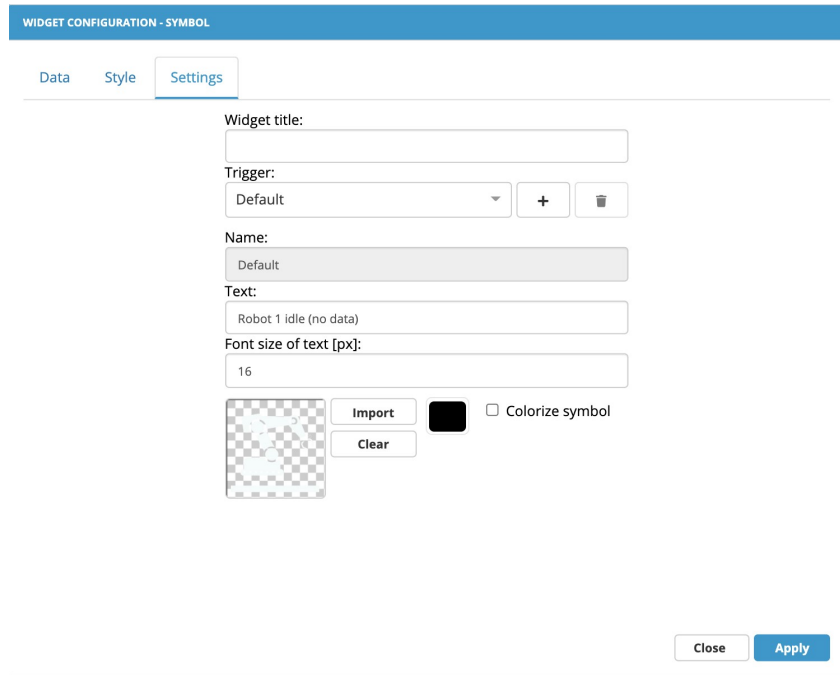


Figure 3.32: X number of triggers can be added. Specify which sample point and operator trigger should depend on and in which priority. Assign the image to a color and click "Apply".

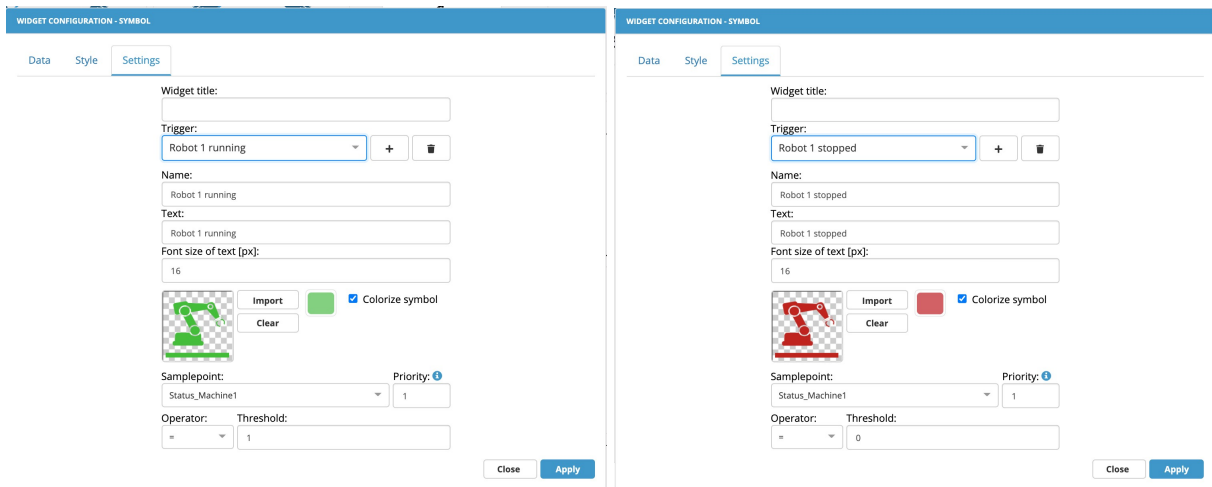


Figure 3.33: It is now possible to build a dashboard that can be used across languages and countries, by using symbols and colors.

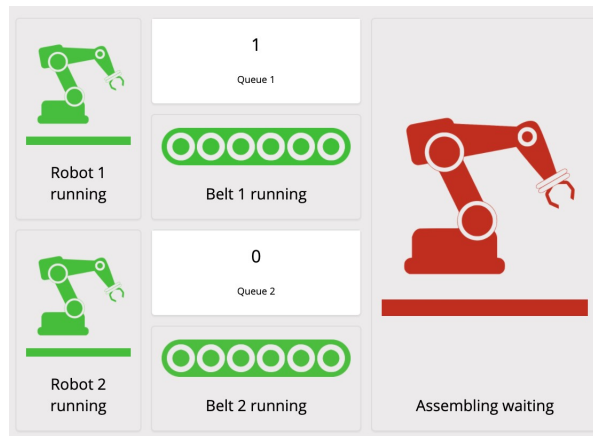


Figure 3.34: Symbol widget when set up.

Supported data types for Symbol:

- double
- bool
- float
- int16
- uint16
- int32
- uint32
- int64
- uint64
- byte
- sbyte
- string

3.7.6 Text Formatter

Text Formatter is used to combine static testing with dynamic testing, using one or more sample points. First select the desired sample points.

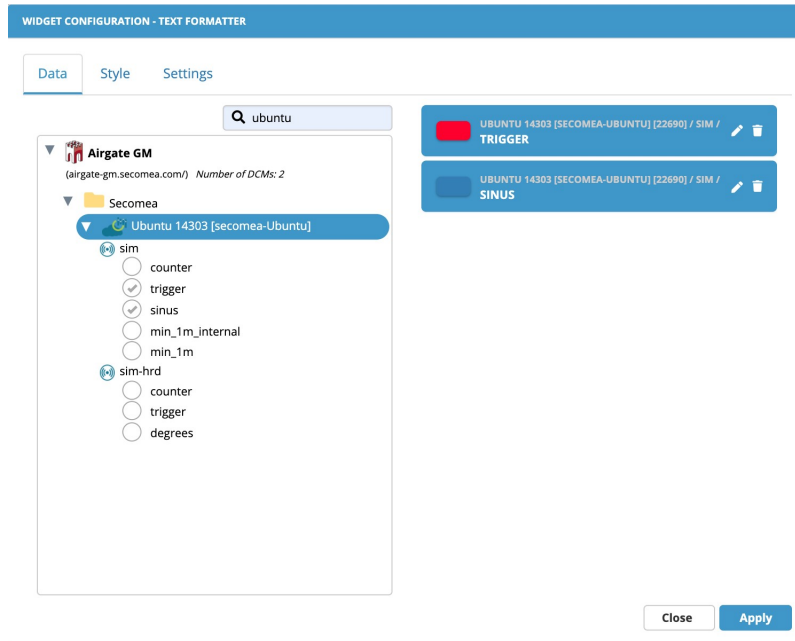


Figure 3.35: Then widgets can be styled according to the own needs.

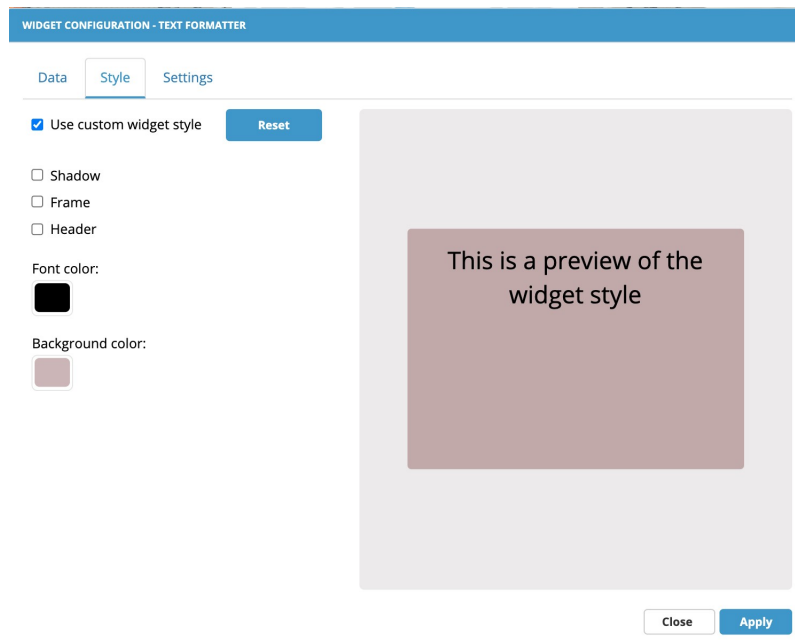


Figure 3.36: The position of text, size, and the number of decimals if double or float are defined by the user. Finally, the desired text is defined. To use a sample point in the text, a template is defined.

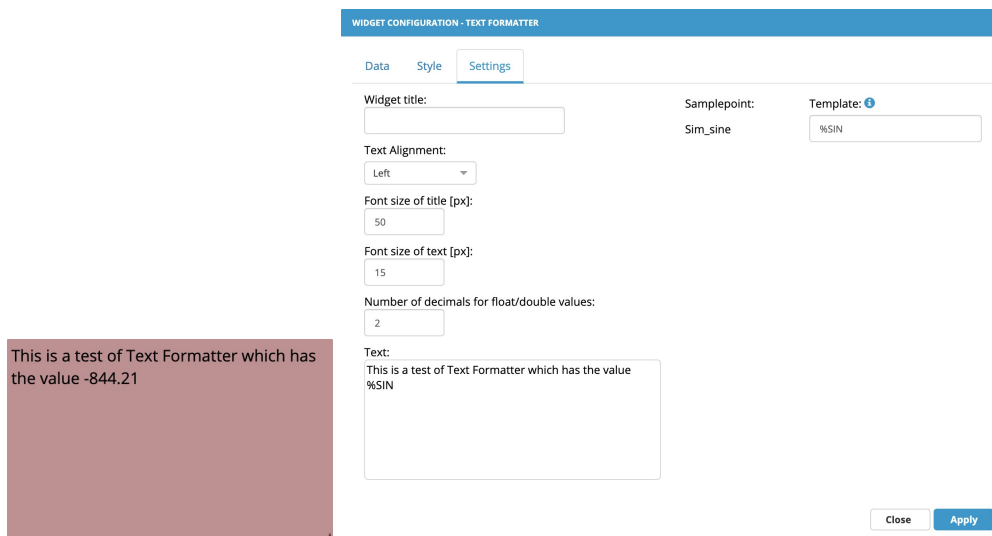


Figure 3.37: The Text Formatter and it's corresponding settings.

Supported data types for Text Formatter:

- double
- bool
- float
- int16
- uint16
- int32
- uint32
- int64
- uint64
- byte
- sbyte
- string

3.8 Fleet Management

3.8.1 Fleet Table

The Logistics Table widget can be useful for navigating to specific dashboards and to gain an easy overview of the Fleet as a table view.

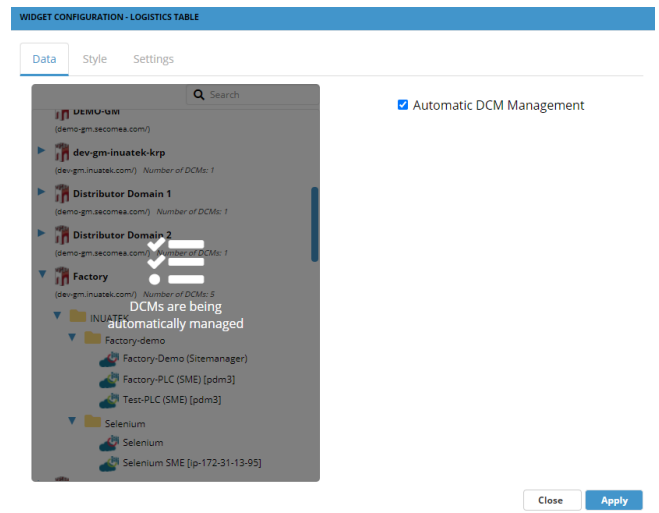
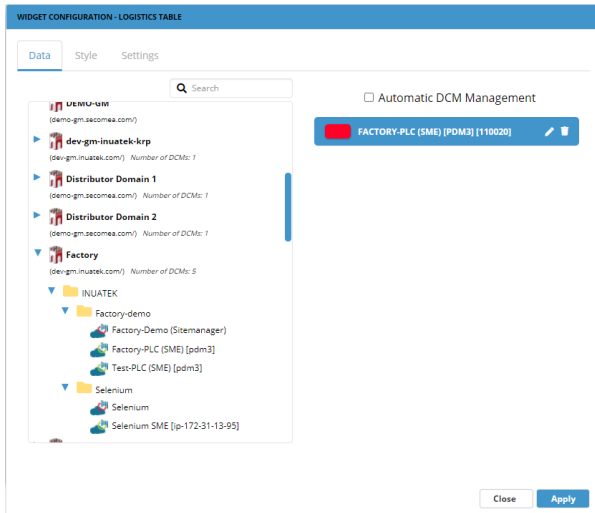


Figure 3.38: For this widget, a DCM can be chosen manually or the box at the top of the right side of the editor can be ticked off to set the widget to “Automatic DCM Management”.

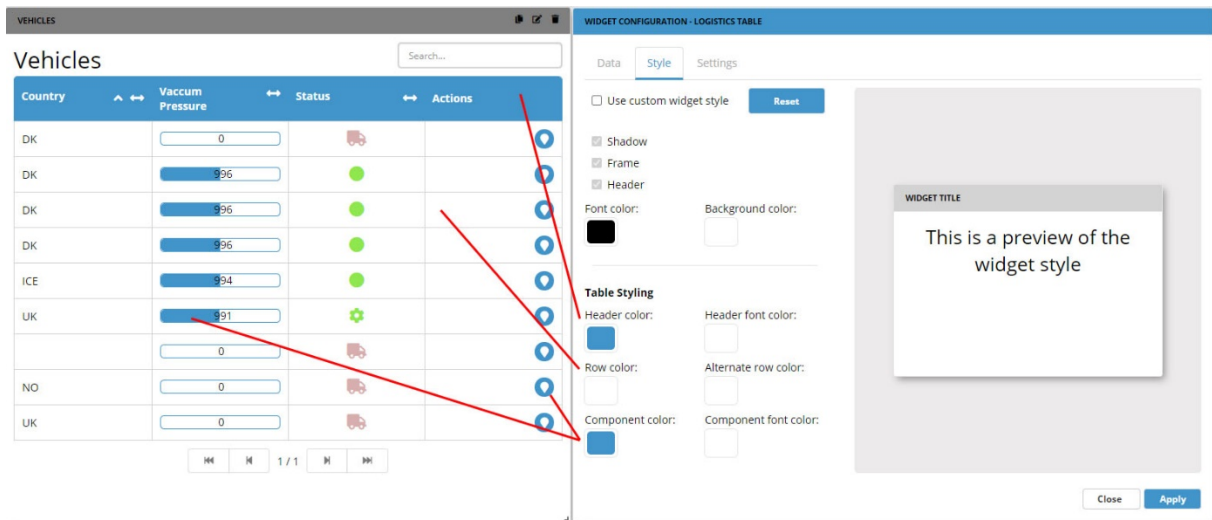
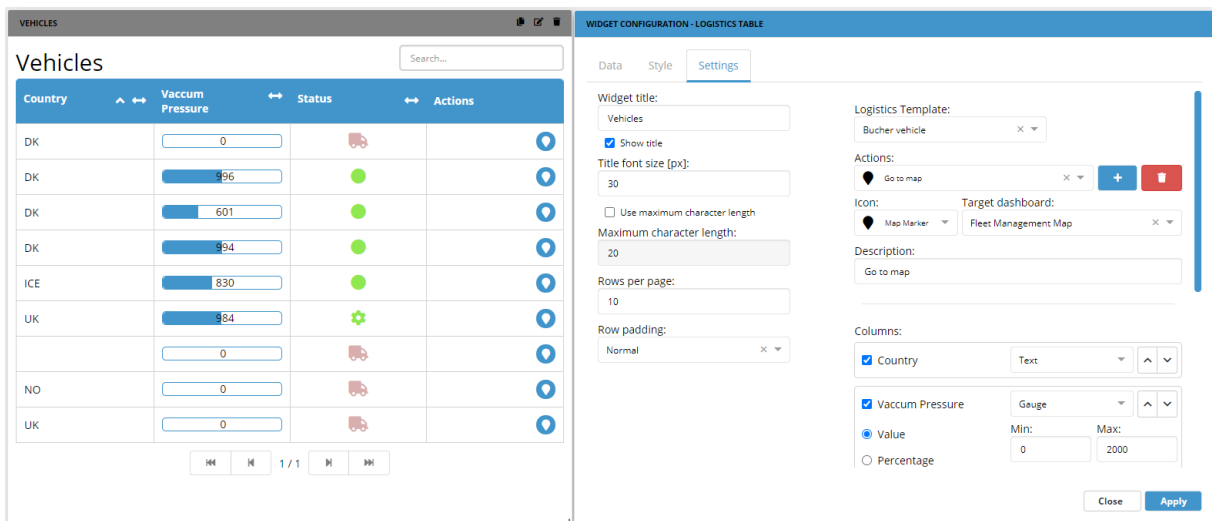


Figure 3.39: The styling tab looks the same for the most part. There is a difference at the bottom of the editor, where a Header color, Header font color, Row color, Alternate row color, Component color and Component font color. They correspond as shown.



3.40: Looking at the left side of the Settings tab starting at the top:
Change the title of the widget or hide the title altogether by unchecking the “Show title” box.

Change the font size of the title. Default is 50.

Underneath, choose to use a maximum character length. This will shorten text in the table if the maximum number of characters are exceeded. Default is 20.

Change the number of rows per page. Default is 5.

Set the spacing (or padding) of the rows.

On the right side of the settings tab starting at the top:

Choose what Logistics Template to use for the table. Set and edit the templates under “Account Setup” on the DCC (Not in the dashboard). To find more information on this, find the DCC documentation in Secomea Knowledge Base.

Underneath, add action buttons. These are the ones that allows for the user to navigate from one dashboard to the other. For instance, in this example the user would be sent to the “Fleet Management Map” dashboard. That dashboard would then show the data from that specific DCM.

Set the icon of the action button and the description that will show when hovering the button within the table. Add more action buttons by clicking the plus sign and delete the one that is currently being viewed by clicking the trash can.

The screenshot shows the 'WIDGET CONFIGURATION - LOGISTICS TABLE' interface. It has three tabs: 'Data', 'Style', and 'Settings' (which is selected). On the left side, there are several input fields and checkboxes: 'Widget title' (set to 'Vehicles'), 'Show title' (checked), 'Title font size [px]' (set to 30), 'Use maximum character length' (unchecked), 'Maximum character length' (set to 20), 'Rows per page' (set to 10), and 'Row padding' (set to 'Normal'). On the right side, there is a list of data fields with checkboxes and dropdown menus for selecting display types. The fields are: 'Engine RPM' (unchecked, 'Select...'), 'Vehicle reference' (unchecked, 'Text'), 'Longitude' (unchecked, 'Select...'), 'Latitude' (unchecked, 'Select...'), 'Event' (unchecked, 'Select...'), 'Status' (checked, 'Symbol'), and 'Message' (unchecked, 'Text'). The 'Status' dropdown menu is open, showing options: 'Symbol', 'Number', 'Text', 'Gauge', and 'Symbol' (highlighted). At the bottom right, there are 'Close' and 'Apply' buttons.

Figure 3.41: Once a template has been selected, the values that were set for that specific template will be shown. In this case it is a fairly long list, but any of these can be ticked on and off. The number of columns within the Fleet Table widget are defined by the number of boxes ticked. The order of the values can be changed by using the arrows to the far right. From every available value is the option to show the data as a number, text, gauge or symbol.

Event	Country	Vacuum Pressure	Status	Actions
0	DK	1006	Red circle	Down arrow
0	ICE	605	Green circle	Down arrow
0	DK	1001	Red circle	Down arrow
0	UK	991	Red gear	Down arrow
0	DK	994	Red circle	Down arrow
0		0	Red truck	Down arrow
0	UK	0	Red truck	Down arrow
0	DK	996	Green circle	Down arrow
0	NO	0	Red truck	Down arrow

Figure 3.42: In this table the values have been ordered as an example of a number, text, gauge and symbol (as well as an action button).

The symbol is defined within the logistics template itself. As previously mentioned, the templates can be set and edited under “Account Setup” on the DCC (Not in the dashboard). To find more information on this, find the DCC documentation in the Secomea Knowledge Base.

3.8.2 Fleet Map

The Logistics Map widget grants a visual overview of the DCMs around the world. The widget can be useful for navigating to specific dashboards and to gain an easy overview of the Fleet as a map view.

The screenshot shows the 'LOGISTICS MAP' widget interface. On the left is a map of Europe with several colored dots representing DCM locations. On the right is the 'WIDGET CONFIGURATION - LOGISTICS MAP' panel, which includes a search bar, a list of DCMs, and a checkbox for 'Automatic DCM Management'. The DCM list includes:

- clh-gm07 (gm07.secomea.com)
- C-test (demo-gm.secomea.com) Number of DCMs: 1
- Customer Domain (demo-gm.secomea.com) Number of DCMs: 1
- Dashboard-child (dev-gm.inuatek.com) Number of DCMs: 1
- Dashboard-parent (dev-gm.inuatek.com) Number of DCMs: 3
- DCM Stress test (dev-gm.inuatek.com) Number of DCMs: 332
- DEMO-GM (demo-gm.secomea.com)
- dev-gm-inuatek-krp (dev-gm.inuatek.com) Number of DCMs: 1
- Distributor Domain 1

The 'Automatic DCM Management' checkbox is currently unchecked. Below the list is a table of DCMs with their IDs and icons:

DCM ID	Icon
20190133 [119387]	Red circle
20200001 [125310]	Blue circle
20200036 [119362]	Green circle
20200032 [133754]	Purple circle
20180191 [112855]	Orange circle
20200047 [132142]	Cyan circle
20190065 [102680]	Yellow circle

Figure 3.43: As within the logistics table widget, the DCMs for the Fleet Map can be chosen manually or automatically by checking off the “Automatic SCM Management” box.

Any DCM with longitude and latitude set will then appear on the map.

Any DCM that has not been set with GPS coordinates will be placed at the bottom of the widget.

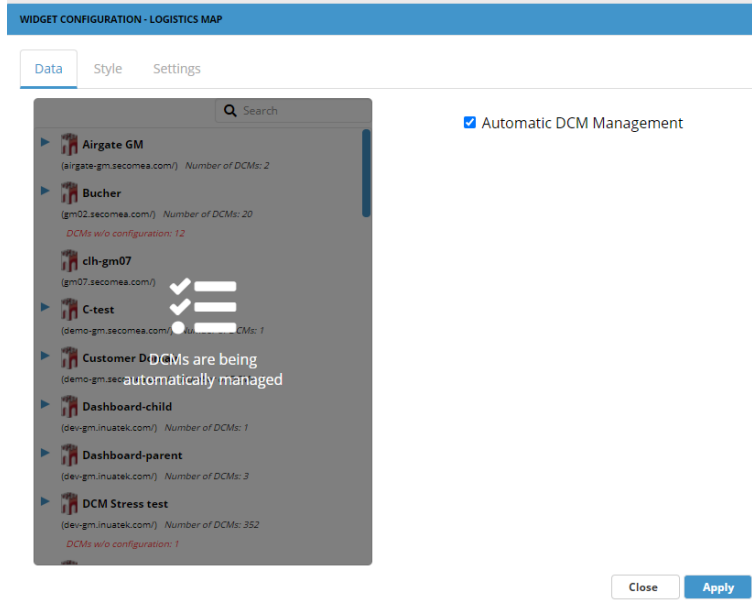


Figure 3.44: The configurator looks like this when “Automatic DCM Management” is selected.

The Style tab looks like most other Style tabs.

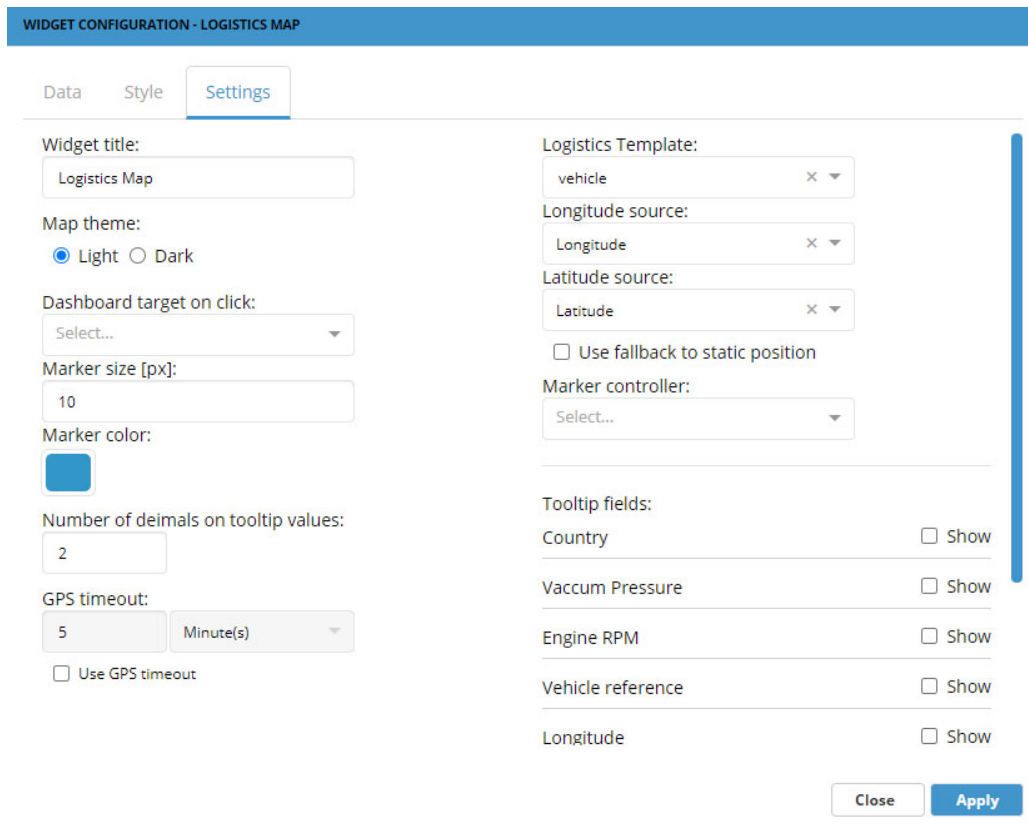


Figure 3.45: The settings tab will look somewhat similar to this. The template has been selected as well as the Longitude and Latitude source, but besides from that this will be the default.

From the top left: Set the title for the widget.

Change the theme from light to dark theme.

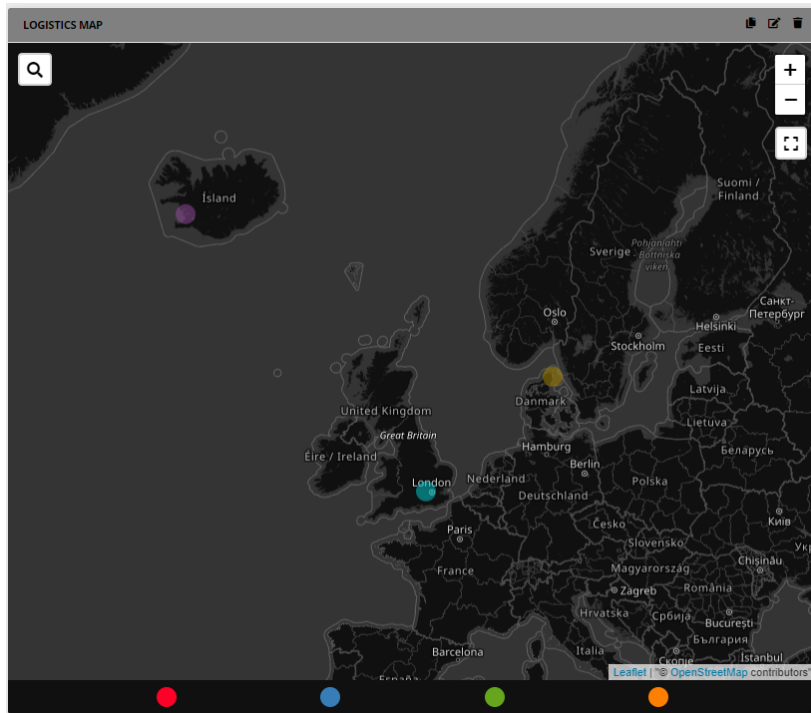


Figure 3.46: Dark theme will look like this.

Next, set the target dashboard. This allows for navigating between dashboards with the data from the specific DCM as the settings within the navigated dashboard.

Change the size and color of the marker. If “Automatic DCM Management” is selected, every marker color will be the same (if a marker controller is not selected). If “Automatic DCM Management” is not selected, the colors of the markers will be dictated from the Data tab of the editor.

Number of decimals on tooltip values defines how many decimals is visible when mousing over a DCM in the map (the tooltip appears).

GPS timeout enables the option to place DCMs at the bottom of the widget, if it has not sent a new signal for a specific period of time (default is 5 minutes). GPS timeout can be switched on and off.

To the right side of the editor, from the top:

Set what template to use for this widget as well as the longitude and latitude source. Check off the box underneath to “Use fallback to static position”. This is the position set under the IoT Administration page in the DCC (Not within the dashboard). To find more information on this, find the DCC documentation in Knowledge Base.

The Marker controller can change the appearance of the markers on the map. This is set via the template, and from the drop-down menu it is possible to select from the data values in the template (the ones that appears as “Tooltips” underneath this menu).

Once a Logistics Template has been selected, the Tooltip fields appear. These are the values that were set for that specific template. In this case it is a fairly long list, but it is possible to tick on and off any of these. The information that is ticked off will appear when mousing over a DCM on the map.

3.8.3 Logistics Info

The Logistics Info widget is used to present information about the machine in question. For this widget to work, choose a PLC (not a sample point) under the “Data” tab in the widget configurator.

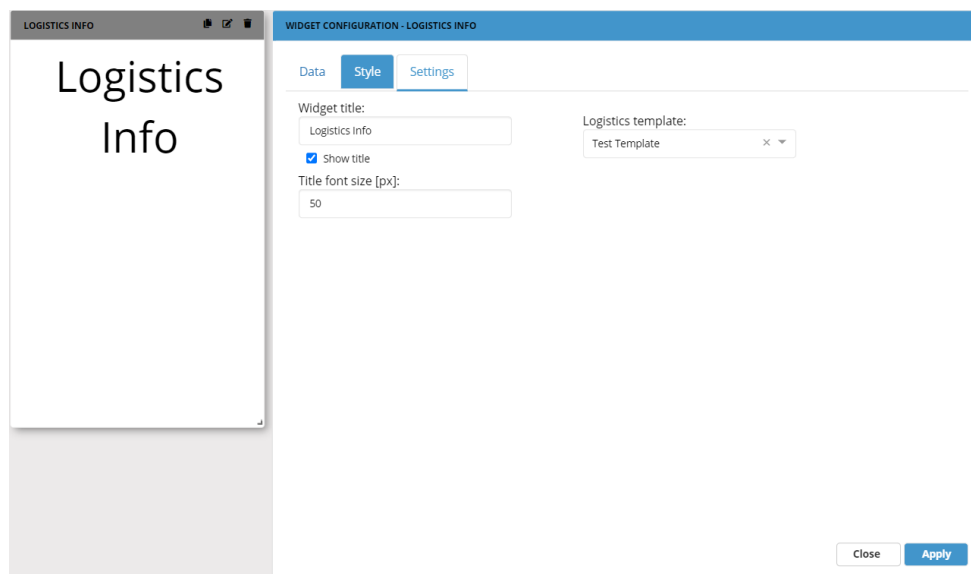


Figure 3.47: To make sure the widget works properly; the administrator should set up the template and data in the DCM. If not it will not be possible to pick the correct template under the setting “Logistics template”.

Widget title, show title and the font size of the title is self-explanatory.

3.9 Layout

While these widgets may not directly affect the function of the dashboard, they nevertheless are important to understand for optimal usage of the dashboard.

3.9.1 Label

Text widget displays written text with a chosen background color. The color is chosen under the “Style” tab like always.

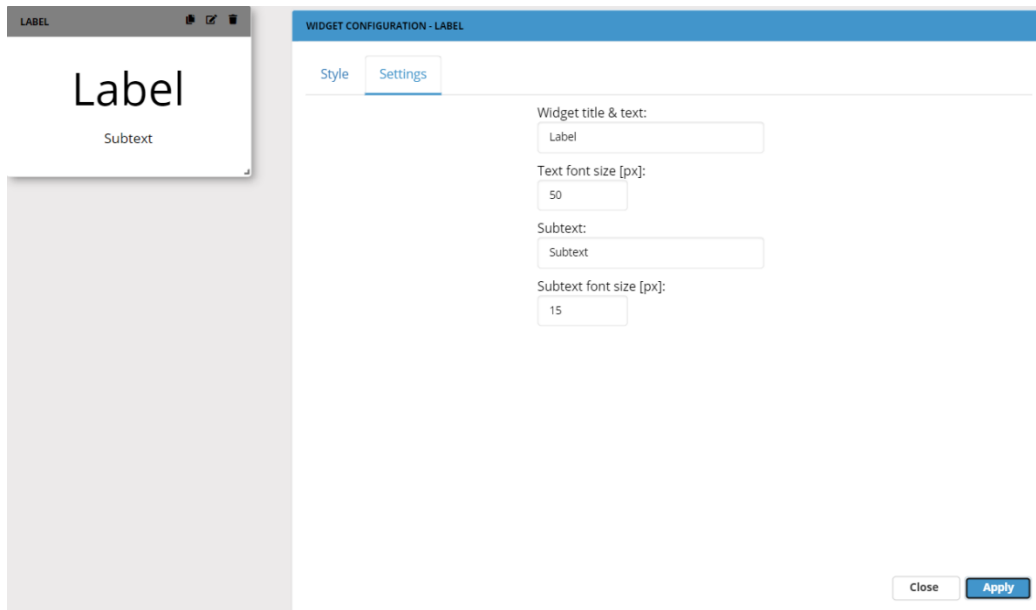


Figure 3.39: The text widget is very simple to configure.

First, enter a title and sub text to display.

The numerical inputs can be used to change the size of the text and sub text.

3.9.2 Picture

The picture widget does just that, shows a picture. It is currently not possible to use the same widget to show video.

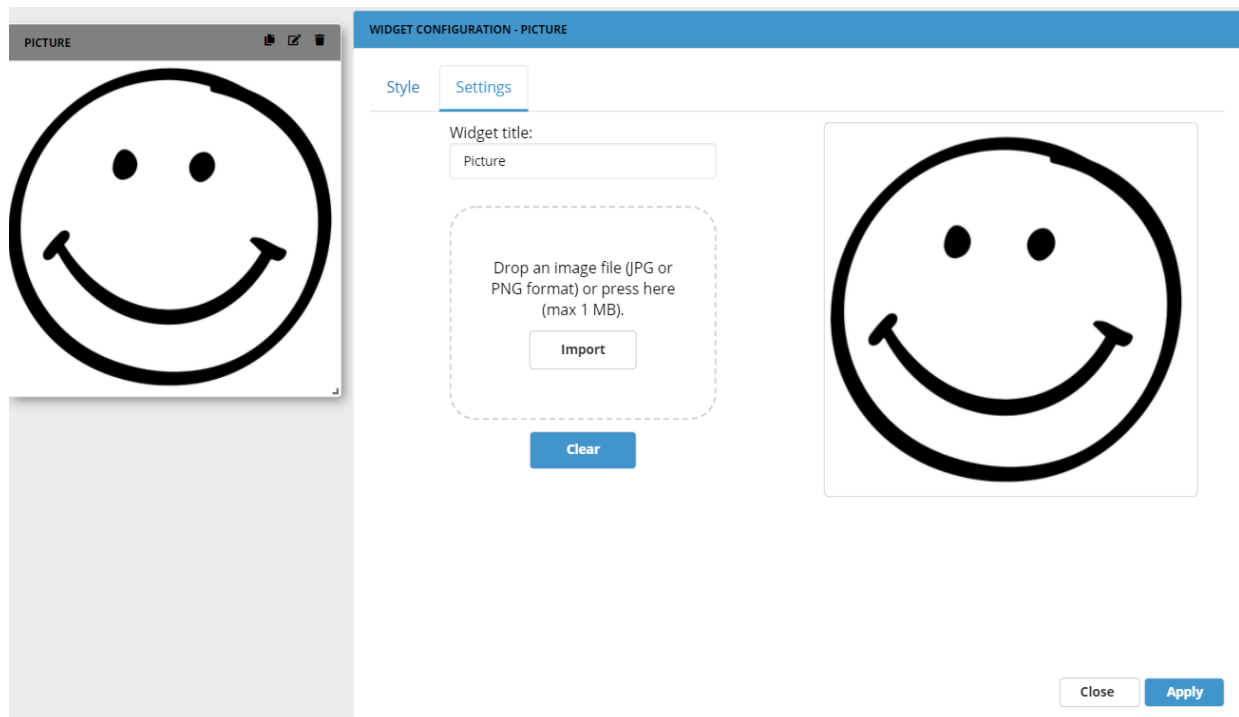


Figure 3.40: The picture widget is rather simple, only needing two inputs, a name and a picture, simply click 'Import picture', select the picture and press apply, the picture should then be applied into the body of the widget.

3.9.3 Navigation

Navigation Widget allows for navigating between multiple dashboards without having to return to the main menu to select a new dashboard.

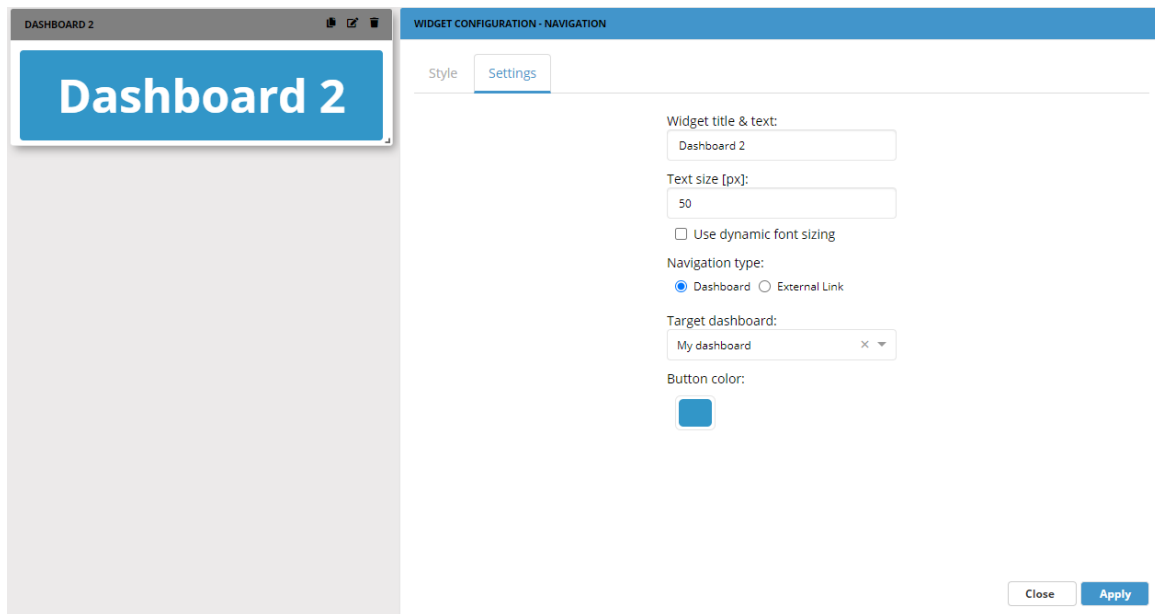


Figure 3.41: Specify the title of the button to navigate to the new dashboard. Change the text size. Default is 50 px. Check off "Use dynamic front sizing" if the text should follow the size of the widget. There are two ways to navigate away from the current dashboard. Set a target dashboard from the drop-down menu. Only available dashboards will be shown. Or use an external link by adding URL hash for the dashboard that the user will be navigated to. It is important that it is only the hash value of the URL and not the entire URL that is added. Finally, change the button color. Font color can be changed under the Style tab like always.

If the user has access to the desired dashboard it will now be possible to go directly to the dashboard via the navigation widget.

Chapter 4

OEE

In order to use OEE, the following widgets are required and must be added in the same order to the dcc:

- Batch Selector
- Event Browser
- Availability Gauge
- Quality Gauge
- Performance Gauge
- Total OEE Gauge

4.1 Batch Selector

The use of batch selector is described in section 3.5.1 please see this section for batch selector setup.

4.2 Event Browser

The event browser illustrates the status of that machine over a batch period.

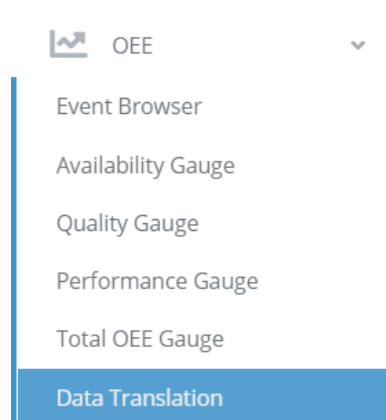


Figure 4.1: After creating the Batch Selector, click on Data Translation from the dashboard sidebar.

Translation Table configuration

Value 0	Translates to	Start	#1b9bd9ff	Batch start	<input type="checkbox"/>
Value 1	Translates to	Stop	#be2edbff	Batch stop	<input type="checkbox"/>
Value 2	Translates to	Running	#33e924ff	Running	<input type="checkbox"/>
Value 3	Translates to	Machine stop	#eca52dff	Not running	<input type="checkbox"/>

Figure 4.2: From there, the values from the machine can be translated. The Event Browser will then appear as follows:

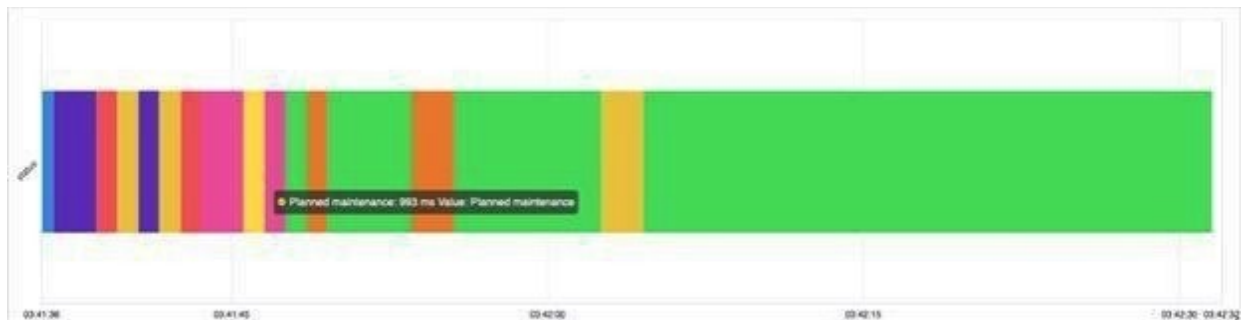


Figure 4.3: The event browser uses the Data Translation module as input, a sample point (status) and the Batch Selection - thereby it can either be the raw value from the DCM or a translation value from the translation module that is displayed.



Figure 4.4: If the raw value is selected and has not been assigned a colour in translation module, the event browser will display the different value in a shade of grey.

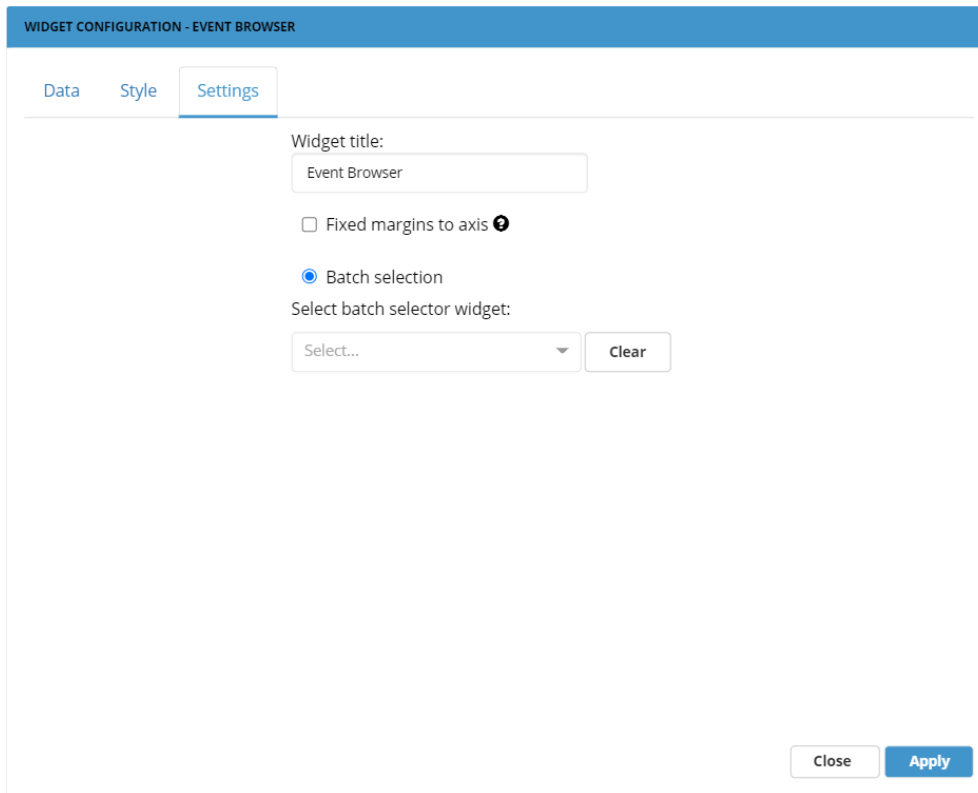


Figure 4.5: Standard settings for the Event Browser. Choose the correct Batch Selector widget to make the Event Browser show the translated data.

4.3 Availability Gauge

Availability Gauge is used to show the availability of the machine as a percentage within a batch period.



Figure 4.6: Availability Gauge depends on the batch selection table (which is an input from the user) and the Event Browser which is set up automatically. In addition, the events that are part of the production time must be defined and marked as "running" in the translation module.

WIDGET CONFIGURATION - AVAILABILITY GAUGE

Data Style **Settings**

Show Calculation

Widget title:

Select batch selector widget:

Use production target

Production target [%]:

Color ranges:
 Filled Unfilled Above Target Below Target

Gauge thickness [px]:

Split number font size [px]:

Label font size [px]:

Figure 4.7: The “Settings” tab for the Availability Gauge is fairly simple and close to the Simple Gauge settings, with a few exceptions:
 Make sure to select the Batch Selector widget that have been used for the Event Browser as well.
 The production target can be visually represented. Set colors below.
 The rest of the settings should be self-explanatory or available in Chapter 3.4 Simple Gauge.

4.4 Quality Gauge

Quality Gauge shows the quality of a batch production (how many items are approved)



Figure 4.8: Quality Gauge also depends on batch selection, in addition, Quality Gauge must use total count and failures that can be added in a random order.

WIDGET CONFIGURATION - QUALITY GAUGE

Data Style **Settings**

Widget title:

Select batch selector widget:

Use production target

Production target [%]:

Color ranges:
 Filled Unfilled Above Target Below Target

Gauge thickness [px]:

Split number font size [px]:

Label font size [px]:

Show Calculation

$Quality = (Total\ Count - Failures) / Total\ Count$

Failures (this batch):

Total Count (this batch):

Figure 4.7: Settings for Quality Gauge. These should be self-explanatory or available in Chapter 3.4 Simple Gauge.

The Failures and Total Count is specific for this widget. Set the sample points under data to activate this feature.

4.5 Performance Gauge

Performance Gauge deals with losses related to reduced production speed.



Figure 4.8: Performance Gauge gets its input from batch selection and seconds per unit which is selected by the user. The value from total counts is also used and obtained directly from Quality Gauge.

WIDGET CONFIGURATION - PERFORMANCE GAUGE

Data Style Settings

Widget title:
Performance Gauge

Select batch selector widget:
Select... Clear

Use production target

Production target [%]:
90

Color ranges:
 Filled Unfilled Above Target Below Target

Gauge thickness [px]:
30

Split number font size [px]:
12

Label font size [px]:
30

Show Calculation

Use samplepoint value instead of manual entry?

Seconds per unit produced:
Seconds per unit produced

Close Apply

Figure 4.9: Settings for the Performance Gauge. These should be self-explanatory or available in Chapter 3.4 Simple Gauge.

The notable thing here is the feature that allows for the use of sample point values instead of manual entry.

Use samplepoint value instead of manual entry?

Samplepoint (seconds per unit produced):
Select...

Figure 4.10: Marking this box changes the “Seconds per unit produced” to a drop down box for the selected sample point (selected under the “Data” tab).

4.6 Total OEE Gauge

Total OEE gauge combines all the above factors to one Key Performance Indicator



Figure 4.11: The Total OEE Gauge gives an overview.

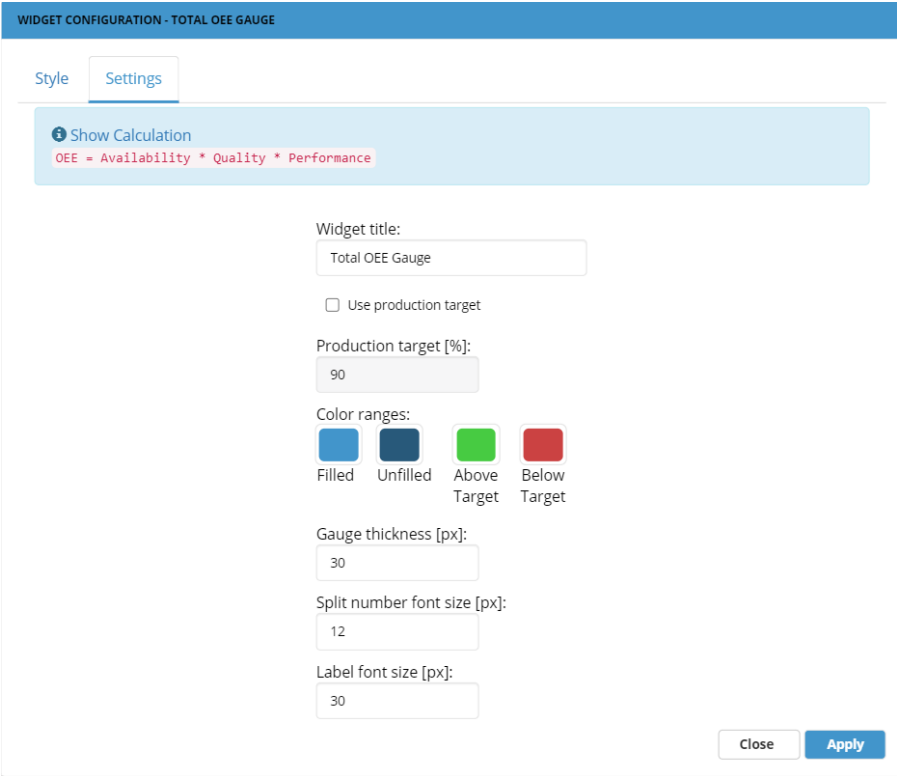


Figure 4.12: The settings for this should be self-explanatory or available in Chapter 3.4 Simple Gauge.