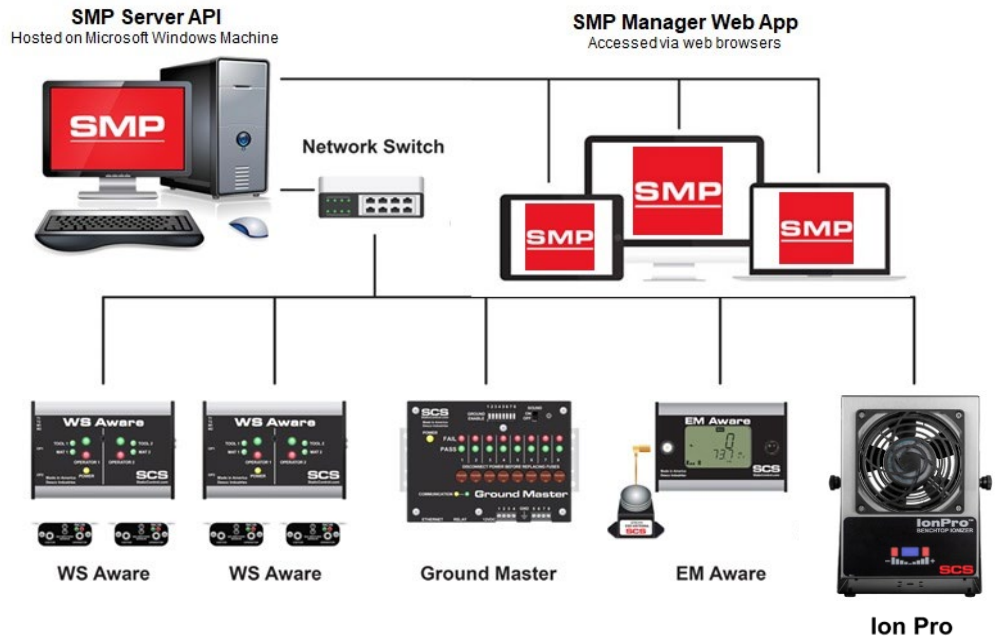
Static Management Program

User Guide



For years, electronics manufacturers have struggled to answer the question, "How do you know?" How do you know that your products are not falling victim to electrical overstress or electrostatic discharge? How do you know that damaged product does not get into the hands of your customers?

With SCS Static Management Program (SMP), finally, you know.

SMP offers companies an effective way to detect electrostatic discharge (ESD) events and help prevent component failures. Static control instrumentation helps businesses achieve a competitive advantage in the marketplace by reducing losses due to ESD, electromagnetic interference (EMI) and electrical overstress (EOS). SMP can assist you in identifying and addressing concerns associated with ESD, EMI and EOS issues. By helping to minimize these concerns, your yields may likely be improved, leading to possible cost savings and increased customer satisfaction.

SMP combined with SCS proprietary diagnostic static control instrumentation, finds and measures actual ESD events and EOS (electrical overstress) situations, instead of simply assessing the potential for such events. Our products capture, record and read data affecting your products, versus only verifying whether or not precautionary measurements are functioning properly. All of this is done in real-time, yielding your company real results.

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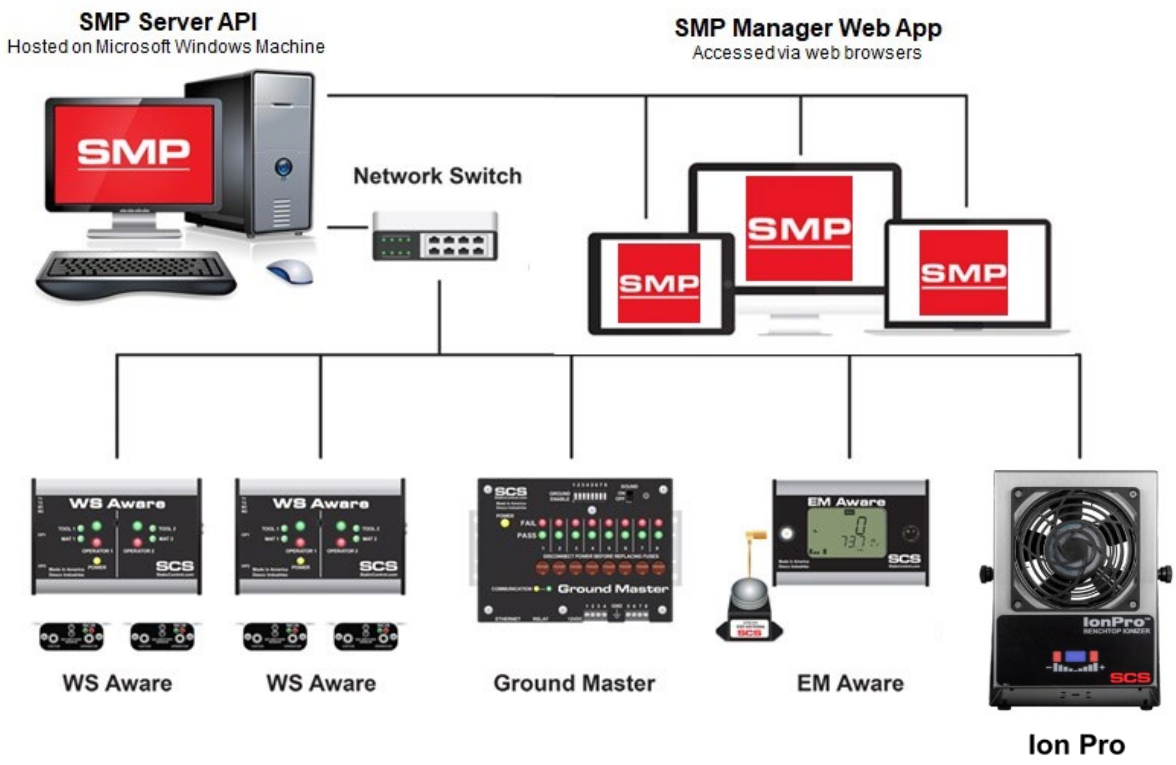
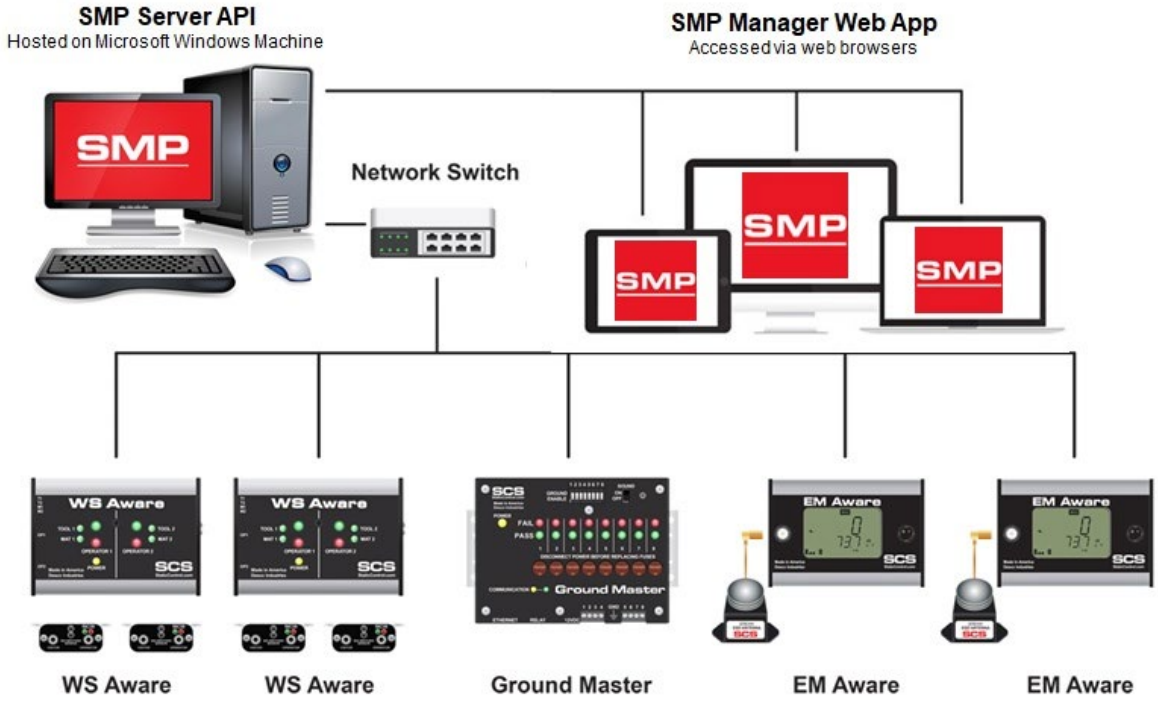
Overview

SMP is a distributed software system designed for control, monitoring, and management of SCS monitoring devices. In the most basic (and most common) installation, the architecture looks like the below image.





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All monitoring devices are connected to a local area network with a server (physical or virtual) running the software.

In general, SMP offers a flexible architecture with loosely coupled components.

SMP Backend is the core of the entire system. It contains system data storage, background processing logic and public service layers that all other components use. SMP Backend is implemented as .NET service running on Windows OS. Public services are implemented as .NET OWIN web API (JSON over HTTP(S)).

SMP Manager is main system application used for administration, control, monitoring, reporting and system management. It is implemented as an SPA web application (with Aurelia framework). Although not required the SMP Manager can be hosted on a same server as the SMP Backend. It is also required that SMP Manager is publicly accessible over the internet although all other scenarios are supported (local intranet, VPN, cloud).

SMP Config is special application used for system installation, configuration, and upgrade.

Server Installation

SMP offers a flexible architecture. It can run on a LAN, over the internet or in a cloud. **SMP Backend** and **SMP Manager** are not required to run on the same server but can for the initial setup. SMP Manager is accessible from any PC on the same network as the SMP Backend. All SMP devices must reside on the same LAN in order for communication to be established.

> NOTE
> **SMP Backend** and the connected SMP devices must be on the same LAN. **SMP Manager** may be hosted anywhere provided it has HTTP access to Backend. SMP also supports network setup where the physical SMP devices are located in different networks and or locations.

The rest of this user guide will outline the requirements for a standard installation.

Prerequisites

SQL Server Compact

SMP stores data within a Microsoft SQL Compact database by default. Free official download is available from Microsoft. SQL Server Compact is **the only requirement** for **SMP Backend**.

> NOTE
> The Microsoft SQL Compact Database is only required for **SMP Backend**. These prerequisites do not apply for **SMP Manager**.

IIS (Internet Information Server)

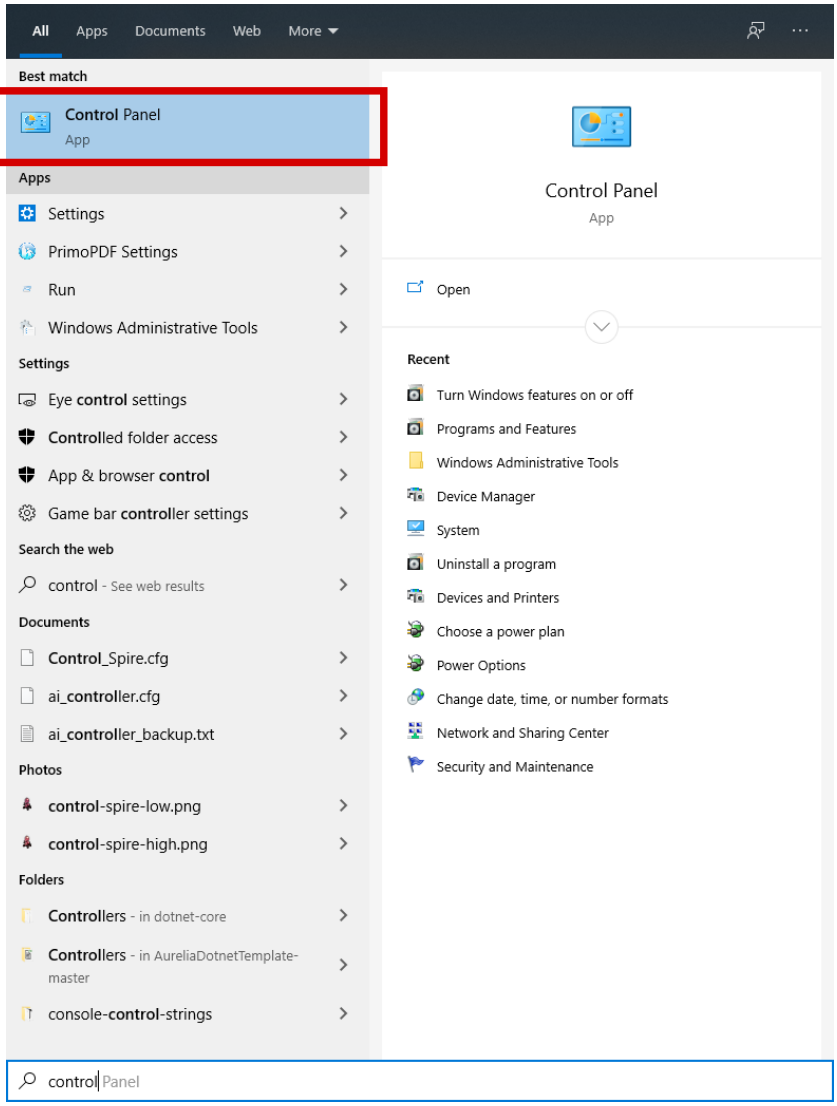
SMP Manager is implemented as single page web application (SPA) and hosted under Microsoft IIS. The server hosting the database must have Microsoft IIS installed (enabled) and configured properly.

Desktop OS (Windows 10)

On a Windows OS, IIS activation can be found at **Control Panel → Programs and Feature → Turn Windows features on or off**:

Step 1: open Control Panel

Use Windows search box:



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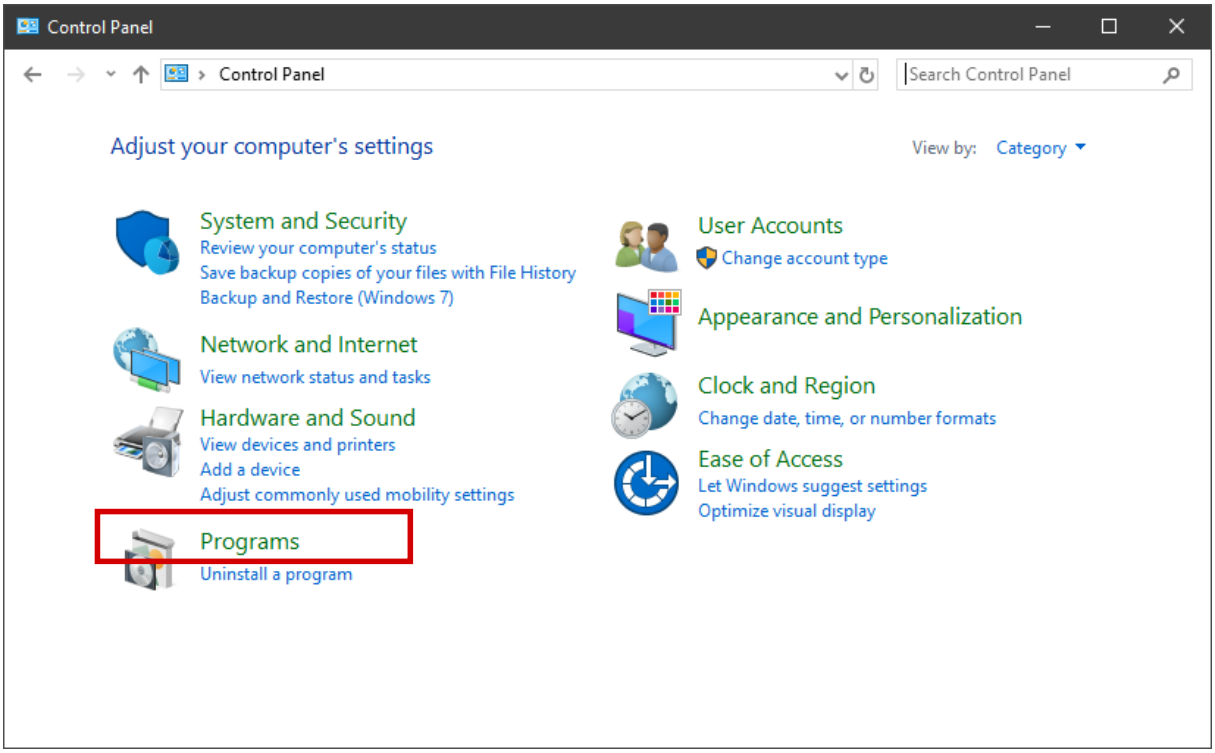
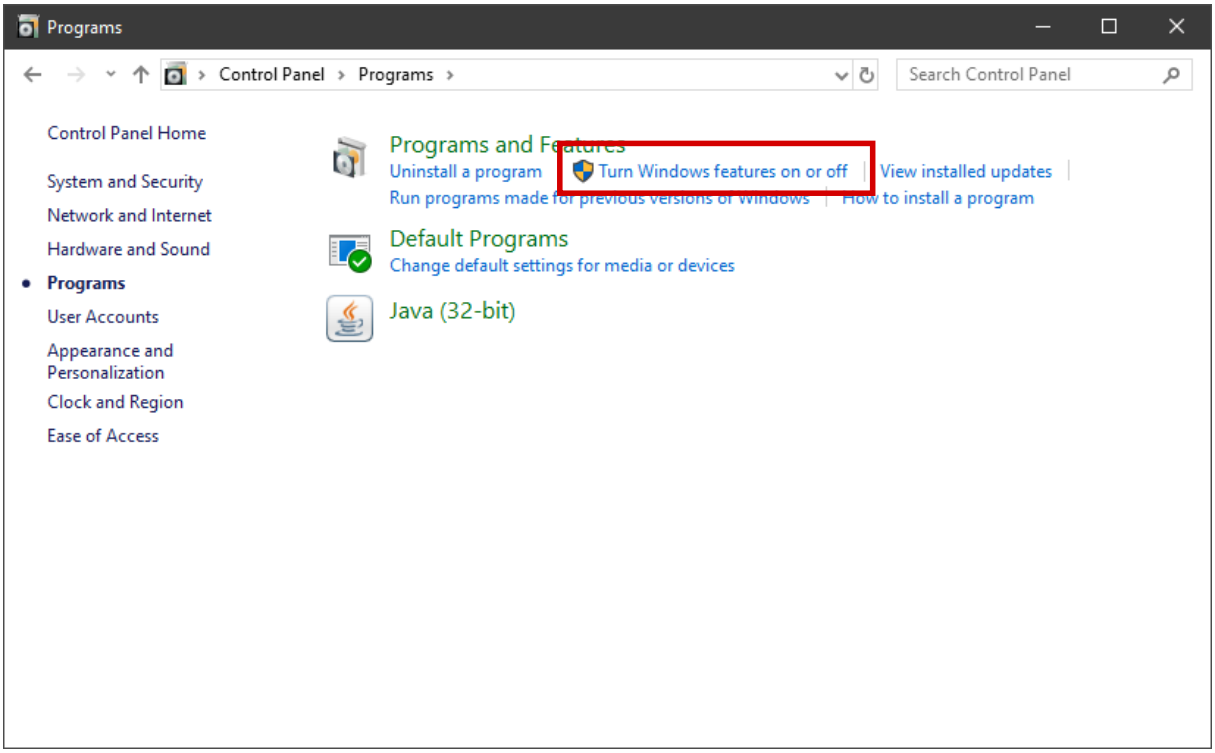
Step 2: click on Programs



Step 3: click on Turn Windows features on or off



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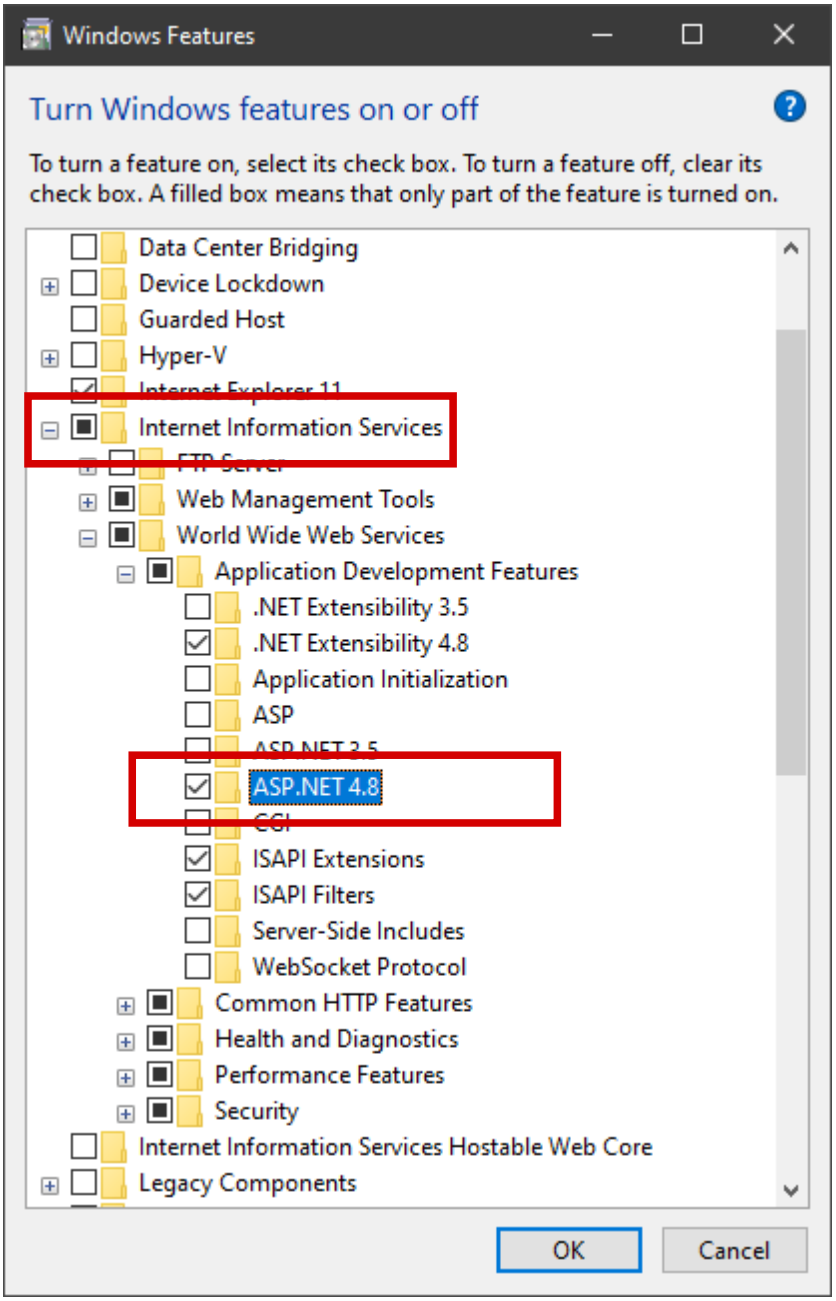
Step 4: enable Internet Information Services and ASP.NET 4.8



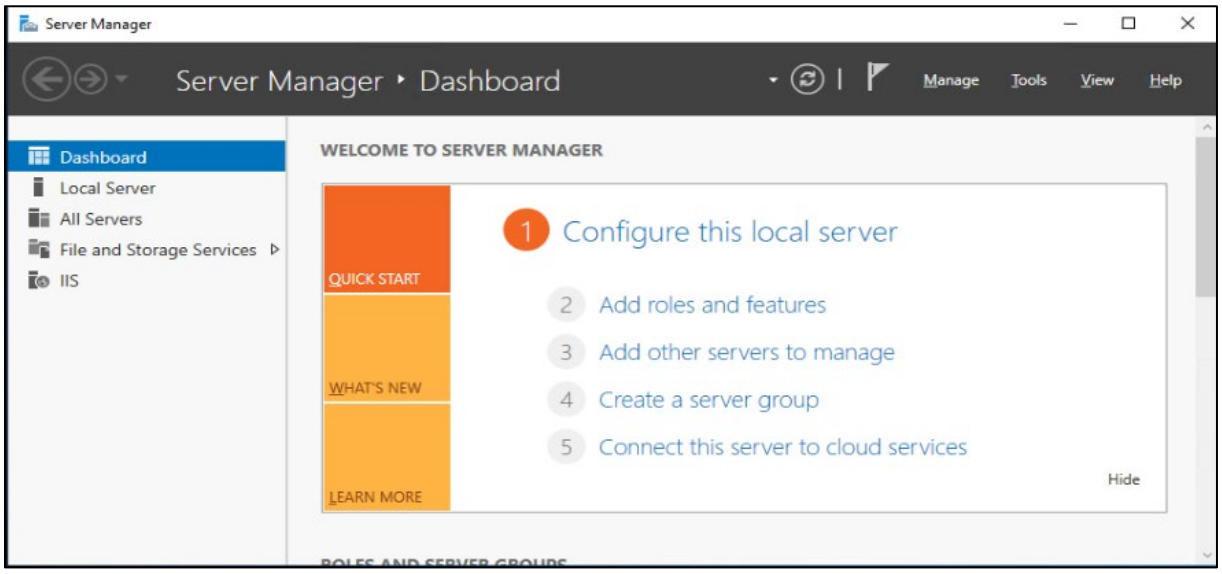
- click on checkbox left of **Internet Information Services** (this will select default options)
- click on plus sign left of that checkbox to expand IIS node
- expand (click on plus) **World Wide Web Services** node
- expand (click on plus) **Application Development Features** node
- select (click on checkbox) **ASP.NET 4.8**
- click **OK**

NOTE
Follow steps above if IIS isn't installed on the desktop. If it is already installed and enabled, then check if the ASP.NET 4.8 feature is enabled. If not make sure to enable.

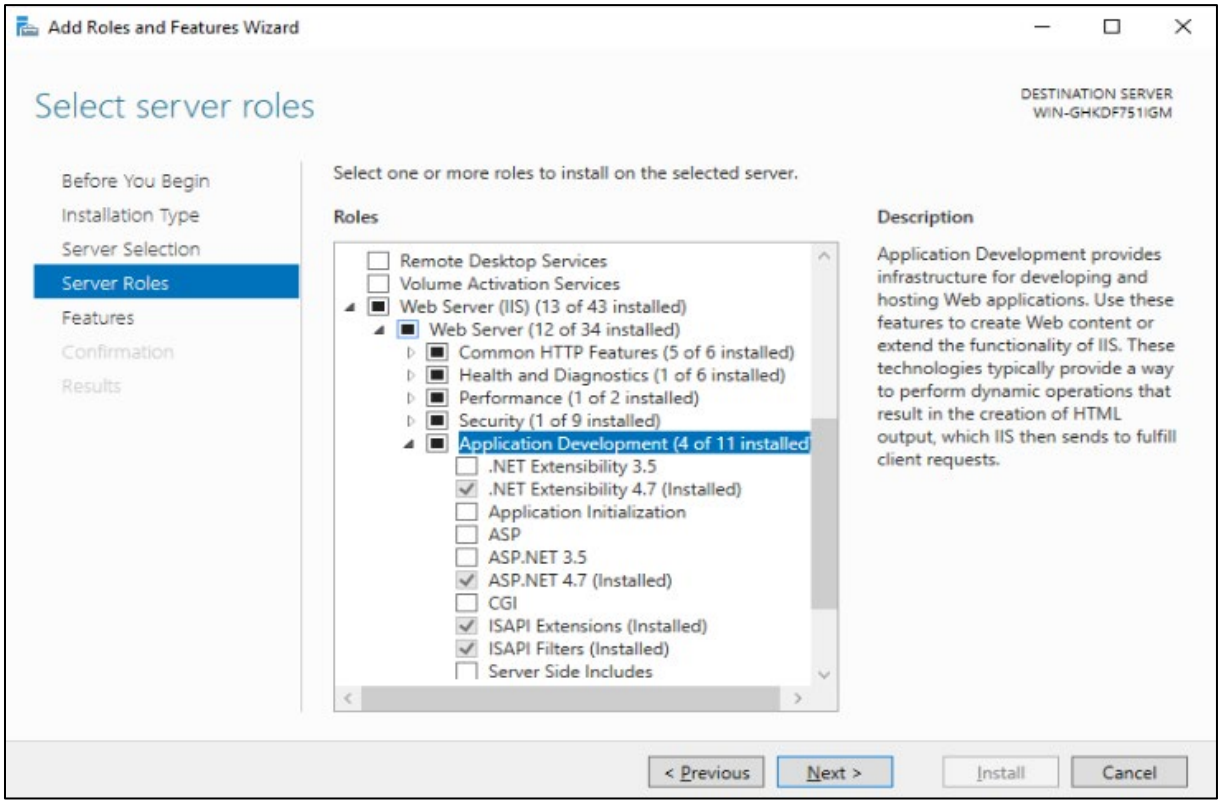
Server OS (Windows Server 2016)

Installation (enabling) IIS on a Windows Server OS is quite similar to installation on a Windows desktop OS (see details above).

Installation is started from **Server Manager**



by clicking on **Add roles and features**. What remains to be done is enabling **Web Server (IIS)** and also enable **ASP.NET 4.7** under **Application Development** (if IIS is already enabled, enable ASP.NET 4.7 if not already).



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URL Rewrite module for IIS

Microsoft URL Rewrite Module 2.0 for IIS is free and the official download is available from Microsoft.

NOTE
URL rewrite module is required for **SMP Manager** web application only.

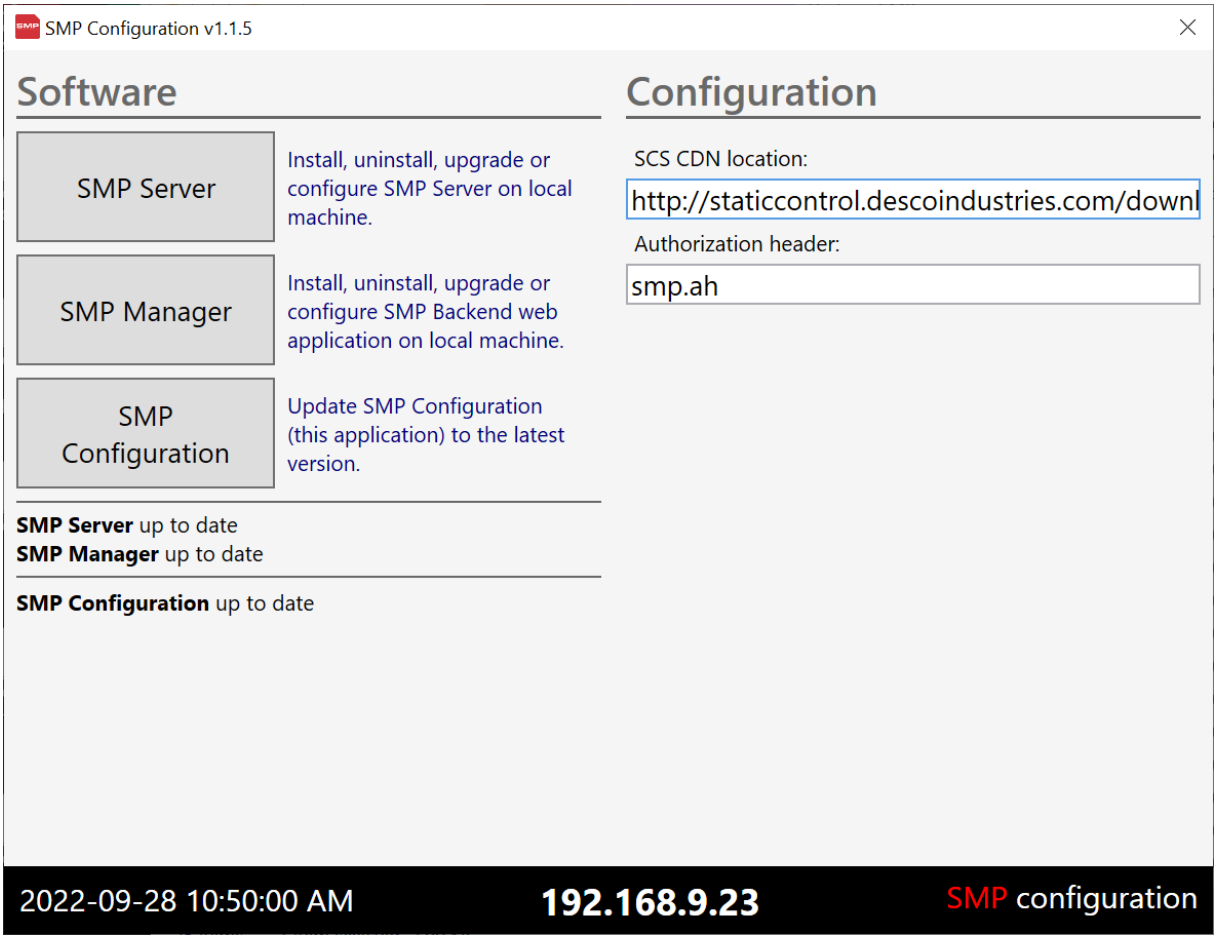
SMP Config

SMP Config is application used for SMP components installation, configuration and maintenance. It is available from SCS CDN:

- download **SMPConfigSetup.msi** from SCS CDN
- run downloaded setup application

Setup program will install **SMP Config** application on the local machine and create desktop icon.

This application is for installation and system maintenance (see details in next chapter) of SMP.



NOTE information part of main window - it contains information about installed version(s) and latest version available on SCS CDN.

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Installation

Once all the prerequisites are fulfilled (see above), SMP Config application provides quick and easy method for server installation. It is designed for most the common scenario (intranet, server components on single computer) but can also be configured for unique network infrastructures.

SMP Config is also the app used for upgrading to the newest version, (re)configuration and reinstallation.

SMP Backend

To install SMP Backend follow these steps:

1. Ensure prerequisites
2. Start SMP Config
3. Click on **SMP Server** button
4. Pick installation folder (**C:\SCS\SMP\Server** is default)
5. Pick port (20115 is default, change only if that one isn't feasible)
6. Pick folder for database (**C:\SCS\SMP\Data** is recommended)
7. Click on Install button

SMP Config will download installation package from SCS CDN (make sure this was set correctly on previous screen).

Once installation is done, click on **Root** link to validate the installation of Backend – web browser should open containing text in the body referencing ***SMP API, © 2022. SCS***

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SMP Backend runs as windows service. A successful installation will start the service immediately.

NOTE
Features within the app will change, buttons and items will no longer be available (Ex: installation folder is greyed out).

Information about the windows service (status) is now available as well as new button to **Start**/**Stop** the installed service.

There is also an **Upgrade** button available. This feature is used when there is a new version available.

NOTE
The upgrade feature is manual (not automatic). This allows the process to be completed if necessary

The upgrade feature can also be used to reinstall/repair the existing installation. It will "upgrade" to the same version but pulling the application files from the CDN should fix problems like accidental deletes, file corruption, etc.

WARNING!
Upgrade stops windows service but **does not start** it again!

SMP Backend service should be started manually after successful upgrade using **Start** button.

There is also a **Configure** button available. This feature reconfigures the existing installation. It can be used to change the data folder or authentication header name.

NOTE
This feature should only be used at the recommendation of SCS.

SMP Manager

It's recommended to install SMP Backend before Manager.

To install SMP Manager follow these steps:

1. Ensure prerequisites
2. Start SMP Config
3. (Optional) install SMP Backend (see comment above)
4. Click on SMP Manager button
5. Pick installation folder (**C:\SCS\SMP\Admin** is default)
6. Pick port (20200 is default, change only if that one isn't feasible)
7. Set API Root (it is set automatically to default backend API root)
8. Click on Install button

The SMP Config app will download the installation package from the SCS CDN (make sure that this was set correctly from the previous screen) for setup.

Once installation is complete, click on the **Root** link to validate the installation of SMP Manager. A web browser will open displaying the SMP Manager login page (see details about SMP Manager in the following chapter).

NOTE
Features within the app will change, buttons and items will no longer be available (Ex: installation folder is greyed out).

There is also an **Upgrade** button available. This feature is used when there are new versions available to update.

The upgrade feature can also be used to reinstall/repair an existing installation. It will "upgrade" to the same version but restore files that were removed by mistake, corrupted, etc.

There is also a **Configure** button that allows you to reconfigure the existing installation. It can be used to change API root or authentication header name.

NOTE
This feature should only be used at the recommendation of SCS.

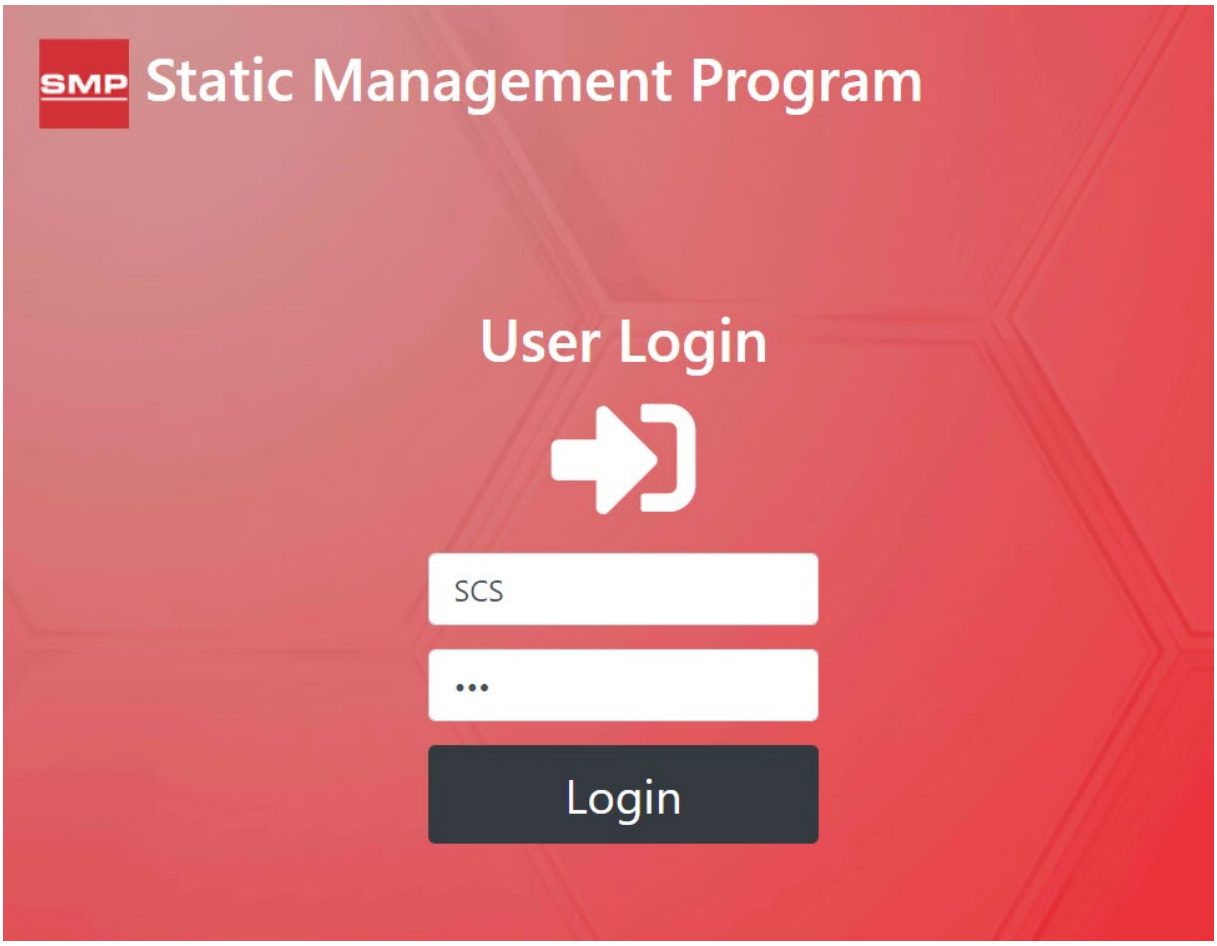
SMP Backend should be centralized on a server and can be accessed by **SMP Manager** from any computer. SMP's web-based platform allows multi-user access from anywhere on any device (with access to a web browser) within the same network. SMP devices will only communicate with **SMP Backend** if they are the same LAN. If SMP devices will be located on multiple LAN's, this system can be configured to allow it. Contact the SCS factory representative for full details on this setup.

SMP Manager

SMP Manager is a web portal that offers access to the SMP system. It is designed to provide:

- Management (administration) of system entities like monitors, alarms, layouts, settings, etc.
- Constant monitoring of system state including versatile query, reporting and alert features
- Controlling operational parameters of SMP devices
- Exporting data in various formats (Excel, html, text, e-mail)
- Importing layouts for monitor management
- Controlling overall SMP operation

When started, the **SMP Manager** requires user authentication:



Every installation comes with a predefined username and password. Multiple login profiles can be created (see Users section). The default username is **SCS** (not case sensitive) and password **scs** (case sensitive). This user has a role of **Owner** and therefore includes full administrative privileges (see Users section for role permissions).

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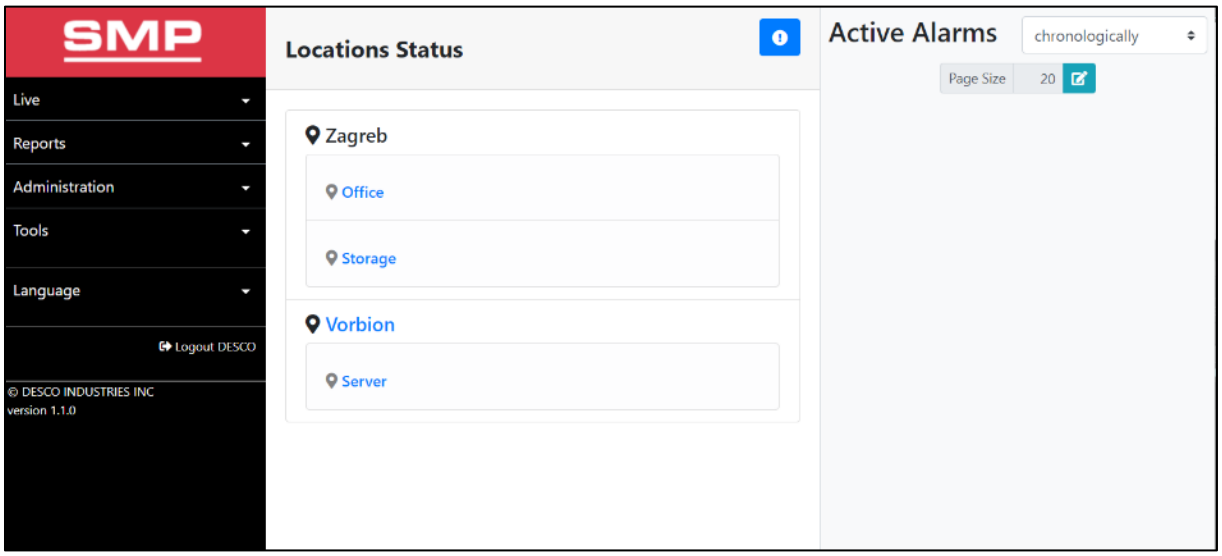
WARNING!
Keeping the default user profile active may offer a security risk!
It is recommended the default “SCS” profile is replaced with a new one; see below:

1. open **Users** (under **Administration**)
2. click on **New User**
3. define new user – set role to Owner (important!)
4. logout predefined SCS admin (on the sidebar menu)
5. login with created user
6. if everything is fine, go to Users again and delete SCS Admin (red delete button)

If **SMP Manager** is installed and configured properly, the dashboard view will display.



The Navigation menu is located on the left sidebar which includes access to the logout button, licensing information and activate button. The SMP icon in the upper left-hand corner will bring you back to the dashboard view if you are on any other screen.

The dashboard is composed of the following “widgets”:

- Locations hierarchy and status
- Live active alarms list (visibility toggled using button)

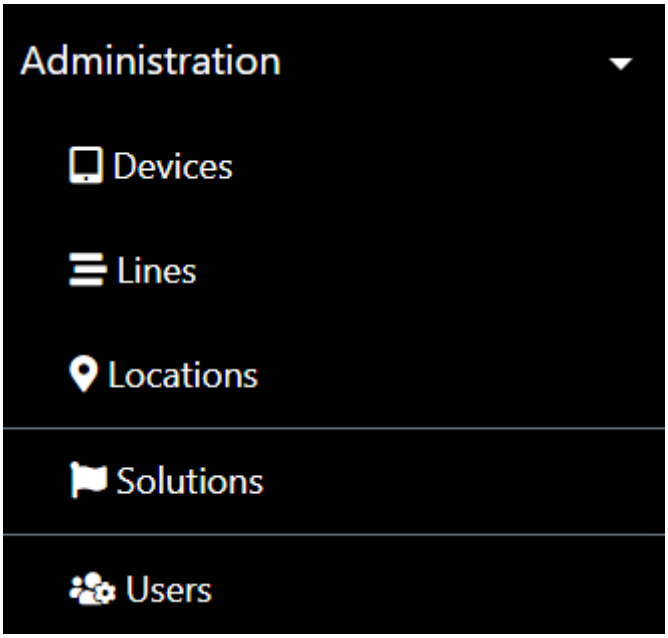
It’s possible to show/hide or configure alarms list (number of alarms shown, alarms ordering, etc.).

System dashboard is “live”, it refreshes automatically to always reflect current system status.

SMP Manager is a “responsive” web application. It will fit and rearrange on smaller screens (tablets, mobile devices, etc.).

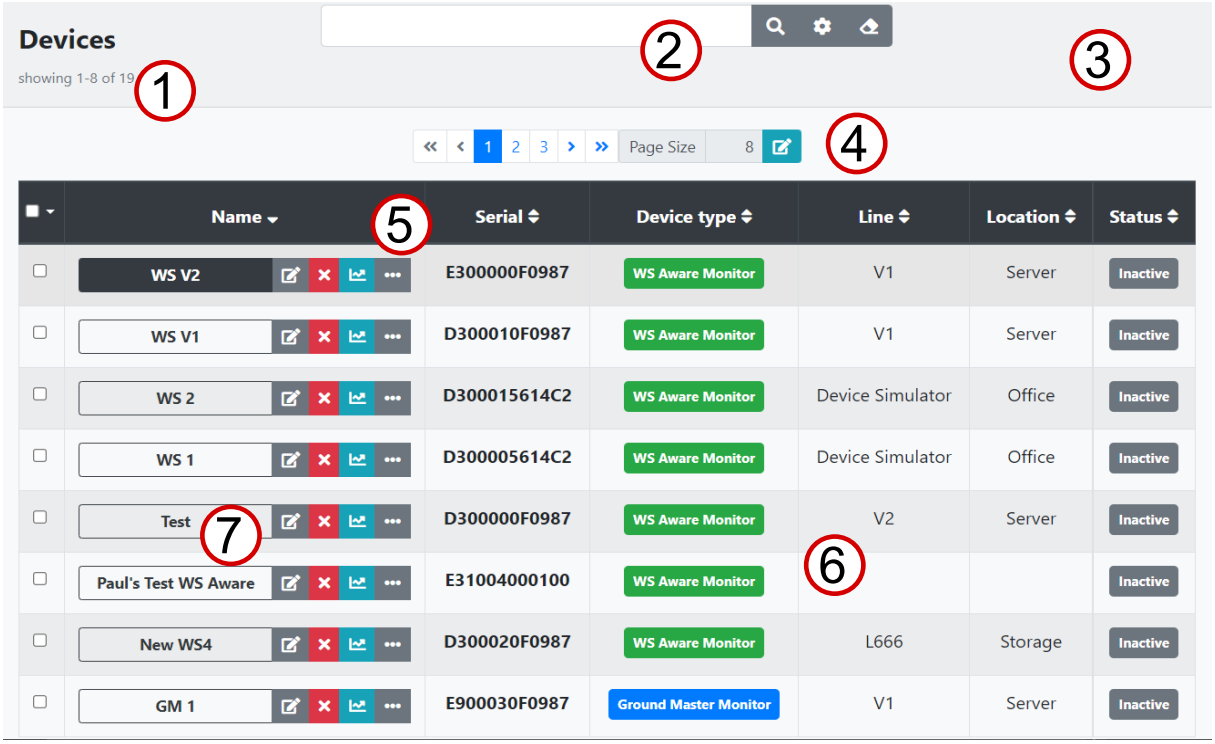
Common functionality

SMP Manager offers full management of all system entities which can be found under the **Administration** menu like shown below.



Clicking on, for example, **Devices** opens standard “master” (list) view.

List view



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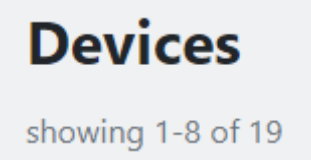
Every list view in SMP Manager looks similar and has the following features:

1. Title with overall entity count
2. Filtering
3. Button to create new entity (not available for devices)
4. Pagination
5. List header with sorting and select all
6. List of filtered entities
7. First column with entity name and a set of available operations

Device view shown above contains all possible components. Some other entity (or report) lists may not contain parts and commands that are not relevant. List view will always adapt seamlessly.

List title

List title contains the title that describes associated list and information about overall (filtered) entity count as well as information about entities shown.



Filtering

Every list can be filtered in various ways:

1. term entry field
2. search button
3. advanced filter button
4. clear filter button

The most basic option is filtering by term. It can be done by entering any text in the term entry field and pressing Enter (or clicking on search button). The list view will immediately refresh to show only entities that “contain” entered term.

For example, entering ***WS*** in the search term would match names like WS V2, WS 1, Test WS Aware, Browser, … - anything containing “ws” (letter casing is irrelevant).

> NOTE
> SMP term matching is more extensive. For each entity, a set of “term” attributes is defined. In our devices example, search above would also match devices with serial number containing WS.

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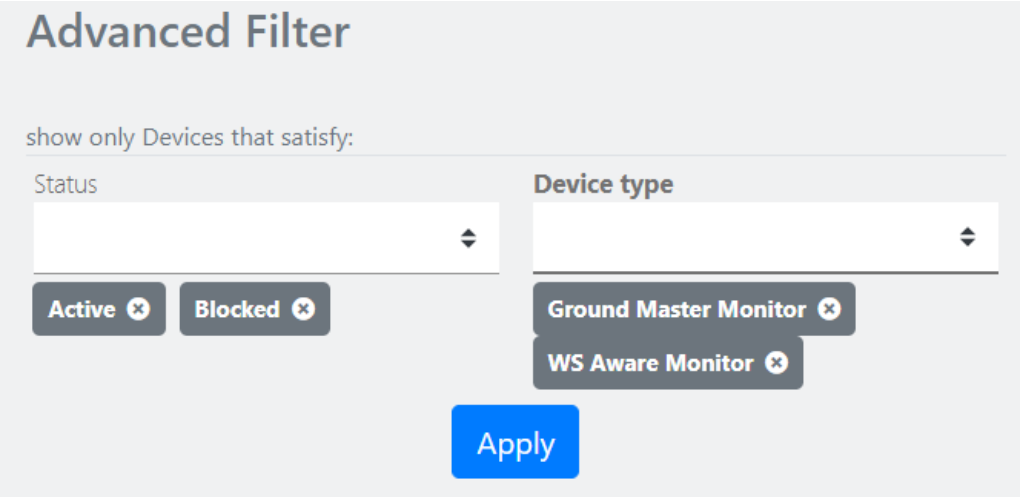
For more advanced scenarios there is advanced filter option. It provides additional meaningful filtering options. Advanced filter automatically adapts for related entity – for devices it is:



Clicking on Apply button (or on search button in filter bar) will filter list accordingly.

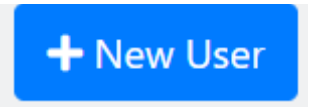
Advanced (extended) filter button in filter bar toggles visibility of advanced filter form.

Finally, clear filter button clears any filtering criteria. It is equivalent to “show all” command.

NOTE
Advanced filter and clear filter buttons indicate whether any filtering is applied. They will turn blue if filtering (including term filter) is active and grey otherwise.

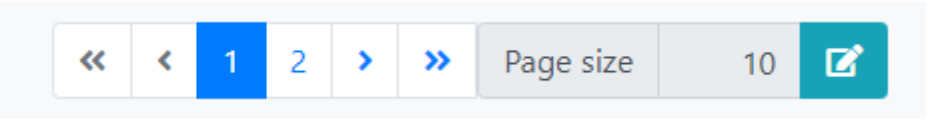
New command

Every list view except devices and solutions contains new item button



Pagination

It is rarely useful to have large lists on screen, SMP Manager uses standardized pagination

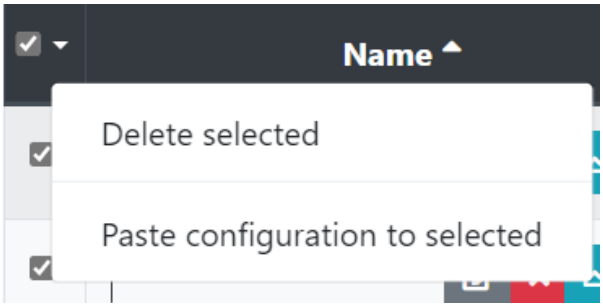


consisting of pager and control for adjusting page size. Pagination is visible only when necessary, i.e., if there are more entities then those shown.

List header

List header contains titles and some of them are clickable as indicated by mouse cursor and arrows to their immediate right. Clickable titles are used to sort the list – clicking on title toggles between ascending and descending sort on related attribute.

In the leftmost column there is a check box with drop-down menu. For devices it looks like



Checkbox is used to select/deselect all, and drop-down menu contains commands relevant for current selection.

Entity list

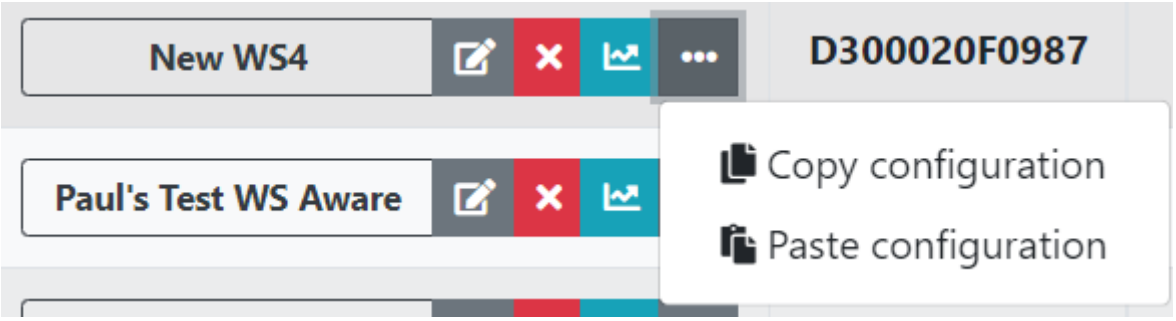
List body simply contains a list of (filtered) entities with predefined columns shown.

In the leftmost column there is a checkbox used for selecting/deselecting individual item.

On smaller screens list with many columns may not fit into viewport. If that happens then list becomes scrollable (left/right).

Name (command) column

First column always contains entity name (or description) and a set of relevant commands



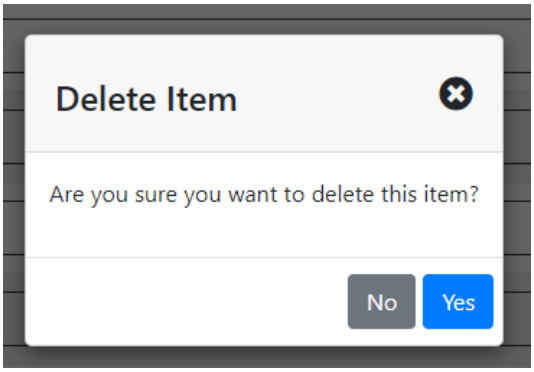
Standard operations (commands) on every entity are edit (modify), delete and preview.

Preview is not available always (only for complex entities and reports). In our operator example, name is in fact a button. When clicked, operator preview will open in popup form.

For some list views (reports in particular), whole row becomes preview trigger. Availability of preview is noticeable by cursor change in that case.

In devices list there is separate edit button next to operator name. For simpler entities (Lines for example) this button won't show! Since simple entities don't have preview option, clicking on name will open edit (details) form instead.

Delete button is red button with cross. Deleting will always ask for confirmation



NOTE
SMP uses concept of soft vs. hard delete. Hard delete removes entity from the system and it isn't reversible (can't be undone). On the other hand, soft delete only marks entity as deleted but keeps it in the system. Soft delete is equivalent to setting entity status to Deleted.

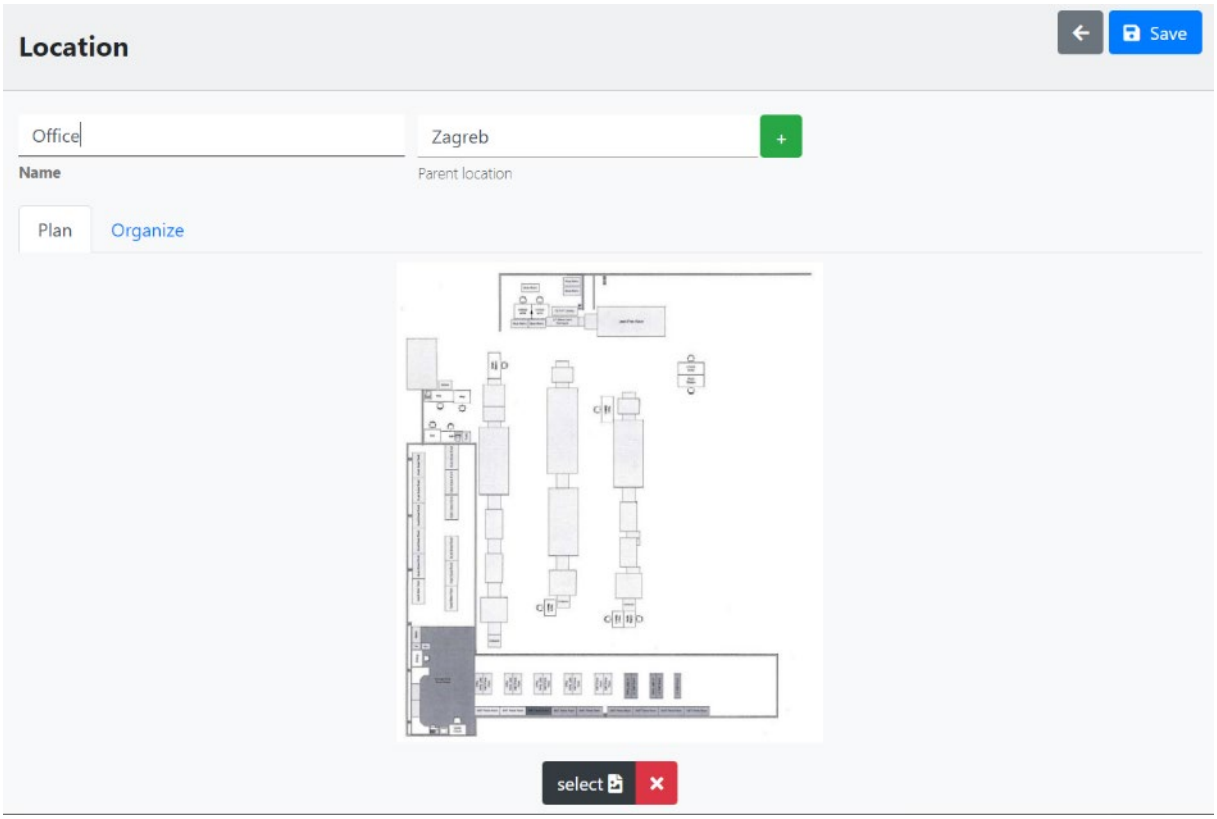
Soft delete is simply called "delete" and hard delete is called "erase" in SMP. Complex entities have Status attribute and have both soft and hard delete available. Simple entities do not have status and have only hard delete available (for them delete=erase).

Hard delete may not succeed. If removing entity would disturb consistency of data (entity is referenced somewhere) then erase fails with informative message.

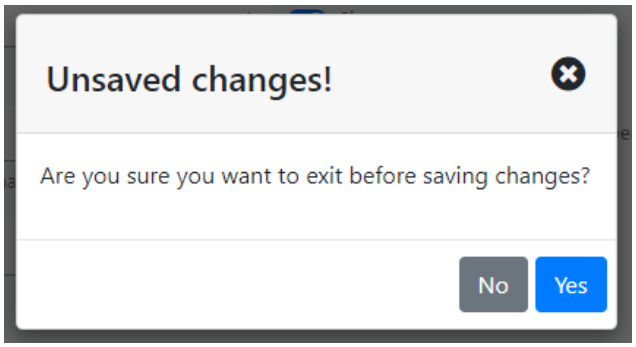
Some entities have additional commands. In case of devices those are: live (real time) view, copy and paste configuration.

Detailed view

Entities are created and edited using details view (form). They are always invoked using either Create New or Edit command on list view (see previous section for details). In some cases, they are very simple and sometimes show quickly as popups. In some cases, they can be fairly complex and contain multiple tabs (for example, location form)



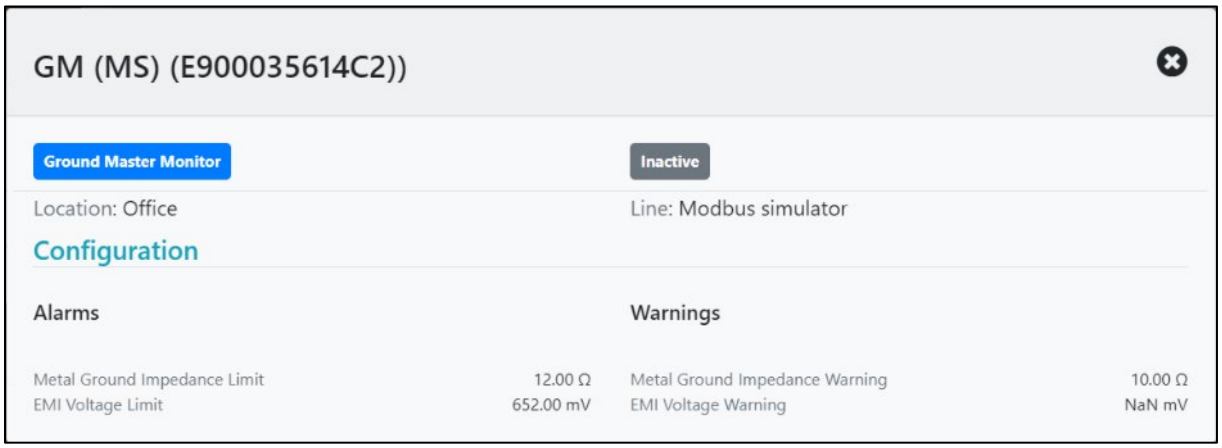
Details view always contains two commands: back (grey left arrow) and Save (blue button). Back command will return to previous location (list view) but will prompt if changes were made:



Save will save changes made (if there were any) and return to previous location (list view).

Preview

Preview is another standard SMP Manager feature. It is available for complex entities, fault history and various reports.



Preview is always shown in a popup window that can be closed using the close button (grey button with cross) or simply by pressing the escape key.

Export

Export is standard feature of all reports.

The primary purpose for exporting the data is to customize reports and synchronize the data with external systems/applications. Reports are offered in the following formats:

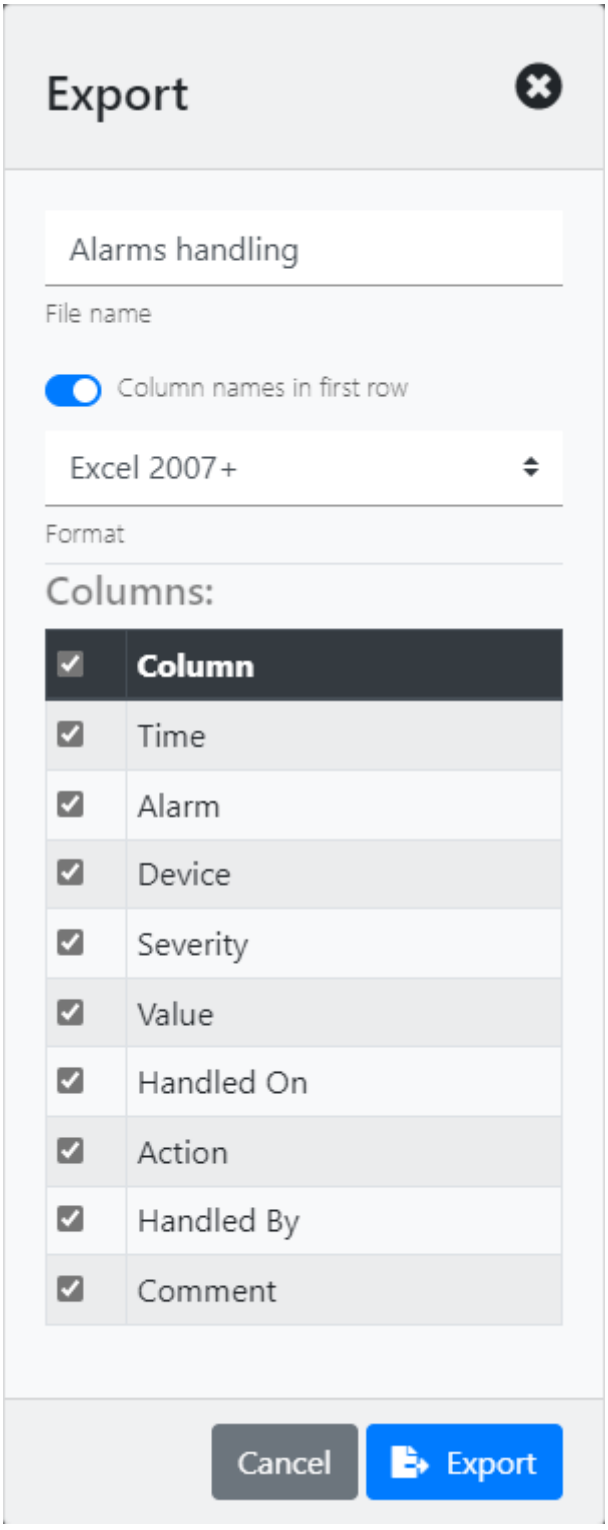
- Excel
- Tab and comma delimited text
- PDF

Export capabilities are extended (for reports) also with:

- PDF preview (useful for printing)

All report pages contain action buttons in the top right corner

Clicking on the Export options brings up a form for customization



This enables columns (attributes), output format and file name selection.

Selecting Export will generate the reports and a create a file to the downloads folder.

NOTE

Export always includes current filtered selection. Use standard filtering and sorting options to produce the desired report.

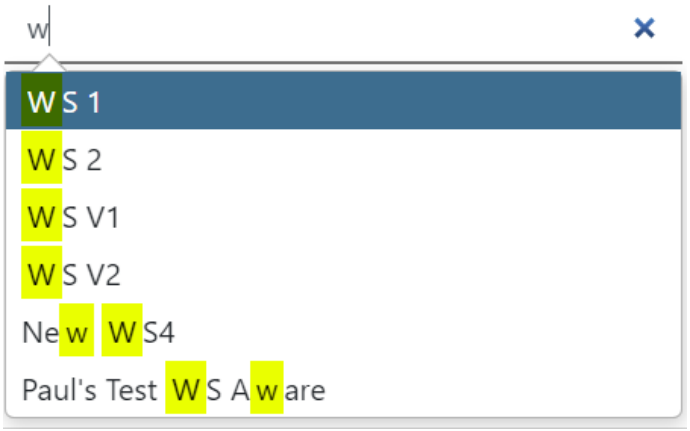
The PDF option (button) opens the resulting PDF in a new browser tab. This is similar to a print preview function offered in other applications.

Common controls

SMP Manager uses standard UI controls – buttons, input fields, dropdown lists, checkboxes, switches, etc. but also the following features:

Autocomplete input

Autocomplete offers suggestions based on the characters being inserted. The suggestions are based on the text available in SMP Manager.



Selecting **Enter** will “complete” the apply the highlighted suggestion.

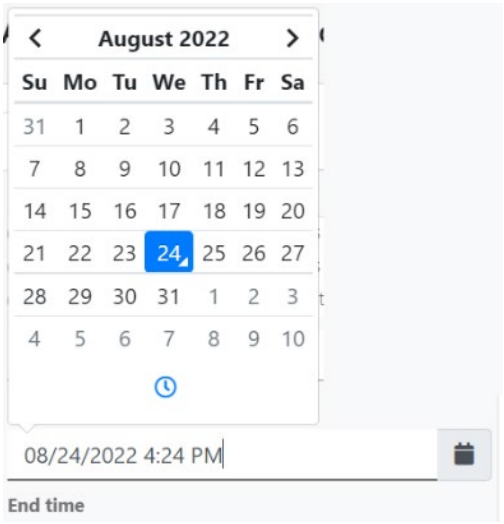
It’s also possible to use the down/up arrows to change the highlighted suggestions or simply click on the desired one.

NOTE
It’s also possible to list “all” available choices without typing in the hint. This is done by pressing **Down Arrow** while the input field is empty. Autocomplete will then display all available entities.

Autocomplete suggestions are always limited to the **first 12 matches**. Suggestions are always displayed in a random order. The autocomplete feature allows operators to quickly identify full device names. This feature also allows multiple selections to be made or detailed filtering.

Date/time input

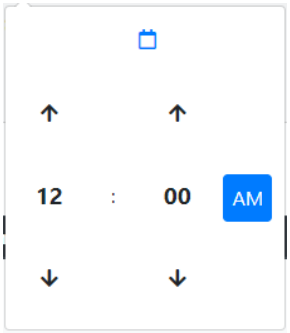
The SMP Manager uses a special input control where dates and times are available.



The input field, where the date and time can be chosen, extends when selected.

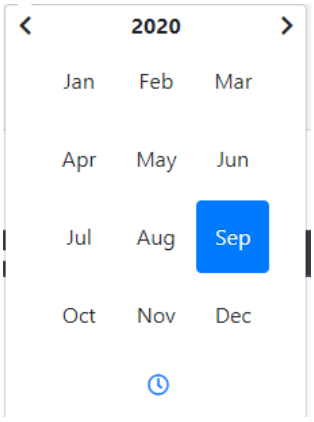
If the time only requires updating, that control will only be displayed. Same would go or the date. In most cases it looks like the above.

Selecting the clock icon will switch to choose a specific time



and calendar icon can be used to switch it back.

In date mode, selecting the month at the top of the window brings up a month chooser.



Selecting the year bring up a year chooser.

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Organizing system layout

SMP automatically discovers all SCS devices (monitors) connected to the local network. SMP identifies each device by its serial number. Devices will always remain in the software even if disconnected from the network as Inactive.

INFO!
If a device is relocated but still within the network subnet, it will remain active. If the device is tied to a layout, it will appear in the same location until the layout is revised.

SMP Manager allows you to organize the dashboard to a layout that allows operators to easily identify where devices are located. The standard system layout consists of:

- Locations
- Lines
- Devices

Location is an entity that groups lines and devices. It usually corresponds to a physical location (Ex floor or building) within the facility. This can also represent any grouping concept.

Line is a logical grouping of one or more devices. Each location can contain one or more lines and each line can contain one or more devices.

INFO!
Locations are generally organized in layers. Examples of this would be a factory containing several buildings and several rooms.
Typically, only bottom level locations contain lines (and thus devices) and higher-level locations represent the system layout.

Devices are the main SMP entity and are organized by lines.

INFO!
To “place” a certain device in a location, a line that belongs to that location is required. Therefore, standard process should be something like:

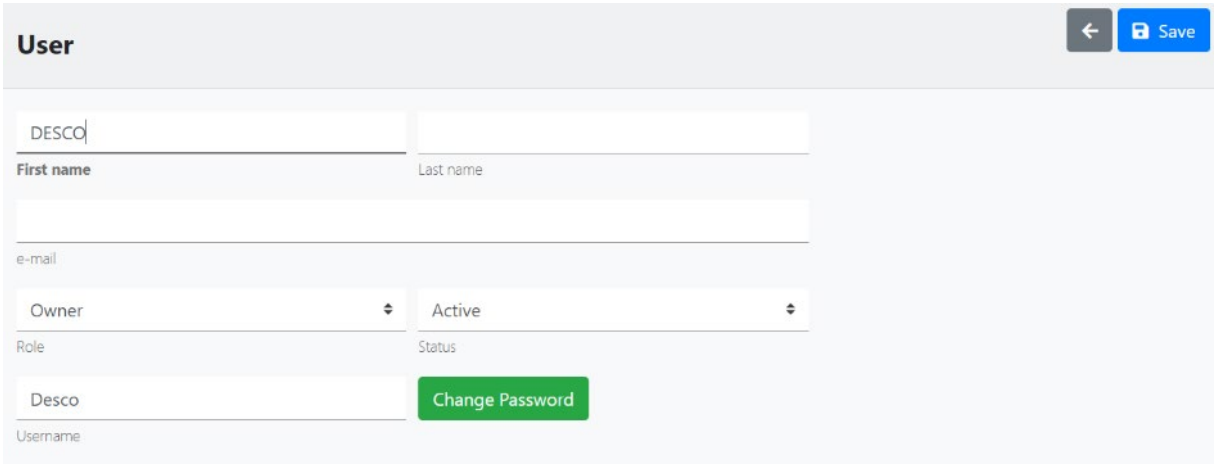
- Create location
- Create line and attach it to that location
- Attach device to that line

Additional details on location plans and the navigation pane will be covered throughout the user guide.

Administration

Users

User is an entity that has access to SMP Manager



Roles are important because they define permission:

- Admin and Owner have full access to all available functions
- Manager has limited access
- User has only “read” access (can view but can’t modify)

Setting status to anything but Active will disable the user profile.

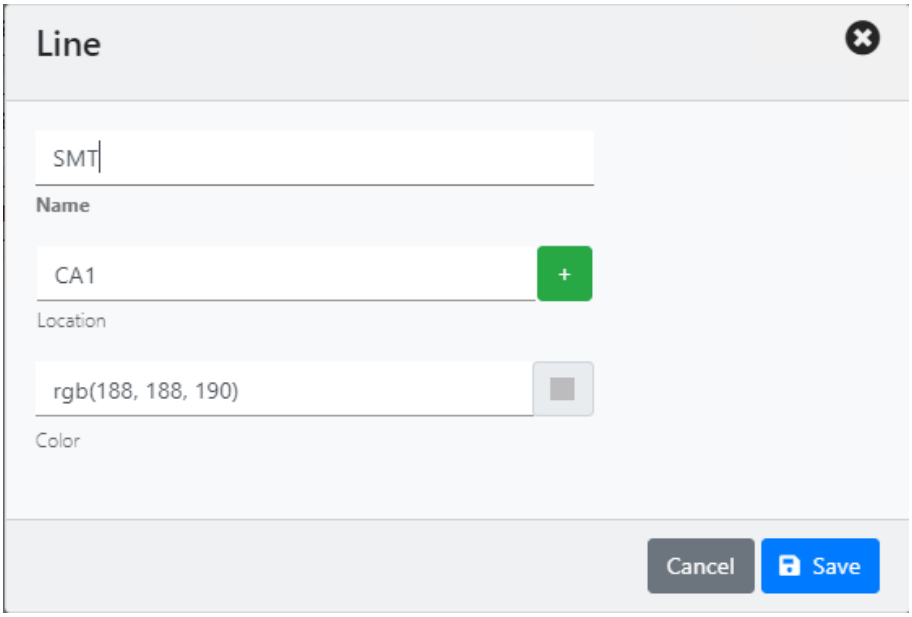
First and Last name are not required but recommended to help quickly identify Roles.

The e-mail field is optional but linked to Alert Notifications.

Required entry: Username, Password.

Lines

Line is used to organize (group) devices:



Name is what you call the line the device will be connected to. It should be specific but can be universal and used for multiple devices in multiple locations/buildings.

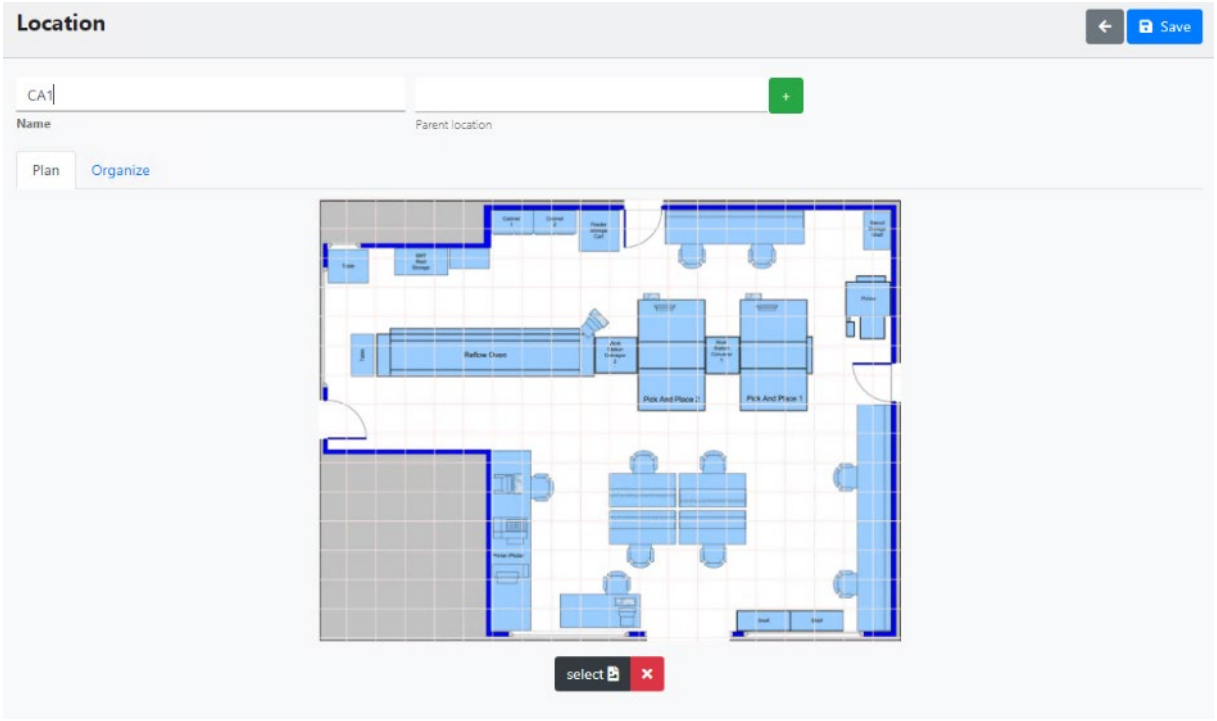
Location is where the line/device is located. This field is not required but recommended to help identity where devices are installed.

Color is the color for device icons located on the layout.

Required entry: Name.

Locations

Location is used to describe and view the layout of the facility and where devices are located.



Name is a unique location name.

Parent location is a location that contains this location (hierarchy). It is either selected using standard auto complete entry field or directly created using **New Location** button.

Plan is bitmap image of the facility layout. The layouts help identify where devices are located within a building, floor and line. The plan is linked to the dashboard and offers quick access to devices.

Required entry: Name.

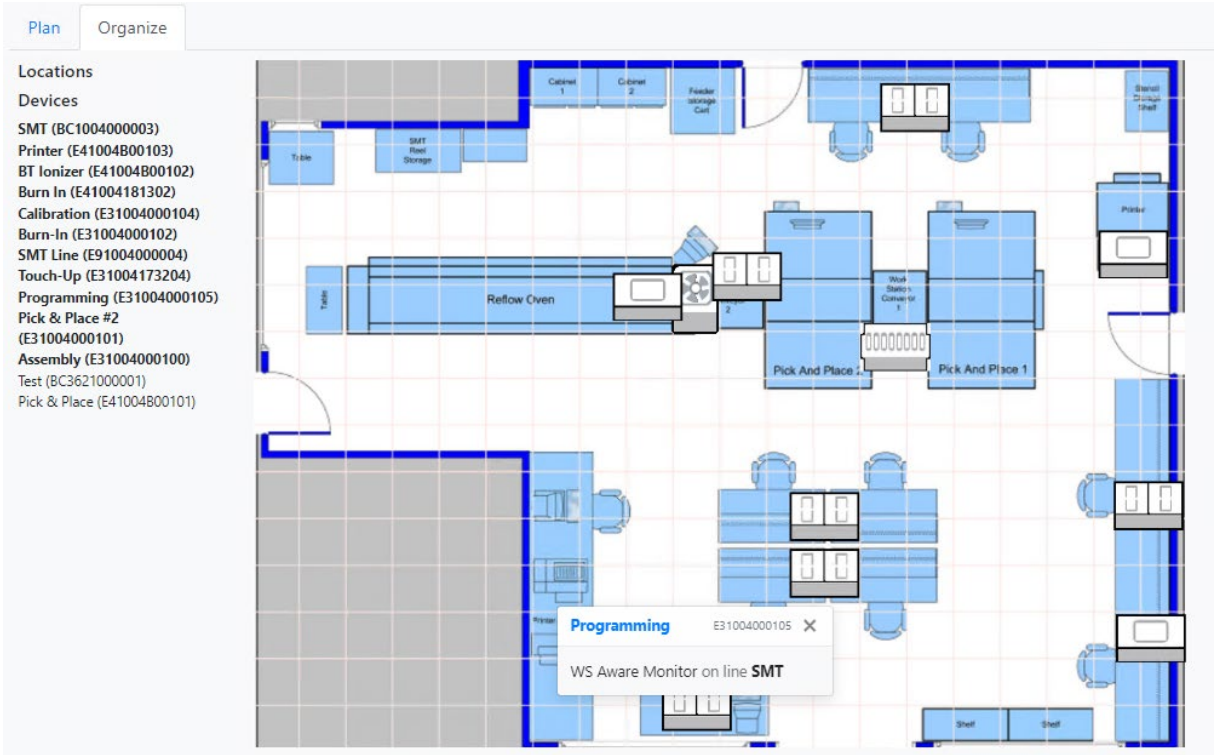
System layout defined by locations is not required but provides some extra features within SMP Manager. It can be very simple, containing just a couple of locations and ranging to

complex hierarchical structures. One example of location hierarchy is (on system dashboard):

Locations that have a plan are presented as links. Clicking on a link will open location “live” view consisting of a plan with “live” device symbols.

Laying out devices

Location form also has a **Organize** panel that is used to lay out device symbols:



In order to have this feature, location should have a plan already and there should be some device assigned to it (using Location->Line->Device association described before).

Sidebar on the left contains a list of assigned devices. Devices that are already “placed” are indicated with bold font.

To place device on a plan, just drag-drop device name from the left sidebar to desired position on a plan.

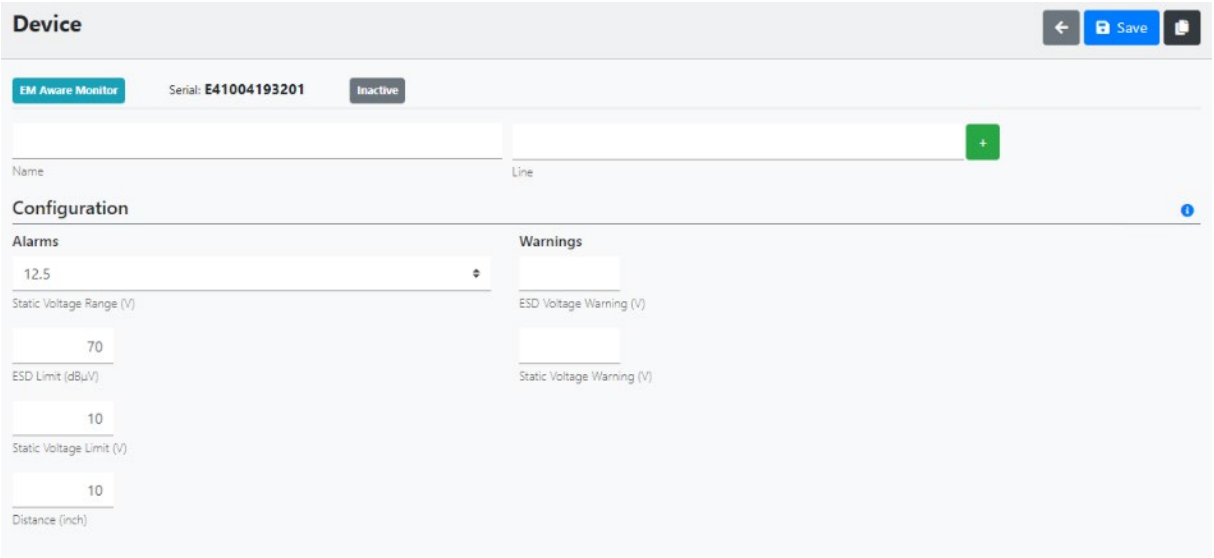
It is possible to zoom in and out on a plan using mouse wheel. It is also possible to rearrange device symbols. To move a symbol just drag drop it to different location.

Clicking on device symbol will show a popup with basic device information as shown on figure above.

IMPORTANT!
All manipulations with location plan must be saved. SMP Manager **will not show** standard "unsaved changes" prompt.

Devices

Device is a main SMP entity and represents a SCS monitor:



Devices are created automatically by the SMP discovery mechanism and identified by serial number as described before. It is, therefore, not possible to create new device or change sensor type or serial in SMP Manager. Even though delete button exists in device list view, deleting an existing device is not available.

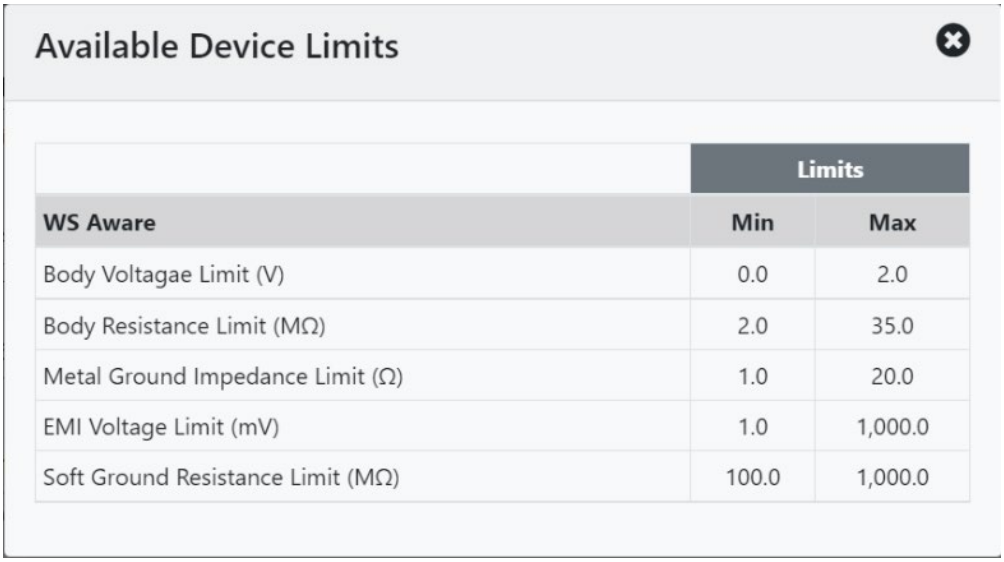
Name is a unique device name. Name is optional but convenient for informational purposes as well as in searching and filtering. Devices without a name will be shown with just a serial number.

Line is the line that device belongs to. This is optional and described in more detail in the previous chapters.

Configuration

SMP Manager is also used to (re)configure devices in real time. SCS monitor configuration usually consists of a set of limits (for alarms and warnings). Configuration for **WS Aware Monitor** also contain two "special" settings: **Hide Terminal 1** and **Hide Terminal 2**. Those settings control behavior in SMP – related channels won't be visible in real-time view and alarms for related channels won't be generated.

The device form also contains blue info button that shows available (applicable) device limits for reference:

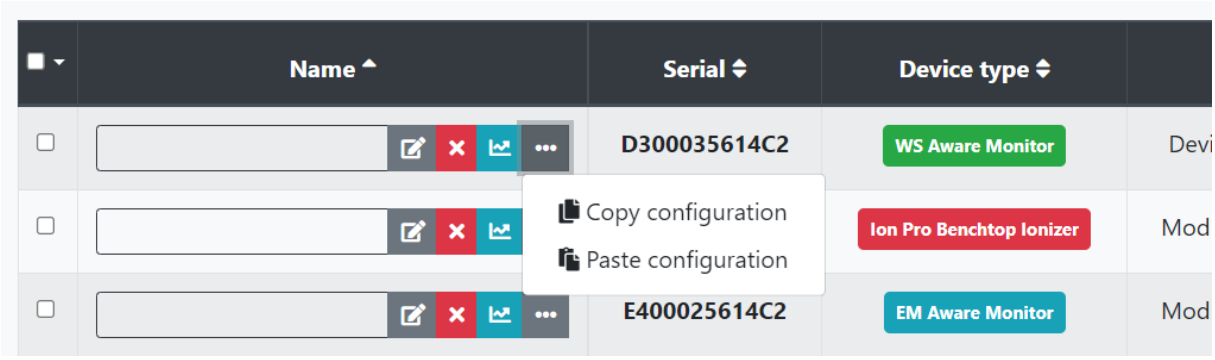


	Limits	
WS Aware	**Min**	**Max**
Body Voltagae Limit (V)	0.0	2.0
Body Resistance Limit (MΩ)	2.0	35.0
Metal Ground Impedance Limit (Ω)	1.0	20.0
EMI Voltage Limit (mV)	1.0	1,000.0
Soft Ground Resistance Limit (MΩ)	100.0	1,000.0

A typical SMP system will often contain several monitors of the same type. Very often those monitors will use the same configuration parameters. To aid in configuration parameter maintenance and remove the necessity to enter a set of values over and over, SMP Manager has a **configuration cloning** feature. This is a very simple process:

- Copy existing device configuration
- Paste configuration to one or more devices of the same type

Copying a device configuration is done either by clicking the copy button  on the device form or by selecting the **Copy configuration** option from commands menu on the devices list view:



Once an existing configuration is copied it can be applied to other existing devices. Cloning a copied configuration to a single device is done with the **Paste configuration** command on the command's menu displayed above. Cloning a copied configuration to multiple devices is available from the selection menu in a list view:

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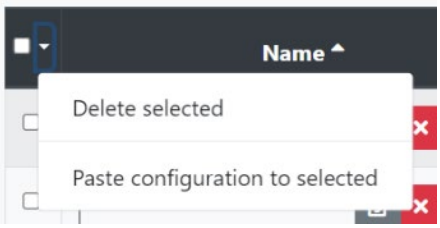
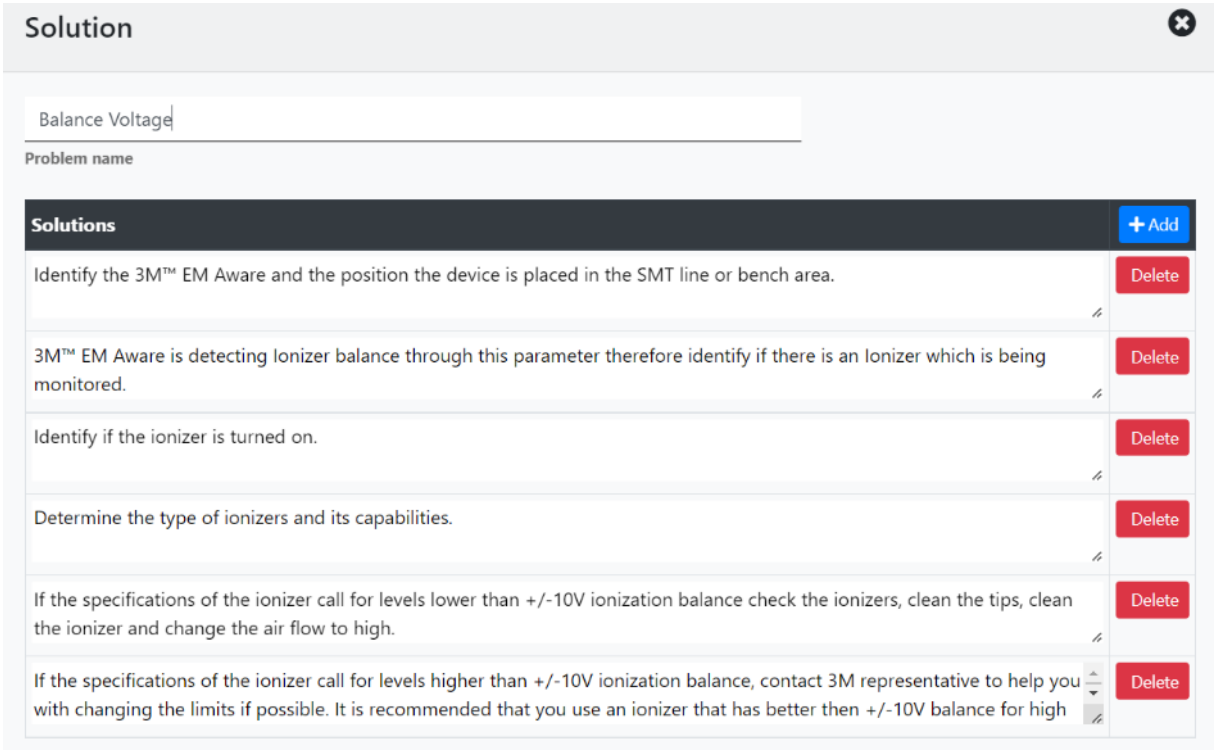


IMPORTANT!
Device configuration is a sensitive function. All configuration changes will immediately be sent and applied to a device, thus altering its behavior.

Solutions

Solutions are sets of troubleshooting tips available for alarms. This feature will be described in action in a later chapter. SMP Manager contains a list of available SMP “problems” and makes the editing of troubleshooting tips possible:

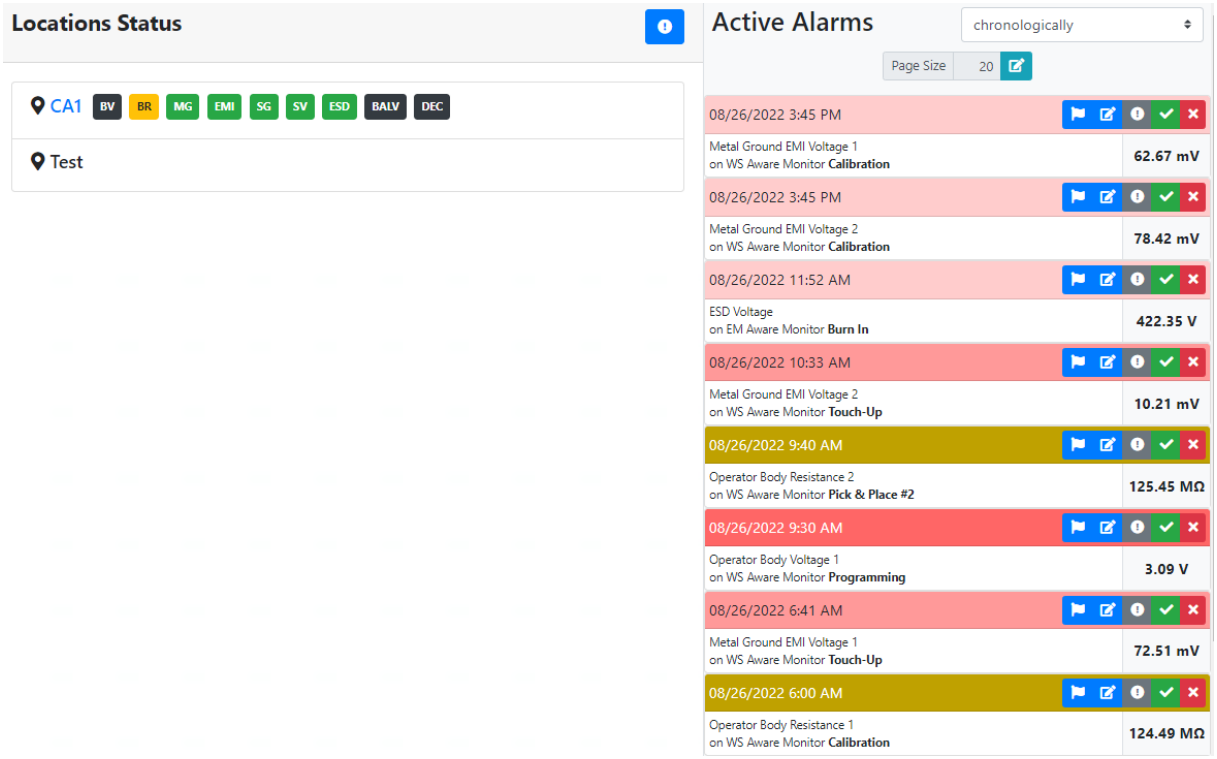


This form provides:

- Editing of the **Problem name**
- Adding and/or removing troubleshooting tips
- Editing troubleshooting tip text

Dashboard

System Dashboard (SMP Manager “home” screen) is always accessible by clicking on the title in the top of the left sidebar. It is composed of widgets that give information about the system and is refreshed in real time:



Location Status widget shows locations hierarchy with live status.
Organizing the system into locations hierarchy was described in detail in an earlier section. Locations that are “browsable” (have a plan) are represented as blue links. Clicking on link will open a live location view.
This widget also shows “location status” in real time. Location status is defined as the cumulative status of all location devices grouped by channel type. Status is represented by colored tags – text is abbreviated channel type name and color indicates status. Channel states and statuses will be described in more detail in later chapters.

INFO!
Parent location by definition “contains” all devices contained in any of its children. Location status will therefore appear even if a location does not have directly assigned devices.

Active Alarms widget shows a list of active alarms with basic information and provides management options for alarms. System faults and alarm functionality will be described later in a dedicated chapter.

Toggle alarms button  turns the active alarms list visibility on and off.

Real time monitoring

Monitoring system state in real time is one of the core SMP functions. SMP Manager provides various views in individual device state as well as overall location state. Information about fault conditions and alarms is also collected and presented in real time and will be described in detail in the next chapter.

SMP Backend collects states from all connected devices every second and SMP Manager provides versatile functionality to display and monitor those in real time. SMP Manager also has versatile reporting functionality to display state history which will be described in detail later.

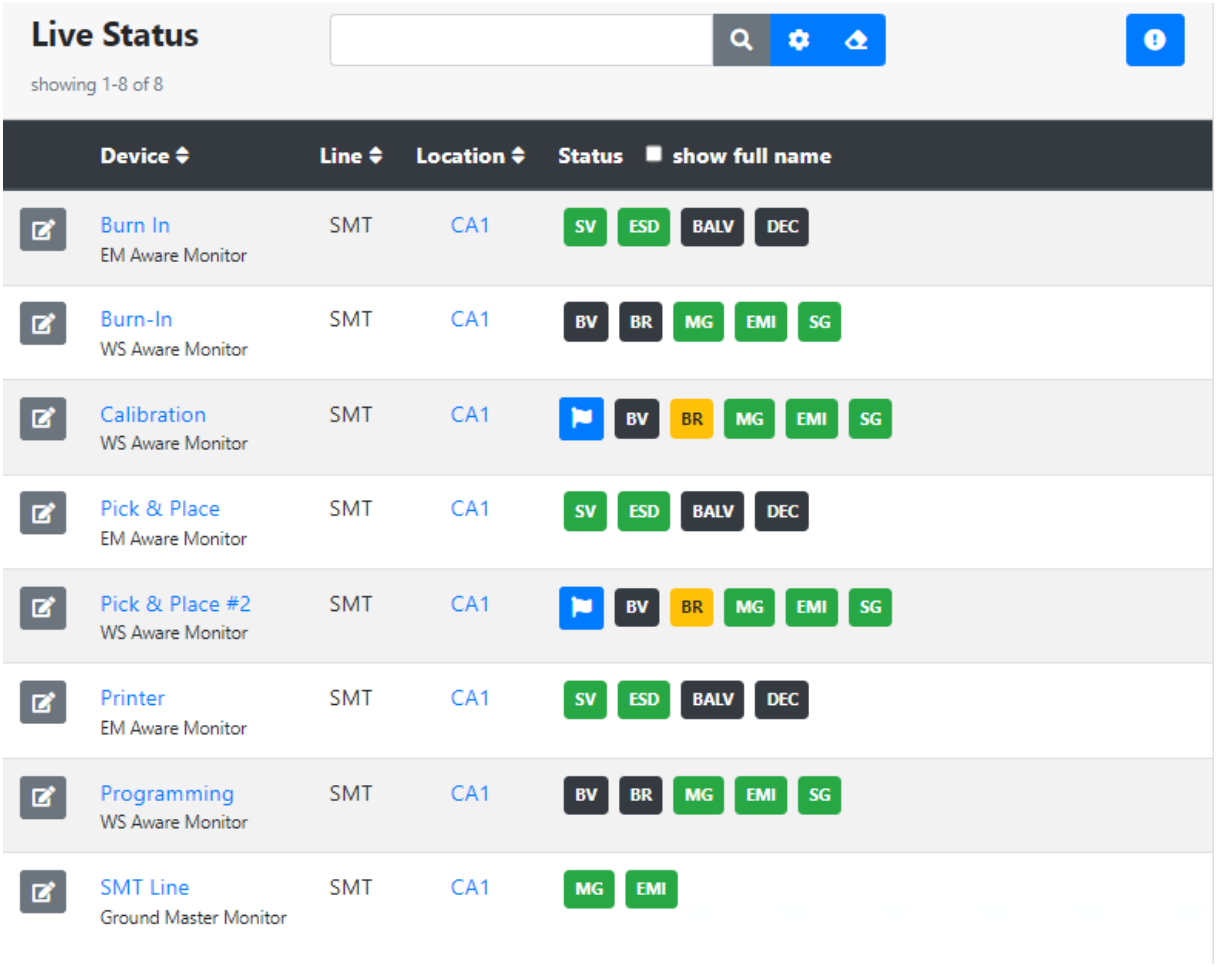
DEFINITION:
Each SCS device measures several values. Those values are called **channels**.
Each channel has **value** (numeric, with physical unit) and **status**.
Status is in SMP Manager represented by color and can be any of:

- **Normal** (operational) – GREEN
- **Alarm** (faulted) – RED
- **Warning** – YELLOW
- **Disconnected** – BLACK
- **Unavailable** – WHITE

For example, WS Aware Monitor has Operator Body Voltage channel with value in volts (V).
Some device types may have several channels of the same type because several operators can connect (e.g., Operator Body Voltage 1, Operator Body Voltage 2).

Active devices status

Status item under **Live** sidebar menu shows in real time status for all (or selected) devices:



It is shown in standard list view with standard functionality (filtering, sorting) as described before. This list is refreshed in real time and shows status by channel type for every device.

INFO!
When device has multiple channels of the same type, SMP Manager shows combined status for all of them. Combined status is always the most significant status:

- RED
- YELLOW
- GREEN
- BLACK

For example, status will show as RED if any of channels are red, it is GREEN if no channels are red or yellow and it will be BLACK only if all channels are black.

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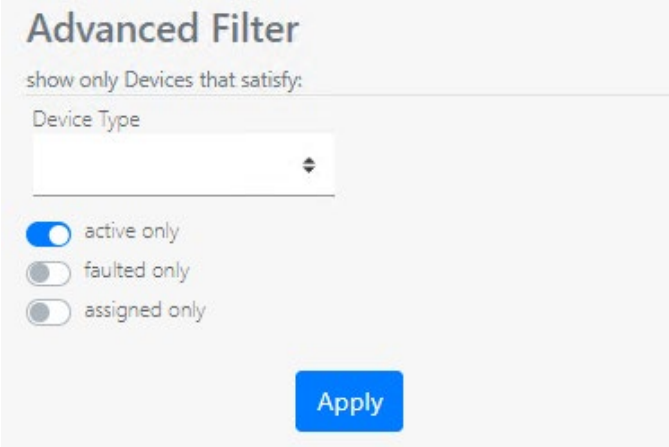
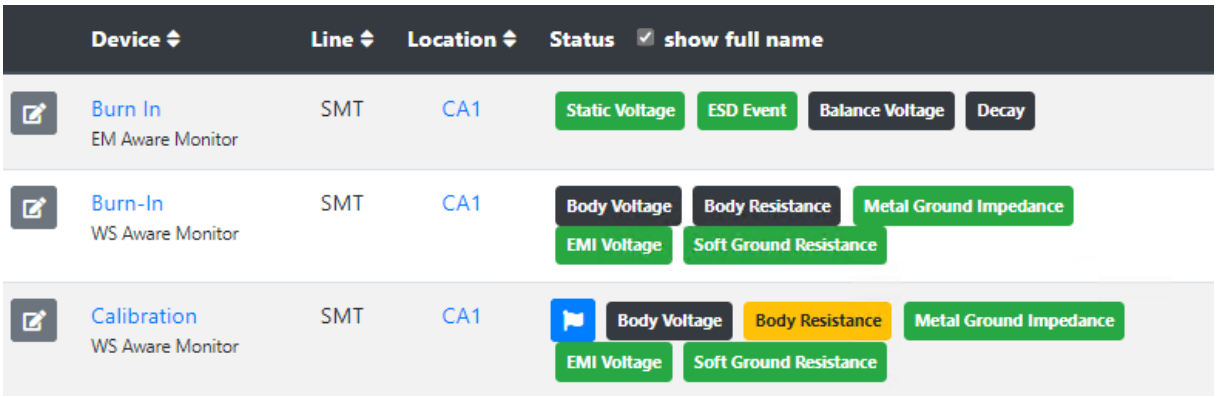
Default filter will show all active devices, but it can be modified using a common UI:



Live devices list also allows device editing (and configuration) using the **edit** button on the left, switching to device live view (device name is a hyperlink) or switching to location live view (location name is a hyperlink if location has a plan).

Statuses are represented with abbreviated channel type names, but it is also possible to show a full name using **show full name** checkbox:



Finally, all devices that experience a problem will have an additional **Troubleshoot** button  left of statuses. Troubleshooting will be covered in more detail later.

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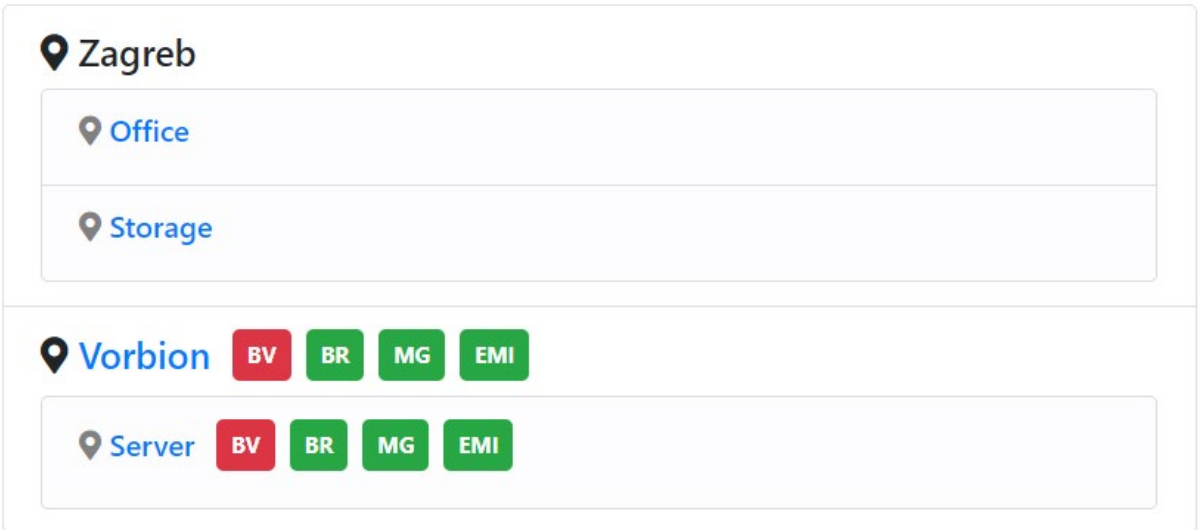
Locations status

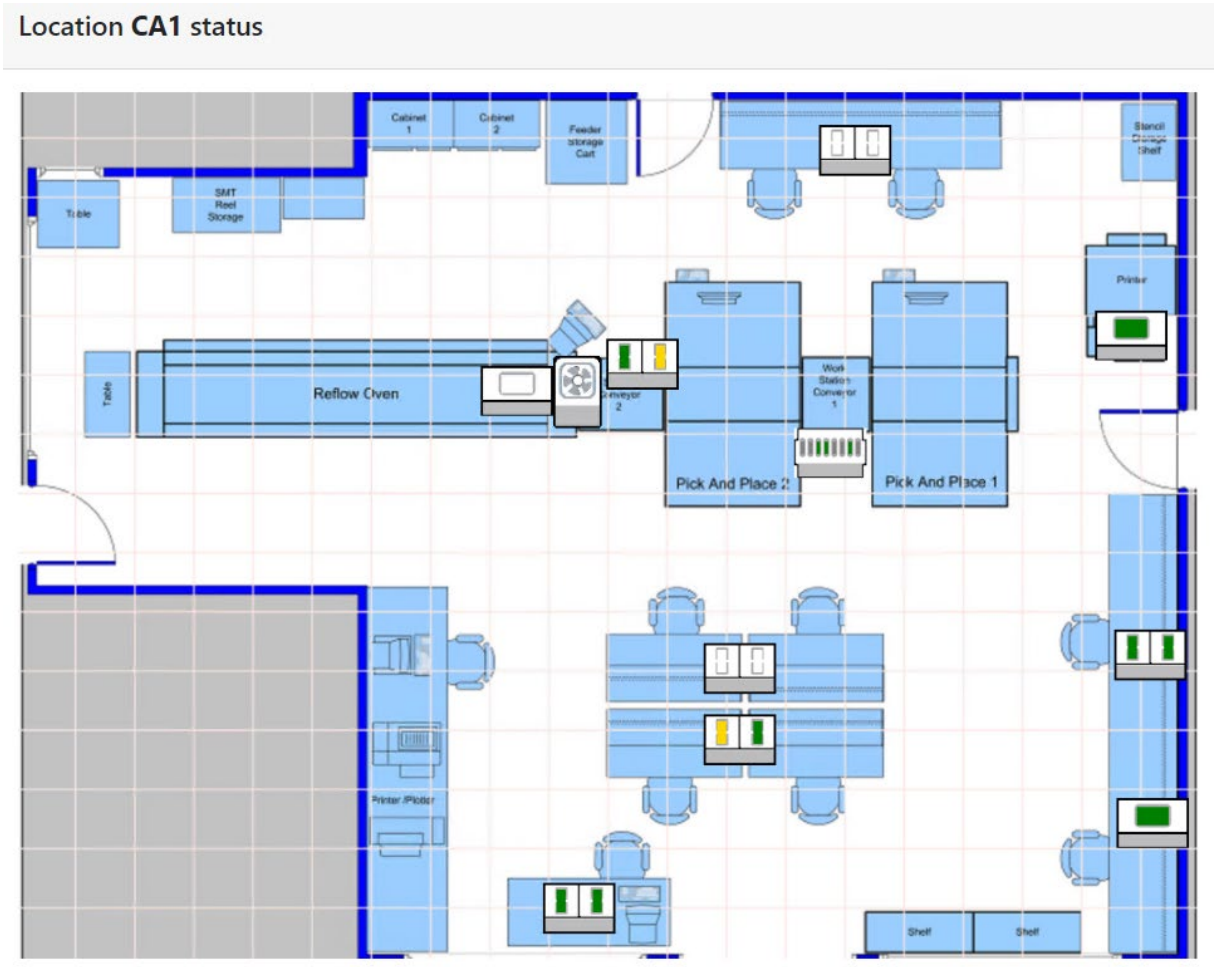
Locations live status which was already described before is shown on the dashboard:



Locations with a plan act as a hyperlink that goes to a location live view (see below) and statuses shown are combined statuses of **all channels of a given type for all devices** in a location. Channel combination was already described in a previous chapter. RED status means that some channel on some device in that location or any contained location is red.

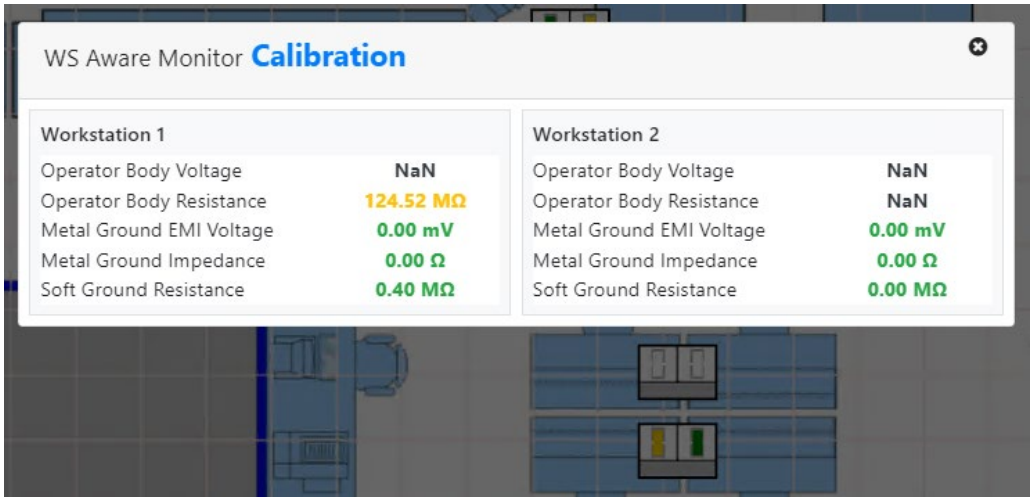
Location live view

If location has a plan with associated devices laid out, then it is enabled for live view:



The plan is “zoomable” (using your mouse wheel) and device symbols show and refresh (combined) status in real time.

Clicking on a device symbol will show a detailed device status popup form (also refreshing in real time):



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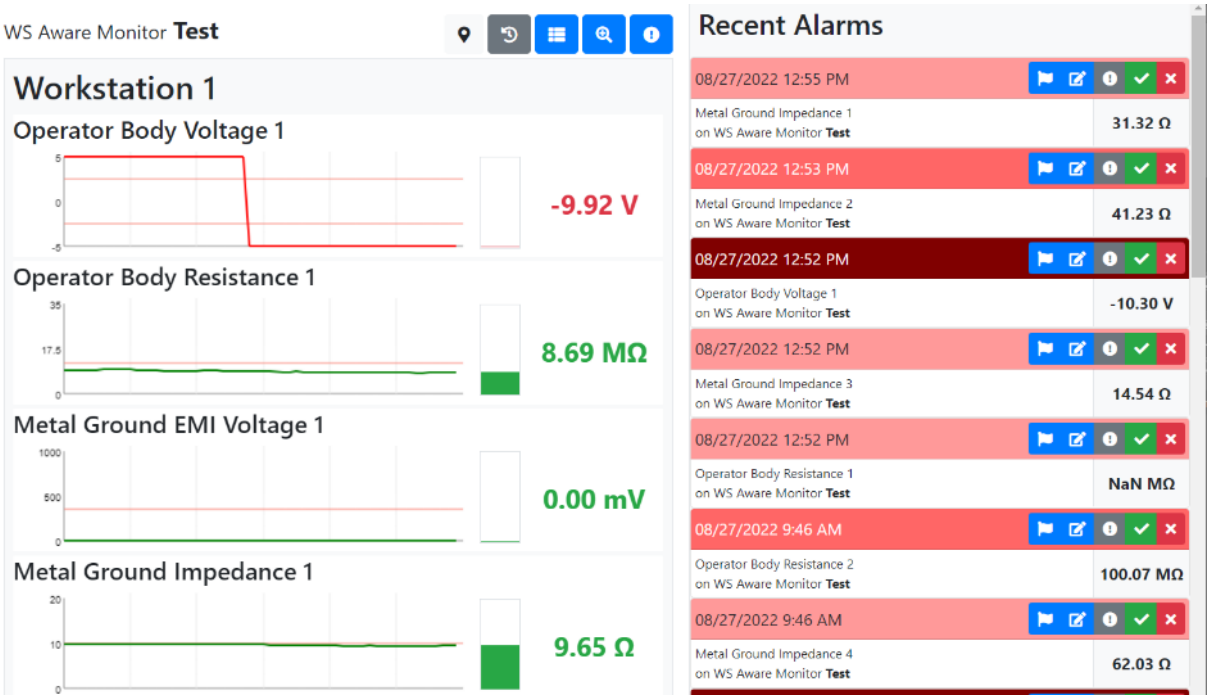
Device name is a hyperlink that opens device live view.

Device live view

A major SMP feature is providing a real time view of an active device>



This view consists of all device channels (status, value) and a list of recent alarms for that device.

Recent alarms list may contain both active and handled alarms and will be described in detail in the dedicated chapter later. It is also possible to toggle recent alarms list visibility using  button.

Status view displays all device channels grouped by workstation. By default, each channel is displayed with graph, gauge and value and refreshed in real time.
Graph shows last minute (i.e., 60 most recent values), uses color to indicate status and shows lines indicating configured limits (alarm and warning).
Gauge shows the relative magnitude of the most recent value and uses color to indicate status.
Value (numeric) is shown with physical unit and uses color to indicate status.

Clicking on  button will go to location a live view (if available).

Clicking on  button will go to default history report. Available reports and related features will be described in a later chapter.

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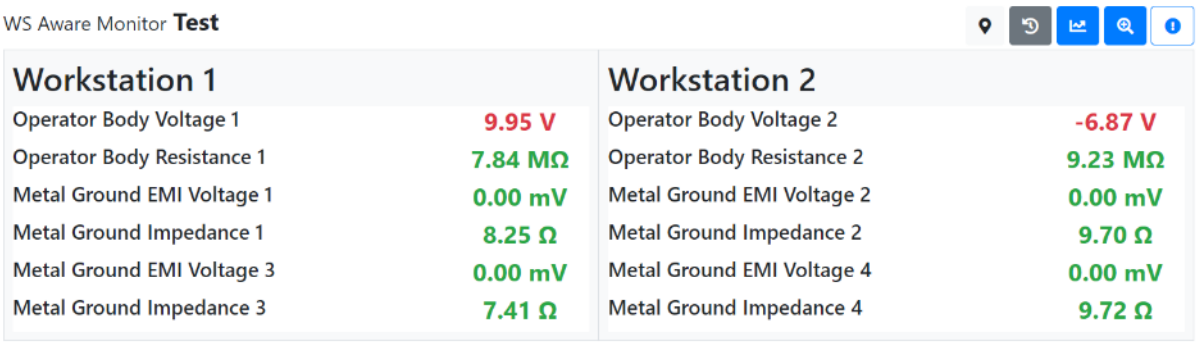
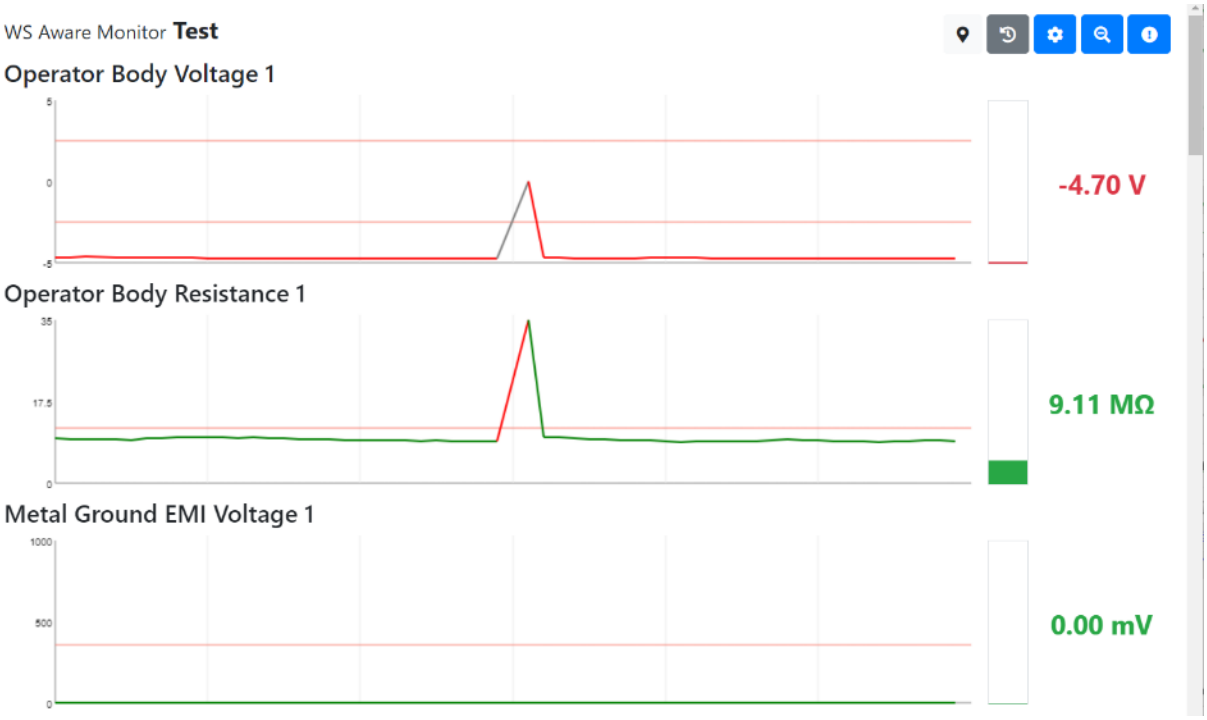
Display mode

Device live view allows for two other different display modes. **Compact** display mode does not show graphs and this button switches the view (shown with recent alarms turned off):



This view also refreshes in real time and is convenient because it saves space and usually all channels fit to screen.

Zoomed view is available by clicking on the button:



Zoomed view always displays each channel in full width. It is designed primarily to be seen from distance on larger monitors.

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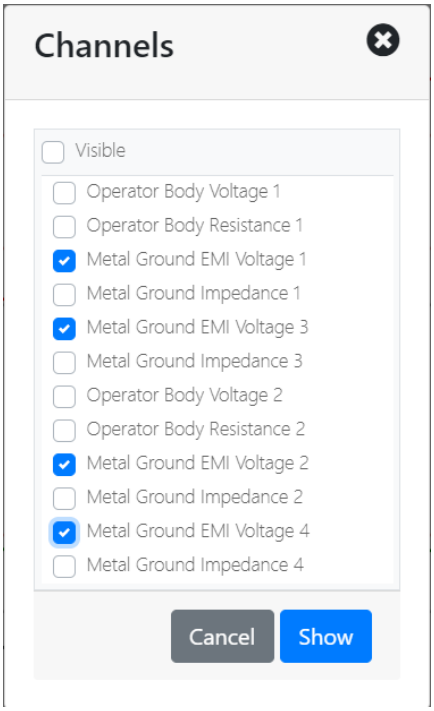
It is also possible to select which channels are shown while in zoomed view by clicking on the button.



Faults and alarms

Notifications about any problem occurring are an important part of any real time sensor monitoring system. SMP uses the concepts of **Alarm** and **Fault** for this purpose:

DEFINITION:
Whenever a problem (alarm or warning) occurs on any device channel, SMP will generate and store a **Fault**.
If the problem continues to exist, SMP will not create a new fault – it will just extend its duration. Each fault has a **duration** in seconds. "Discrete" fault events will have duration of 1.
Since a fault represents a continuous series of problems over a period of time, it cannot be represented with a single value. Faults are instead represented with three standard statistical measures: **minimum value**, **maximum value** and **average value** over problem period (discrete faults will have min, max and average all equal to a single value that produced the problem).
Faults are generated for warnings also and if problem escalates from warning to alarm, SMP won't create a new fault – it will just escalate its level.

Alarm, on the other hand, is a notification that a problem occurred. This means that alarm will be generated and recorded **only when the problem first occurred**. In other words, whenever a problem occurs on a device channel for the first time, SMP will create a fault and also an alarm. If a problem on the same channel occurs again, SMP won't create new alarm – it will just record corresponding fault. Alarms, thus, have a **value** – its **initial** channel value that triggered the problem condition.
There is a logical association between alarms and faults: all faults recorded on a channel are associated with a corresponding alarm.

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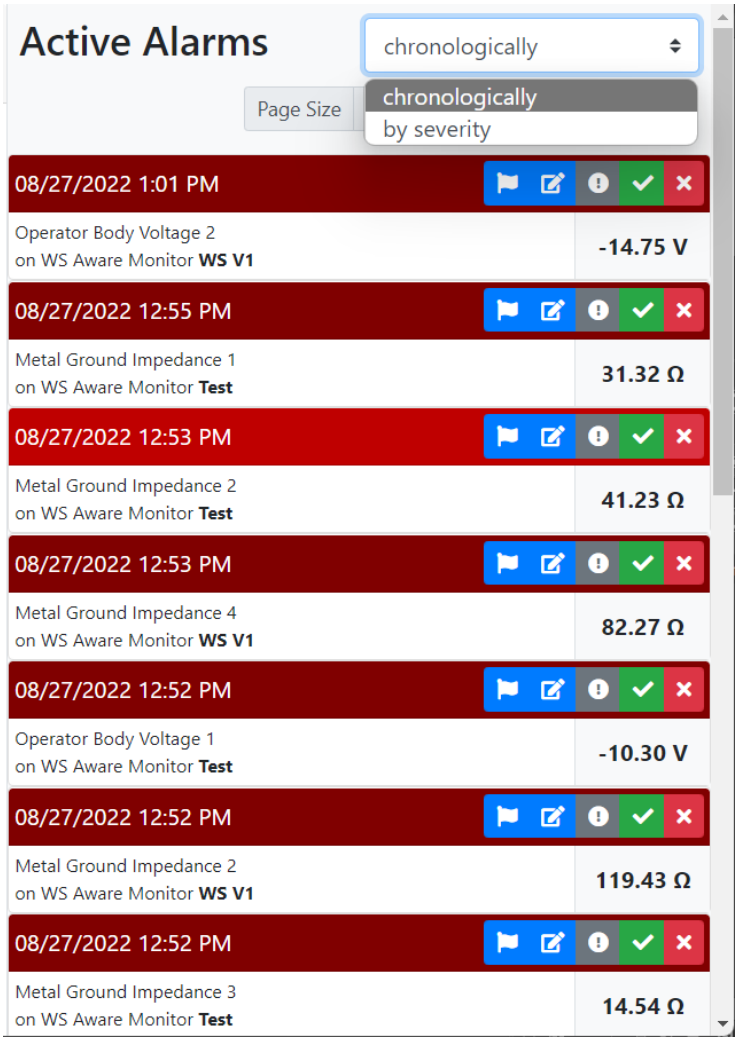
Alarms **remain active until handled** in SMP Manager. Alarms that were not handled by an operator **expire** (get automatically "handled") by SMP at the end of the day.
For example, if there was a problem on Body Voltage 1 channel, SMP will create a corresponding alarm and fault and associate any future faults on Body Voltage 1 with the created alarm. When the alarm gets handled, the first Body Voltage 1 problem that happens afterwards will create a new alarm.
Alarms also have the concept of **Severity**. Severity is defined to be a cumulative duration of all associated faults. Severity levels are represented in SMP by colors (a darker color indicates higher severity).

Active Alarms

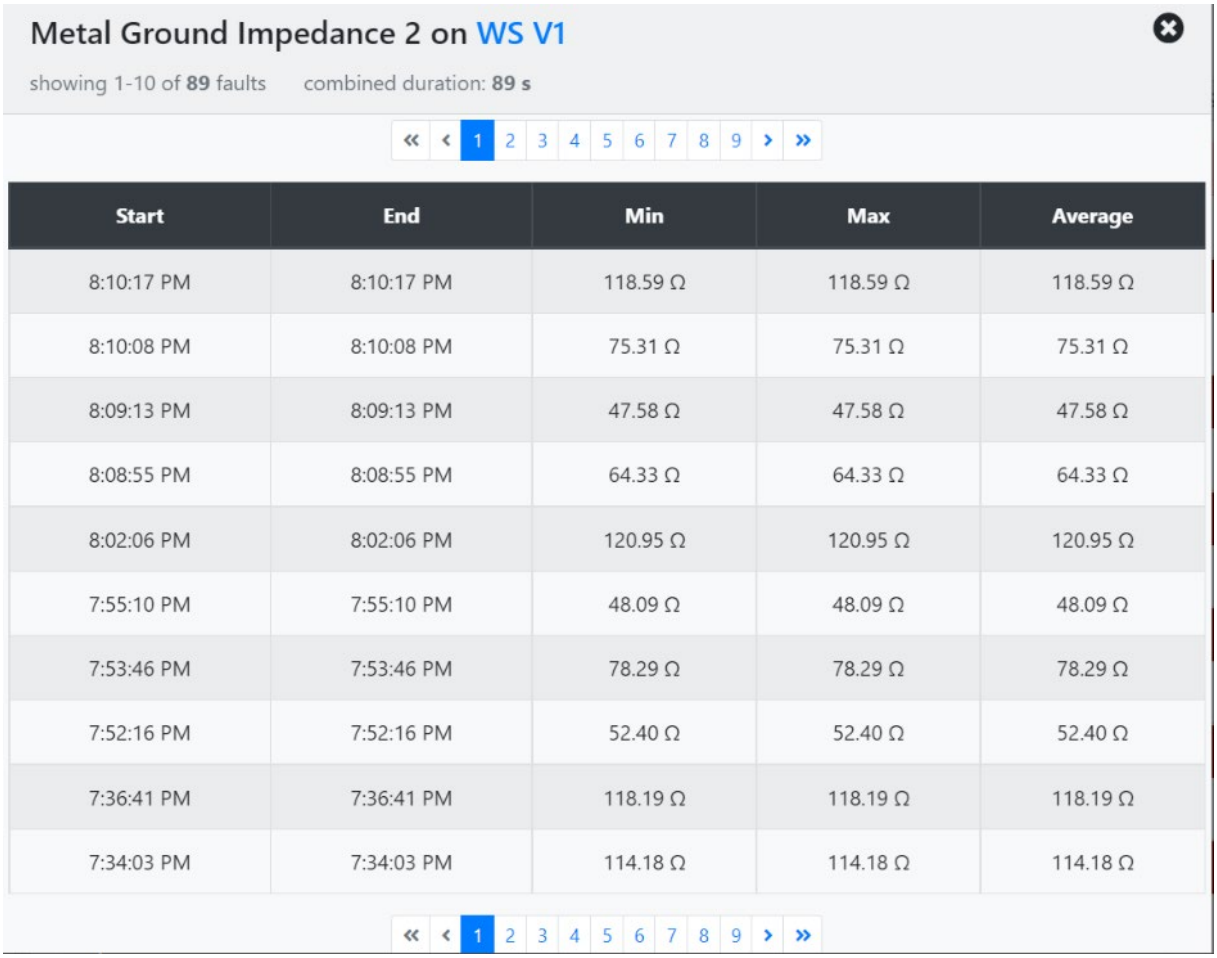
Main dashboard contains Active Alarms list:



This is a standard list view that may be ordered either chronologically (default) or by alarm severity.

This list contains information about **active alarms only**. Each alarm is represented with time of occurrence (in the title bar), severity (color of title bar), problem type, device type and name and value. Title bar also contains a command bar with standard action buttons.

Clicking on an item in alarms list will open a detailed list of associated faults:



Note that device name is a hyperlink. This is a quick way to check out the live view of a device on which an alarm happened (and check its present status).

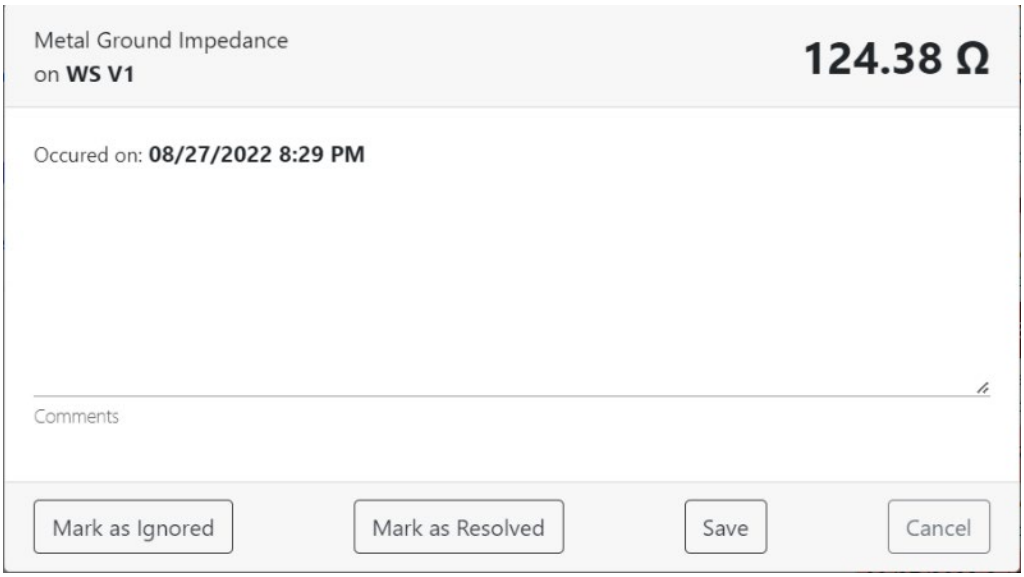
Each item in the active alarms list has the following commands available:

Resolve ( ) – handles alarms and marks it as resolved. Alarm is closed and removed from the active alarms list. Any future problem on the same channel will generate a new alarm.

Ignore ( ) – handles alarms and marks it as ignored. Alarm is closed and removed from the active alarms list. Any future problem on the same channel will generate a new alarm.

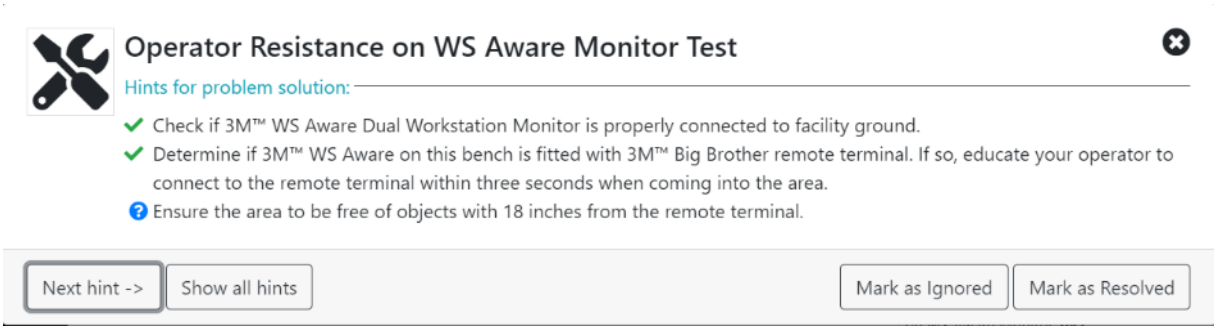
Mark as important ( ) – marks alarm as important. This is in fact a toggle button and an alarm marked as important can be unmarked by clicking again. For important alarms the button will change color from grey to yellow. This feature is designed for facility managers to be able to indicate to an operator in charge that certain alarms need special handling (immediate action, problem analysis, etc.).
When an alarm is marked as important it won't allow simple handling (resolve, ignore). It will always require a comment i.e., display comment described below.

Comments ( ) button allows entering comments for an alarm:



The main purpose of this form is entering and editing comments for an alarm, but it may also be used to handle an alarm (ignore or resolve).

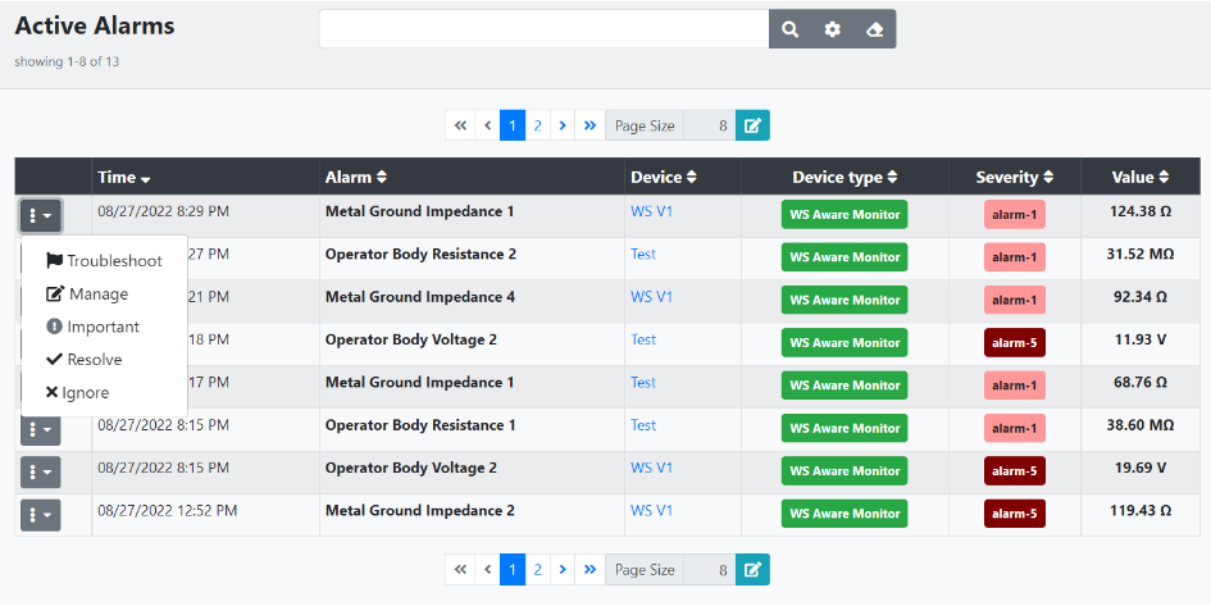
Troubleshoot ( ) button shows problem troubleshooting tips in a wizard-like form:



This form has an option to show hints one by one (standard because an operator is supposed to check and solve potential problems one by one) or show all available hints right away.
Maintenance of troubleshooting tips are explained above under Administration. SMP comes with a predefined, default set of tips already, but it is possible to add, remove or change those tips at will.

Finally, the troubleshooting wizard also contains buttons to handle an alarm (ignore or resolve).

SMP Manager contains an additional active alarms view – **Active Alarms** under **Live** menu on the sidebar:



This view provides all functionality that the active alarms widget on the dashboard provides, but it is also a standard list view with additional standard functionality (filtering, sorting, pagination).

Alarm commands described above are invoked from an actions button on the left, clicking on a table row also opens a detailed list of associated faults and device name is a hyperlink that opens a device live view.

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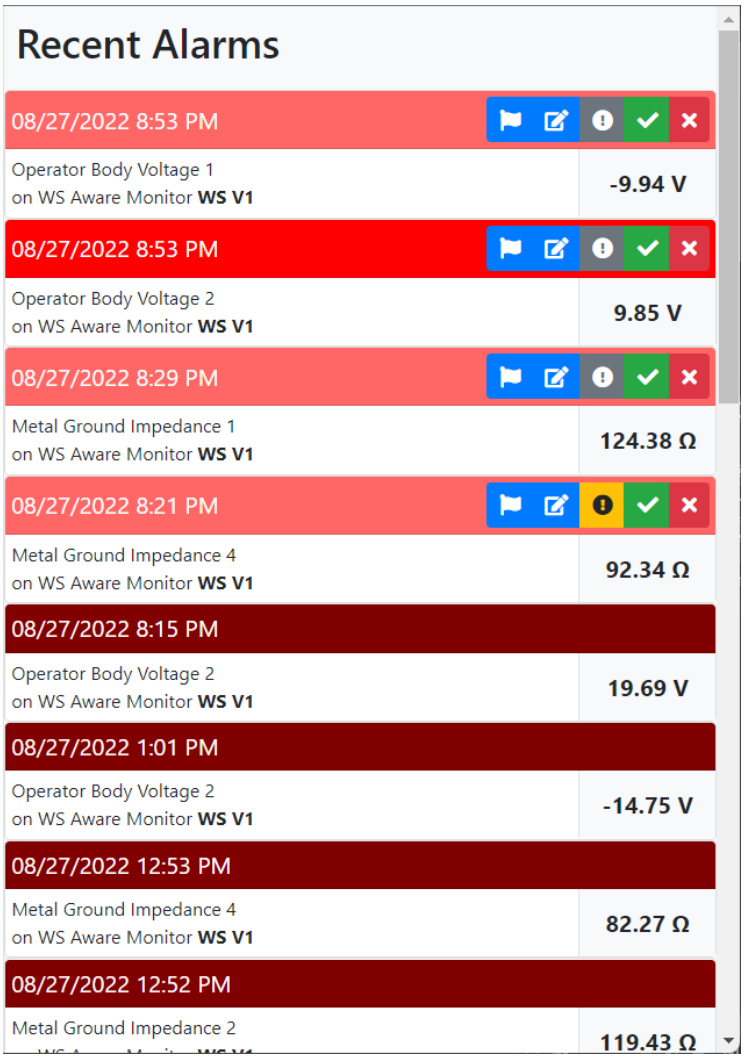
Recent Alarms for device

The recent alarms list on device live view will show a list of recent alarms that occurred on that device:



The list is chronological (from most recent to older) but active alarms will always get shown first.

The recent alarms list provides the same functionality as the active alarms list but handled alarms don't have action buttons available.

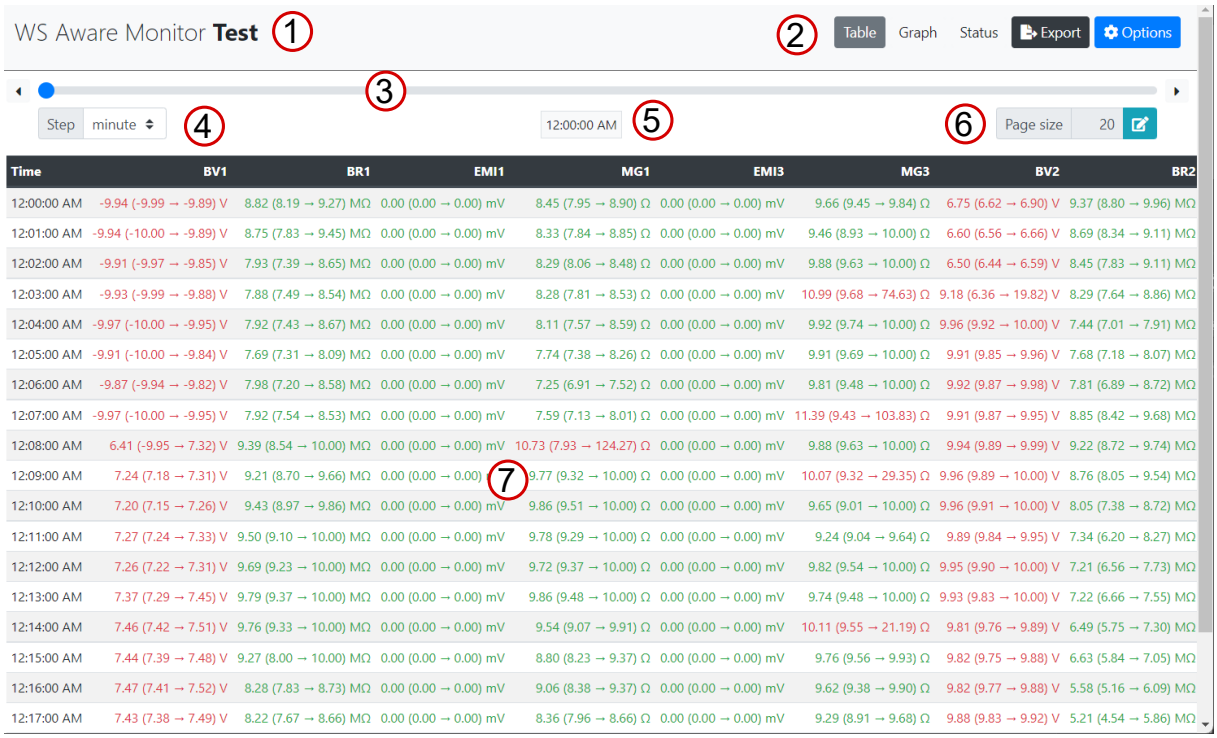
Reports

SMP collects a huge amount of data over time and one of its main features is the ability to review that data on demand. SMP Manager implements several reports in order to review data history and export to standard documents.

Device History

Device history is the most basic SMP report that provides both detailed and aggregate insight into state history for any device over any given period of time.

It is possible to open device history directly from the device live page as described before:



Time	BV1	BR1	EMI1	MG1	EMI3	MG3	BV2	BR2
12:00:00 AM	-9.94 (-9.99 → -9.89) V	8.82 (8.19 → 9.27) MΩ	0.00 (0.00 → 0.00) mV	8.45 (7.95 → 8.90) Ω	0.00 (0.00 → 0.00) mV	9.66 (9.45 → 9.84) Ω	6.75 (6.62 → 6.90) V	9.37 (8.80 → 9.96) MΩ
12:01:00 AM	-9.94 (-10.00 → -9.89) V	8.75 (7.83 → 9.45) MΩ	0.00 (0.00 → 0.00) mV	8.33 (7.84 → 8.85) Ω	0.00 (0.00 → 0.00) mV	9.46 (8.93 → 10.00) Ω	6.60 (6.56 → 6.66) V	8.69 (8.34 → 9.11) MΩ
12:02:00 AM	-9.91 (-9.97 → -9.85) V	7.93 (7.39 → 8.65) MΩ	0.00 (0.00 → 0.00) mV	8.29 (8.06 → 8.48) Ω	0.00 (0.00 → 0.00) mV	9.88 (9.63 → 10.00) Ω	6.50 (6.44 → 6.59) V	8.45 (7.83 → 9.11) MΩ
12:03:00 AM	-9.93 (-9.99 → -9.88) V	7.88 (7.49 → 8.54) MΩ	0.00 (0.00 → 0.00) mV	8.28 (7.81 → 8.53) Ω	0.00 (0.00 → 0.00) mV	10.99 (9.68 → 74.63) Ω	9.18 (6.36 → 19.82) V	8.29 (7.64 → 8.86) MΩ
12:04:00 AM	-9.97 (-10.00 → -9.95) V	7.92 (7.43 → 8.67) MΩ	0.00 (0.00 → 0.00) mV	8.11 (7.57 → 8.59) Ω	0.00 (0.00 → 0.00) mV	9.92 (9.74 → 10.00) Ω	9.96 (9.92 → 10.00) V	7.44 (7.01 → 7.91) MΩ
12:05:00 AM	-9.91 (-10.00 → -9.84) V	7.69 (7.31 → 8.09) MΩ	0.00 (0.00 → 0.00) mV	7.74 (7.38 → 8.26) Ω	0.00 (0.00 → 0.00) mV	9.91 (9.69 → 10.00) Ω	9.91 (9.85 → 9.96) V	7.68 (7.18 → 8.07) MΩ
12:06:00 AM	-9.87 (-9.94 → -9.82) V	7.98 (7.20 → 8.58) MΩ	0.00 (0.00 → 0.00) mV	7.25 (6.91 → 7.52) Ω	0.00 (0.00 → 0.00) mV	9.81 (9.48 → 10.00) Ω	9.92 (9.87 → 9.98) V	7.81 (6.89 → 8.72) MΩ
12:07:00 AM	-9.97 (-10.00 → -9.95) V	7.92 (7.54 → 8.53) MΩ	0.00 (0.00 → 0.00) mV	7.59 (7.13 → 8.01) Ω	0.00 (0.00 → 0.00) mV	11.39 (9.43 → 103.83) Ω	9.91 (9.87 → 9.95) V	8.85 (8.42 → 9.68) MΩ
12:08:00 AM	6.41 (-9.95 → 7.32) V	9.39 (8.54 → 10.00) MΩ	0.00 (0.00 → 0.00) mV	10.73 (7.93 → 124.27) Ω	0.00 (0.00 → 0.00) mV	9.88 (9.63 → 10.00) Ω	9.94 (9.89 → 9.99) V	9.22 (8.72 → 9.74) MΩ
12:09:00 AM	7.24 (7.18 → 7.31) V	9.21 (8.70 → 9.66) MΩ	0.00 (0.00 → 0.00)	9.77 (9.32 → 10.00) Ω	0.00 (0.00 → 0.00) mV	10.07 (9.32 → 29.35) Ω	9.96 (9.89 → 10.00) V	8.76 (8.05 → 9.54) MΩ
12:10:00 AM	7.20 (7.15 → 7.26) V	9.43 (8.97 → 9.86) MΩ	0.00 (0.00 → 0.00) mV	9.86 (9.51 → 10.00) Ω	0.00 (0.00 → 0.00) mV	9.65 (9.01 → 10.00) Ω	9.96 (9.91 → 10.00) V	8.05 (7.38 → 8.72) MΩ
12:11:00 AM	7.27 (7.24 → 7.33) V	9.50 (9.10 → 10.00) MΩ	0.00 (0.00 → 0.00) mV	9.78 (9.29 → 10.00) Ω	0.00 (0.00 → 0.00) mV	9.24 (9.04 → 9.64) Ω	9.89 (9.84 → 9.95) V	7.34 (6.20 → 8.27) MΩ
12:12:00 AM	7.26 (7.22 → 7.31) V	9.69 (9.23 → 10.00) MΩ	0.00 (0.00 → 0.00) mV	9.72 (9.37 → 10.00) Ω	0.00 (0.00 → 0.00) mV	9.82 (9.54 → 10.00) Ω	9.95 (9.90 → 10.00) V	7.21 (6.56 → 7.73) MΩ
12:13:00 AM	7.37 (7.29 → 7.45) V	9.79 (9.37 → 10.00) MΩ	0.00 (0.00 → 0.00) mV	9.86 (9.48 → 10.00) Ω	0.00 (0.00 → 0.00) mV	9.74 (9.48 → 10.00) Ω	9.93 (9.83 → 10.00) V	7.22 (6.66 → 7.55) MΩ
12:14:00 AM	7.46 (7.42 → 7.51) V	9.76 (9.33 → 10.00) MΩ	0.00 (0.00 → 0.00) mV	9.54 (9.07 → 9.91) Ω	0.00 (0.00 → 0.00) mV	10.11 (9.55 → 21.19) Ω	9.81 (9.76 → 9.89) V	6.49 (5.75 → 7.30) MΩ
12:15:00 AM	7.44 (7.39 → 7.48) V	9.27 (8.00 → 10.00) MΩ	0.00 (0.00 → 0.00) mV	8.80 (8.23 → 9.37) Ω	0.00 (0.00 → 0.00) mV	9.76 (9.56 → 9.93) Ω	9.82 (9.75 → 9.88) V	6.63 (5.84 → 7.05) MΩ
12:16:00 AM	7.47 (7.41 → 7.52) V	8.28 (7.83 → 8.73) MΩ	0.00 (0.00 → 0.00) mV	9.06 (8.38 → 9.37) Ω	0.00 (0.00 → 0.00) mV	9.62 (9.38 → 9.90) Ω	9.82 (9.77 → 9.88) V	5.58 (5.16 → 6.09) MΩ
12:17:00 AM	7.43 (7.38 → 7.49) V	8.22 (7.67 → 8.66) MΩ	0.00 (0.00 → 0.00) mV	8.36 (7.96 → 8.66) Ω	0.00 (0.00 → 0.00) mV	9.29 (8.91 → 9.68) Ω	9.88 (9.83 → 9.92) V	5.21 (4.54 → 5.86) MΩ

By default, it will show device history for today in table view. The report window consists of:

1. Device type and name
2. Command bar (changing view, exporting data and adjusting options)
3. Navigation slider used for browsing
4. Unit time period selector (time unit for a row in table view or point in graph view)
5. Label with start date/time
6. Page size selector (number of rows in table view, number of data points in graph view)
7. Data area

Unit time can be:

- Day
- Hour
- Minute
- Second

Unit time selector is automatically adjusted for the history period. If the report shows history for only a couple of hours, then available choices will be minute and second only. If history was requested over months, then the selector will offer day, hour, minute and second.

When unit time is second, history will show exact values for every channel. For all other time units one history item (row in table view, data point in graph view) represents a set of values which is then represented in table view using:

average (min → max) unit

where minimum, maximum and average are calculated for the time period shown.
In graph view, a data point will represent average value.

Channel status is indicated with color in a standard way.

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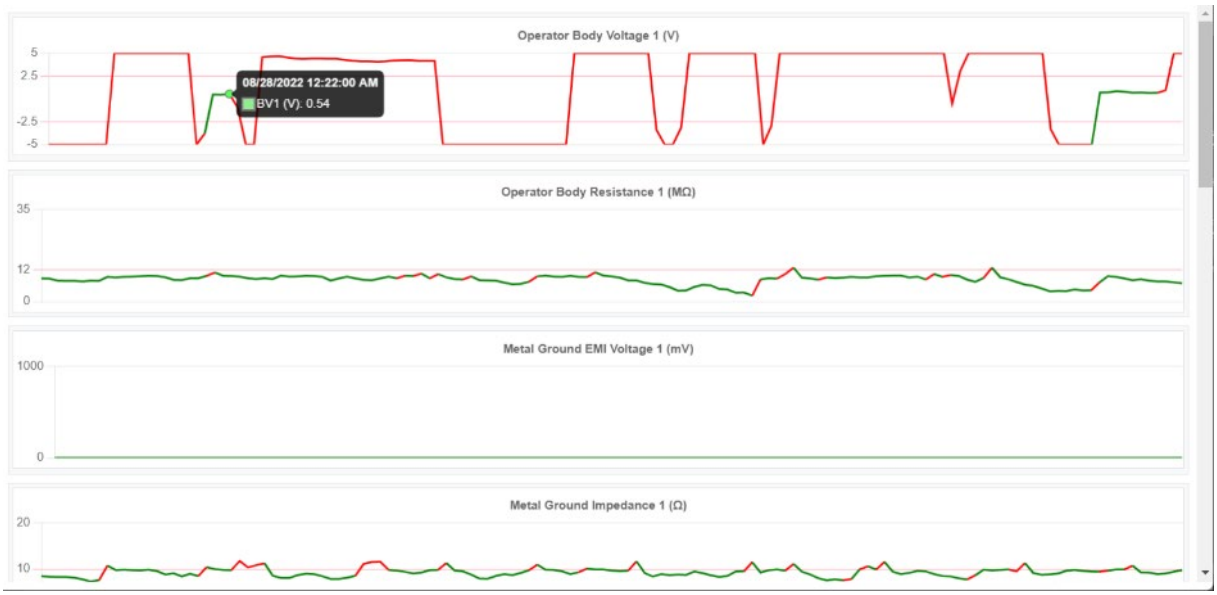
Table view

The functionality of table view was already described above. There is just one additional feature available: clicking on a table row will zoom into that period. The same thing may also be achieved by changing the time unit and scrolling, but this is faster, more precise and more convenient.

Graph view

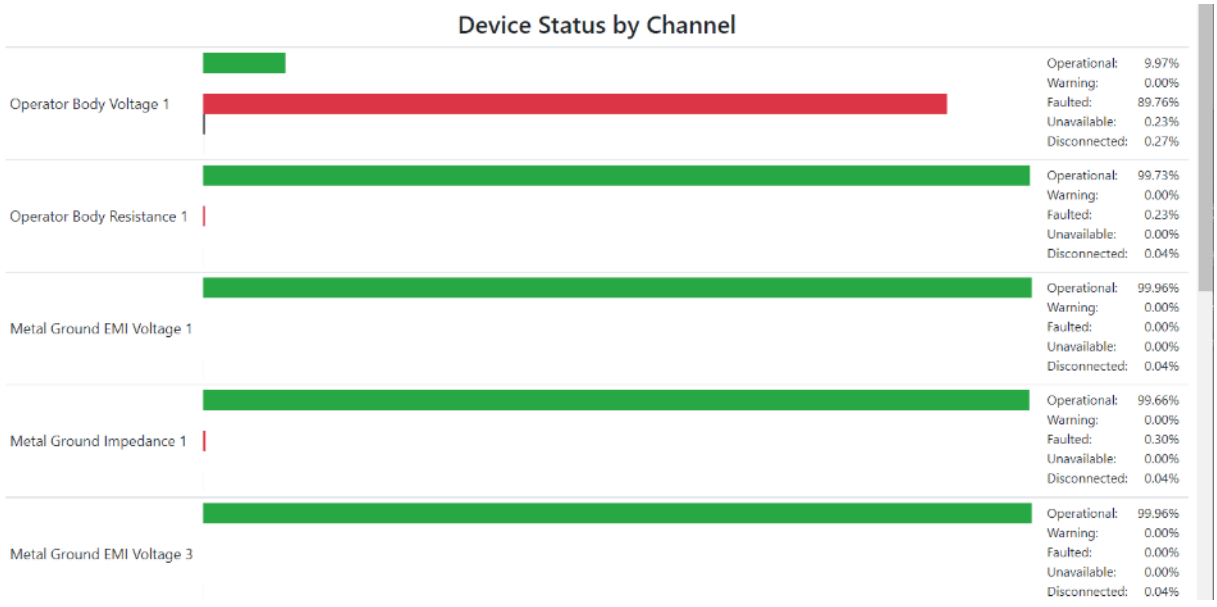


Graph view provides better insight into trends over time but is less informative about exact values. Hovering the mouse pointer over data points will show more information (data point exact value).

Clicking on graph will perform “zoom in” functionality similar to clicking on a row in table view.

Status view

Status view provide another, different, view into data collected for period shown:



Each channel here is represented with the relative percentage of each possible status.

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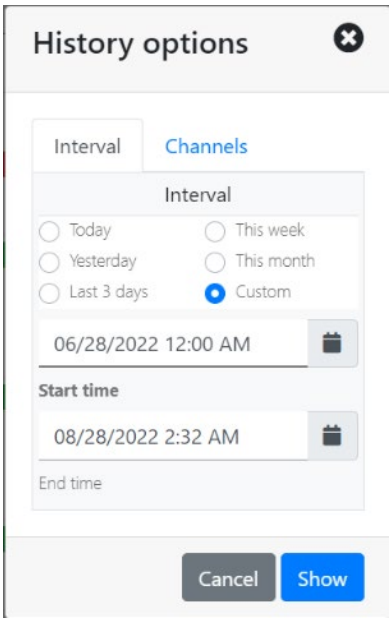
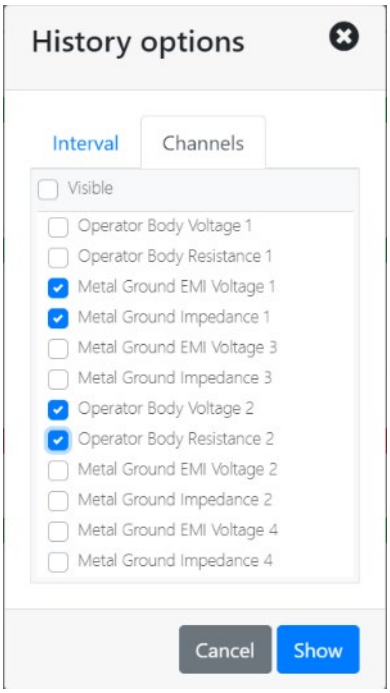
Options

Options popup controls display history period and visible channels:



Time period may quickly be set to one of the most common options or selected arbitrarily using the **Custom** choice.

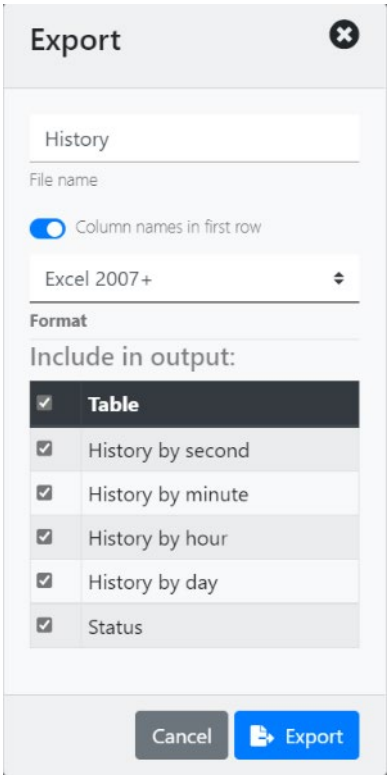
It is also possible to choose only some channels that will be present in the report:



Export

All SMP Manager reports have standardized export functionality. SMP exports data to Excel or text format (CSV, tab delimited) and for some reports export to PDF will also be available.

The history report has the following options:

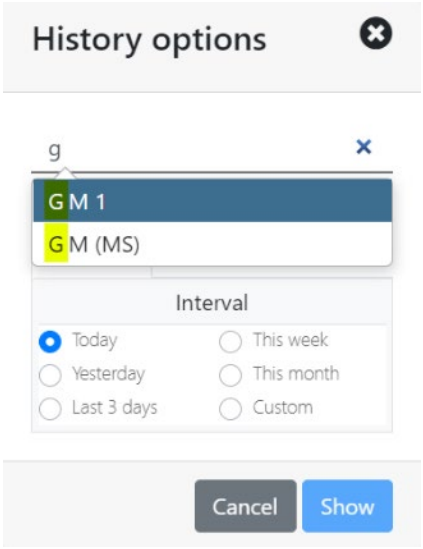


Available formats here are Excel and text.

INFO!
SMP report can contain a very large amount of data. Controlling export behavior is implemented in System Options. This will be described in detail in a later chapter.

Accessing history report using menu

Th history report is also available using the **Reports** menu on the sidebar. The only difference is that in that case SMP will prompt for a device first:



A device is picked using a standard autocomplete selection field.

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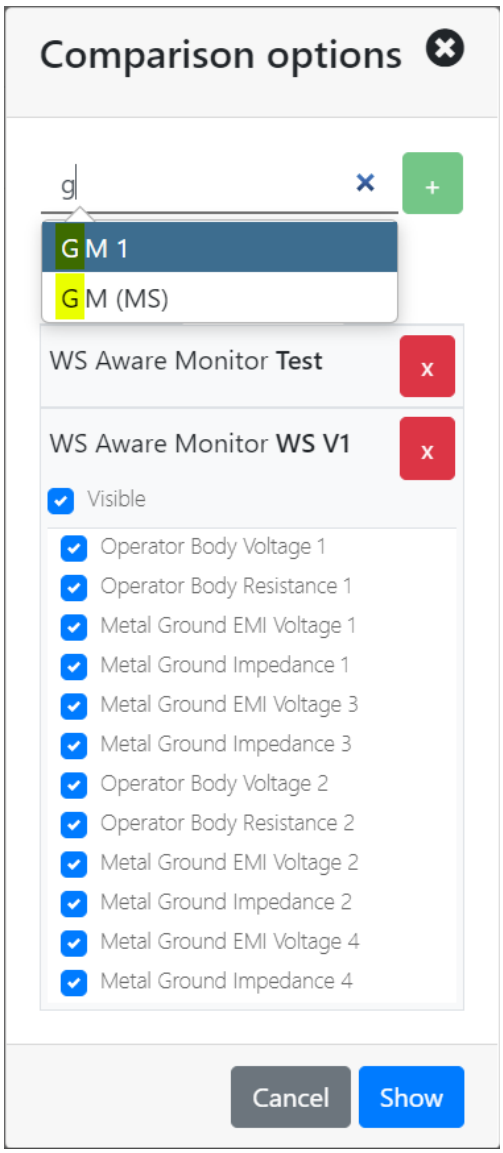
Device Comparison

SMP Manager provides another useful “flavor” of history report – Device Comparison. This report consists of a selection of channels from one or more different devices shown “side by side”.

This report is invoked from the **Device Comparison** on **Reports** sidebar menu and first requires devices/channels selection:



It is usually most efficient to select devices first and then choose channels for each of them.

History comparison reports are very similar to the device history report with some obvious differences.

In table and status view each channel will also show the device name (in addition to channel type).

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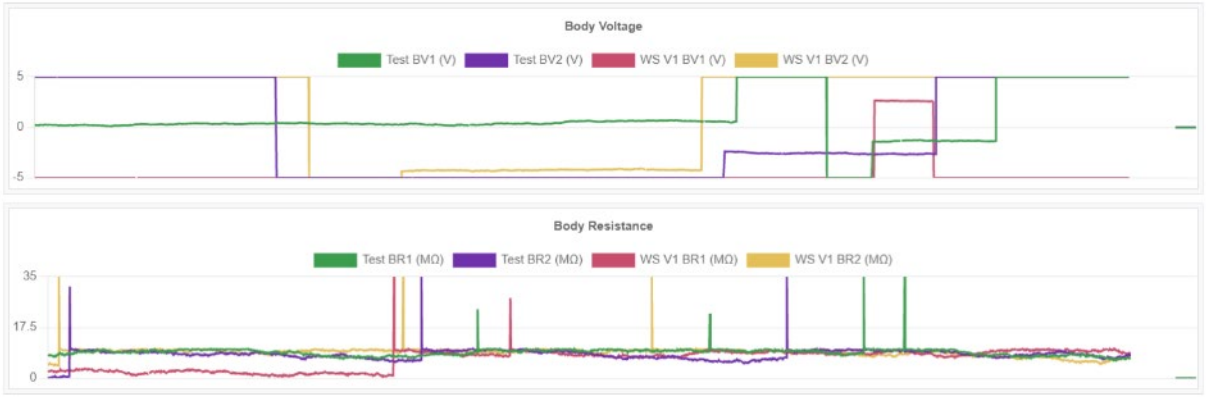
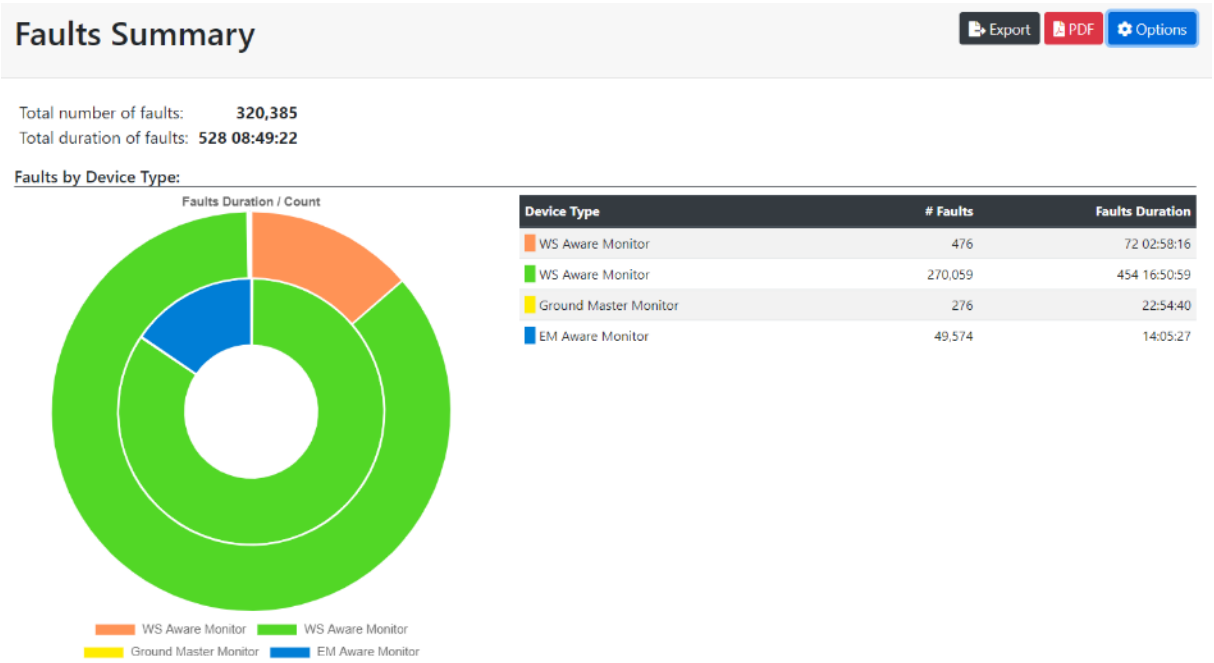
Graph view is different because it shows all “similar” channels of all devices in a single graph using different colors for different channels:



NOTE
It is possible to change the channels displayed using options and add even more devices or remove existing ones.

Faults summary

Faults summary is another report available in SMP Manager. It is used for analytics because it provides an overview of overall problems within a system over a period of time:



Device Type	# Faults	Faults Duration
WS Aware Monitor	476	72 02:58:16
WS Aware Monitor	270,059	454 16:50:59
Ground Master Monitor	276	22:54:40
EM Aware Monitor	49,574	14:05:27

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This report provides a faults overview grouped by device type (shown as a chart and table), faults overview grouped by alarm type (shown as chart and table) and faults overview grouped by device (shown as a table)

Faults by Device:

Device	Device Type	Alarm Type	# Faults	Faults Duration
WS 1	WS Aware Monitor	Body Resistance	75	02:42:53
WS 1	WS Aware Monitor	Body Voltage	78	03:21:32
WS 1	WS Aware Monitor	Metal Ground Impedance	147	00:02:28
WS 2	WS Aware Monitor	Body Resistance	51	01:55:40
WS 2	WS Aware Monitor	Body Voltage	52	01:41:49
WS 2	WS Aware Monitor	Metal Ground Impedance	191	00:03:12
(E400025614C2)	EM Aware Monitor	ESD Event	4	00:01:27
EM	EM Aware Monitor	ESD Event	49,570	14:04:00
WS V2	WS Aware Monitor	Body Resistance	67	05:40:53
WS V2	WS Aware Monitor	Body Voltage	71	05:54:54
WS V2	WS Aware Monitor	Metal Ground EMI Voltage	67	03:11:26
WS V2	WS Aware Monitor	Metal Ground Impedance	64	05:06:58
WS V2	WS Aware Monitor	Soft Ground Resistance	67	05:48:08
WS V1	WS Aware Monitor	Body Resistance	19,790	12:37:24
WS V1	WS Aware Monitor	Body Voltage	21,804	126 09:07:04
WS V1	WS Aware Monitor	Metal Ground EMI Voltage	167	08:13:23
WS V1	WS Aware Monitor	Metal Ground Impedance	39,700	23:43:50
GM 1	Ground Master Monitor	Metal Ground Impedance	276	22:54:40
Paul's Test WS Aware	WS Aware Monitor	Body Resistance	135	69 09:33:58
Paul's Test WS Aware	WS Aware Monitor	Metal Ground Impedance	1	00:00:01
Test	WS Aware Monitor	Body Resistance	19,408	6 00:30:36

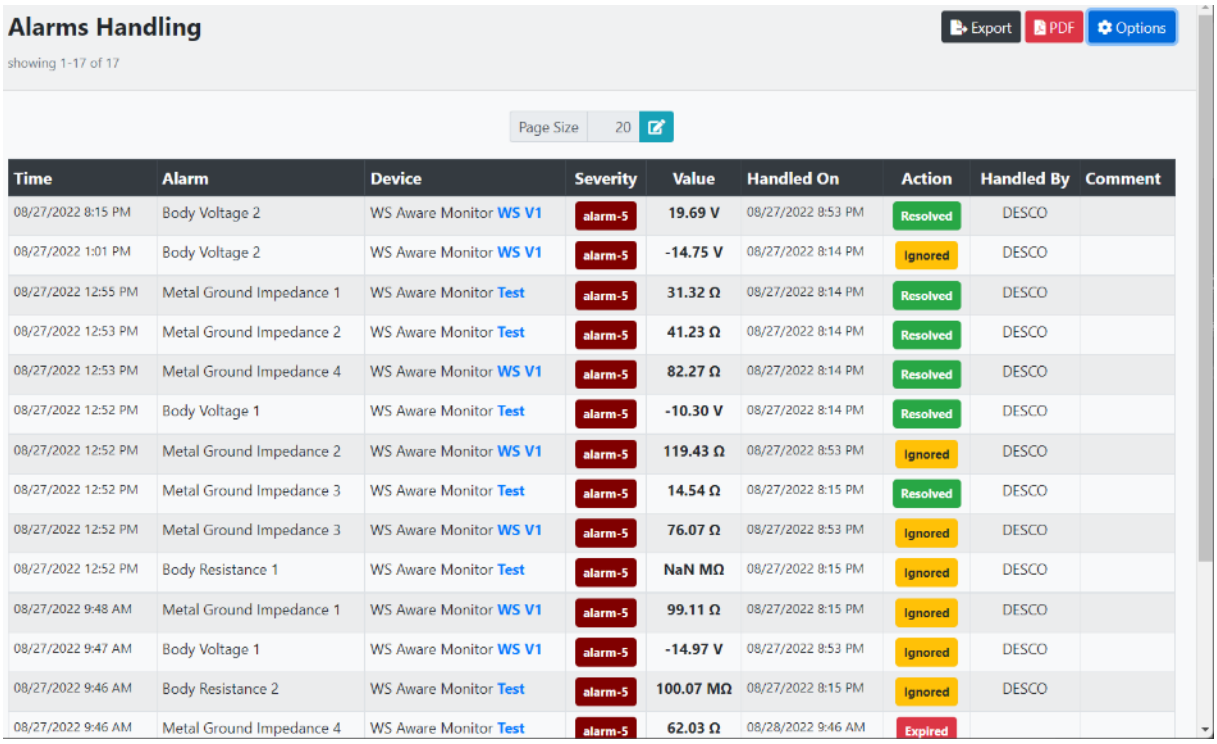
Each of the report parts show faults with total number of occurrences and total combined duration.

For this report Options only select a time period – no device or channel selection is available because the report will always consider all active devices.

For export, this report also offers exporting to a PDF document. The generated document will open in a new browser window if the **PDF** button is used and will be downloaded if the PDF format was selected in the **Export** popup.

Alarms Handling

The Alarms Handling (located under **Reports**) sidebar menu provides detailed information about alarm handling history.



Time	Alarm	Device	Severity	Value	Handled On	Action	Handled By	Comment
08/27/2022 8:15 PM	Body Voltage 2	WS Aware Monitor WS V1	alarm-5	19.69 V	08/27/2022 8:53 PM	Resolved	DESCO	
08/27/2022 1:01 PM	Body Voltage 2	WS Aware Monitor WS V1	alarm-5	-14.75 V	08/27/2022 8:14 PM	Ignored	DESCO	
08/27/2022 12:55 PM	Metal Ground Impedance 1	WS Aware Monitor Test	alarm-5	31.32 Ω	08/27/2022 8:14 PM	Resolved	DESCO	
08/27/2022 12:53 PM	Metal Ground Impedance 2	WS Aware Monitor Test	alarm-5	41.23 Ω	08/27/2022 8:14 PM	Resolved	DESCO	
08/27/2022 12:53 PM	Metal Ground Impedance 4	WS Aware Monitor WS V1	alarm-5	82.27 Ω	08/27/2022 8:14 PM	Resolved	DESCO	
08/27/2022 12:52 PM	Body Voltage 1	WS Aware Monitor Test	alarm-5	-10.30 V	08/27/2022 8:14 PM	Resolved	DESCO	
08/27/2022 12:52 PM	Metal Ground Impedance 2	WS Aware Monitor WS V1	alarm-5	119.43 Ω	08/27/2022 8:53 PM	Ignored	DESCO	
08/27/2022 12:52 PM	Metal Ground Impedance 3	WS Aware Monitor Test	alarm-5	14.54 Ω	08/27/2022 8:15 PM	Resolved	DESCO	
08/27/2022 12:52 PM	Metal Ground Impedance 3	WS Aware Monitor WS V1	alarm-5	76.07 Ω	08/27/2022 8:53 PM	Ignored	DESCO	
08/27/2022 12:52 PM	Body Resistance 1	WS Aware Monitor Test	alarm-5	NaN MΩ	08/27/2022 8:15 PM	Ignored	DESCO	
08/27/2022 9:48 AM	Metal Ground Impedance 1	WS Aware Monitor WS V1	alarm-5	99.11 Ω	08/27/2022 8:15 PM	Ignored	DESCO	
08/27/2022 9:47 AM	Body Voltage 1	WS Aware Monitor WS V1	alarm-5	-14.97 V	08/27/2022 8:53 PM	Ignored	DESCO	
08/27/2022 9:46 AM	Body Resistance 2	WS Aware Monitor Test	alarm-5	100.07 MΩ	08/27/2022 8:15 PM	Ignored	DESCO	
08/27/2022 9:46 AM	Metal Ground Impedance 4	WS Aware Monitor Test	alarm-5	62.03 Ω	08/28/2022 9:46 AM	Expired		

This is a standard list view showing all available information about handled alarms.

Each row is “clickable” and clicking on a row shows a list of associated faults (see chapter about alarms and faults for details).

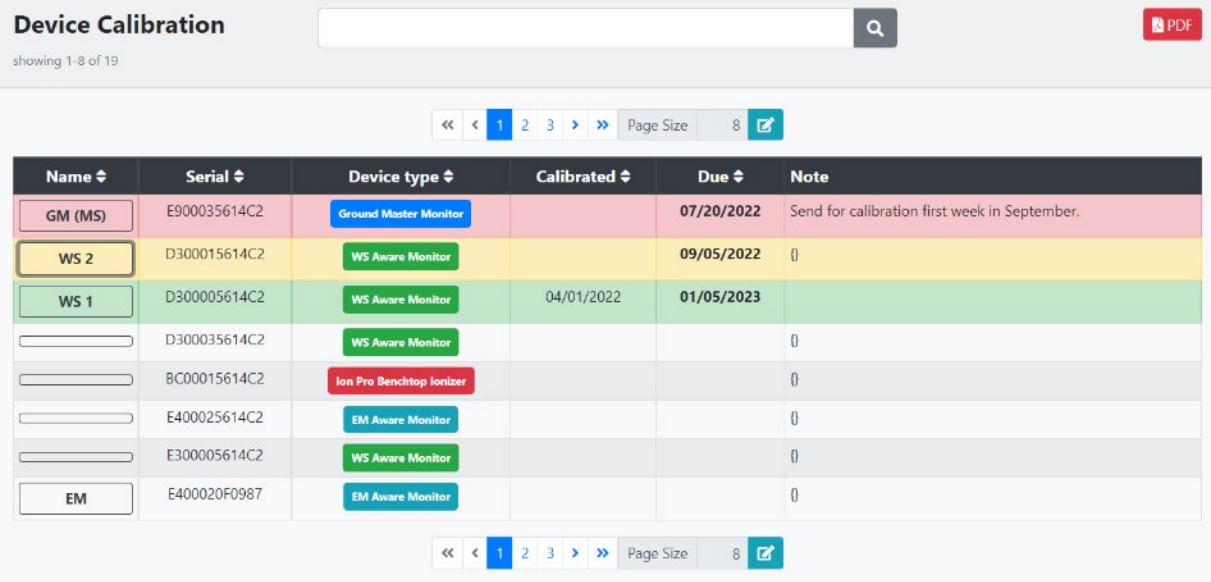
The handled alarms list does not use standard filtering – available filtering options are instead located on the **Options** form.

For export, this report also offers exporting to a PDF document. The generated document will open in a new browser window if the **PDF** button is used and will be downloaded if the PDF format was selected in the **Export** popup.

Device Calibration

Device Calibration (under the **Reports** menu on the sidebar) is a special kind of report with dual purpose.

This report is a list view with information about device calibration:



Devices that are overdue for calibration are shown in red, devices with calibration due soon are shown in yellow and green indicates calibrated devices that are not due soon for calibration.

The second purpose of this “report” is for management of calibration related information. Clicking on the device name in first column brings up a form:

Facility managers may enter or edit the date of last calibration, next calibration due date and notes.

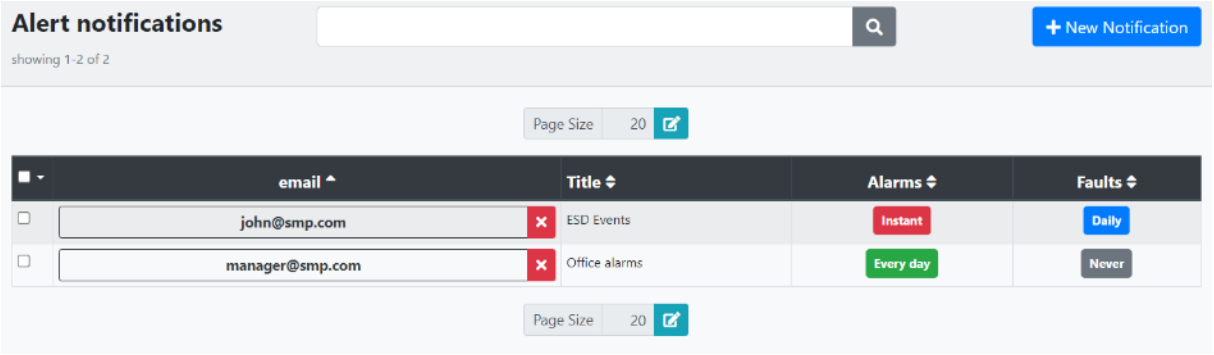
This report is designed to aid in facility maintenance but is entirely optional. Keeping accurate information about device calibration schedules is left up to management discretion.

Export is available only to a PDF document – clicking on the **PDF** command button will open a PDF report in a new browser window.

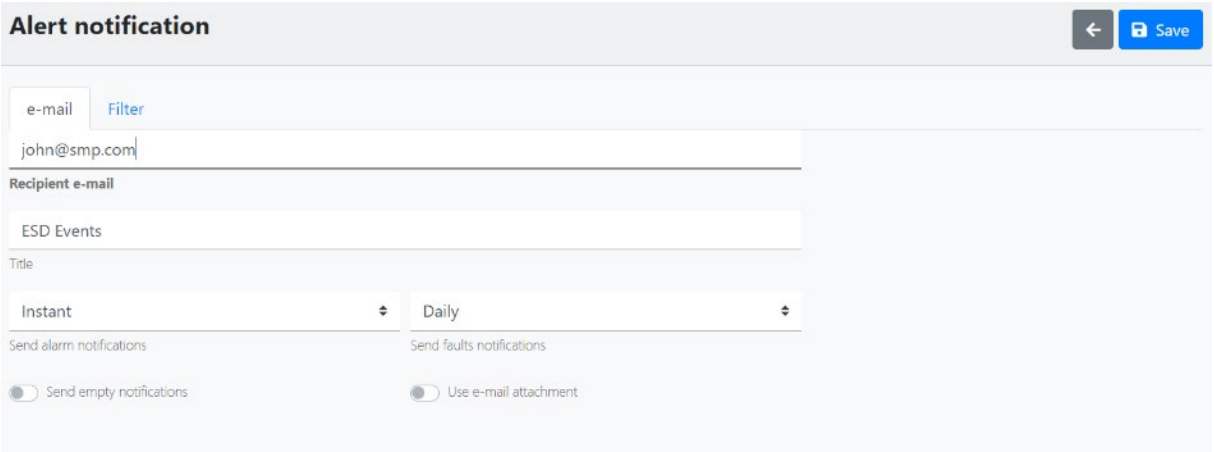
Alerts

SMP is capable of notifying about problems within the system. SMP Manager provides this information in real time as already described, but it is also important to be able to notify people not using SMP Manager when a problem occurred. SMP server can send e-mail notifications about problems. This feature is designed to provide maximum flexibility and cover every practical use case.

Alerts under the **Tools** menu on the sidebar opens a standard list view with defined notification schedules:



Details view defines scheduling:



e-mail tab

This tab defines notification e-mail(s) that will be sent: recipient, title and contents. The notification e-mail may contain information about alarm(s), faults or both.

Options for sending alarm notifications are:

- Never (do not send notification)
- Instant (notification is sent the moment alarm happens)
- Every 15 minutes
- Every hour
- Every 4 hours
- Daily

Notifications sent for alarms over a period of time will contain a list of alarms that happened within that period.

Send empty notifications option controls whether “empty” e-mails will get sent. For example, if this option is on and alarm notifications were scheduled for every 15 minutes and there was no alarm within 15 minutes, then a notification e-mail with **NO ALARMS** will be sent.

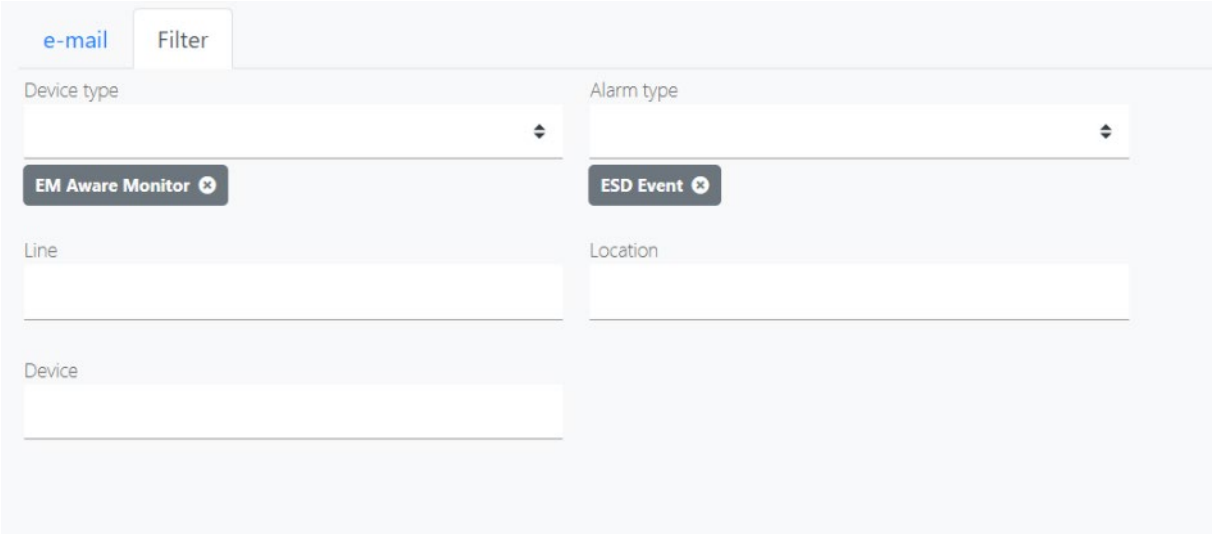
Options for sending faults notifications are:

- Never (do not send notification)
- Daily
- Weekly
- Monthly

Fault notifications contain **Faults Summary** reports for a selected period of time (see details about this report in an earlier chapter). The report always contains faults by device type, faults by alarm type and faults by device.

Use e-mail attachment option controls whether summary tables will be embedded in the message body or attached as Excel tables.

Filter tab



This tab provides a versatile option for filtering problems. It is possible to restrict notified problems to one or more device types, alarm types, devices, lines or locations. This feature offers flexibility to cover all practical use cases.

INFO
Empty selection (no selection) for any of filtering options above means “use all”.

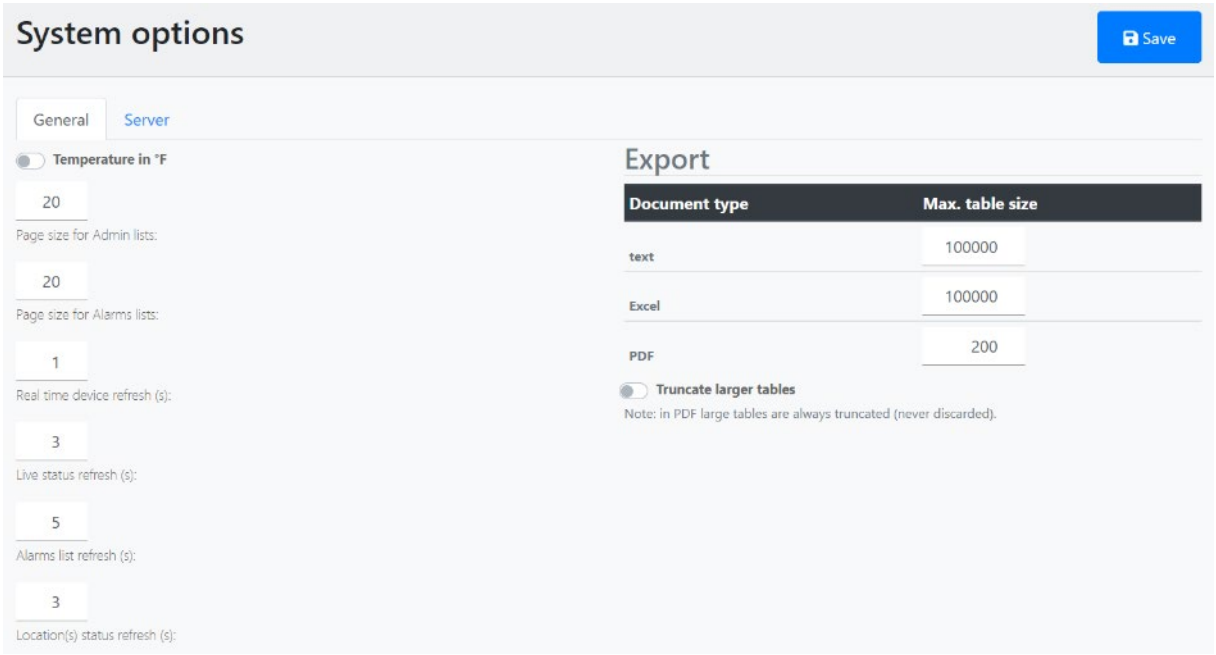
Options

SMP Manager provides control over certain system options. It is possible to set and change some display aspects of SMP Manager itself but also control operation of some backend features.

> **IMPORTANT!**
> All changes made on the Options page must be saved explicitly by clicking on the Save button!

Options are available under the **Tools** menu on the sidebar.

General tab



Here it is possible to control several aspects of SMP Manager:

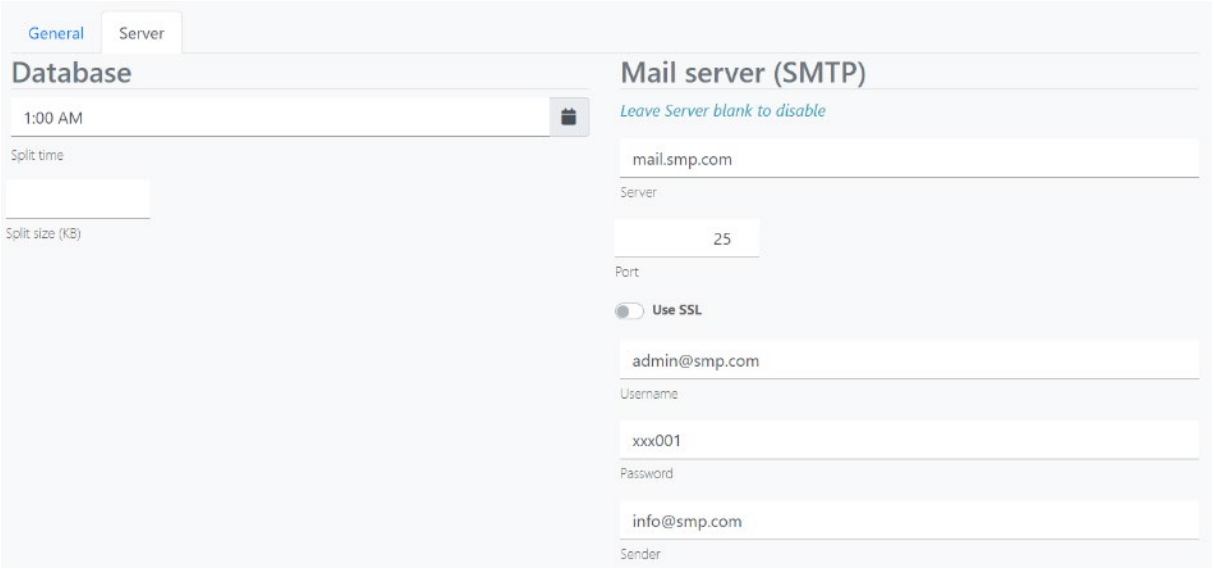
- temperature units (Celsius or Fahrenheit)
    - SMP is compatible with Fluke 1620 T&H sensors. This feature allows you to display the results in C° or F°. Contact the SCS factory for more information
- page size (number of rows) on all list views under Administration section
- refresh periods for live views: live device view, live status view, alarms list, live location view

It is also possible to control export behavior. It was already mentioned in the chapter explaining reports that a generated report can contain huge amount of data. This would result in Excel tables with millions of rows, text files with millions of lines or PDF files with thousands of pages. Export options control this by setting a maximum allowed data size (number of items).

Truncate larger tables option defines the export behavior further. If it is turned on, then larger tables will get truncated at a defined size. If it is turned off, then exported document (Excel sheet or text file) won't be generated if data is larger than the set limit.

Server tab

This tab contains settings that control backend operation:



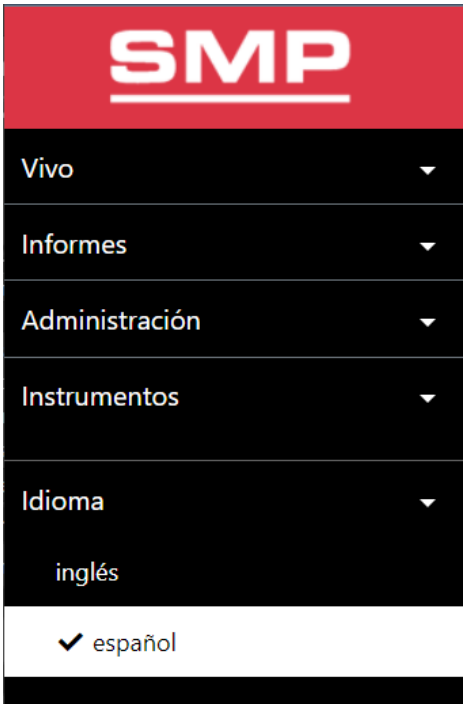
It was already described in a previous chapter that SMP Backend may send e-mail notifications about system problems. To make mailing functionality available, SMP uses SMTP mail server. All required parameters for SMTP server are available on this tab. This is advanced feature normally performed by network/system administrators.

SMP maintains system database to store data. By default, SMP uses SQL Server Compact as database engine. SMP collects and stores a huge amount of data which is bound to exceed SQL Server Compact limitations over time (database size limited to 4GB). To cope with that and still be able to store history data over a long period of time, SMP uses a special **data catalog** feature.
When database size reaches defined limit, it will get closed, stored in a catalog and a new database will be created to receive future data.
SMP has very advanced custom implementation that is able to perform data queries “over catalog”. When history is requested in SMP Manager or via API then SMP Backend queries all databases for the given period and combines results if necessary.

Database split operation when the current database reaches a defined limit is quite demanding (takes time and computer resources). During a database split process, SMP Backend is effectively “shut down” – it does not receive any data from devices and all API services are disabled. Even though this process usually lasts less than a minute, it may still result in unwanted “gaps” in history. To minimize potential damage, SMP Manager allows setting of a **Split time** – time of day when SMP will check if a split is necessary and run it if it is.
It is also possible to set a **Split size** (defaults to 2MB) – limit to decide whether the database should get split.

Changing language

SMP Manager is translated and available in several languages. Language selection is done from the sidebar:



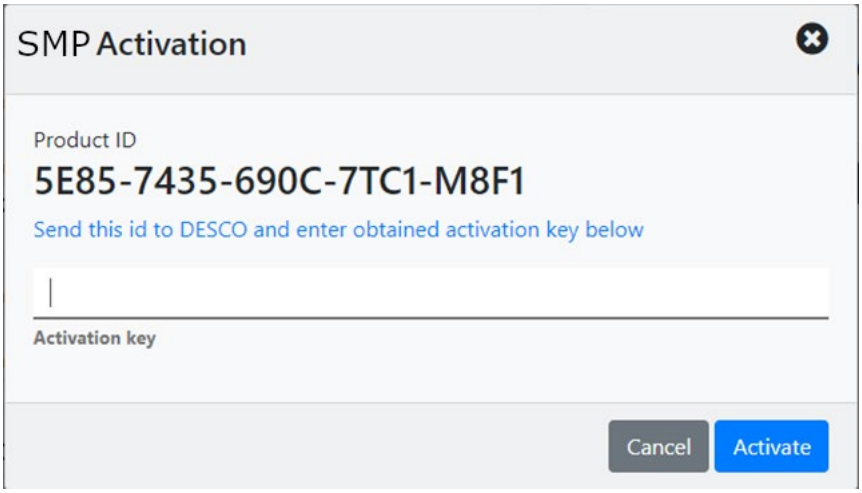
Software activation

SMP requires valid license to operate. Upon installation, SMP will run with a trial license and validity is shown on the sidebar:

IMPORTANT!
License is related to SMP Backend even though it is shown on and maintained by SMP Manager. If the license expires, the whole SMP will stop working.

SCS - 926 JR Industrial Drive, Sanford, NC 27332
East: (919) 718-0000 | West: (909) 627-9634 • Website: StaticControl.com

To activate SMP software click on the **Activate** button (see image above):



This form contains a unique Product ID. Send this ID to your SCS representative and obtain the activation key. Enter the activation key in the respective field and click **Activate**.

If the entered activation key was valid, SMP will be activated permanently.

It is also possible to obtain an extended trial key from SCS, but it will only be valid for limited period of time. Contact your SCS representative for further details.

Contact Us
Main Address: 926 JR Industrial Drive, Sanford, NC 27332
Support Number: (919) 718-0000
Support Email: Service@StaticControl.com

Limited Warranty, Warranty Exclusions, Limit of Liability and RMA Request Instructions
See the SCS Warranty -
http://staticcontrol.descoindustries.com/Limited-Warranty.aspx