

Smart Building Manager

Operational Guide



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Chapter 1. Summary

In this document you will learn how to use Smart Building Manager (SBM) for operational tasks like monitoring and analysis of a Smart Building infrastructure.

For further information about Smart Building facilities, standards, parameters and options please refer to the chapters "Apps" and "SmartOffice" in the Firmware Generation 6 product manual. This manual is included in each software archive containing firmware G6. It can also be downloaded from the link Documentation in the device's web manager navigation bar.

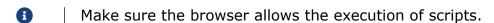
For detailed information on using Smart Building Manager please refer to Smart Building Manager user manual. This user manual is included in SBM server manager via help menu. It describes in detail on how to use Smart Building Manager properly.

1.1. Information available from the MICROSENS Website

Registered users can find the latest firmware versions as well as further information on our web site:

- Registration
 - Go to www.microsens.com
 - Click on Login and follow the link Not registered?
 - Fill in the opening email form and submit it to MICROSENS.
 - You will receive an email from MICROSENS with a user name and a password
- Login
 - Go to www.microsens.com
 - Login with your user name and password
 - Click on Login.
- Firmware images
 - Navigate to the device and select the tab Services

For further information select one of the other tabs.





After updating the firmware either by Web Manager or CLI be sure to clear the cache of the browser you are using to open the Web Manager of the respective device. This will force the browser to reload the device's updated web GUI data instead of using the outdated data from its cache.

1.2. Before you begin

In case of questions please contact your sales representative to make sure that you received the application's latest version including a valid licensing key file.

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Also please check if the computer system where the application will be installed matches the system requirements. (see section Chapter 3)



Chapter 2. General Security Recommendations

In order to work safely with the application we strongly recommend the following actions before going operational:

Passwords and Certificates

- Change all default passwords of application instances and pre-defined registered users.
- Change the default admin password of the managed devices. Refer to the respective device's user manual.
- Change the default database access password.
- Update the server certificate using a valid Root-CA.
- Update the devices certificates using a valid Root-CA.



- It is recommended to use a password management software to store all your changed passwords.
- It is recommended to use an identity management system to create and manage certificates for your server and devices.

User Management

- Create alternative admin users with appropriate permissions for daily work.
- Create different users for the different roles.
- For security reasons, only create a minimum number of users which are absolutely necessary.
- Adjust the authorisation level for each user and always select a minimum number of access permissions.

Firewall Settings

- Review necessary port numbers.
- Review necessary firewall settings.
- Adjust the port numbers of the server instance if needed.
- Take care of the dynamic port numbers as used by the server instance.
- Adjust firewall port settings for those ports which match the application's ports.



Chapter 3. System Requirements

The application is designed to run on personal computers or servers with the following minimum requirements. These requirements are defined for dedicated systems.

1 The application requires a 64-bit operating system.

• Windows Server 2016, Debian Linux 11

RAM • 8 GB

Free disk space • 2 GB + 1 GB/1.000 additional managed devices

• 3 GHz, typically 4-6 Core CPU current Xeon Server CPU; multi-Core i7/i5 Desktop CPU

Display resolution • at least 1280*1024

• recommended: 1920*1080

Please refer also to the latest application release notes document. In case of doubt, it contains the latest installation requirements.

For network access a network interface with TCP/IP stack must be installed and configured.



Chapter 4. Administrative Prerequisites

Before using the application for operational tasks, the prerequisites must be as follows:

- Valid login on the local computer.
- Application's server instance is started.
- User account has the right to start the application via web client.
- Valid server licence key file is uploaded to the server.
- Login into the web client as user with at least access rights to see SBM building summary.



Chapter 5. Server-side Requirements

5.1. Start Server Manager

In order to start the Server Manager use one of the links provided in the Microsoft Windows® Start menu:

• Start > MICROSENS > MICROSENS SBM Server

or

Start > MICROSENS > MICROSENS SBM Server (Debug Mode)



Starting the server in debug mode will open an additional Microsoft Windows® command line interface (cmd), where all the logs and errors will be displayed.

The Server Manager opens with its main window, showing the tab Server Settings.

5.2. Enable Web Server

- 1. On the tab Server Settings of the server manager enable the option **Enable Web Server**.
- 2. It is recommended to enable **secured HTTP connections (HTTPS)**.
- 3. As long as it does not prove necessary, leave the default **Port for incoming http(s) connections** (8443) as is.

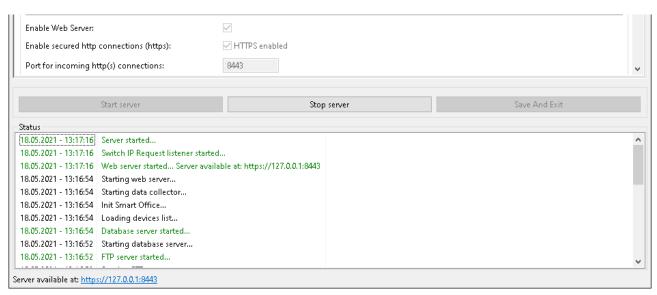


Figure 1. Server Manager - Configuring and Starting the Web Server

After enabling the required HTTP(S) service and starting the server instance, a web browser can be used to access the server with one of the following URL addresses.

For standard HTTP connections

http://<server_ip_address>:<http_server_port>/



For secured HTTP connections, if the secured HTTP was configured

https://<server_ip_address>:<https_server_port>/

You will find the linked URL also at the bottom of the Server Manager window.

When using the stand-alone client, enabling the web server is not necessary.

5.3. Start Server Process

Click on the button Start Server to start the server process.



Figure 2. Server Manager - Start Server Process

If the server process was started successfully, you should see Server started… as last message on top of the status field as follows:

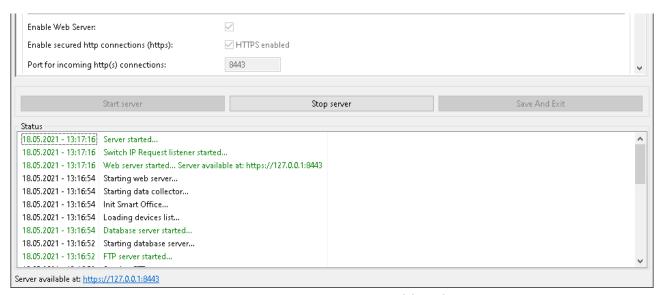


Figure 3. Server Manager - Status Field and Server URL

Please note the SBM server URL on the bottom left corner below the status field.

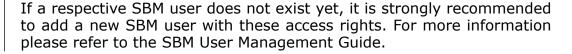
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Chapter 6. Working with the Web UI

If available, login as user with sufficient access rights for one or more of the following tasks:

- Viewing the building summary
- · Viewing alarms and events
- · Using the scheduler



6.1. Login to Web UI

After starting the server instance, a web browser can be used to access the server with one of the following URL addresses. You can find the server IP address and the server port on the bottom left corner of the server manager window right below the status list.

For secured HTTP connections, if the secured HTTP was not unchecked https://<server_ip_address>:<https_server_port>/

For standard HTTP connections http://<server_ip_address>:<http_server_port>/

You have to insert valid credentials into the login screen before accessing the Web UI of the application's web server.



A user account with administrator access rights (e.g.) is mandatory to make changes in the respective application.

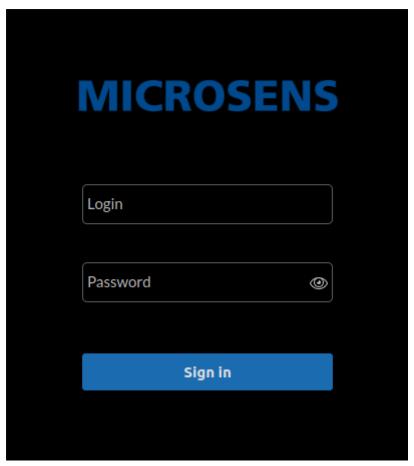


Figure 4. WEB UI - Login Screen

Depending on the user's access level, the Web UI opens with several application tiles for:

- Building Configuration
- Device Management
- User Management
- Licence Management
- Server Configuration

If you do not see one or more of these tiles you do not have the respective access level for this application.

6.2. Review Building Summary

1. If not already active, change to the building management application. You will need to login as a user with Smart Building access rights.

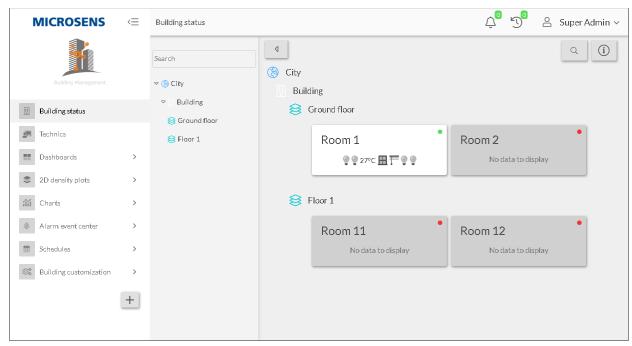


Figure 5. SBM Web UI - Building Administration - Building Status

- 2. If necessary click on Building Status.
 - The left hand pane contains the main menu for monitoring and customising the building automation.
 - Click on the funnel icon to expand the middle panel, showing a searchable outline view of the building infrastructure. Click on the arrow icon to collapse the middle pane.
 - The right hand summary screen shows the most relevant data points defined for the rooms.
- 3. In the middle pane click on a specific entry to show the respective rooms in the summary screen.
- 4. In the summary screen click on a room to open a detailled view.
 - The summary screen opens with a graphical representation of the room.

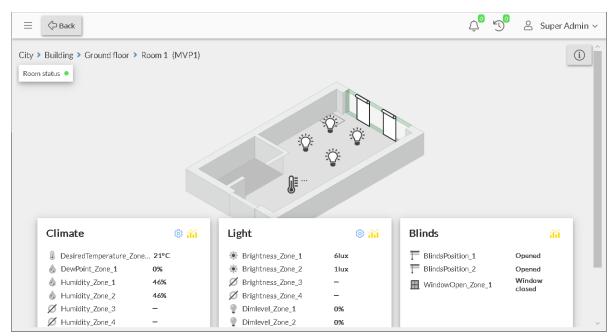


Figure 6. SBM Web UI - Building Administration - Building Status

5. Click on Back to return to the summary screen.

It is possible to filter the summary by searching for specific infrastructure elements.

- 1. Click on the magnifier icon on the upper right.
 - The search text field expands.
- 2. Enter the element name you are looking for.
 - The summary screen updates in real time, showing only the elements matching the search term.
- 3. Delete the search term to show the full summary.

A click on Info ("i" icon) on the upper right will open a legend containing information about the different icons and colour codes used in the summary screen.

6.3. Review History Charts

- 1. If not already active, change to the building management application.
- 2. Select Charts > Building.
 - The charts screen opens.

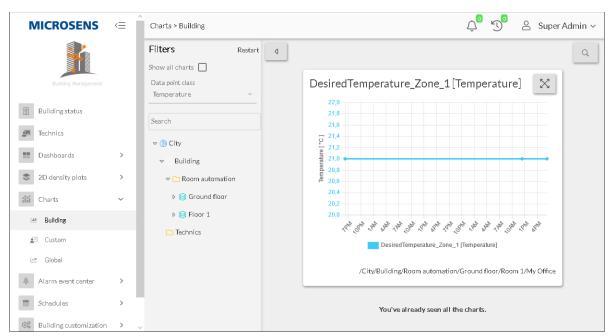


Figure 7. SBM Web UI - Building Administration - Charts - Building

- 3. Open the middle pane with a click on the funnel icon.
- 4. Select a specific data point class from the drop-down list (e.g. "All" or "Temperature").
- 5. Select the infrastructure element in the outline list.
 - The right hand screen updates the data charts for the selected data points.
- 6. Click on Charts > Custom or Charts > Global to open these specific charts.



While hovering the mouse pointer over a chart, it is possible to zoom in and out by using the scroll wheel of your mouse.

6.4. Review Global Charts

Global charts are created automatically to show history data of global data points which are calculated for a single building.

- 1. If not already active, change to the building management application.
- 2. Select Charts > Global.
 - The global charts screen opens.

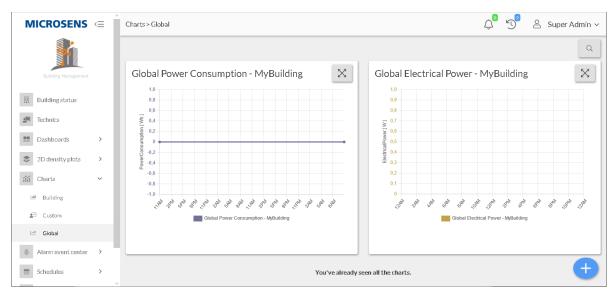


Figure 8. SBM Web UI - Building Administration - Charts - Global

3. Click on the button Add (blue "+" icon on the lower right) to create a custom history chart.

6.5. Custom History Charts

It is possible to create custom charts for specific data points of increased interest.

- 1. If not already active, change to the building management application.
- 2. Select Charts > Custom.
 - The chart customisation screen opens, showing the existing custom charts.
- 3. Click on the button Add (blue "+" icon on the lower right) to open the chart customisation wizard.

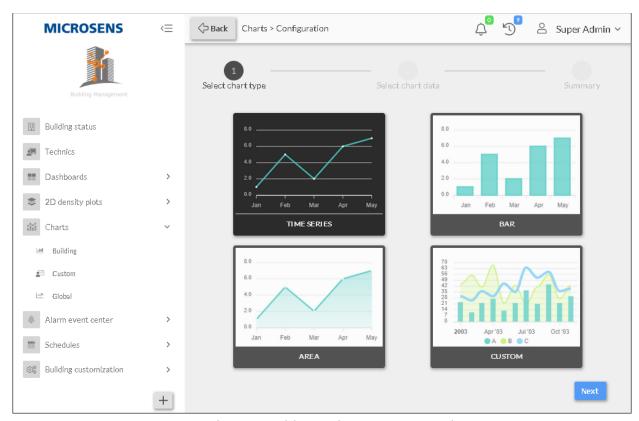


Figure 9. SBM Web UI - Building Administration - Charts - Custom

- 4. Proceed with the following steps:
 - a. Select the chart type (i.e. line, bar, area or multi chart).
 - b. Select the specific data points as data source.
 - c. Save the chart.
 - The custom chart will appear in the list of charts in the chart customisation screen under Charts > Custom.
 - For more details on how to customize charts, please see the SBM Customisation Guide available on the MICROSENS homepage.
- 1. To edit or delete a chart, maximise the chart with a click on the button Max on the upper right of the chart.
 - a. Click on the button Settings to edit the charts settings.
 - b. Click on the button Delete to delete this chart.

6.6. Managing Alarms and Events

- 1. If not already active, change to the building management application.
- 2. Select Charts > Alarm Event Center.
 - The menu item Charts > Alarm Event Center does not have an explicite start page. To manage alarms and events select the respective menu entry.



6.6.1. Working with Alarms

- 1. Select Charts > Alarm Event Center > Alarms.
 - The alarm list opens, showing all actual alarms in a tabular overview.

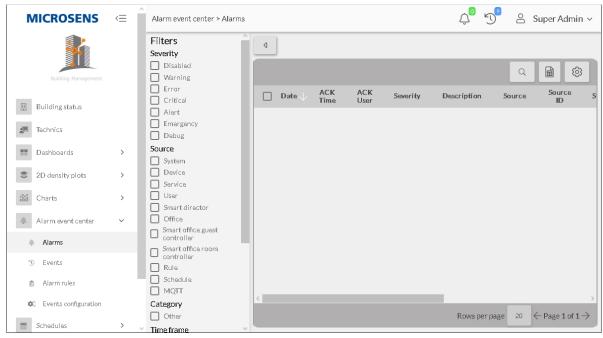


Figure 10. SBM Web UI - Building Administration - Alarms Events Center - Alarms

- 2. To acknowledge an entry, check the respective entry in the first column. Two buttons Acknowledge selected and Remove selected appear.
 - a. Click on the button Acknowledge selected to acknowledge the selected entries
 - b. Click on the button Remove selected to remove the selected entries.
- 3. To search for specific entries, click on the button Search ("magnifier" icon) and enter a respective search term into the opening text field. The list will be filtered for any occurences of the search term.
- 4. Open the middle pane with a click on the funnel icon.
- 5. Check the entries for e.g. severity, source etc.
 - The right hand screen updates the alarm list according to the selected filter settings.
- 6. Click on the button Export ("spreadsheet" icon) to export the filtered alarm list as csv file.
- 7. Click on the button Settings ("gear" icon) to edit the tables appearance.



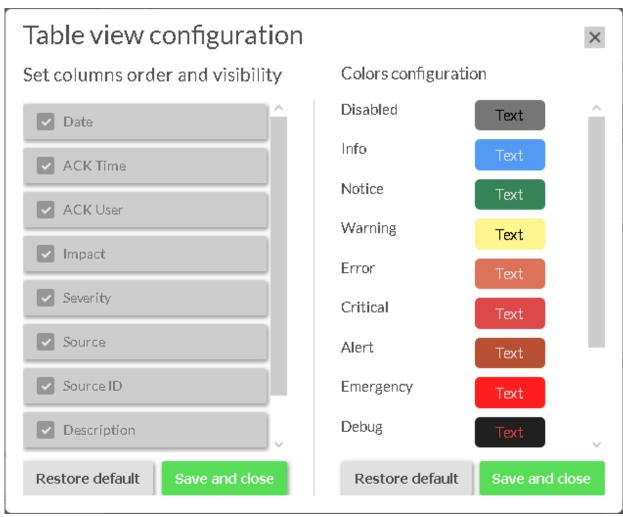


Figure 11. SBM Web UI - Building Administration - Alarms Events Center - Alarms - Settings

6.6.2. Working with Events

- 1. Select Charts > Alarm Event Center > Events.
 - The event list opens, showing all actual events in a tabular overview.

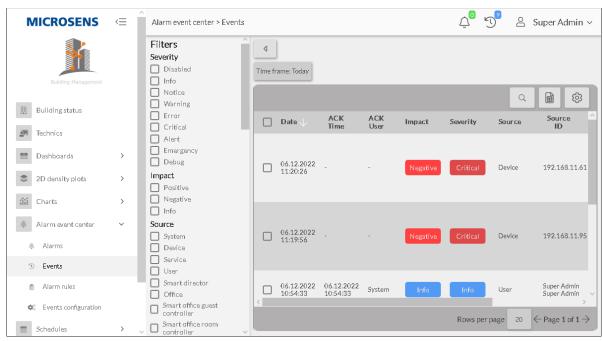


Figure 12. SBM Web UI - Building Administration - Alarms Events Center - Events

- 2. To acknowledge an entry, check the respective entry in the first column. Two buttons Acknowledge selected and Remove selected appear.
 - a. Click on the button Acknowledge selected to acknowledge the selected entries
 - b. Click on the button Remove selected to remove the selected entries.
- 3. To search for specific entries, click on the button Search ("magnifier" icon) and enter a respective search term into the opening text field. The list will be filtered for any occurences of the search term.
- 4. Open the middle pane with a click on the funnel icon.
- 5. Check the entries for e.g. severity, source etc.
 - The right hand screen updates the event list according to the selected filter settings.
- 6. Click on the button Export ("spreadsheet" icon) to export the filtered alarm list as csv file.
- 7. Click on the button Settings ("gear" icon) to edit the tables appearance.



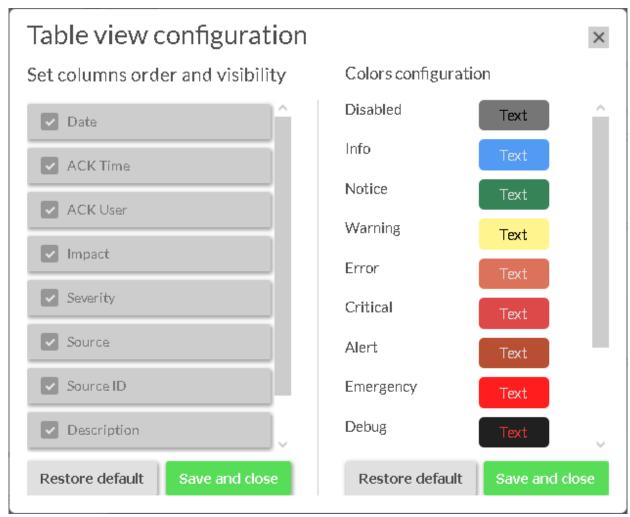


Figure 13. SBM Web UI - Building Administration - Alarms Events Center - Alarms - Settings

6.7. Working with Scheduled Tasks

The scheduler allows to define time points and periods to automatically perform specific tasks to a building's infrastructure right to the level of room components (e.g. switch of the light in an office room on weekends).

- 1. If not already active, change to the building management application.
- 2. Open the menu Schedules.



The menu item Schedules does not have an explicite start page. To manage schedules and determined tasks select the respective menu entry.

6.7.1. Define Schedule Entry

A scheduler entry consists of a set of one or more time settings. Therefore it is possible to use a complex set of different tasks (e.g. alternating times to switch off and on the light in an office room throughout a day).



- 1. Select Schedules > Definitions.
 - In the right-hand pane a tabular overview of existing scheduler entries appears.

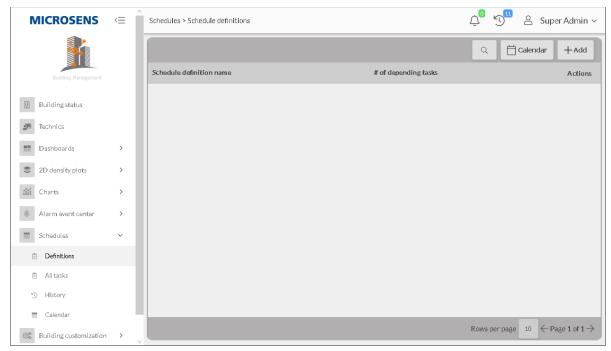


Figure 14. SBM Web UI - Building Administration - Schedules - Definitions

- 2. Click on the button Edit ("notepad" icon) of an existing entry to edit its settings.
- 3. Click on the button [+Add] to add a new scheduler entry.

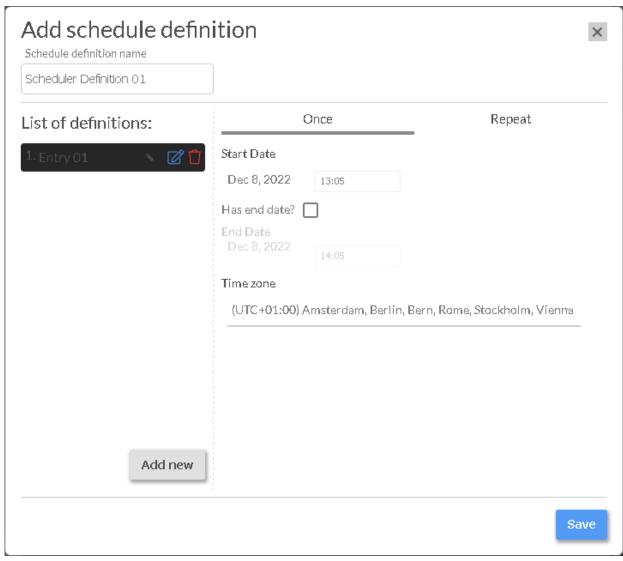


Figure 15. SBM Web UI - Building Administration - Schedules - Definitions - Add Definition

- a. Enter a descriptive name of the scheduler entry.
- b. Click on the button Add new to add a new time setting definition.
 - In the list of definitions the new entry appears, showing its settings in the right-hand pane.
- c. Assign all necessary settings, either for one-time with or without end, or with repetition.
- d. Proceed with new definitions as needed.
- e. Finally click on the button Save to apply the settings.
 - The new scheduler entry appears in the tabular overview of scheduler entries.

To search for existing entries use the search function ("magnifier" icon on the top right).



Click on the button Calendar to show all available scheduler entries in a calendrical view.

6.7.2. Assign Schedule Entry to Task

- 1. Select Schedules > All Tasks.
 - In the right-hand pane a tabular overview of existing task entries appears.

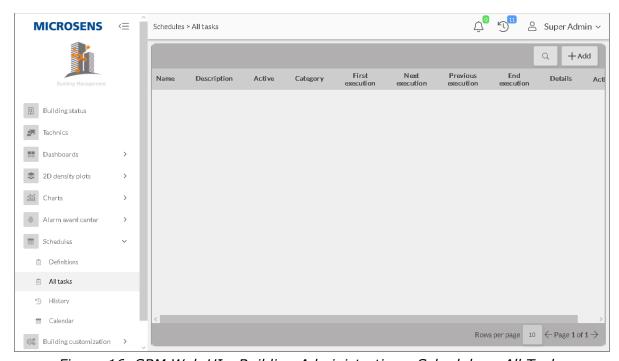


Figure 16. SBM Web UI - Building Administration - Schedules - All Tasks

- 2. Click on the button Edit ("notepad" icon) of an existing entry to edit its settings.
- 3. Click on the button +Add to add a new task entry.



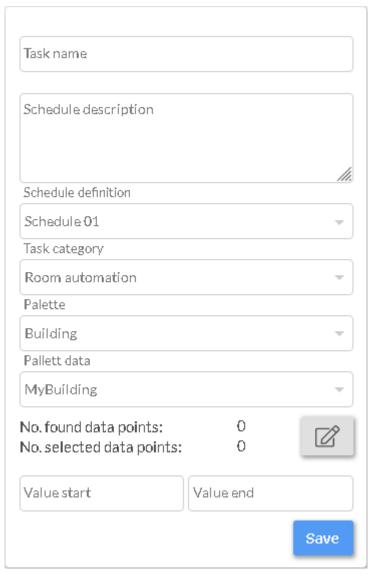


Figure 17. SBM Web UI - Building Administration - Schedules - Definitions - Add Definition

- a. Assign the following settings to the task:
 - Enter a descriptive task name
 - Enter a task description
 - Select a scheduler entry from the drop-down list
 - Select a task category (room or building automation).
 - With room automation active, select the building structure (i.e. location, building, floor, room) that should be affected from the scheduler settings.
 - Click on the button Edit Datapoints ("notepad" icon) to select the affected data points.
 - Enter the threshold values.
- b. Finally click on the button Save to apply the settings.
 - The new task entry appears in the tabular overview of task entries.



To search for existing entries use the search function ("magnifier" icon on the top right).

6.7.3. Scheduler History Log

It is possible to see a list of previously scheduled tasks for e.g. maintenance or security reasons.

- 1. Select Schedules > History.
 - In the right-hand pane a tabular overview of all previously performed tasks appears.

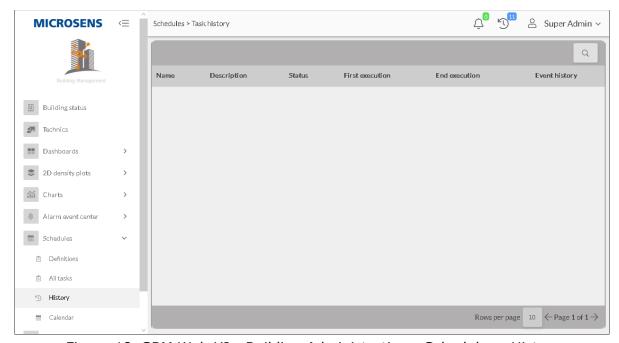


Figure 18. SBM Web UI - Building Administration - Schedules - History

To search for existing entries use the search function ("magnifier" icon on the top right).

6.7.4. Calendrical Overview

For a quick overview it is possible to see all scheduler definitions in a calendrical view.

- \mathbb{Q} The calendar offers a convenient way to create scheduler definitions.
- 1. Select Schedules > Calendar.
 - In the right-hand pane a calendar view shows all existing scheduler definitions.

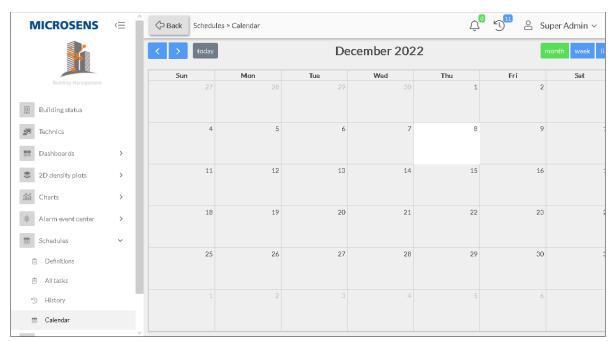
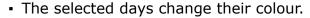


Figure 19. SBM Web UI - Building Administration - Schedules - Calendar

- The actual date is highlighted.
- 2. Adjust the time period by clicking the buttons Month or Week on the upper right.
- 3. Change to a list view by clicking on the button List on the upper right.
- 4. Edit an entry by selecting it with a click. The edit dialogue opens.
- 5. To add a new scheduler entry click on the respective day in the calendar. The add dialogue opens.

Assign a time frame of multiple days to the new entry as follows:

- 1. Open the monthly calendar view.
- 2. Click on the start day and hold the mouse button down.
- 3. Move the mouse icon to the end day and relase the mouse but-



 The add dialogue opens with start and end date preset (with "00:00" each).

To assign a time frame of multiple days with explicite hours of the specific day, change to the weekly calendar view and proceed as described above.

6.8. Working with Technic Nodes

The technic tree of a building shows the different central building services in a structured order.



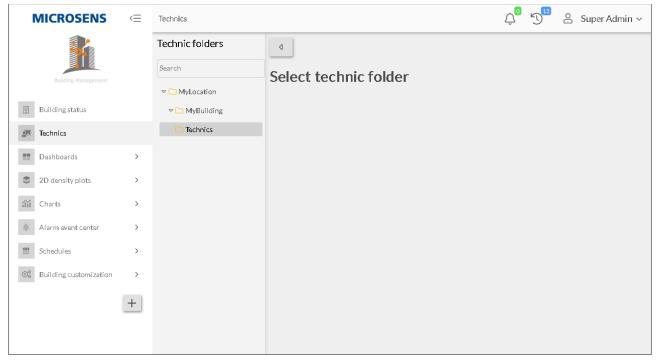


Figure 20. SBM Web UI - Building Administration - Technics

- 1. Click on the funnel icon to expand the middle panel, showing the technic tree as defined during the customisation steps using the SBM client. Click on the arrow icon to collapse the middle pane.
- 2. Select the entry Technics to open the corresponding visualisation in the right-hand pane.



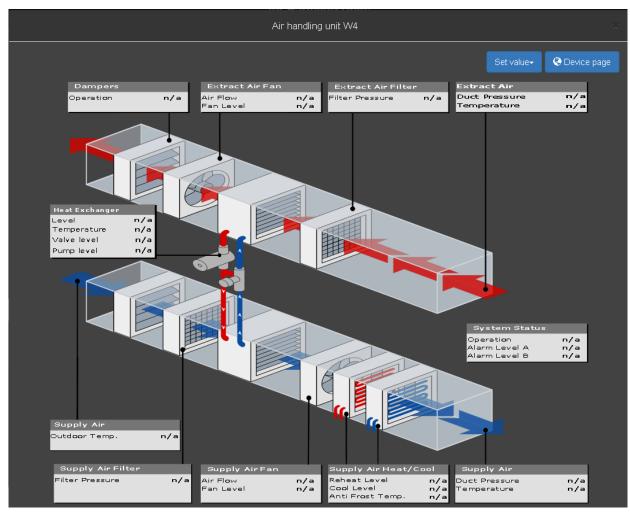


Figure 21. SBM Web UI - Building Administration - Technics - Example

- The visualisation is also defined during the customization step using the SBM client. During this step a portlet can be uploaded to the SBM server.
- The example shows an instance of an air handling unit used on a leaf node of the technic node.

6.9. Building Customisation

This menu allows to execute the following tasks:

- Globally configure parameters like currency, energy costs and specific climate values.
- Display building topology.
- Manage data points.
- Create and assign templates.

6.9.1. Datapoint Classes

Select the menu Building Customisation > Datapoint Classes to open a tabular



overview of all available datapoint classes.

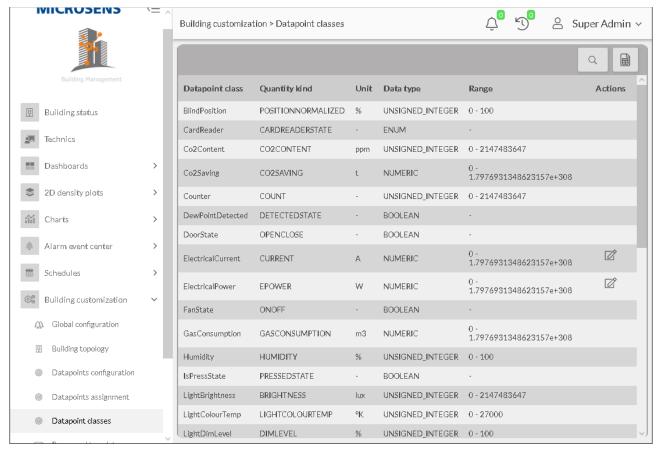


Figure 22. SBM Web UI - Building Administration - Building Customisation - Datapoint Classes

The right-hand pane shows all datapoints with the following information:

- Datapoint class
- Quantity kind
- Unit
- Data type
- Range
 - 1. Click on the button Search ("magnifier" icon) on the upper right to search for a specific entry. The list will be updated automatically.
 - 2. Click on the button Export ("spreadsheet" icon) to export the (filtered) list as csv file.
 - 3. In the column Actions click on the button Edit ("notepad" icon), if available, to edit the datapoints unit.



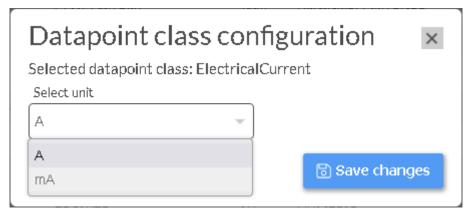


Figure 23. SBM Web UI - Building Administration - Building Customisation - Datapoint Classes - Edit

4. Click on the button Save changes to apply the new value.

6.9.2. Datapoints Configuration: General

- 1. Select Building Customisation > Datapoints Configuration.
 - The right-hand pane shows a tabular overview of all available datapoints.

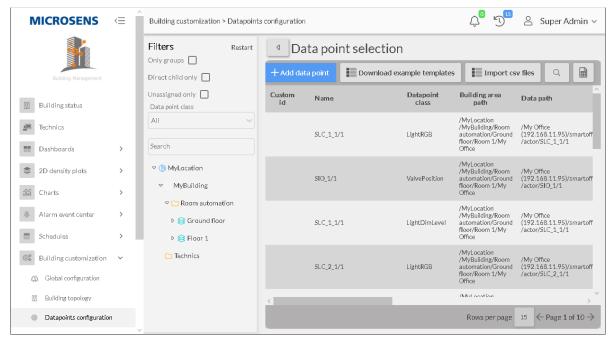


Figure 24. SBM Web UI - Building Administration - Building Customisation - Datapoint Configuration

- 2. Open the middle pane with a click on the funnel icon.
 - Enable and select specific filter options to show the respective datapoints.
- 3. Click on the button Search ("magnifier" icon) on the upper right to search for a specific entry. The list will be updated automatically.
- 4. Click on the button Export ("spreadsheet" icon) to export the (filtered) list as csv file.



5. In the column Actions click on the button Edit ("notepad" icon), if available, to edit the datapoints.

It is possible to edit the options "Save history" and "Log on value change" directly by changing the option in the respective columns without the the need of opening the edit dialogue.

- 6. Click on the button Delete ("trash bin" icon) to delete an entry.
 - This action is only available for custom-generated datapoints. Default datapoints cannot be deleted.
- 7. Click on the button Add datapoint to create a new datapoint.

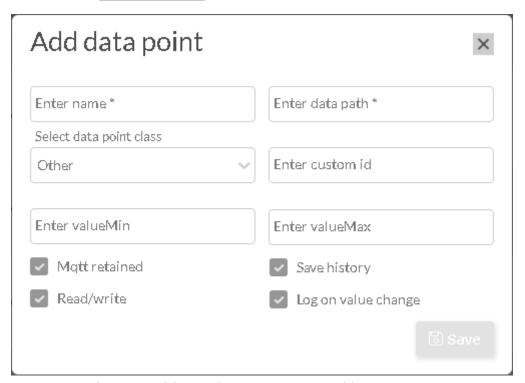


Figure 25. SBM Web UI - Building Administration - Building Customisation - Datapoint Configuration - Add Datapoint

- 8. Enter the necessary information of the datapoint. A descriptive name and the data path are mandatory, all other information is optional.
- 9. Click on the button Save to apply the new datapoint.

6.9.3. Datapoints Configuration: Using Templates

For a more conveniant management of a large amount of datapoints, it is possible to use csv templates that you can edit in a text editor or spreadsheet application.

- 1. In the right-hand pane of Building Customisation > Datapoints Configuration click on the button Download example templates.
 - An option dialogue opens, where you can select the type of template.

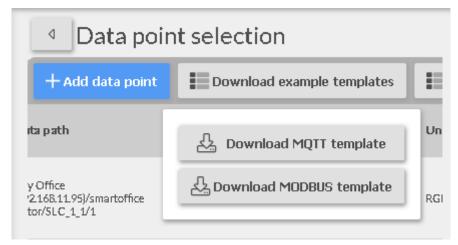


Figure 26. SBM Web UI - Building Administration - Building Customisation - Datapoint Configuration - Download Template

2. Select either Download MQTT Template or Download MODBUS Template to save the respective csv template locally. Both the MQTT and MODBUS templates are slightly different to fit their specific needs.



To edit all existing datapoints the same way, click on the button Export ("Spread sheet" icon) on the upper right to save all listed datapoints as csv file.

- 3. Open the csv file in your preferred csv editor, edit the necessary datapoints and save it.
- 4. Click on the button Import VSC Files.
 - An option dialogue opens, where you can select the type of csv datapoints file.

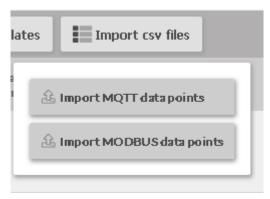


Figure 27. SBM Web UI - Building Administration - Building Customisation - Datapoint Configuration - Import CSV

5. Select either Import MQTT Datapoints or Import MODBUS Datapoints to load the respective csv datapoints file to the server.

6.9.4. Datapoints Assignment

1. Select Building Customisation > Datapoints Assignement to assign datapoints to a building's infrastructure.



 The right-hand pane shows a tabular overview of both all assigned datapoints and all available datapoints.

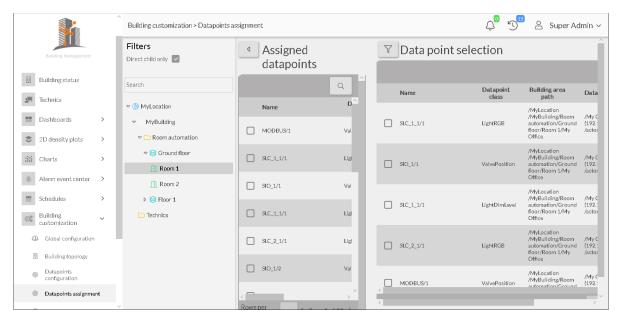


Figure 28. SBM Web UI - Building Administration - Building Customisation - Datapoint Assignment

- 2. The list of assigned as well as available datapoints can be filtered. Open the respective filter pane with a click on the funnel icon.
 - Enable and select specific filter options to filter the list.
- 3. Click on the button Search ("magnifier" icon) on the upper right to search for a specific entry. The list will be updated automatically.
- 4. Select the building's infrastructure level to show the datapoints assigned to this level.
- 5. To remove the assignment of a datapoint, check the specific datapoint and click on the button Remove Datapoint.
- 6. To assign a datapoint, select the respective building element in the assigned datapoints filter list.
- 7. In the list of available data points check the datapoint and click on the button Assign Datapoint.
 - All changes will be processed immediately.

Smart Building Manager

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