

# Widget details and specifics

DCC, Data Collection Cloud

v. 5.3

Made: 05/08/2019, Newest revision: February 2, 2021

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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	11.02.20	MM	Converted to .docx word document, edited text, updated photos, added Bar Chart and Logistics Info

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.

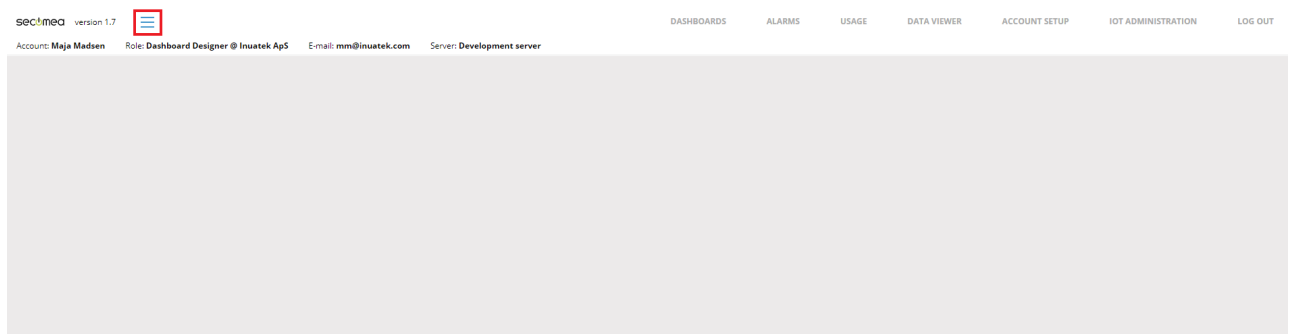


Figure 2.1: The sidebar is located in the top left corner of the browser window as seen above. To activate the sidebar, click the button that is to the right of the Secomea logo (marked with red above).

The sidebar will then open. It looks like this:

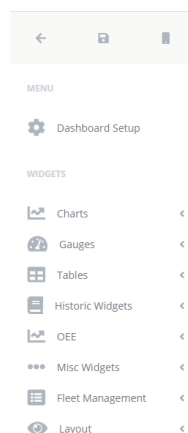


Figure 2.2: After the sidebar is opened it will present the function buttons and access to widgets.

### 2.1.1 Function buttons

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

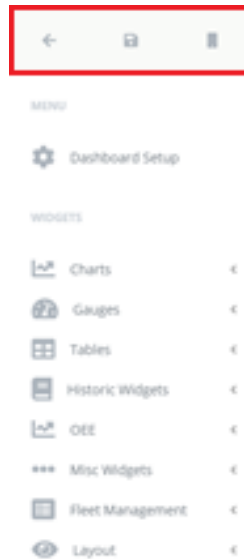


Figure 2.3: The Function buttons are as follows:

- 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.

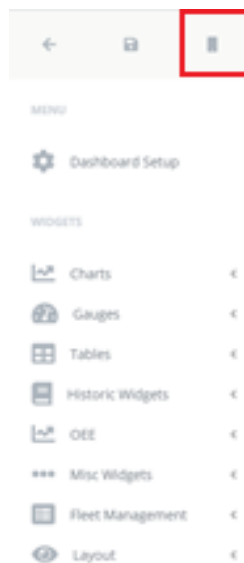


Figure 2.4: Mobile view button pictured to the right of the function buttons.

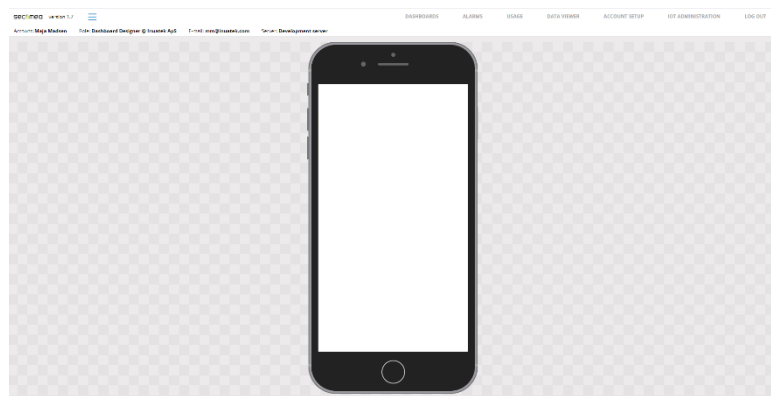


Figure 2.5: Enabling the mobile view turns the workspace into a phone model simulating the space and look of a mobile dashboard.

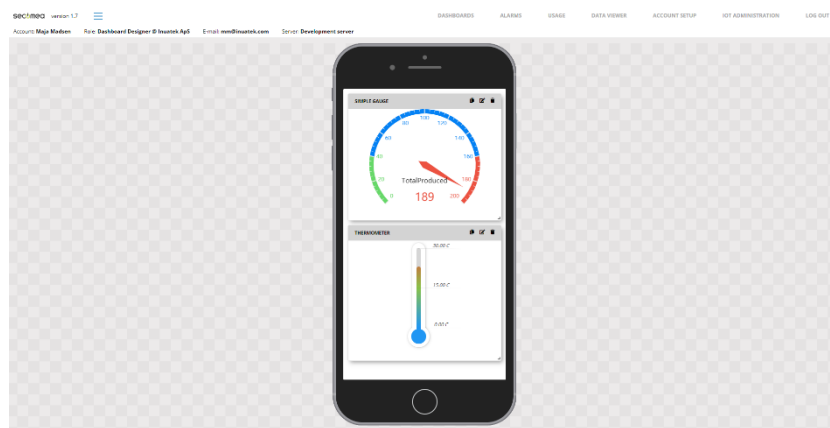


Figure 2.6: Here a dashboard can be designed with mobile usage in mind.

### 2.1.3 Dashboard Setup

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



### Dashboard setup

Details

Title:

My dashboard

Description:

Dashboard description

Parent Dashboard:

Select...

DCM Replacement Tool

From:

Select...

To:

Select...

Replace

Dashboard style

Background Image (JPG or PNG format, max 5 MB):

Import

Clear

☐ Fill Horizontally

☐ Fill Vertically

Static Width [px]:

0

Static Height [px]:

0

Background color:

Widget style

☒ Shadow

☒ Header

☒ Frame

Background color:

Font color:

Close

Apply

Figure 2.7: You can change the title and description of your dashboard. It is also from here you 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 which can be either a fixed or dynamic size in height or width.

You can pick a specific background color for the entire dashboard.

You can create a standard for all the widgets you add. This includes shadow, header and frame on the widgets as well as background and font color. Within font or background color you are able to change opacity of the color if you would like.

### 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.

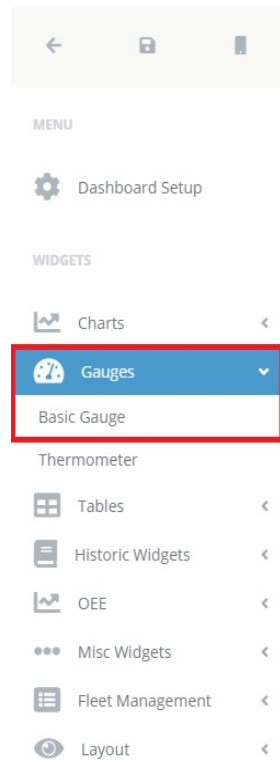


Figure 2.8: Second, click the drop down that is needed, a Basic Gauge falls under Gauges. Click this.

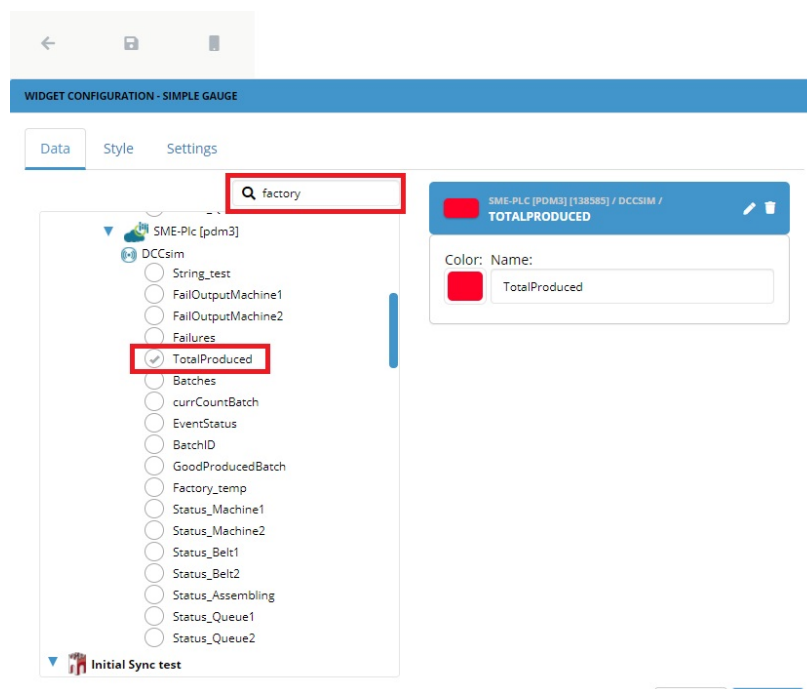


Figure 2.9: Once you have decided what widget to add and clicked it, it will be added to the dashboard and the widget configurator will automatically open to the tap called “Data”. Of course the first thing you need to decide is what data you would like to view via your

gauge. To do so you can search if you need to in order to find the correct sample point that has previously been set up by your administrator. Now you can choose what specific data the gauge should visualize.

For the sake of this demonstration we have searched for factory and selected the data showing “Total produced”. You can rename the data as shown by clicking the pen in the blue square. This tap looks the same for every widget.

## 2.2 Widget Configurator: Style

You might want to change the style of the individual widget. You can do so by clicking the style tap. This tap looks the same for every widget.

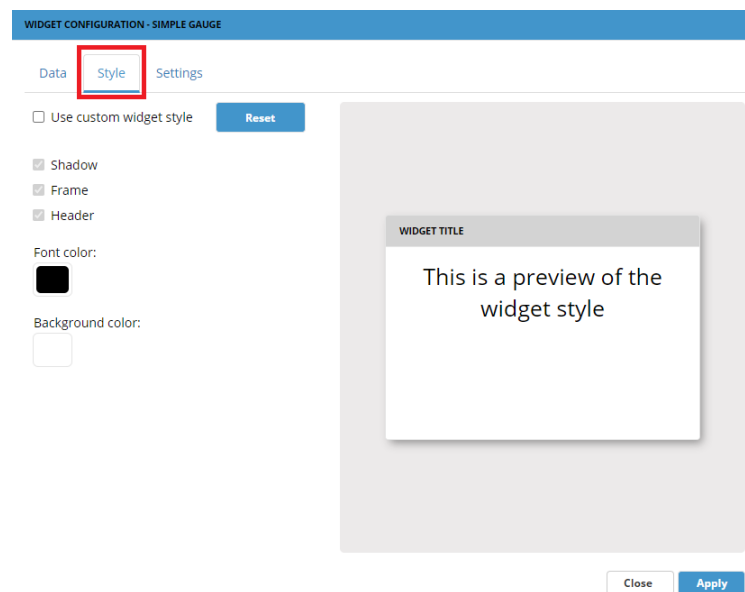


Figure 2.10: From the style tap you can decide, if you would like to use the standard widget style that you have created under dashboard settings or if you would like to change the style of the specific widget in question. The available style settings includes shadow, frame, header and font and background color.

## 2.3 Widget Configurator: Settings

The next step of the process is to configure the recently created gauge widget. For this the widget configurator is also used. The widget configurator is the essential tool to make and edit widgets. The “Settings” tap looks different depending on which widget you are editing.

WIDGET CONFIGURATION - SIMPLE GAUGE

Data Style **Settings**

Widget title:  
Simple Gauge

Minimum value:  
Gauge minimum

Maximum value:  
100

Gauge low range [%]:  
20

Gauge high range [%]:  
80

Color ranges:  
☐ Low ☐ Mid ☐ High

Gauge thickness [px]:  
30

Number of splits:  
10

Split number font size [px]:  
12

Number of decimals:  
2

☒ Show samplepoint name

Samplepoint name placement:  
Center

Samplepoint name font size [px]:  
15

Value font size [px]:  
25

Close Apply

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

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

Close Apply

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

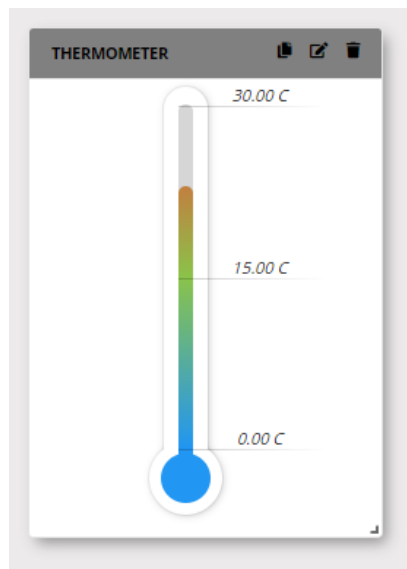


Figure 3.1: Widgets have a head and a body. In the header, the name of the widget and top-level function buttons, duplicate, edit and delete can be found (left, middle and right icon respectively). By clicking the edit button, you will open the widget configurator. You can also do so by right-clicking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

The header is also draggable such that the widget can be moved around. You can also move the widget by right-clicking the widget and selecting “Move widget”.

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:

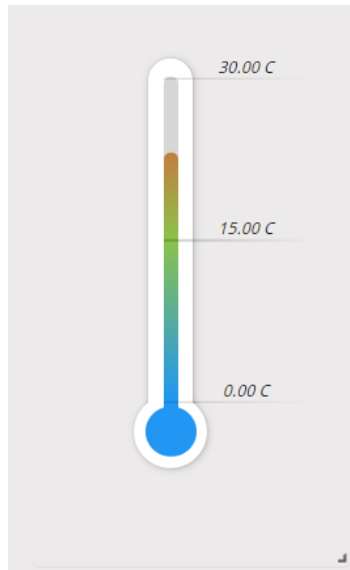


Figure 3.2: For this design we have removed the shadow, header and frame and changed the opacity of the background color to 0%. This is of course done in the widget configurator under the style tap (or the dashboard settings if you would like for this look to apply to all widgets).

## 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.

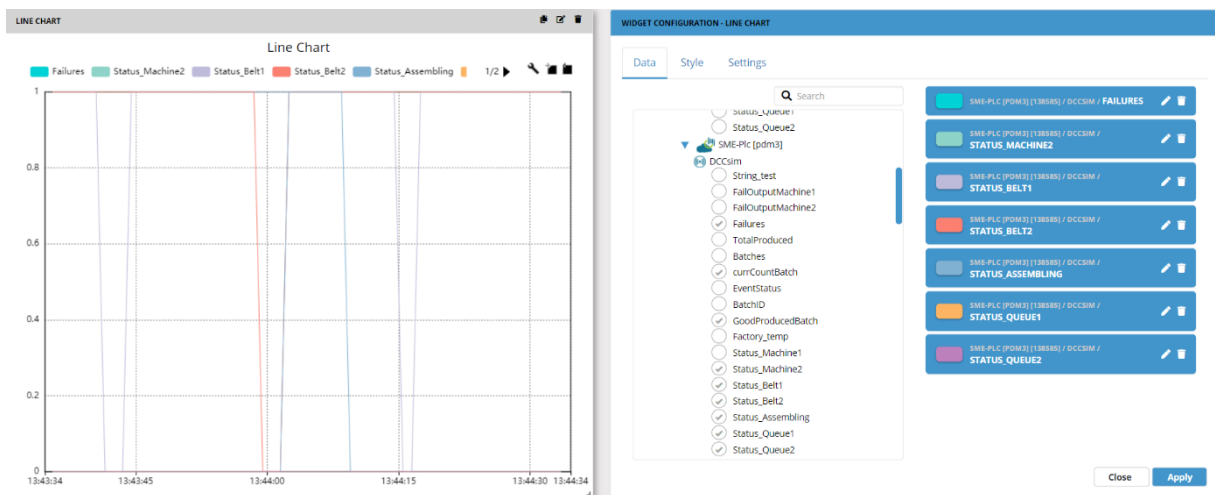


Figure 3.3: The Line Chart input is the most versatile of all the widgets currently available for use in the dashboard. The Line Chart is able to track multiple DCM sample inputs at once by color coding each line such that it grants easy overview. To select multiple sample points, simply mark the ones you would like in the widget configuration tap “Data” when setting up or editing the widget.

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

WIDGET CONFIGURATION - LINE CHART

Data

Style

Settings

Widget title:

Line Chart

Title font size [px]:

18

☐ Title behind chart

Legend placement:

Top

☒ Enable sampling ⓘ

☐ Fixed margins to axis ⓘ

Y-Axis max:

Maximum

Y-Axis min:

Minimum

Set maximum expected sample period in seconds: ⓘ

Max Sample Period

☒ Real-time ☐ Batch selection ☐ Time Interval

The span of the chart in seconds:

60

Close

Apply

Figure 3.4: 1<sup>st</sup> input is a title for the widget, this input is universal with all widgets. Next you are able to change the Title font size and the placement of the legend. This can be placed at the top, bottom, right or left side. You are able to put the title 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 your browser run smoothly and minimizes the CPU-usage on your device. We recommend having this enabled unless you specifically need otherwise. This is why it is checked off as a standard setting.

WIDGET CONFIGURATION - LINE CHART

Data

Style

Settings

Widget title:

Line Chart

Title font size [px]:

18

☐ Title behind chart

Legend placement:

Top

☒ Enable sampling ⓘ

☒ Fixed margins to axis ⓘ

Y-Axis max:

Maximum

Y-Axis min:

Minimum

Set maximum expected sample period in seconds: ⓘ

Max Sample Period

☒ Real-time ☐ Batch selection ☐ Time Interval

The span of the chart in seconds:

60

Left: 30 [px] Right: 30 [px]

Top: 45 [px] Bottom: 35 [px]

Close

Apply

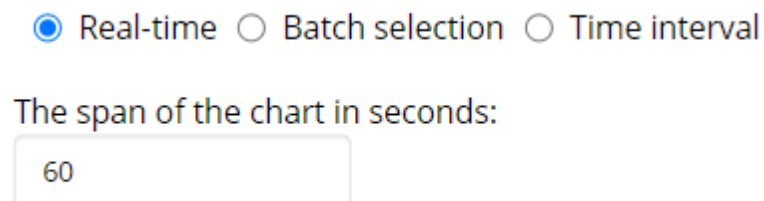


Figure 3.5: The “Fixed margins to axis” feature makes it possible to align axis between multiple charts. Once you check this off, you are able to change the pixel value.

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

The next setting available enables you to visually discard missing data on your chart. For instance, if your 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.

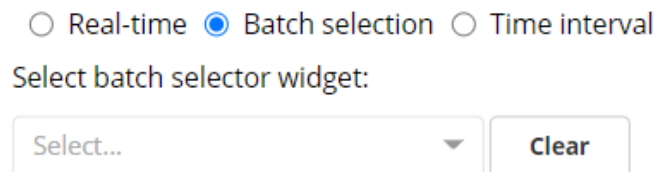
At the bottom of the Line Chart Settings page you are able to choose how you would like to view your data. Real-time, Batch selection or Time interval.



☒ Real-time ☐ Batch selection ☐ Time interval

The span of the chart in seconds:

Figure 3.6: If you select Real-time, you are able to edit how long the span of your chart should be in seconds. You are essentially editing the X-Axis.



☐ Real-time ☒ Batch selection ☐ Time interval

Select batch selector widget:

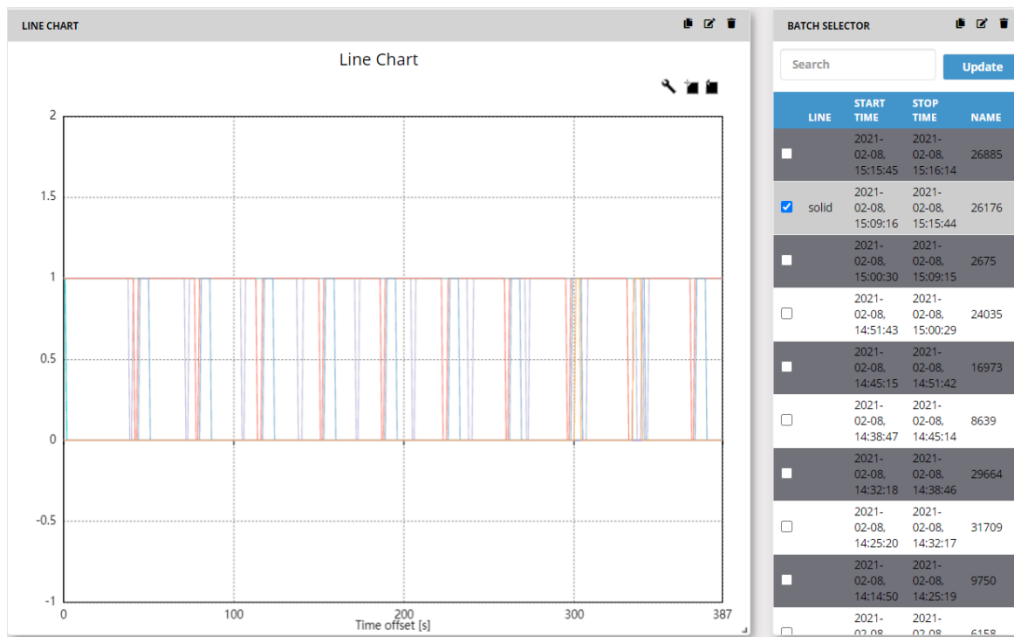


Figure 3.7 & 3.8: If you select Batch selection, you can choose from a list of your Batch-selector-widgets. Thereby you connect the two widgets and are able to read the batch-data via the Line Chart. More on the Batch Selector widget under Chapter 3.5 Tables.

☐ 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 you can choose to view a specific time interval in your Line Chart. As you can see it is possible for you 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.

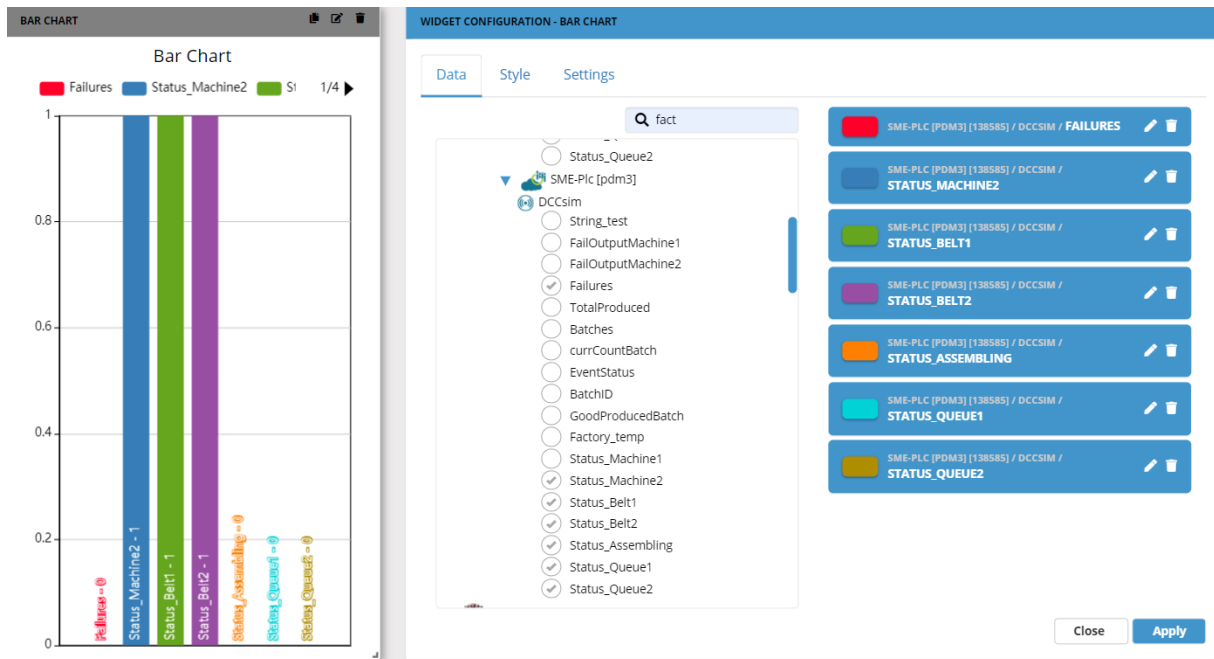


Figure 3.10: The Bar Chart is able to track multiple DCM sample inputs at once by color coding each line such that it grants easy overview. To select multiple sample points, simply mark the ones you would like in the widget configuration tap “Data” when setting up or editing the widget.

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

The 'Settings' tab of the 'WIDGET CONFIGURATION - BAR CHART' panel includes the following options:

- Widget title:** Bar Chart
- Title font size [px]:** 18
- ☐ Title behind chart
- Legend placement:** Top
- Sorting:** No Sorting
- Bar Orientation:**
  - ☒ Vertical
  - ☐ Horizontal
- ☒ Show values on bars
- Time Option:**
  - ☒ Real-time
  - ☐ Batch selection
  - ☐ Time Interval
- Info:** In real-time mode, only the latest values of each sample point are shown.

Buttons: Close, Apply

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”-tap.

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 ▼

Clear

☐ 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.

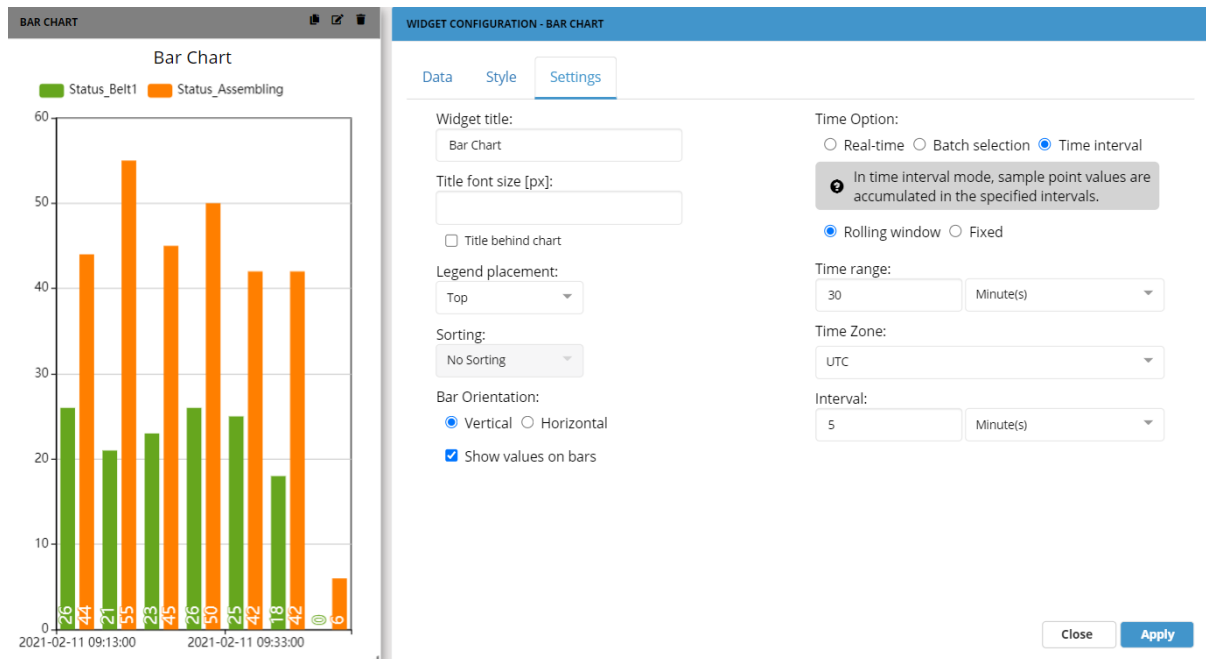


Figure 3.13: If Time-interval is marked it is possible to view accumulated data from within a specific time-period. Marking “Rolling window” allows you to pick from a time range (minutes, hours, days). Here the time range is 30 minutes, which shows the accumulated time from now and 30 minutes back.

If you need to share this information with a colleague in another time zone, you can change that from the “Time zone” menu.

Interval indicates how you would like your data represented. Would you like accumulated data each minute or maybe on a day-to-day basis. You can pick from minutes, hours and days here as well. In the example we are showing data from 30 minutes back in a five-minute interval. We are therefore shown 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: 08-02-2021, 15:18 To: 08-02-2021, 16:18

Time Zone: UTC

Interval: 5 Minute(s)

Figure 3.14: Marking “Fixed” allows you to show data from a specific time (not only the past “30 minutes”). Time zone and interval works the same as previously explained. You’ll notice 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:

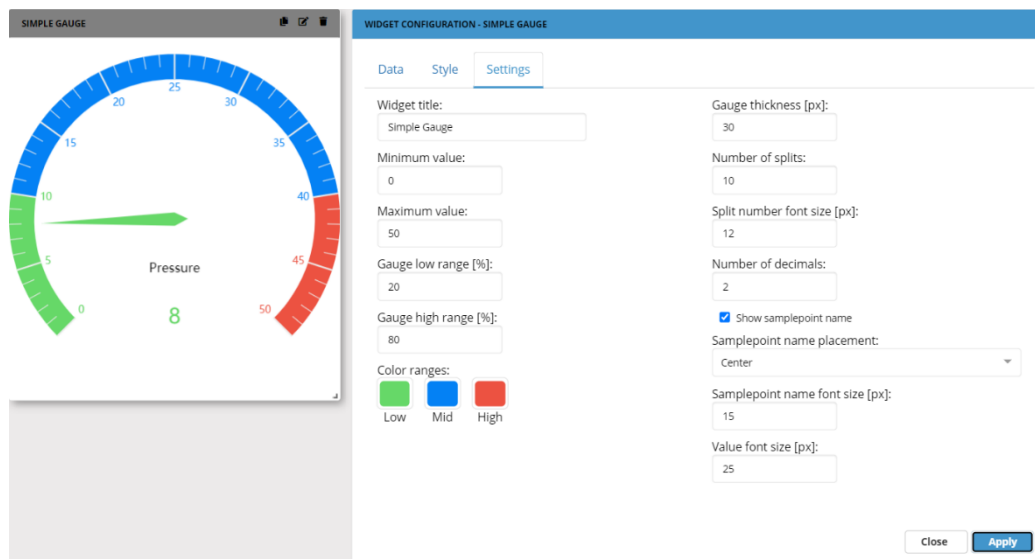


Figure 3.15: The first option is to change the widget title that is shown in the header of the gauge.

2<sup>nd</sup> and 3<sup>rd</sup> is the minimum and maximum value which defines how low the gauge goes, incl negative values, so for example, -50 to 100. Here we've chosen 0-50.

You then get to 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. We have then chosen the color green to mark when the value is within the low range. As you can see, the arrow of the Gauge is green. This changes color according to what range it is pointing to.

At the other end of the spectrum, we have decided that the “high range %” should begin at 80%. Again, since our 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 we can make is the thickness of the gauge in pixels as well as the number of splits and the size of the numbers for these. You are also able to choose the number of decimals, should this be relevant.

You can decide whether to show the sample point name, and if you do decide to show it, where it should be placed (top, center, bottom) and what font size it should have.

Lastly you are able to change the font size of the value (the number in the middle).

### 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.

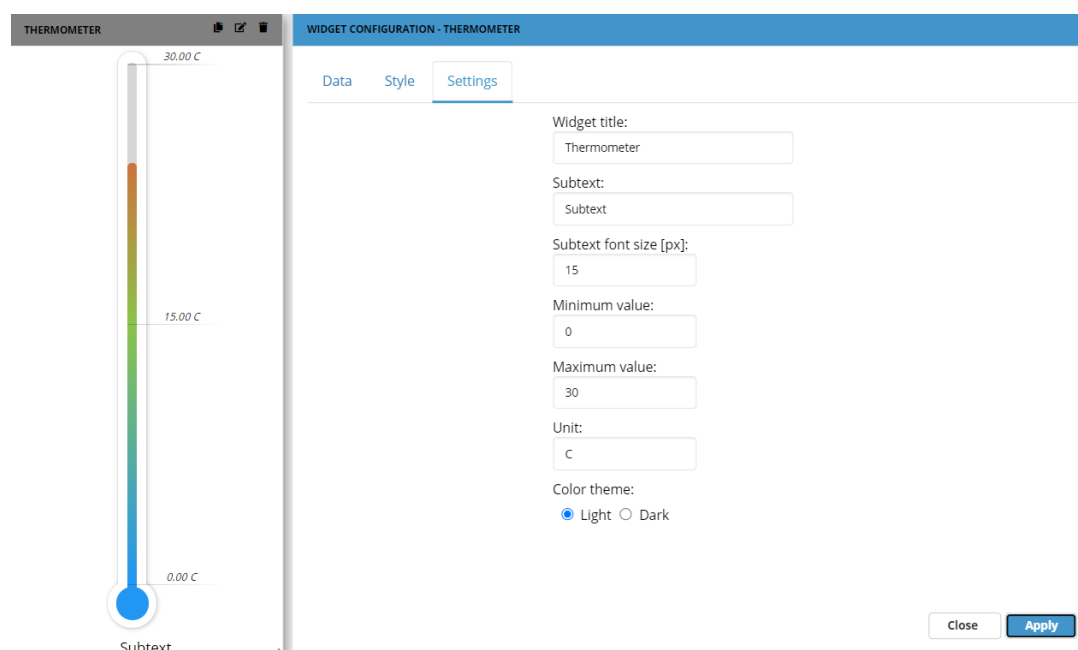


Figure 3.16: Standard thermometer setup for system temperature with Unit set as °C (Celsius). The unit of measurement can be set as anything as it is currently just a text input.

These settings are fairly self-explanatory. We have set the subtext as “Subtext” to visualize where this text will show up.

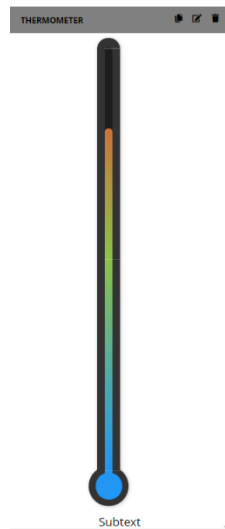


Figure 3.17: For this widget light and dark theme has been added as a feature. Light theme is showed in figure 3.16 and dark theme is showed above. Of course dark theme works a lot better if the background color is dark as well.

## 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



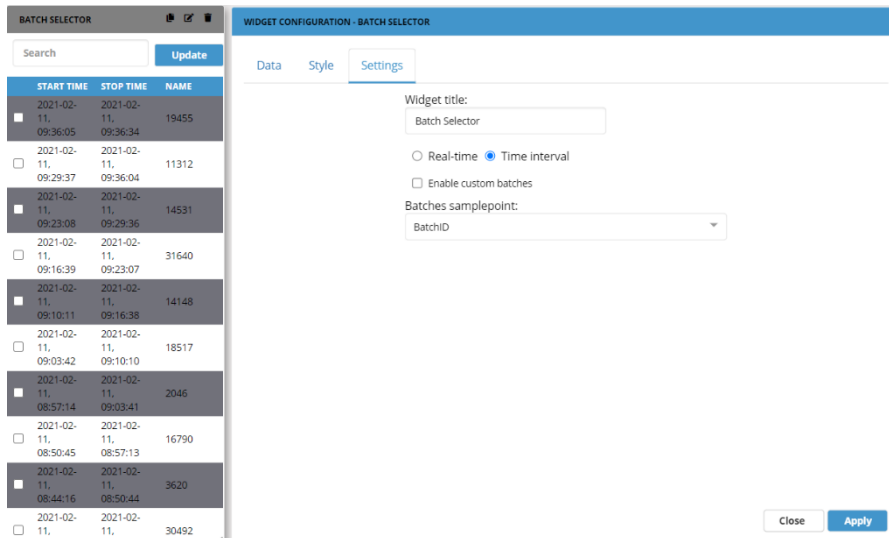


Figure 3.18: The Batch Selector can show you specific batches of data within Time interval (as shown above) or within Real-time. For the Batch Selector to function properly, it is important that the sample point matches on all widgets.

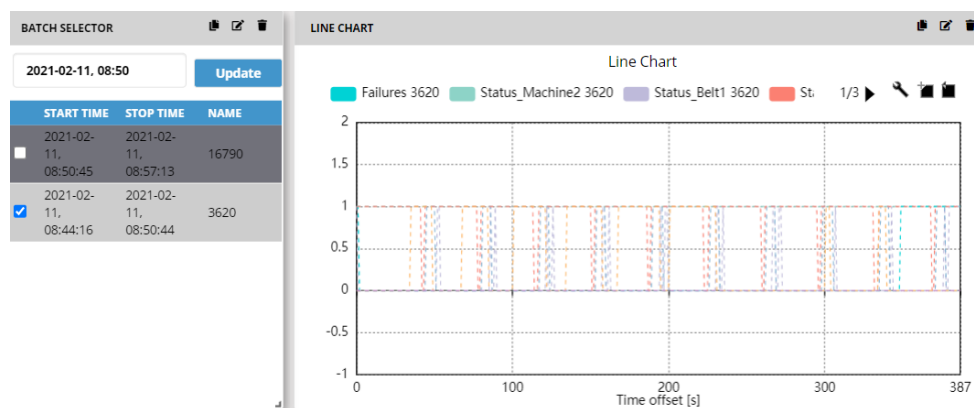


Figure 3.19: The batch selector can be used in conjunction with a graph to display a batch over time, a single chart can actually display the output of multiple batch selectors at once. You are even able to search for specific batches within the widget itself. You can then mark the batch in question 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

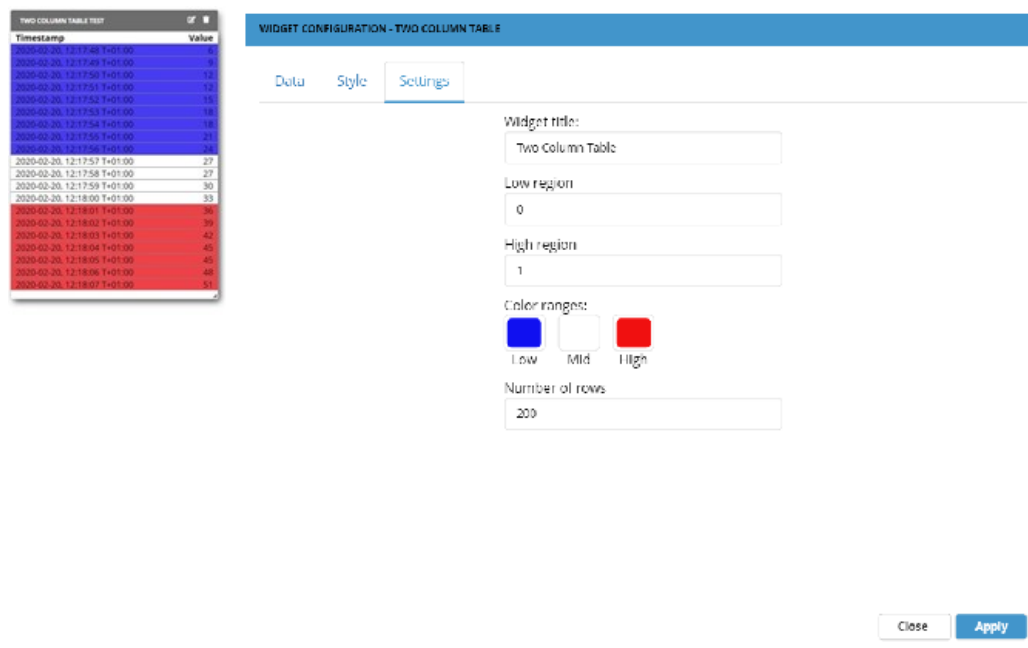


Figure 3.20: The Two Column Table widget automatically updates the data shown and there can be set a low and high region like the gauge – in this example we have set the low range to the color blue and used the color red for the high ranges. Of course, everything in between will be the mid range – and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

At the bottom you will see a setting regarding the number of rows that is being shown at once in the widget. 200 rows is 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.

WIDGET CONFIGURATOR - DATE RANGE

Widget title

☐ Hide export button?

Start 2020-07-23, 15:46

Stop 2020-07-23, 16:46

Apply

Export

Close Apply

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

Widget title

Legend placement: Select...

☐ Real-time ☐ Batch selection ☒ Time interval

☒ Use Date Range Widget

Maximum samples per samplepoint:

500

☐ Enable sampling ?

Close Apply

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.

**REPORT GENERATOR**

# Report Generator

Subtext

From: 04-02-2021, 13:12 To: 11-02-2021, 13:12

Maximum number of datapoints per samplepoint (0 = all data):

0

Options:

- ☒ Include header row?
- ☒ Combine all samplepoints to a single file?

File name when combining to a single file:

combined-data

E-mail to send report:

example@mail.com

Enter a valid email and add samplepoints to start generating a report

**Generate**

**WIDGET CONFIGURATION - REPORT GENERATOR**

Data Style **Settings**

Widget title:

Report Generator

Font size of title [px]:

50

Subtext:

Subtext

Font size of subtext [px]:

20

Default filename when combining to a single file:

combined-data

☒ Time interval ☐ Batch selection

Default time range:

1 Week(s)

**Close** **Apply**

Figure 3.23: 1<sup>st</sup> 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.

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

☐ Time interval ☒ Batch selection

Select batch selector widget:

Batch Selector **Clear**

Figure 3.24: You are able to choose to have your report generated around a batch as well. To do so you have 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-based 'Report Generator' interface. At the top, there's a title bar with the text 'REPORT GENERATOR' and some icons. Below this, the main heading 'Report Generator' is displayed in a large font, followed by a 'Subtext' label. The form includes several input fields: 'From' and 'To' date-time pickers showing '04-02-2021, 13:12' and '11-02-2021, 13:12' respectively; a text input for 'Maximum number of datapoints per samplepoint (0 = all data):' with the value '0'; a section for 'Options:' with two checked checkboxes: 'Include header row?' and 'Combine all samplepoints to a single file?'; a text input for 'File name when combining to a single file:' with the value 'combined-data'; and an 'E-mail to send report:' input with the value 'example@mail.com'. A message below the email field says 'Enter a valid email and add samplepoints to start generating a report'. At the bottom, there is a blue 'Generate' button.

Figure 3.25: Report generator widget.

The 1<sup>st</sup> 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.

2<sup>nd</sup> 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.

	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	20	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.

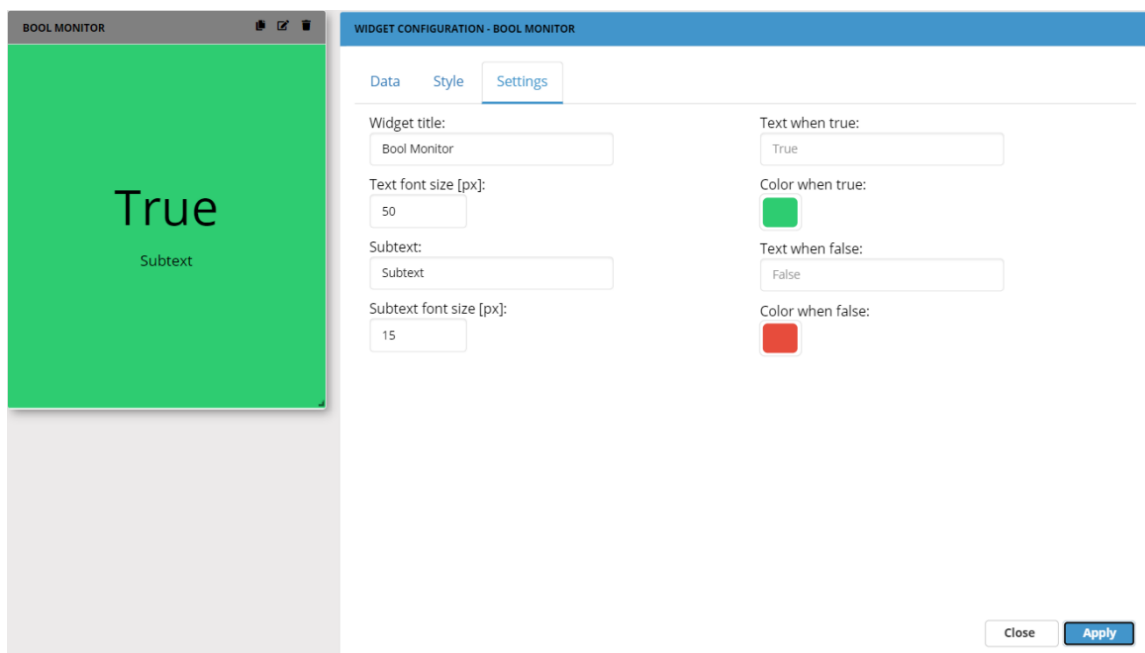


Figure 3.27: 1<sup>st</sup> input from the top, is the title for the widget.

2<sup>nd</sup> input is for the size of the text displayed for True/False outputs.

3<sup>rd</sup> input is for setting a subtext. Could be used to specify one bool monitor from another if multiple is in use.

4<sup>th</sup> input specifies the size of the subtext.

5<sup>th</sup> input specifies the text displayed if the output is true. This will as a standard be “True”.

6<sup>th</sup> is the color if true. Standard will be green.

7<sup>th</sup> and 8<sup>th</sup> 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.

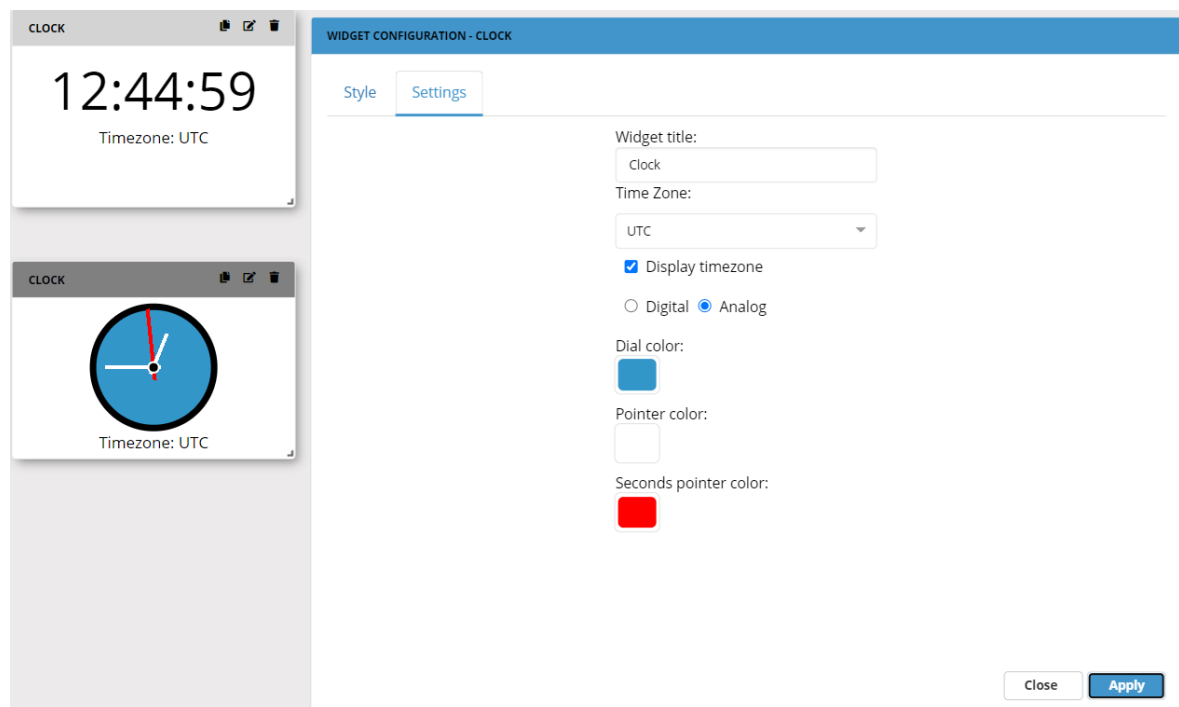


Figure 3.28: The clock has all time zones and a search functionality built into the dropdown. The rest is self-explanatory.

### 3.7.3 Map

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

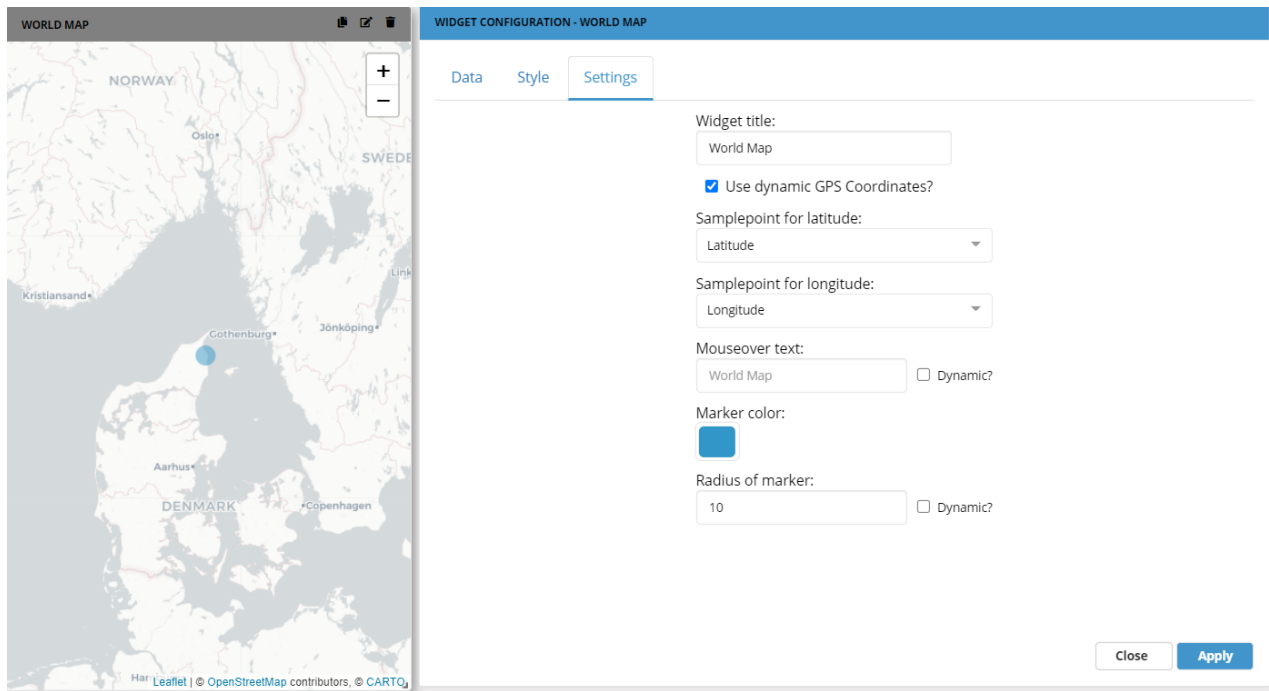


Figure 3.29: 1<sup>st</sup> input from the top, is the title for the widget, can be used to specify one map from another if multiple is in use.

2<sup>nd</sup> and 3<sup>rd</sup> 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, you will have to select “Use dynamic GPS Coordinates?”

If this is not marked, you can select a DCM.

4<sup>th</sup> 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.

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

6<sup>th</sup> 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.

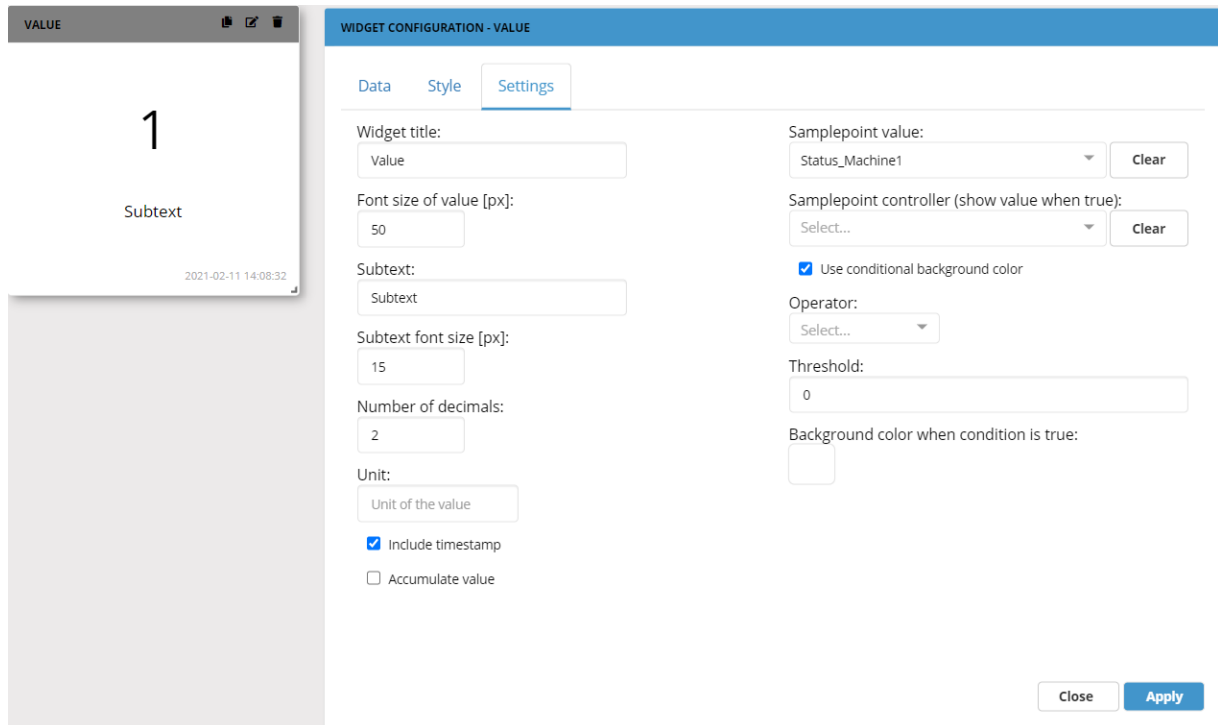


Figure 3.30: 1<sup>st</sup> input from the top, is the title for the widget, can be used to specify one Value widget from another if multiple is in use.

2<sup>nd</sup> input is for the size of the text displayed.

3<sup>rd</sup> and 4<sup>th</sup> input is for subtext and the size of the subtext displayed.

5<sup>th</sup> input is the number of decimals shown, if relevant.

6<sup>th</sup> is the unit of the value.

You can decide if you would like to include the time stamp or if it should be an accumulated value.

Next you are able to 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.

You can select the desired sample point for the controlled Boolean, if desired.

If you want a changed background color, depending on the value "Use conditional background color" can be used.

Once this is marked "Operator" and "Threshold" as well as background color pops up.

The operator lets you decide if the Boolean should react if the value is more, less, 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 you to introduce 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.

WIDGET CONFIGURATION - SYMBOL

Data Style Settings

Widget title:

Trigger:

Default

Name:

Default

Text:

Robot 1 idle (no data)

Font size of text [px]:

16

Import Clear

Colorize symbol

Close Apply

Figure 3.31: 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".

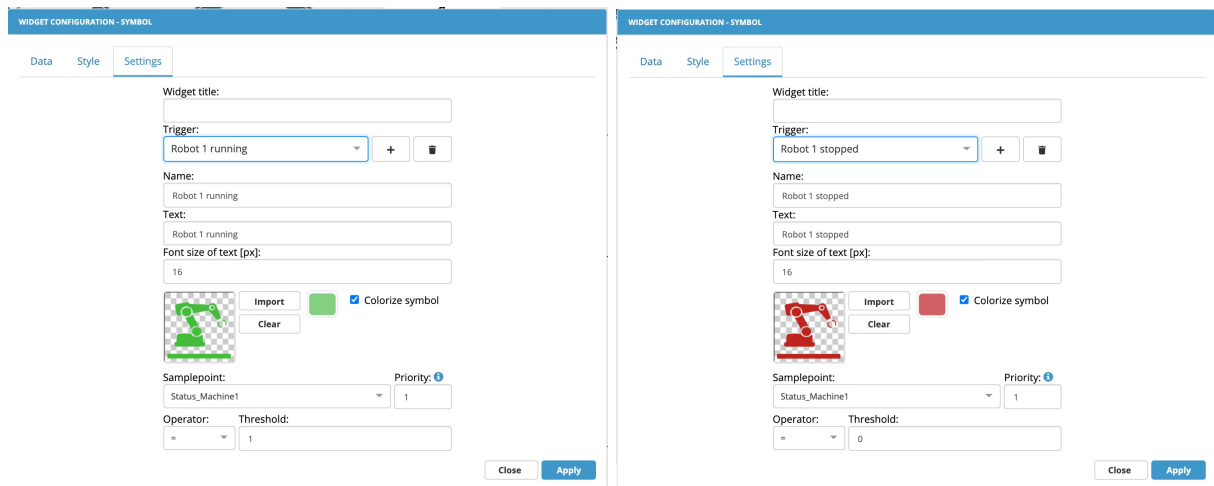


Figure 3.32: It is now possible to build a dashboard that can be used across languages and countries, by using symbols and colors.

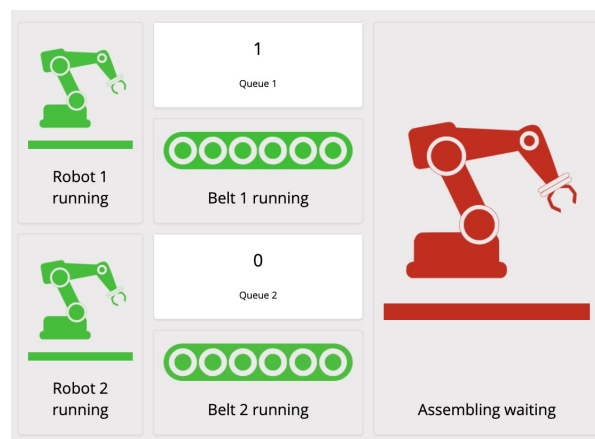


Figure 3.33: Symbol widget when set up.

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.

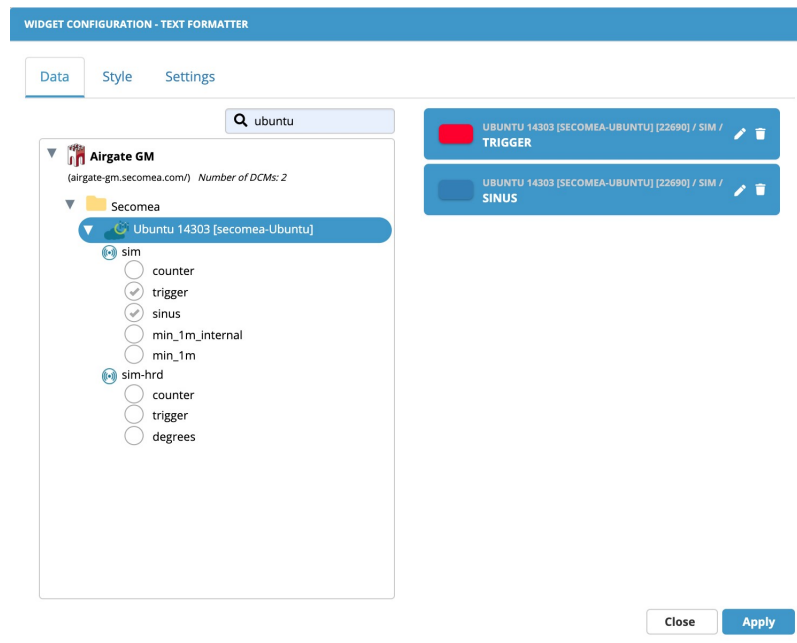


Figure 3.34: Then widgets can be styled according to your own needs.

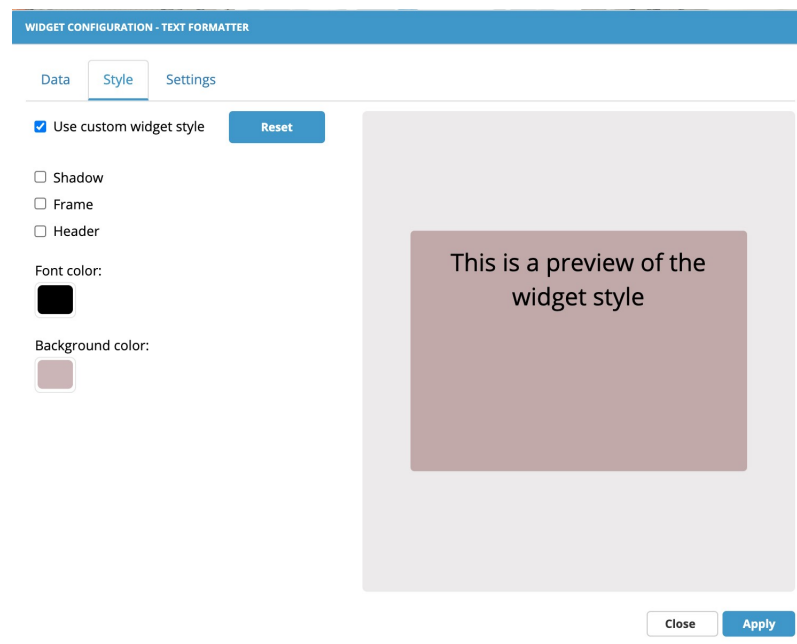


Figure 3.37: The position of text, size, and the number of decimals if double or float are defined by the user. Finally, the desired text is defined. To use a sample point in the text, a template is defined.

WIDGET CONFIGURATION - TEXT FORMATTER

Data Style Settings

Widget title:

Samplepoint:  Template:

Text Alignment:

Font size of title [px]:

Font size of text [px]:

Number of decimals for float/double values:

Text:

Close Apply

Figure 3.35: 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

### 3.7.7 Logistics Info

The Logistics Info widget is used to present information about the machine in question. For this widget to work you will need to choose a PLC under the “Data” tab where you would normally choose a sample point (when editing the widget).

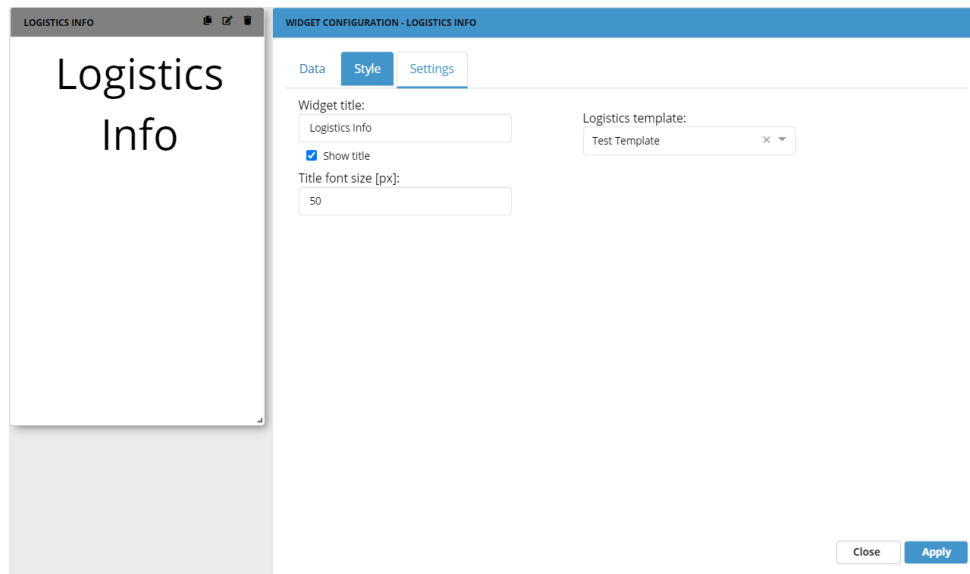


Figure 3.36: To make sure the widget works properly; your administrator should set up the template and data in the DCM. If not, you will not be able to pick the correct template under the setting “Logistics template”.

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

## 3.8 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.

### 3.8.1 Label

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

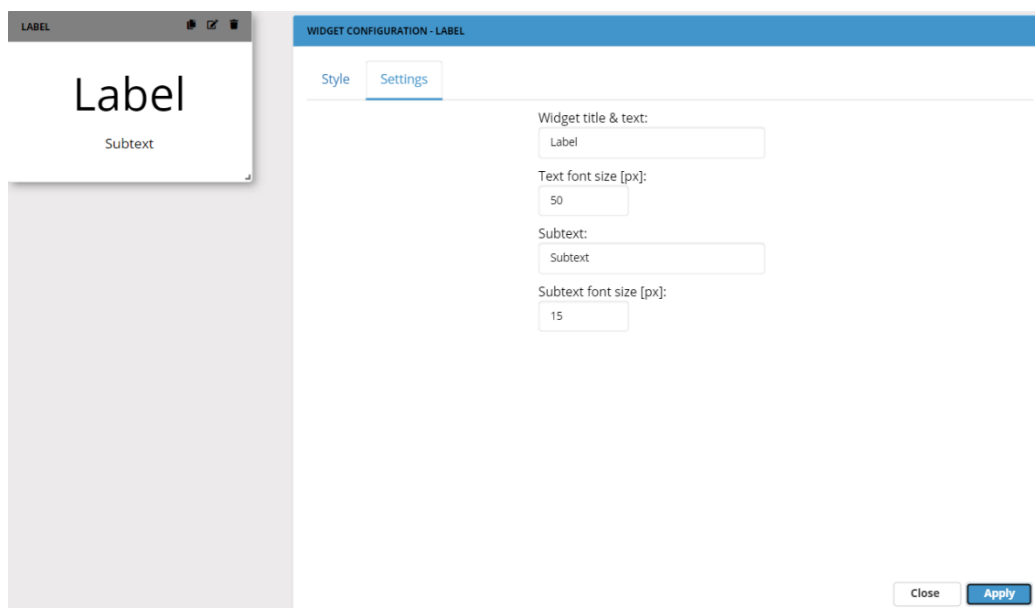


Figure 3.37: The text widget is very simple to configure.

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.

### 3.8.2 Picture

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

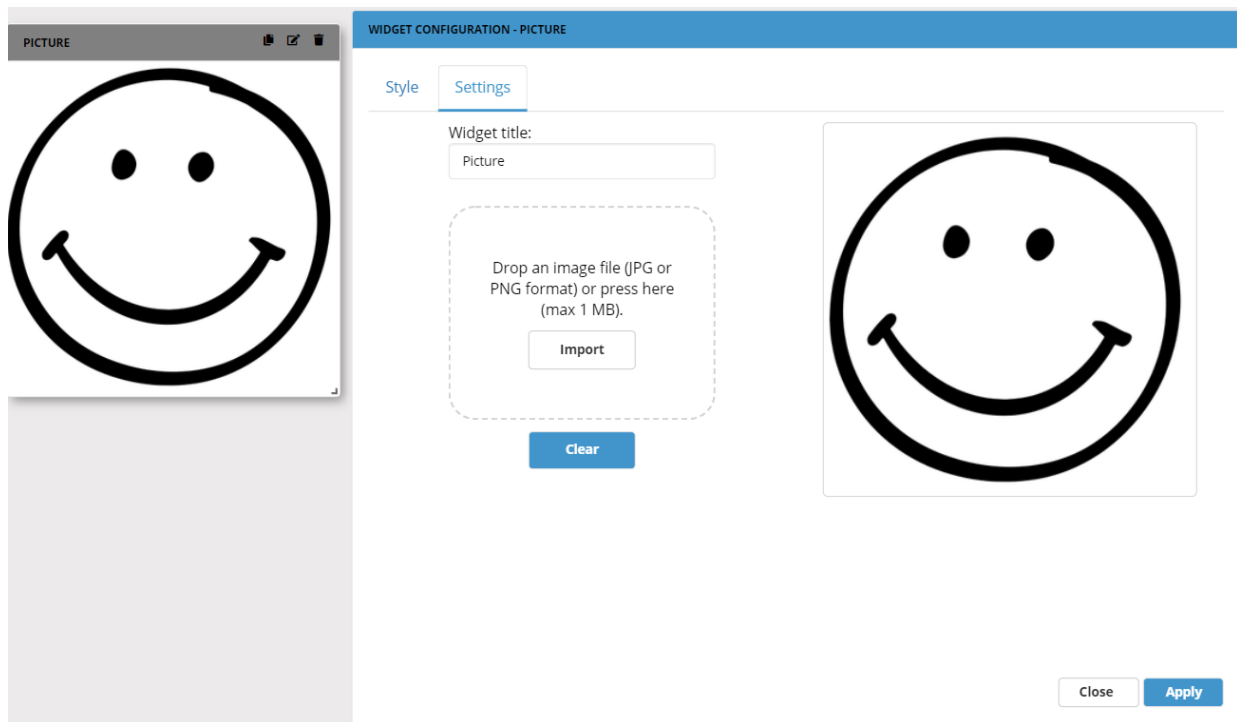


Figure 3.38: The picture widget is rather simple, only needing two inputs, a name and a picture, simply click 'Import picture', select the picture and press apply, the picture should then be applied into the body of the widget.

### 3.8.3 Navigation

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

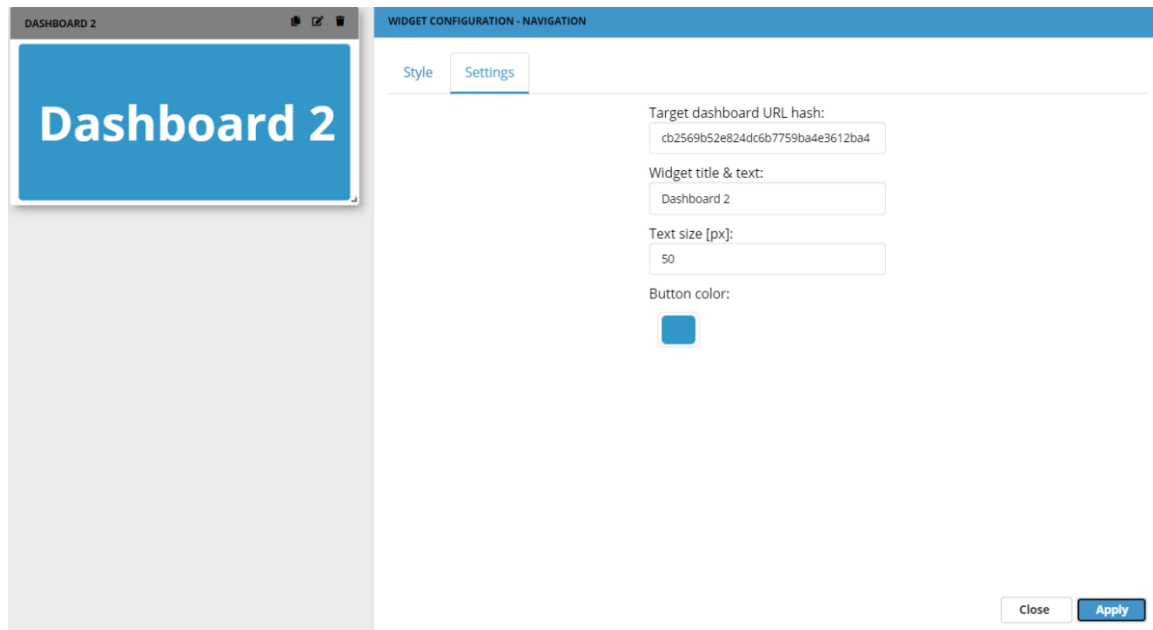


Figure 3.39: The navigation widget is very simple to configure. First specify the title of the button to navigate to the new dashboard. Then add URL hash for the dashboard that you want to navigate to. It is important that it is only the hash value of the URL and not the entire URL that is added. Finally, colors and font sizes can be changed. Change the font color 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.

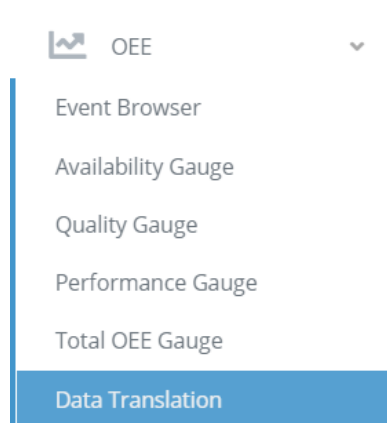


Figure 4.1: After creating the Batch Selector, click on Data Translation from the dashboard sidebar.

**Translation Table configuration**

Value 0	Translates to	Start	#1b98d9ff	Batch start	<input type="button" value="Start"/>
Value 1	Translates to	Stop	#be2edbff	Batch stop	<input type="button" value="Stop"/>
Value 2	Translates to	Running	#33e924ff	Running	<input type="button" value="Running"/>
Value 3	Translates to	Machine stop	#eca52dff	Not running	<input type="button" value="Not running"/>

Figure 4.2: From there, you can translate the values from your machine. 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.

WIDGET CONFIGURATION - EVENT BROWSER

Data
Style
Settings

Widget title:

Event Browser

☐ Fixed margins to axis

☒ Batch selection

Select batch selector widget:

Select...

Clear

Close

Apply

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

Availability 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

Close

Apply

Figure 4.7: The “Settings” tab for the Availability Gauge is fairly simple and close to the Simple Gauge settings, with a few exceptions:

Of course, you will select the Batch Selector widget that you have been using for the Event Browser as well.

You can decide if you would like to visually represent your production target. You can then set the colors below if you would like that.

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

$$\text{Quality} = (\text{Total Count} - \text{Failures}) / \text{Total Count}$$

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 only thing we would like to point out is the Failures and Total Count, which is specific for this widget. You can set your 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 only thing we would like to point out is the feature that allows you to use sample point value 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 you an overview.

WIDGET CONFIGURATION - TOTAL OEE GAUGE

Style Settings

Show Calculation  
 $OEE = Availability * Quality * Performance$

Widget title:  
Total OEE Gauge

☐ 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

Close Apply

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