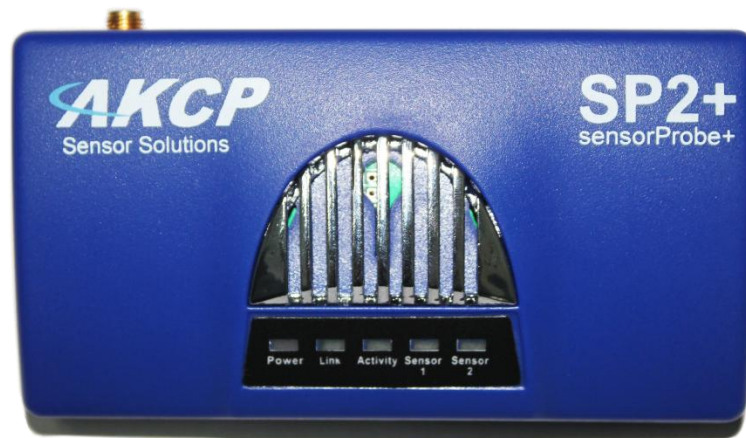




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# SP2+ Introduction Manual



## Table of Contents

Introduction .....	4
Port assignment information for SP2+ units.....	5
LED information for SP2+ units.....	6
Reset button functions for SP2+ units.....	7
Setting up the unit's IP address .....	8
SP2+ Web UI Walkthrough .....	10
Menu navigation.....	10
Monitoring Summary page.....	11
Graph feature.....	13
Expansion units .....	15
Managing Desktops and Maps .....	16
Important Notes on custom desktops .....	17
Managing Desktops .....	18
Navigation.....	18
Folders .....	20
Desktops .....	21
Adding items to your custom desktop .....	24
Desktop Auto Scroll feature.....	25
Managing Rack Maps.....	26
Access Control Users and Groups .....	28
Notifications and Events, Sensors menu, Settings menu .....	29
System page .....	30
General .....	30
Language management.....	32
Date/Time .....	36
Network.....	37
Modem.....	38
VPN.....	40
Set up VPN connection to APS.....	41

SMTP .....	45
SNMP .....	46
Server Integration .....	48
Services .....	49
SSL Certificate.....	50
Modbus .....	53
Password Checking and security.....	54
Password Security options.....	55
Maintenance .....	58
Heartbeat Messages .....	60
License Management.....	61
About .....	63
Sensors page.....	64
General options for all sensors .....	65
Virtual sensors .....	68
Example sensor configuration .....	70
Temperature/Humidity Sensor.....	70
Relay Sensor .....	74
Firmware upgrade through the Web UI.....	78
Network ports used by SP+ units .....	80

## Introduction

In this manual, we'll cover the main features and basic configuration of the SP2+ and the setup of notifications and the explanation of events will be in the "Notifications" manual.

### What is the SP2+?

The SP2+ is a high speed, accurate, intelligent monitoring device, featuring a completely embedded host and operating system. The SP2+ is a complete redesign of the world's best-selling environmental monitoring platform, 3 years in the making with all new hardware and software. We've combined the low cost and simplicity of use of the SP2, along with many advanced features of our securityProbe platform.

The SP2+ E unit supports a maximum of 150 sensors per unit. This unit supports up to 4 (physical) sensors.

#### SP2 + Features:

- IP based, including SNMPv3, HTTPS, VPN
- Send encrypted SNMP Trap and Email Notifications
- Supports 4 Intelligent Sensors or up to 20 Dry Contacts
- Optional cellular modem with external antenna
- Notification Wizards
- Front and Rear Thermal Mapping for any server cabinet
- Low Cost Daisy Chained Temperature sensors
- Optional Expansion Module connectivity
- Virtual Sensors
- Patented Fire Suppression feature
- AKCP Swing Handle Lock support

**Important note:** Some of the pictures shown in this manual might not represent the actual Web UI of the unit; this is because we are constantly working on improving the firmware. Please provide us with feedback if you have any issues configuring your unit.

## Port assignment information for SP2+ units



Port numbering starts from the power connector on the unit: the closest port to the power connector is Port 1 and closest to the Ethernet interface is Port 4.

You may connect AKCP intelligent sensors to any available ports.

### ***Important notes:***

- The power adapters that are used on sensorProbe+ units **shipped after August 2017** are now **5 Volts**. Please verify the voltage of your sensorProbe+ before ordering replacement power supplies.
- If you're using analog pins on the sensor ports (with manually on-lined DCV sensors, and pin 7 of the RJ45 connector) make sure that the **voltage doesn't exceed 3 Volts**. Otherwise you can damage the unit!

## LED information for SP2+ units



Power/Ethernet Link - Sensor 1 - Sensor 2 - Sensor 3 - Sensor 4

The Power/Ethernet LED will become red if there's no network connection, and blinking green (according to LAN activity) when the connection is normal.

For sensor LEDs (green):

Off = offline

On = online and normal

Slow blinking = Warning status

Fast blinking = Critical and Error status

## Reset button functions for SP2+ units

There are specific commands you can send to the unit by holding the Reset button for a specified amount of time.

You'll have to use something sharp, such as a straightened paperclip to be able to press Reset.



Commands:

Time to hold	Action
3..7 sec	Reboot
7..12 sec	Web UI password reset
12..17 sec	Serial flash erase (DB erase without factory reset, the system configuration is kept)
17..25 sec	Reset to factory defaults (serial flash erase + config erase)

## Setting up the unit's IP address

Very Important Note: The unit's ship with the passwords **enabled**. The default log in for the web interface is Username: *admin* Password: *public*

Every unit is shipped with the default IP address of **192.168.0.100**

First we will go through the process of changing this IP address to fit your own network configuration.

*Note:* In some cases your computer might not be able to connect to this default IP address. In this situation you either need to:

- a) add this IP your computers routing table or
- b) add a secondary IP address to the LAN card to allow access to the unit.

See below how to setup these.

Ensure the following items are available to you before starting:

- RJ45 CAT5 crossover cable with RJ45 male connection
- A PC with Ethernet card or LAN socket, logged in with Administrator rights

**1)** Connect the unit via the Ethernet port of the unit to your computers LAN or Ethernet port with a CAT5 crossover cable.

**2)** Open a web browser and type the default IP address, hit enter.

You'll be presented by the **Summary** page.

Go to the **System/Network** page to change the network settings (see below in this manual).

Once you have assigned the new IP address use the "ping" command to test the unit's reply.



## How to add a manual route to the computer's routing table?

Open an Administrator Command Prompt (CMD) window and type:

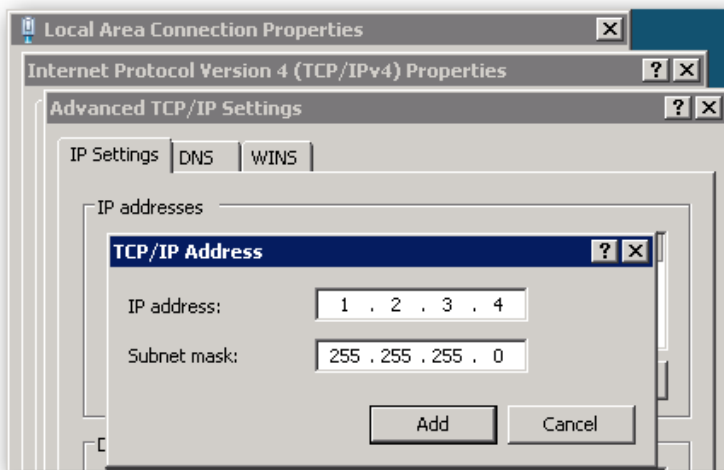
```
route add 192.168.0.100 10.1.1.20
```

Where 10.1.1.20 is the IP address of the Ethernet interface on the PC that the unit is plugged into with the crossover cable.

*Note:* If you do not receive an 'OK!' message then a parameter was wrong or missing. The route is not persistent (removed upon rebooting), but you can also delete it with the `route delete 192.168.0.100` command.

## How to add a secondary IP address to the computer's LAN card?

You can do this via the GUI by opening the LAN connection's properties:



Or open an Administrator Command Prompt (CMD) window and type:

```
netsh interface ipv4 add address "Local Area Connection" 192.168.0.2  
255.255.255.0
```

The above command adds the IP Address 192.168.0.2 (with Subnet Mask 255.255.255.0) to the connection titled "Local Area Connection".

You will then be able to connect to the unit with its default IP.

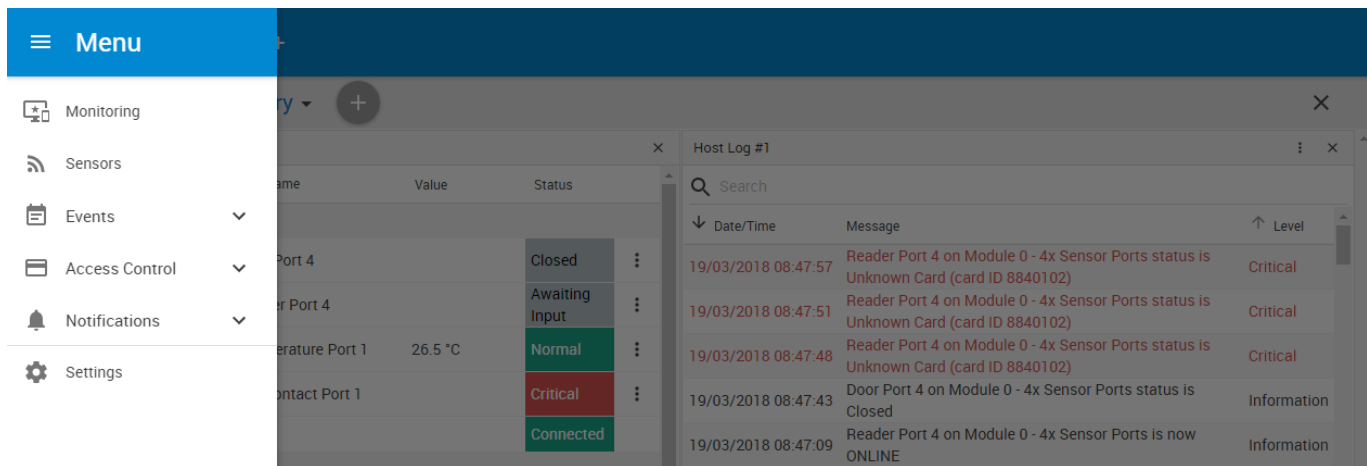
*Note:* The secondary IP address is permanent for the LAN connection; don't use it if you only need it once. Instead use the routing table method above.

## SP2+ Web UI Walkthrough

### Menu navigation

With newer firmware (after 1.0.3074), the Web UI and the menu structure has been changed on all SP+ family devices.

To open the menu, click on the three horizontal lines in the upper left corner:



This will bring up the full menu for navigation.


Depending on the device, you might see additional menu items, such as Power.

**Important Note:-** As Microsoft no longer supports the Internet Explorer web browser, we also do not support any version of IE when viewing our web interface on all AKCP base units. Please use the Chrome or Firefox browsers when viewing the base units web UI.



In the Summary page's Sensors Information window you can do the following:

Workspace > Summary +				
System Name (System Location)				Host Log #1
Unit	Name	Value	Status	
<b>SPX+</b>				
Module 0 - 4x Sensor Ports	Temperature Port 1	26.5 °C	Normal	15/03/2018
Module 1 - 20x Dry Contacts IO	Dry Contact Port 1		Critical	15/03/2018
Virtual Sensors			Connected	15/03/2018
<b>CCU (0D000037)</b>				
CCU 1.2	Cabinet Door Port 1		Forced Open	15/03/2018

Click on the configuration menu button  directly next to the right of a sensor to access its popup menu.

Sensor Error	
Normal	View Graph
Off	Enable Graph
Connected	Acknowledge
	Offline
	Settings

Directly acknowledge a sensor's status, and put the sensor offline

Off	
Normal	Sensor Control
Off	On
Connected	Off
	Toggle Off-On
	Toggle On-Off
	View Graph
	Enable Graph
	Acknowledge
	Settings

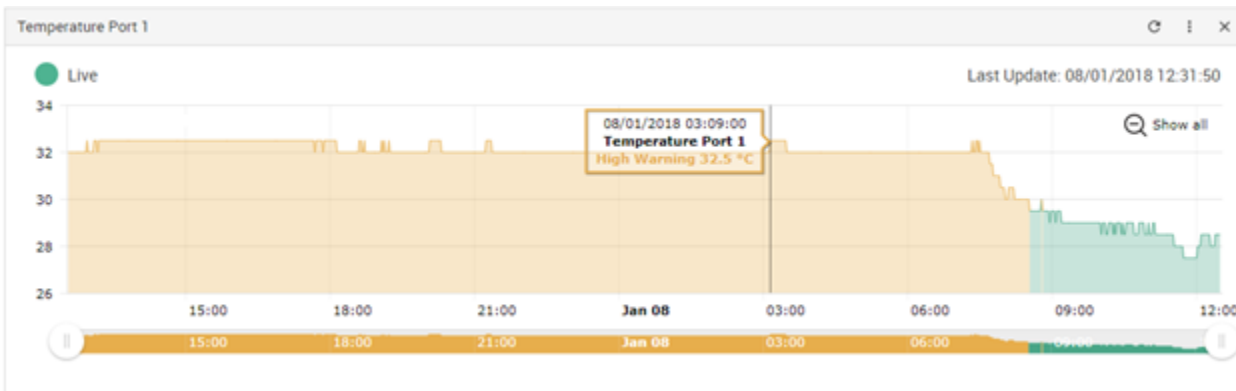
Control the relay-type sensors

View Graph
Disable Graph
Acknowledge
Settings

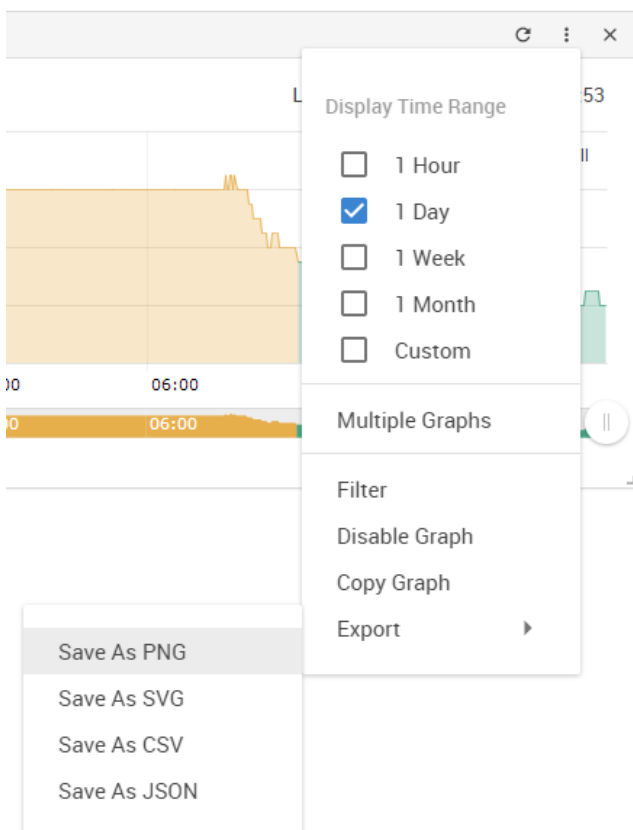
Enable/disable graph data collection per sensor (if they support it), and display the graph display window for the Summary page  
We'll explain the Graph feature in more detail below.

## Graph feature

After you've enabled the data collection for a sensor, you can choose to display specific time intervals of the stored data: hourly/daily/weekly/monthly and custom display interval. You can also export the recorded data in multiple formats.



In this example picture, we've chosen to display the temperature sensor's daily maximum. You could also resize the graph window (including full screen) and move the scale to display more or less data.



You can choose to export the graph data in selected formats by clicking on the graph's menu on the right, then by choosing the desired format from the popup menu.

The file will be downloaded automatically and assigned a file name that will contain the sensor's name, IP address of the unit, and the date and time.

The graph is always a **Live Graph**; you can set the data collection period in the General Settings page (see below for more information).

You may also refresh the graph data manually with the refresh button on the right.

Graph Data Collection Period

90
1m 30s

Graph data can be stored for 31 days 23h 45m 0s.

If you want to view multiple sensor graphs, first you need to **Enable Graph** for a sensor that supports graphing from the sensor's menu. Then select **View Graph** to display it. The data collection will run in the background even if you don't display the graph.

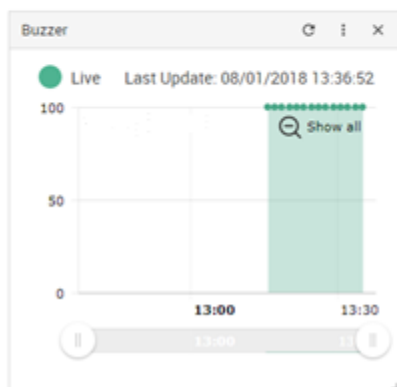
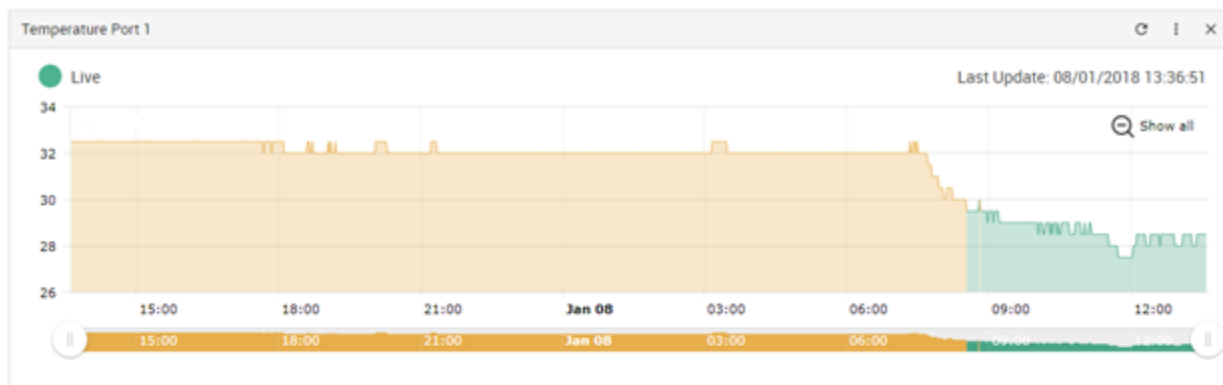
Sensor Control

On
Off
Toggle Off-On
Toggle On-Off

View Graph
Enable Graph
Acknowledge

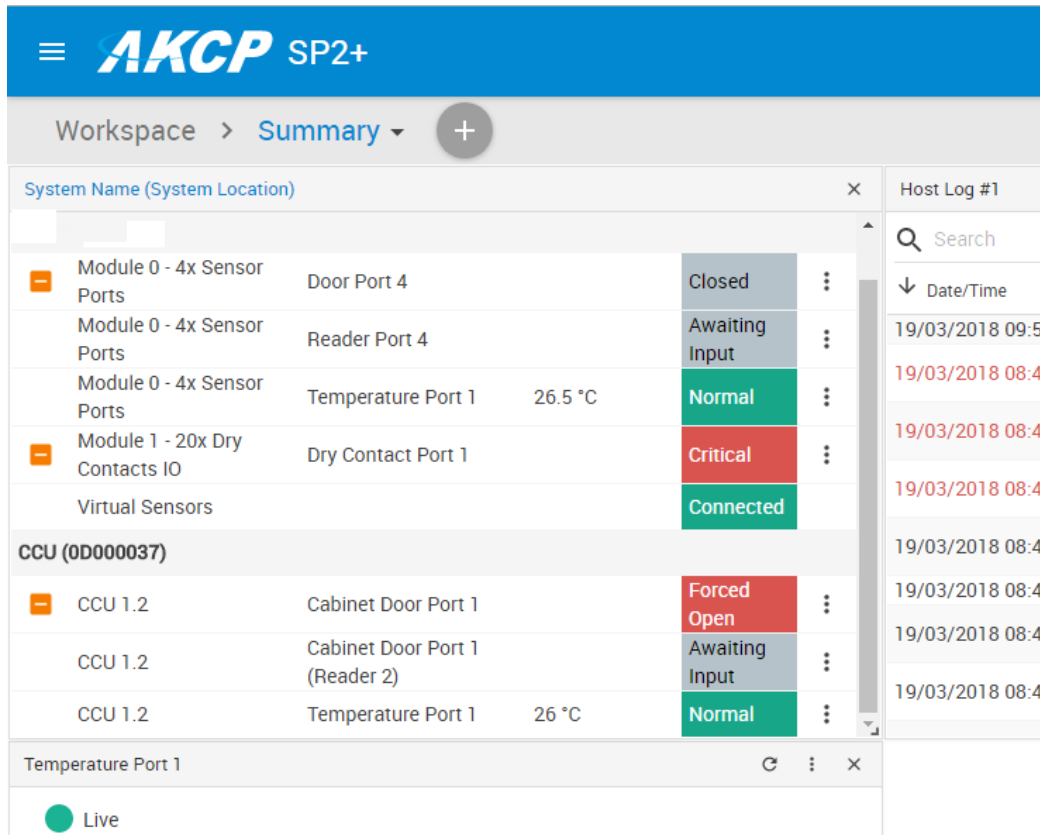
Settings

The second graph will appear below the first graph (you can freely rearrange it).



## Expansion Units

If you have an expansion unit connected and sensors on the expansion board, they will be also listed in the System Name Information window as shown below. If you have a BEB unit, please refer to that separate manual titled SPX+ BEB Units. BEB units are NOT supported on the SP2+, only on the SPX+ units. E-sensor8 & E-opto16 expansion units are supported on the SP2+.



System Name (System Location)				Host Log #1
Module 0 - 4x Sensor Ports	Door Port 4		Closed	
Module 0 - 4x Sensor Ports	Reader Port 4		Awaiting Input	
Module 0 - 4x Sensor Ports	Temperature Port 1	26.5 °C	Normal	
Module 1 - 20x Dry Contacts IO	Dry Contact Port 1		Critical	
Virtual Sensors			Connected	
<b>CCU (0D000037)</b>				
CCU 1.2	Cabinet Door Port 1		Forced Open	
CCU 1.2	Cabinet Door Port 1 (Reader 2)		Awaiting Input	
CCU 1.2	Temperature Port 1	26 °C	Normal	

Temperature Port 1

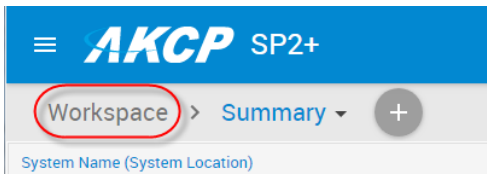
Live

In the picture above we have a CCU (Cabinet Control Unit) connected as an expansion board, with an additional Temperature Sensor connected to one of its ports.

The base unit (listed as System Name) can be changed by clicking on the link also has a Temperature Sensor connected to Port 1.

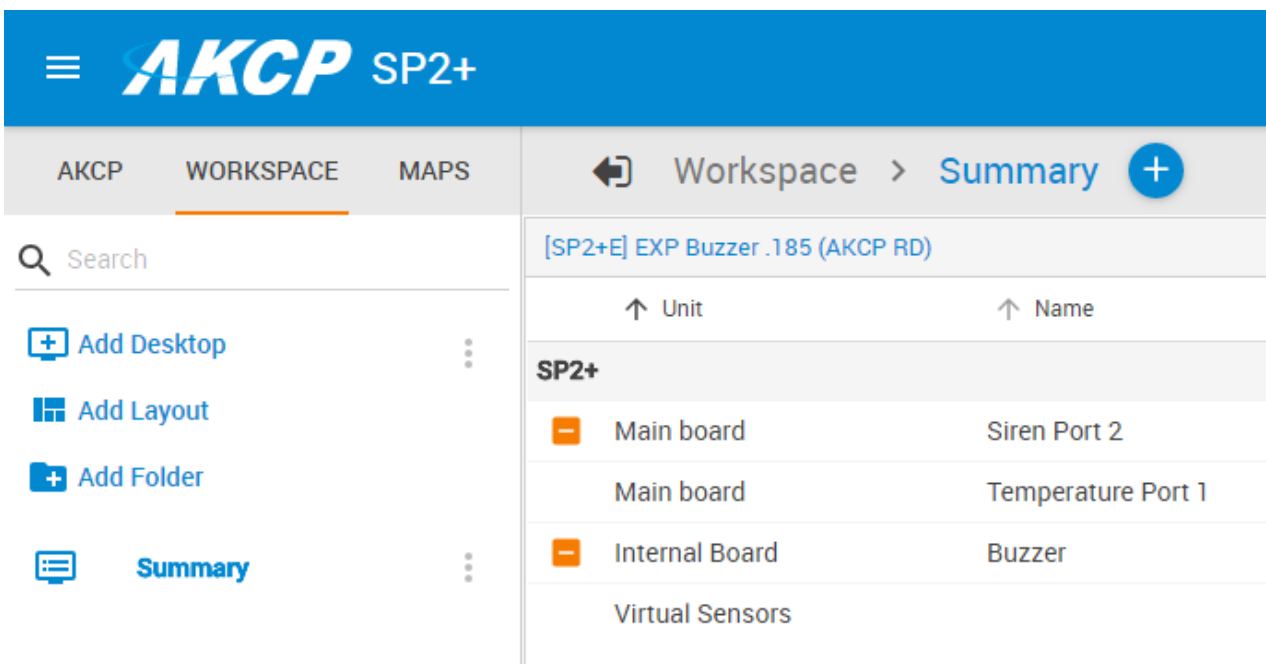
## Managing Desktops and Maps

The updated SP+ Web UI has the Workspaces feature from the AKCP Pro Server's HTML5 UI. With this you can manage and view different Desktop layouts in a quick and easy way, create multiple custom Desktops as well as select from pre-defined layouts with placeholders for displaying your sensor gauges, logs etc.



To enter into the Workspace mode, click on the Workspace link circled in red as shown above.

The default Desktop is the Summary page on all devices.





### ***Important Notes on custom desktops***

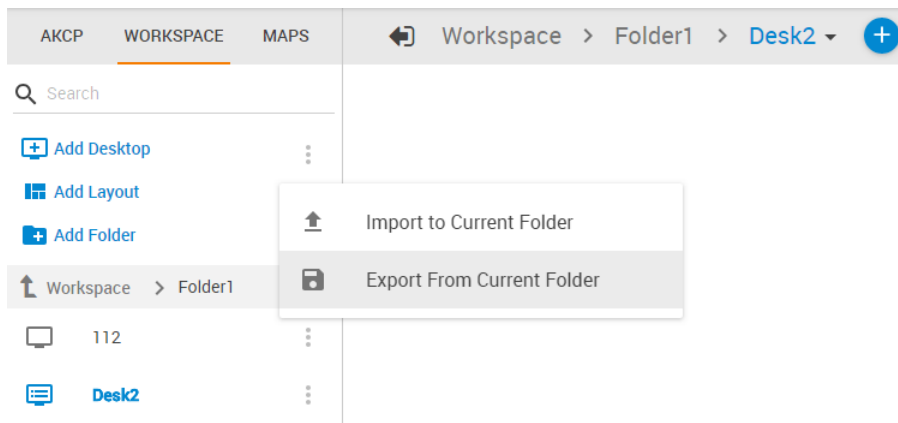
Please note the custom Desktops that are created **ARE NOT** stored in the SP+ units memory. These are HTML based, so they are stored in the browser cache, or local data on the Chrome & Firefox browsers. In other words, the Workspaces are not portable.

So, if you factory reset the unit or clear the cache on your internet browser the folders and custom desktops will be lost.

Generating a backup file from the Maintenance menu will also contain the custom desktops (added after firmware version 1.0.4209).

Without generating a full backup file, you could to export and then import the desktop configuration before you change browser, change your device or before you clear your browser cache. The configuration files will be saved as JSON files.

You can click the Export / Import command on a Desktop to save/reload it individually:



### ***Viewing custom desktops different users & PC's***

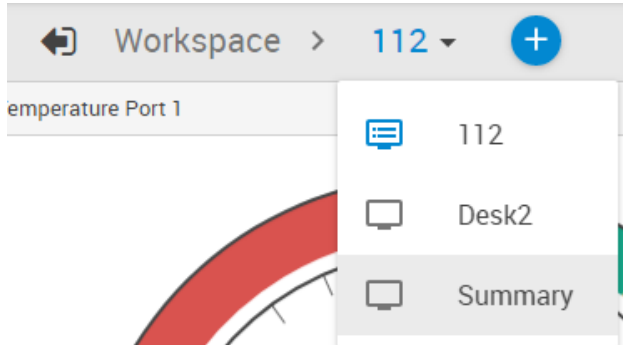
Regarding the viewing of your custom desktops via other users. Because multiple users can log into the SP+ unit from the same PC or different PC's on the network, the following applies:-

If two different users (different usernames) log in to the same SP+ unit they will not be able to view the other users custom desktops.

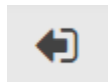
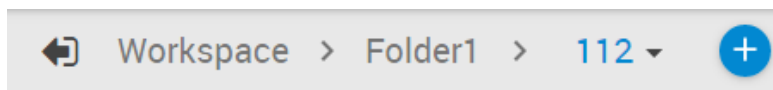
If the same user logs into the SP+ from two different PC's they will not be able to view the custom desktops (they do not synchronize), so the custom desktops will only be viewable on the original PC that they were created on as again these are stored on the PC's browser local data.

## Managing Desktops

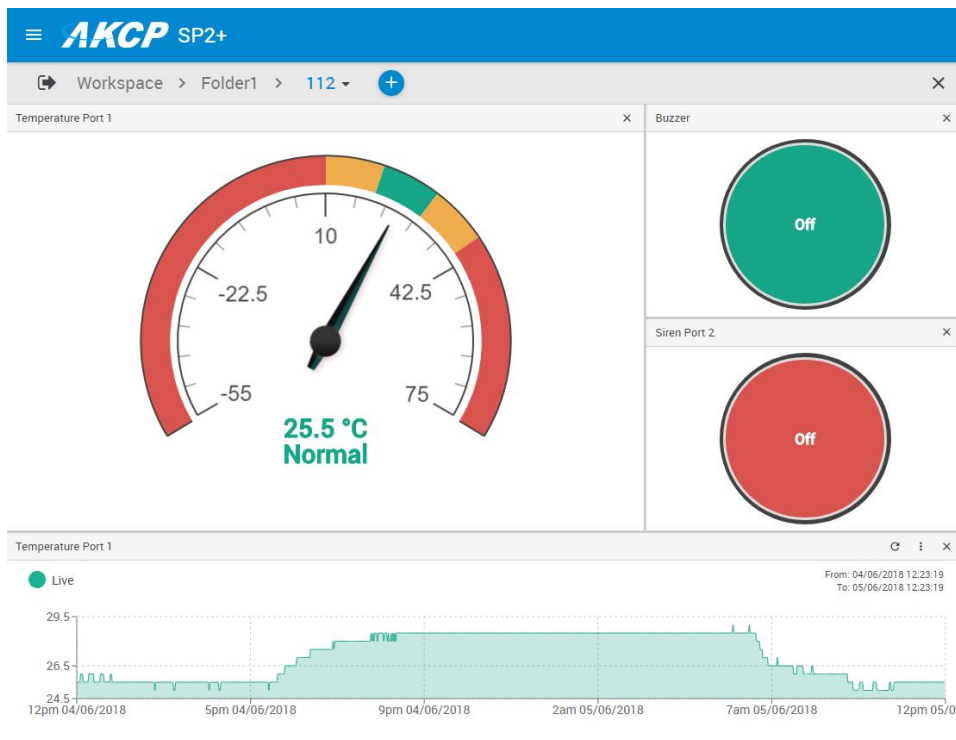
### Navigation



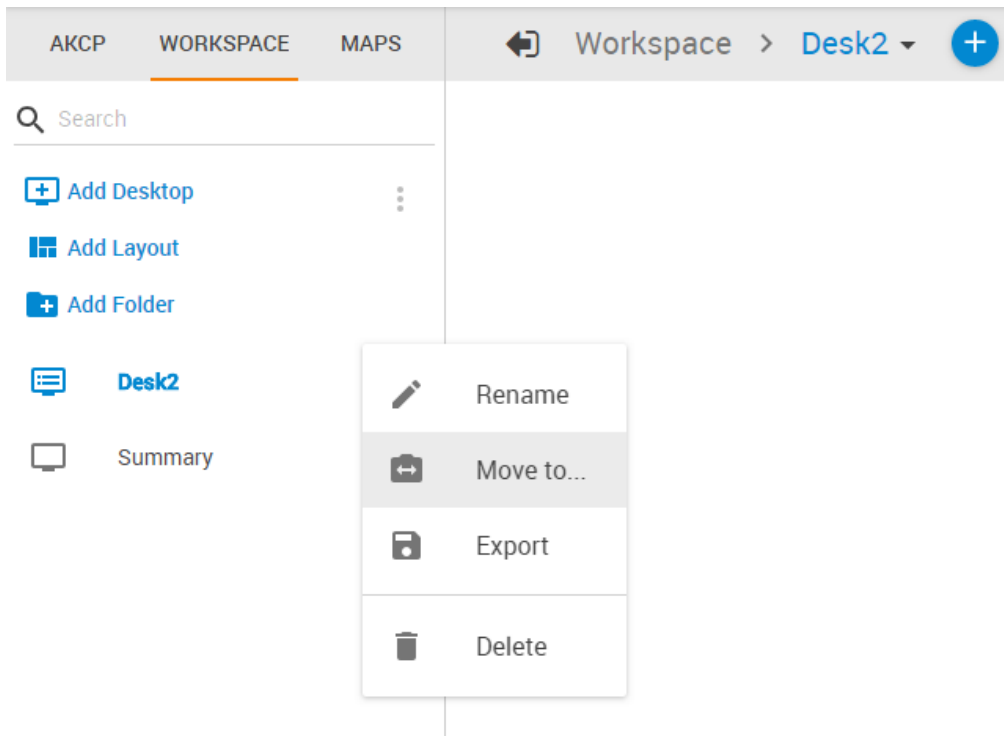
You can manually change between Desktops using the arrow menu, or by directly clicking on the desired Desktop if they are stacked under a folder.



With this button, your current Desktop will expand to the browser's screen width as shown on the screenshot below:

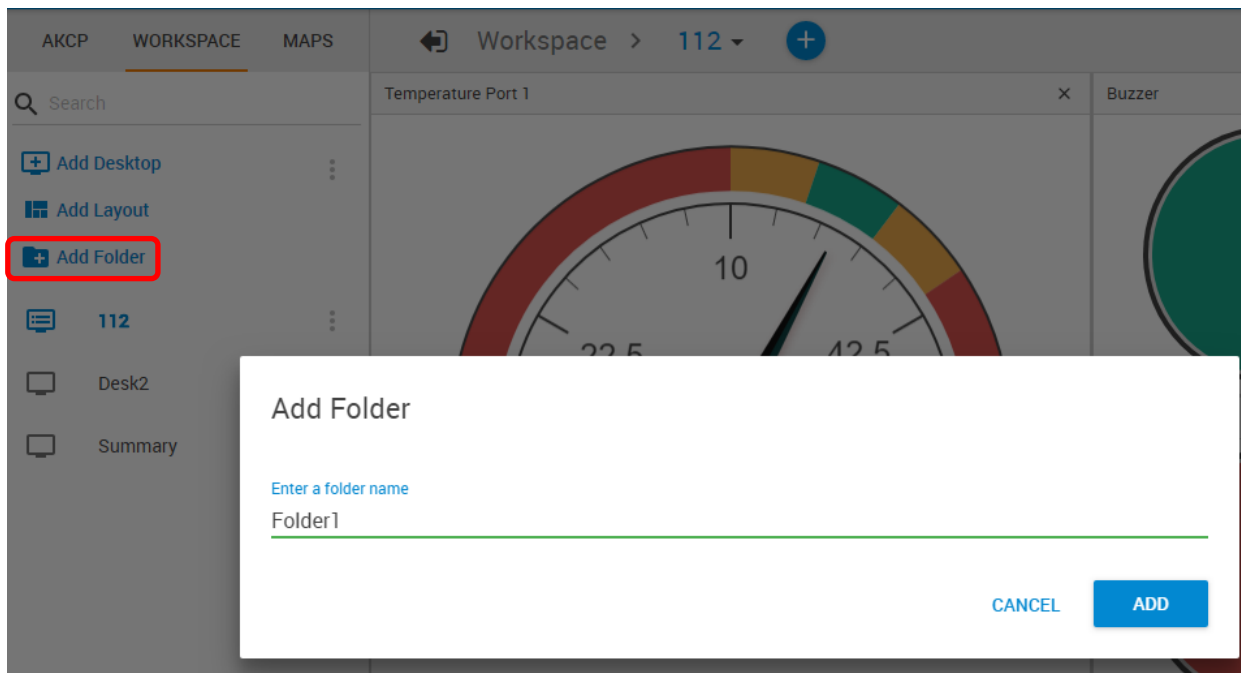


Click it again to go back to the full view.

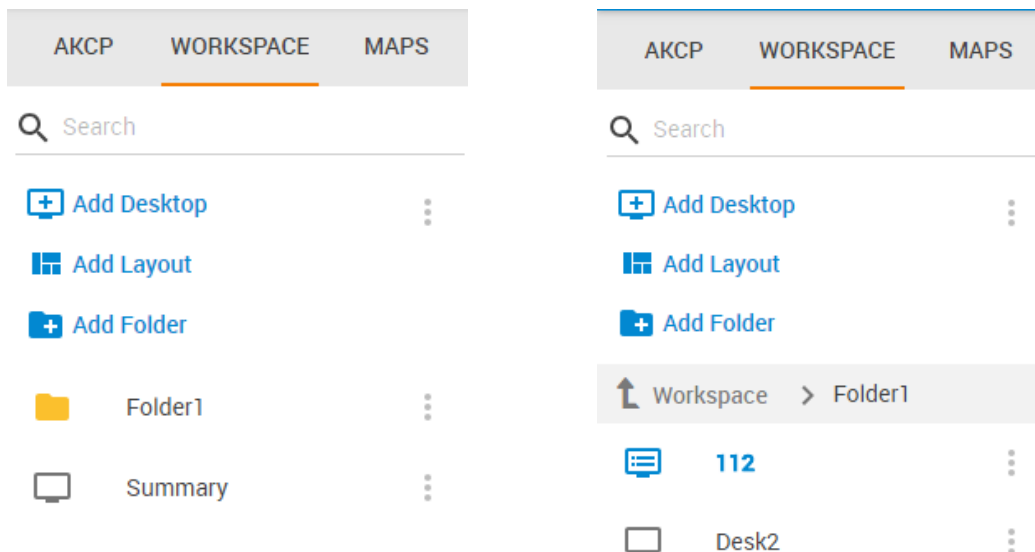


On each Desktop and Folder item, you have the option to Rename, Move, Export or Delete them. Move is useful if you've created multiple folders (see below). As noted earlier, don't forget to export your Workspace items to save them permanently.

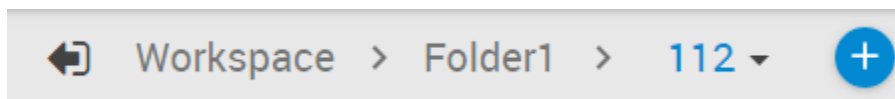
## Folders



You can add Folders to arrange your desktops into a hierarchical view.

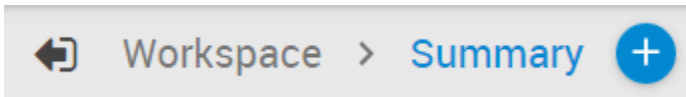


After created, you can simply drag and drop your Desktops under the folder, or use the Move menu. The folder structure will also display on the Desktop selector menu on top:

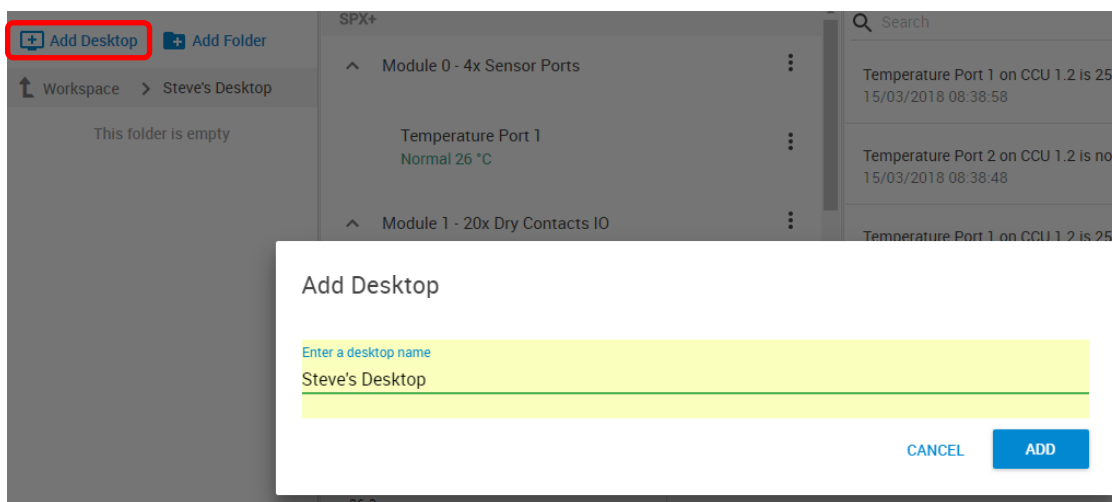


## Desktops

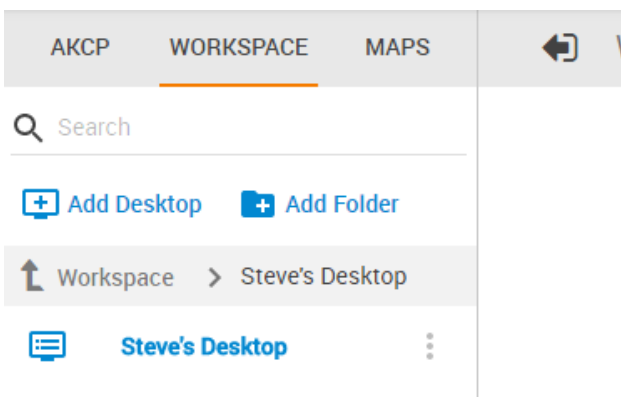
You can add new Desktops where you can customize the layout to place any sensor gadget, logs, graphs etc. on the screen.



There are two ways to add a new desktop. The first is by creating a blank desktop using the **Add Desktop** link under the Workspace tab:



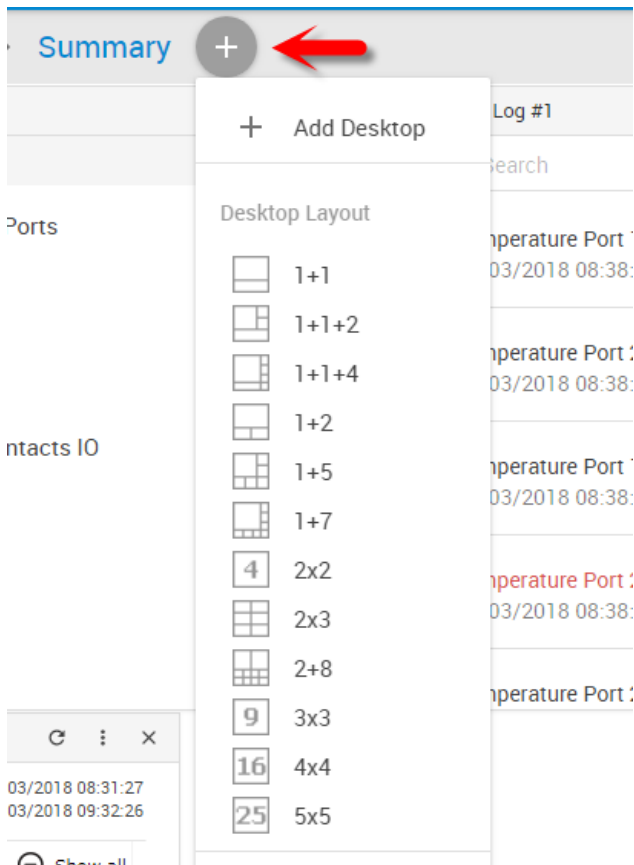
Name the new desktop and click the **Add** button.



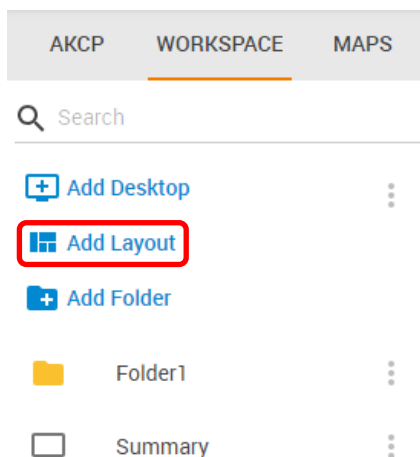
It will appear in the Workspace menu list.

In addition to the simple blank desktop, the second way to add a new desktop is via pre-defined Desktop Layouts. You could choose one that best suits your monitoring needs to drag and drop your sensor gadgets.

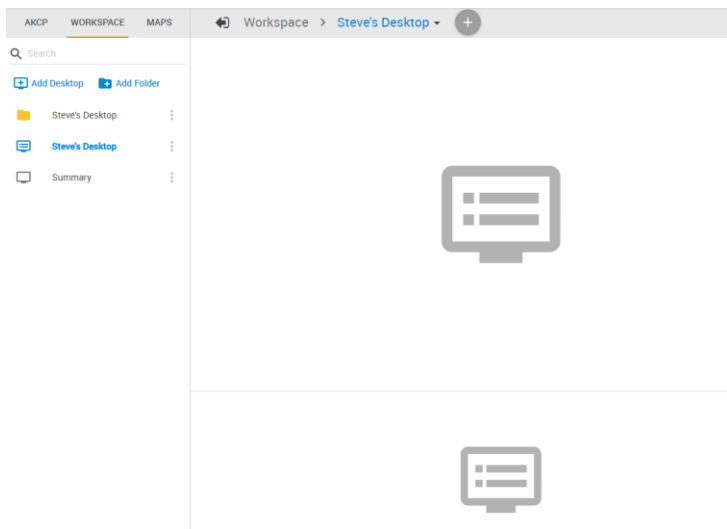
Use the plus button at the top of the page and select the layout for your new desktop:



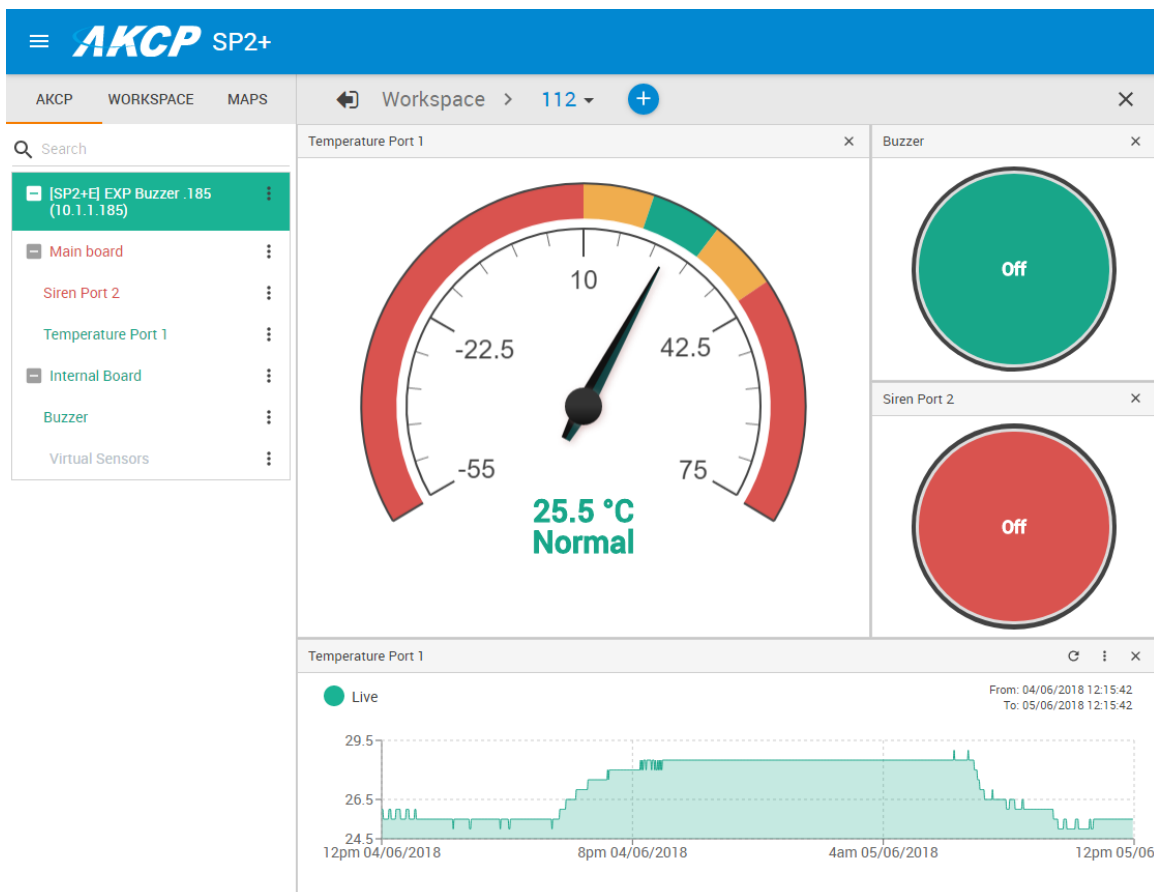
Alternatively you can click on the Add Layout link to select from layouts:



The empty desktop will have placeholders similar to this:

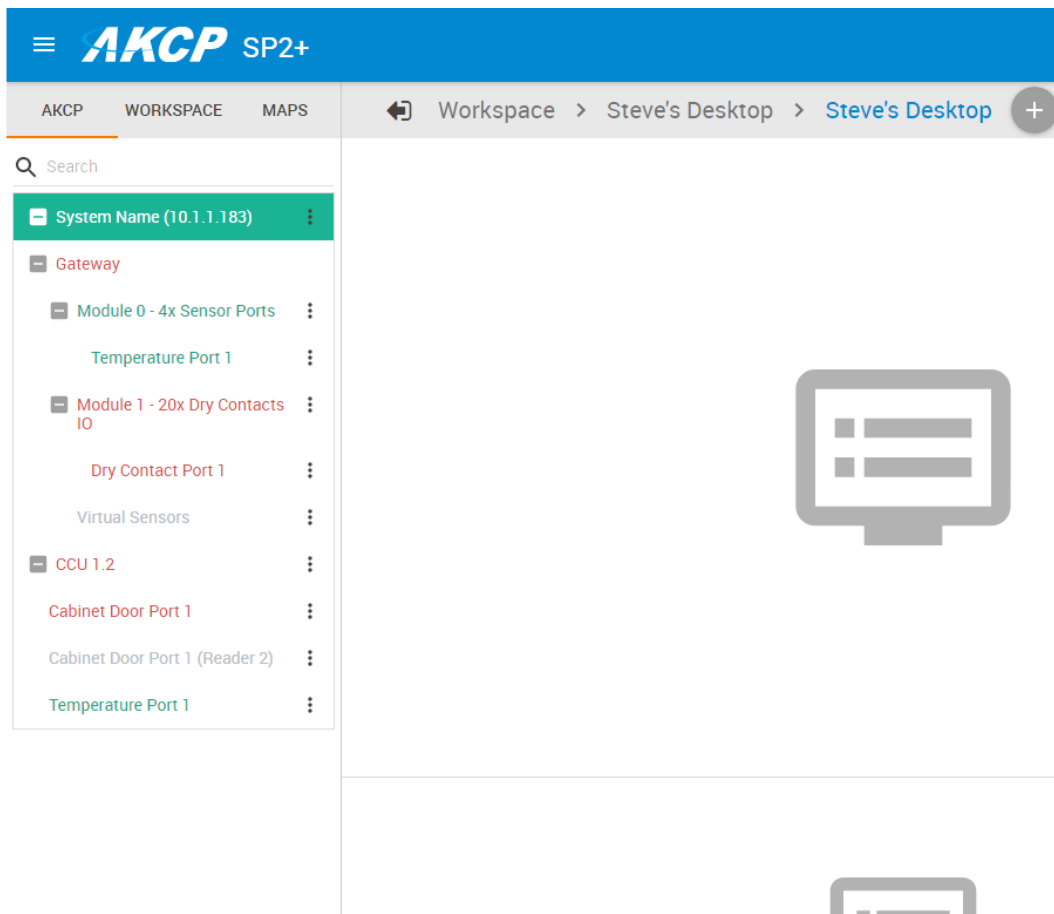


As an example below, we've selected the 1+1+2 layout. Then you can drag and drop sensors, logs and graphs on the layout:



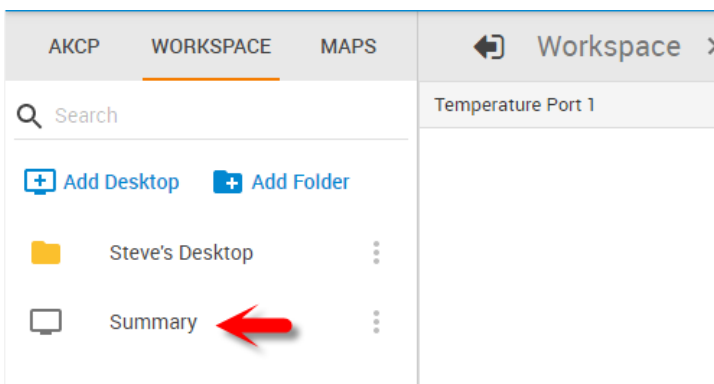
Below we'll show you how you can add sensors to the desktops.

## Adding items to your custom desktop



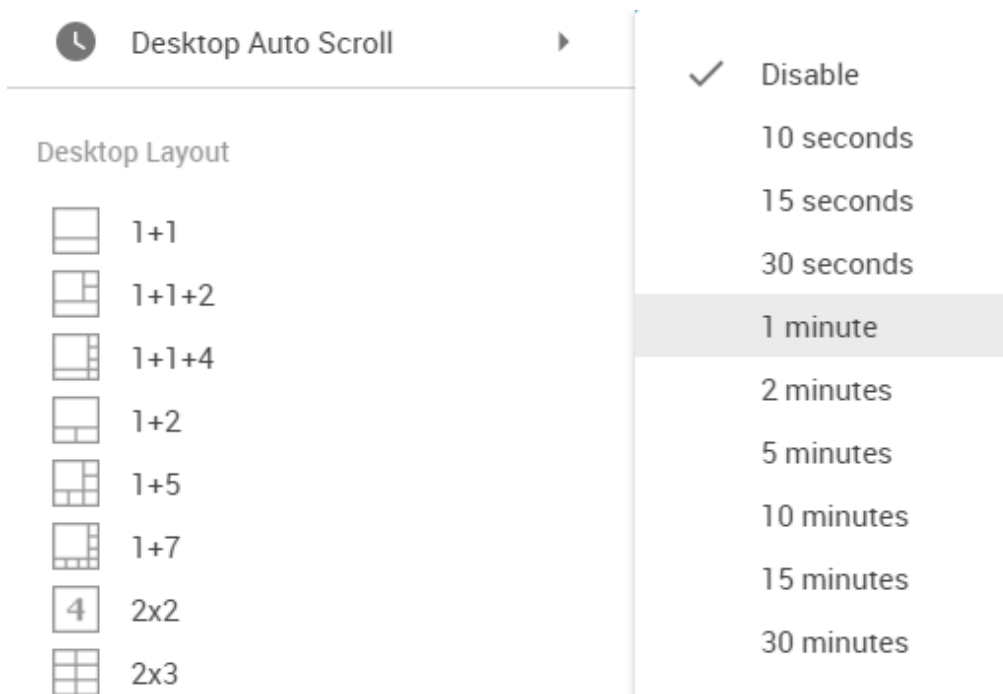
To add items from the units that are connected to the SP+ unit, you will first need to click on the AKCP link in the Navigation Tree as shown above.

Next simply drag and drop the items you wish to add to your new desktop. This is also how you can add items to the Summary page. To navigate back to the Summary or Main Monitoring page click on the Summary link shown below.

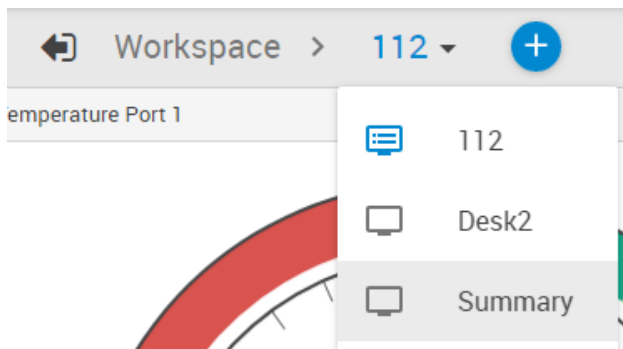




## Desktop Auto Scroll feature

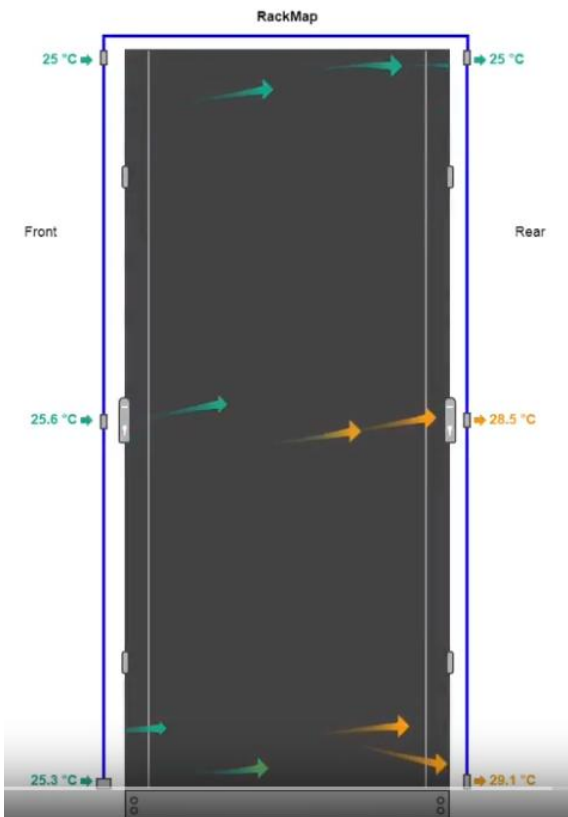


With this feature enabled, your desktop view will automatically switch between the created additional desktops within the specified time interval.



You can also manually change between Desktops using the menu.

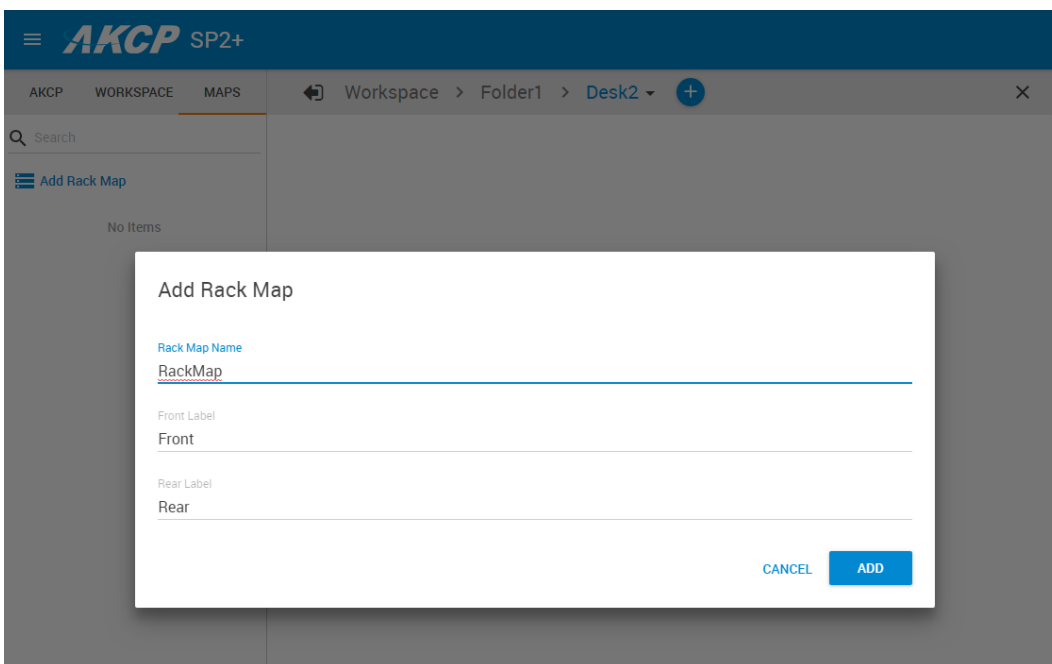
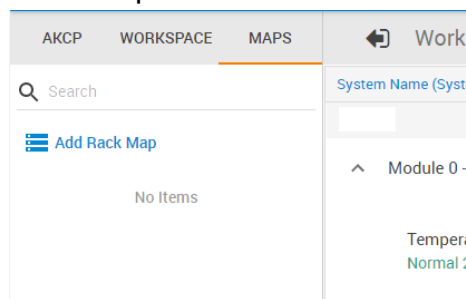
## Managing Rack Maps



The Rack Map feature was originally (and still is) included in the AKCess Pro Server / AKCP Pro Server (HTML5) and has also been added to the SP+ units. You can add a Rack Map as a graphical representation of your server rack, and to display and record the temperature of the airflow within your server cabinets.

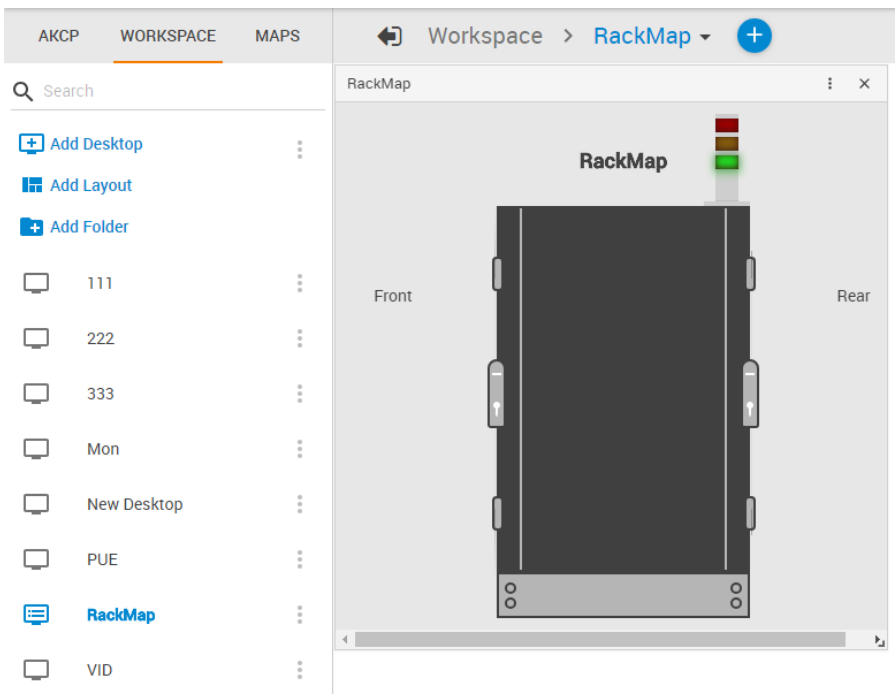
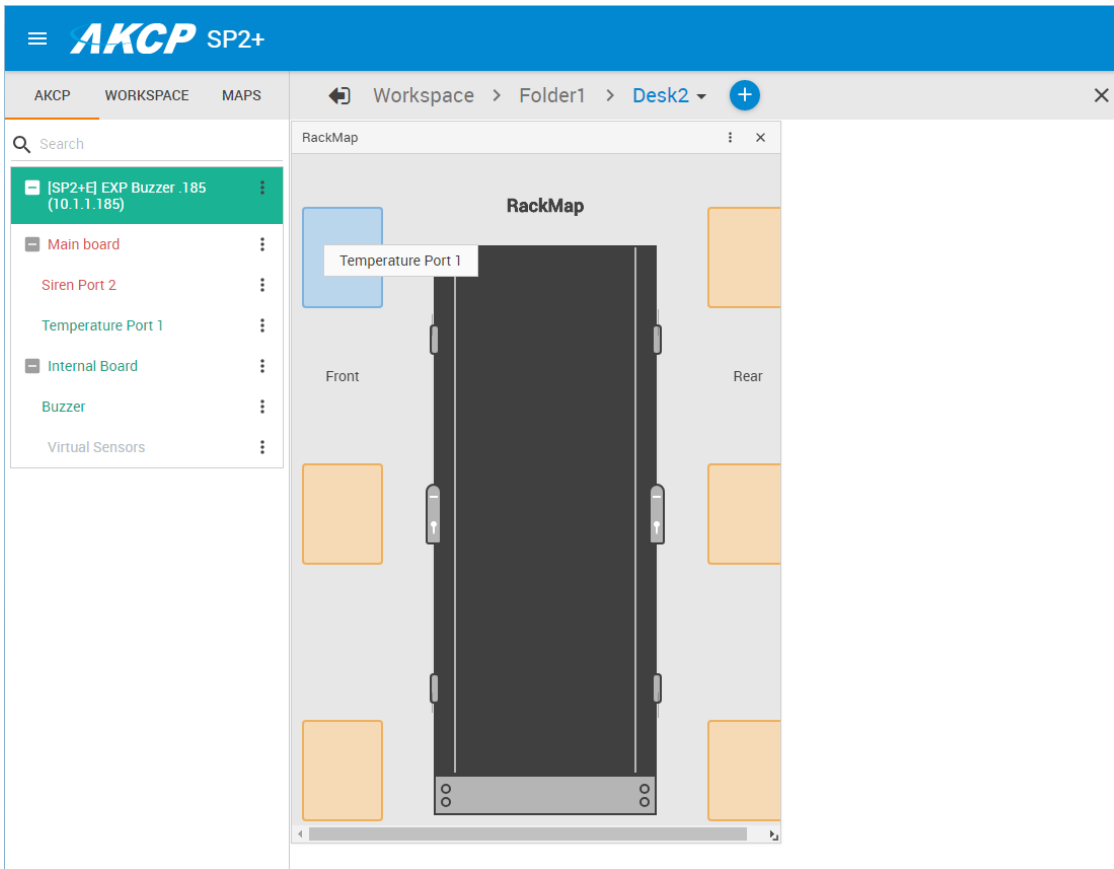
Note that on SP+ family Web UI only limited options are available for the Rack Map; for example you cannot add devices or assets.

Click on the Maps tab and Add Rack Map link to add a Rack Map:



After created, you can drag and drop the Rack Map to a desktop.

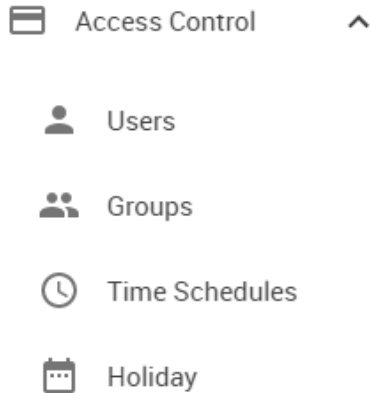
You can add Temperature sensors, the Swing Handle Lock and the Sensor Status Light gadget on a Rack Map. Simply drag and drop the desired sensor from your unit's sensor list, as shown below.



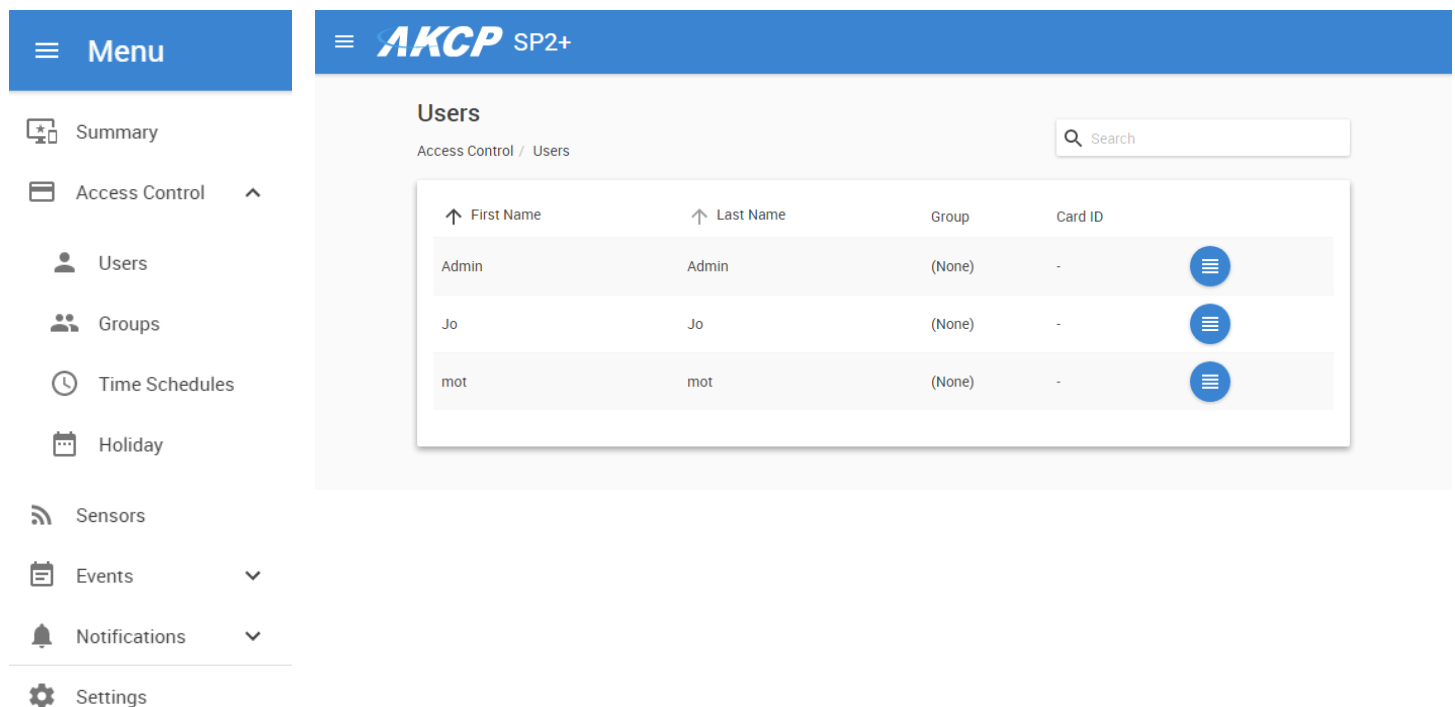
This example picture shows a Sensor Status Light added to a Rack Map.

Please see the Thermal Map sensor manual for complete installation & setup instructions for the Thermal Map sensors.

## Access Control Users and Groups

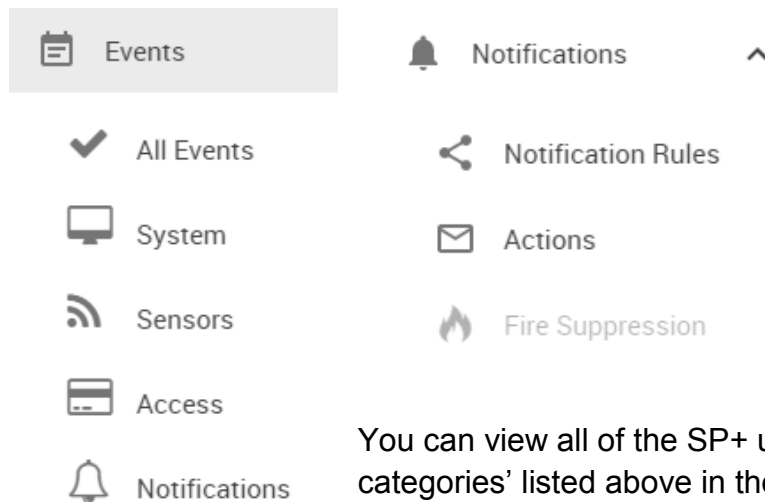


The Access Control Users and Groups are managed from the AKCP Pro Server and are used for accessing doors with the Swing Handle Lock. You can only view the existing users and groups from the unit's Web UI and modify only a few parameters on them.



This feature has its own manual, refer to the SP+ Swing Handle Lock Manual for more information.

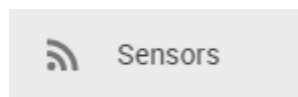
## Notifications and Events



You can view all of the SP+ unit's events and filter them by each of the categories' listed above in the Events drop down menu.

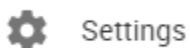
Please refer to the SP+ units "Notifications Manual" for setting up the alerts and the Event log on the units.

## The Sensors menu



The "Sensors" shortcut will allow you navigate directly to the sensors setting page where you can setup the sensors connected to the unit. This is covered in the Sensors section in this manual.

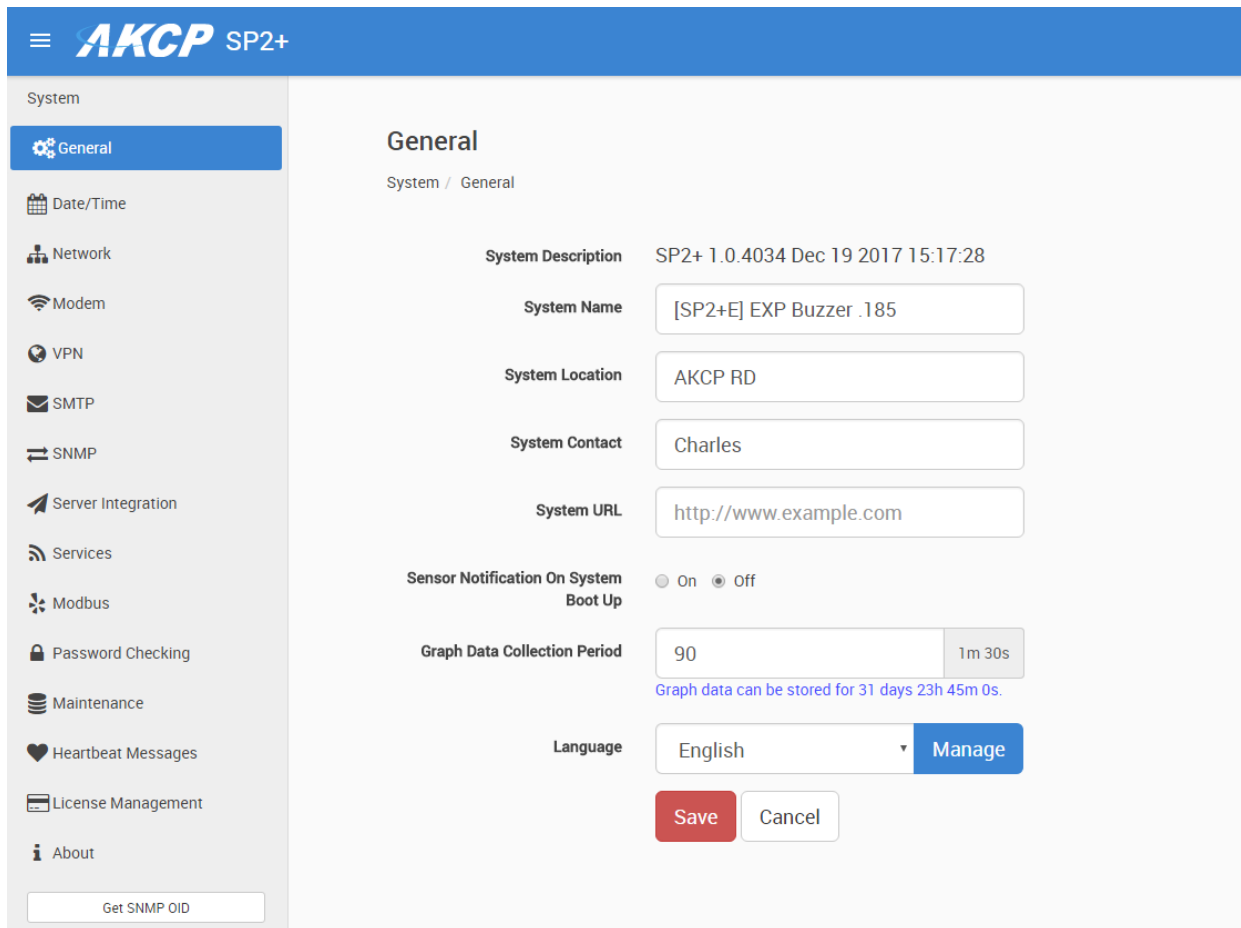
## The Settings menu



This shortcut will take you to the unit's system settings pages. Each page will be described below in detail.

## System page

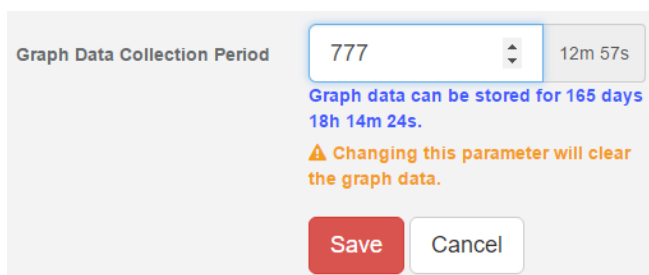
### General



Here you can change general settings for the device.

The unit's firmware version is shown in the Description field, and the System Name/Location/Contact options are user configurable.

You could also specify the System URL option, for quick access of a custom part of the Web UI for example, but you can specify any URL.



By changing the **Graph Data Collection Period**, you can choose how frequently the data is sampled. Note that if you had stored graph data previously, changing this setting will clear the data.

With the option **Sensor Notification On System Boot Up**, you can choose to allow/disallow running the notifications with sensor values read at system boot up. In some cases, invalid values are read while the unit is starting up, and you could get false alarm notifications. You can enable/disable the notification processing at startup with this option.

On each System subpage you can see a **Get SNMP OID** button (where applicable):

Get SNMP OID

#### SNMP OID of General

Description ▲	Syntax ▼▲	Access ▼▲	SNMP OID ▲
cfgSystemDescription	DISPLAY STRING	read-write	.1.3.6.1.4.1.3854.3.2.1.8.0
cfgSystemName	DISPLAY STRING	read-write	.1.3.6.1.4.1.3854.3.2.1.9.0
cfgSystemLocation	DISPLAY STRING	read-write	.1.3.6.1.4.1.3854.3.2.1.10.0
cfgSystemContact	DISPLAY STRING	read-write	.1.3.6.1.4.1.3854.3.2.1.11.0
cfgGraphDataCollectionPeriod	INTEGER	read-write	.1.3.6.1.4.1.3854.3.2.1.104.0
cfgSystemURL	DISPLAY STRING	read-write	.1.3.6.1.4.1.3854.3.2.1.107.0

This will give you a popup window with all relevant OIDs for the actual page (here the General page is shown).

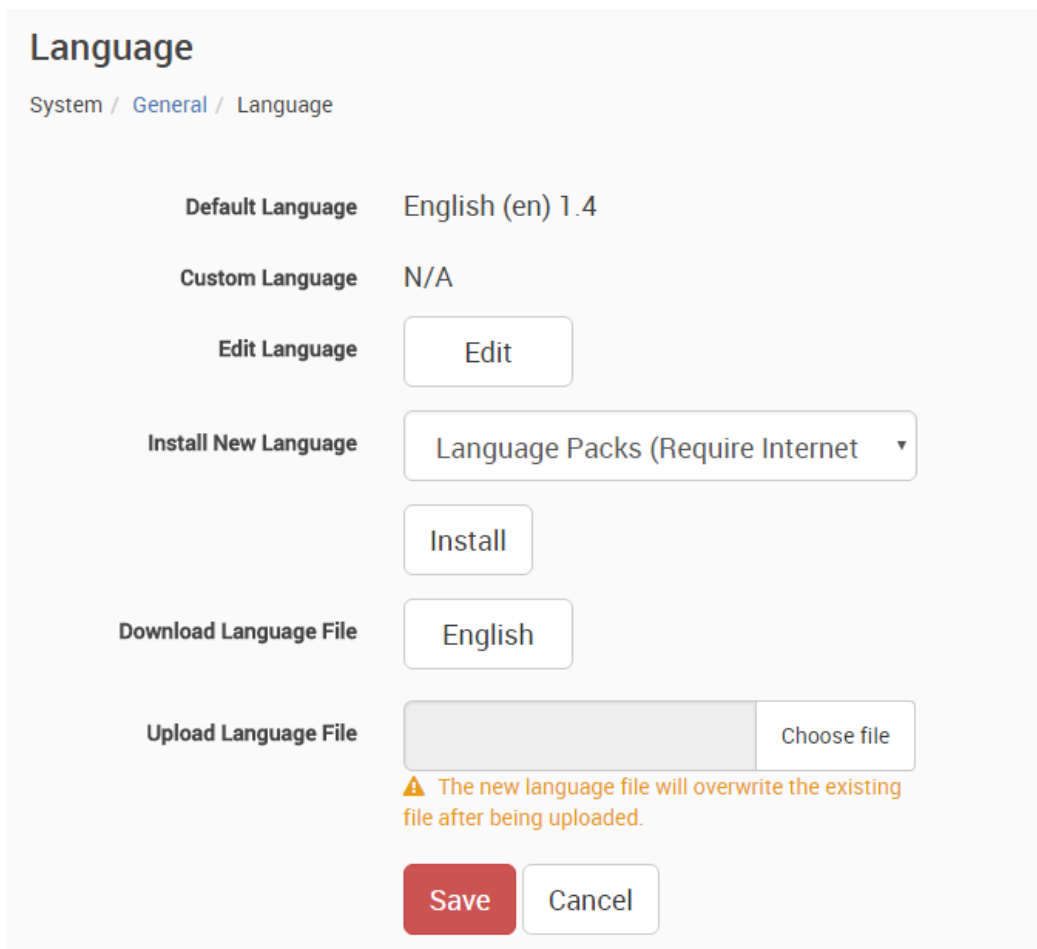
You can use OIDs for SNMP calls and in custom scripts, or for setting up the unit for monitoring by a third party NMS software such as WhatsUpGold or Paessler.

This button is also accessible on the *Sensors page* for each sensor.

## Language management

A horizontal UI element for language management. It consists of a label 'Language' on the left, followed by a dropdown menu currently showing 'English' with a downward arrow, and a blue button labeled 'Manage' on the right.

You can change the display language of the Web UI with this option. Only one additional language is supported, together with the default (and fallback if there's an error) English.

A screenshot of the 'Language' settings page. The title 'Language' is at the top left. Below it is a breadcrumb trail: 'System / General / Language'. The settings are organized into rows. The first row is 'Default Language' with the value 'English (en) 1.4'. The second row is 'Custom Language' with the value 'N/A'. The third row is 'Edit Language' with an 'Edit' button. The fourth row is 'Install New Language' with a dropdown menu showing 'Language Packs (Require Internet)' and an 'Install' button below it. The fifth row is 'Download Language File' with a dropdown menu showing 'English'. The sixth row is 'Upload Language File' with a file upload area and a 'Choose file' button. Below the upload area is a warning message: '⚠ The new language file will overwrite the existing file after being uploaded.' At the bottom are 'Save' and 'Cancel' buttons.

In **Manage**, you can choose to **Download Language File** if you'd like to edit the language file offline (you can also download the custom language's file if it's already present). Then upload the completed file, and it will be selectable as the Custom Language. For official translation files, the language code and version will show the correct values.

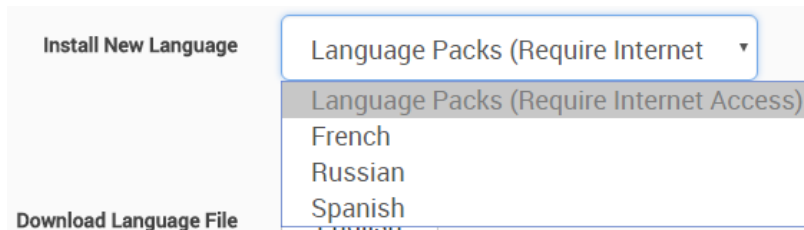
*Note:* Whenever you upload or install a custom language file, it will overwrite the old file. Only one additional language is supported.



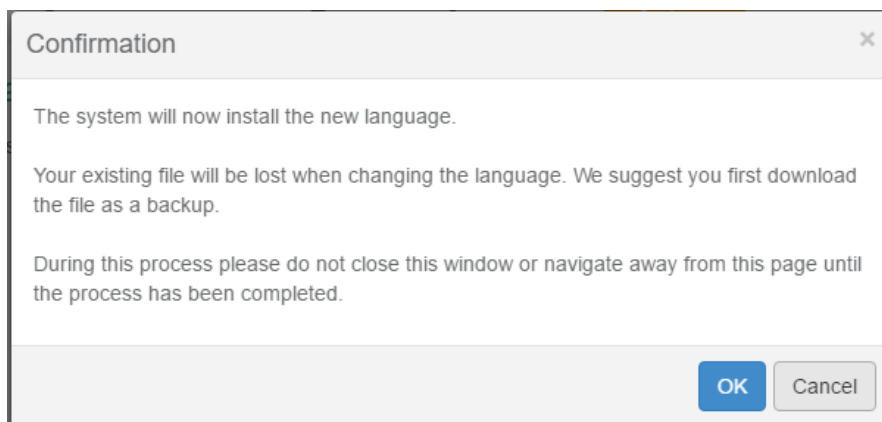
You can get separately downloadable language files from our website in the Support section.

If you have active internet connection, the unit supports installing the official language files directly from our server.

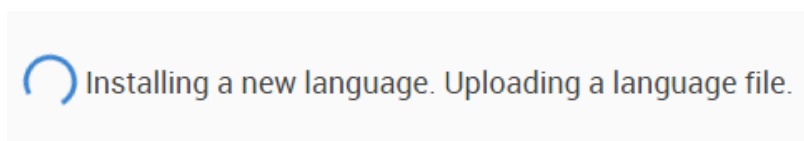
Select a language from the drop-down menu **Install New Language**:



Then press the **Install** button. It will ask you to confirm the action in a popup window:

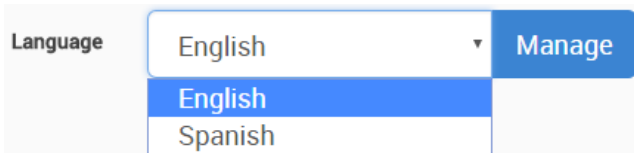


Wait until the language is downloaded and installed:



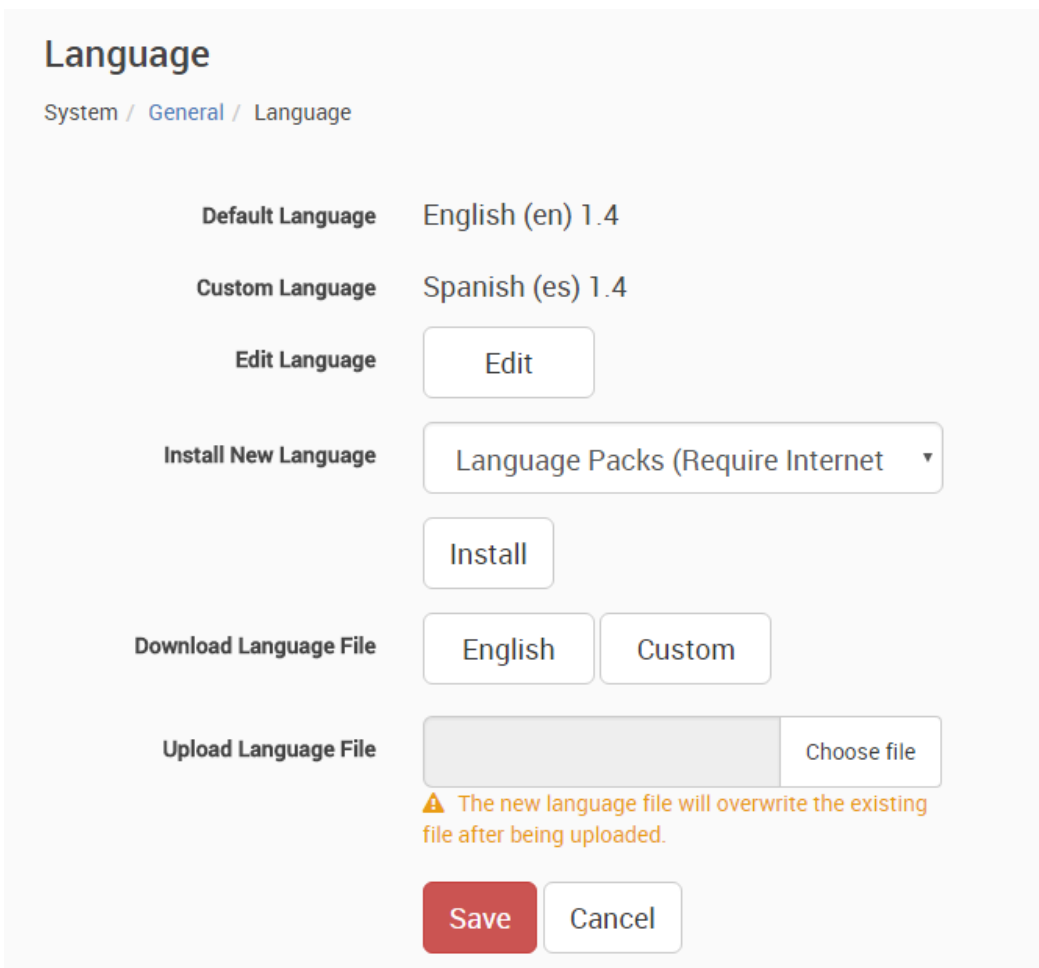
The unit will notify you about the successful language installation. If you installed it from the list, it won't change the language of the Web UI automatically.

Now you can switch display languages by selecting from the drop-down list on the **General** page, then pressing **Save**:




A screenshot of a web interface showing a 'Language' dropdown menu. The menu is open, displaying 'English' and 'Spanish' as options. A blue 'Manage' button is located to the right of the dropdown.

After you've added the custom language, you can manage it from the same menu:



A screenshot of the 'Language' management page. The page title is 'Language'. Below the title is a breadcrumb trail: 'System / General / Language'. The page contains several sections:

- Default Language:** English (en) 1.4
- Custom Language:** Spanish (es) 1.4
- Edit Language:** A button labeled 'Edit'.
- Install New Language:** A dropdown menu showing 'Language Packs (Require Internet)' and an 'Install' button below it.
- Download Language File:** Two buttons labeled 'English' and 'Custom'.
- Upload Language File:** A file upload area with a 'Choose file' button.

Below the upload section, there is a warning message:  The new language file will overwrite the existing file after being uploaded.

At the bottom of the page are two buttons: 'Save' (red) and 'Cancel' (white).

*Note:* The official language files are also included in the firmware update packages.

You can also edit the chosen language directly in the Web UI, if you choose **Edit Language**:

Custom Language

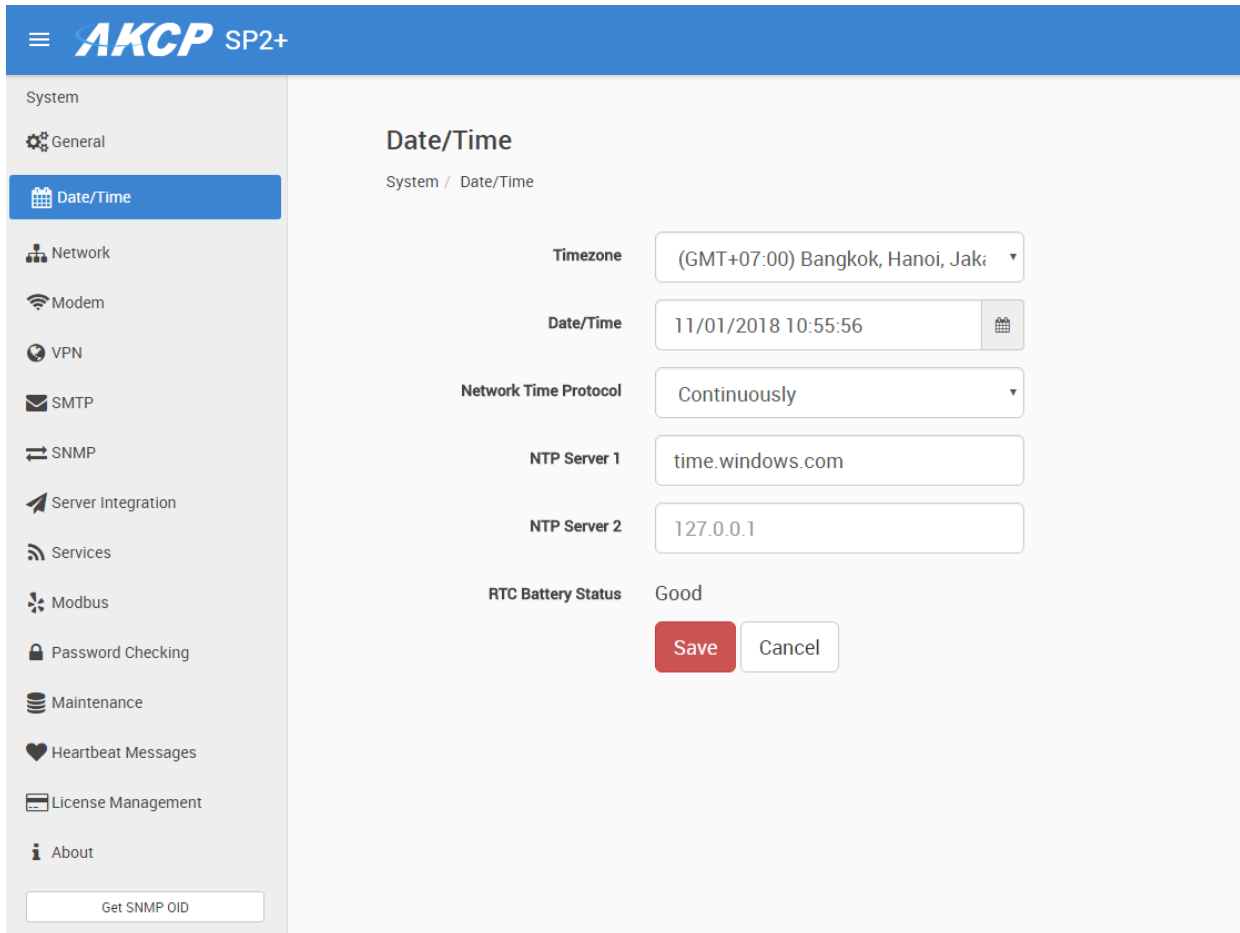
Spanish ▼

Save

Cancel

Group	Total Entries	Translated Entries	
General	110	110	<a href="#">Edit</a>
Setup	25	25	<a href="#">Edit</a>
Code Activation	9	9	<a href="#">Edit</a>
Menu	33	33	<a href="#">Edit</a>
Explorer	3	3	<a href="#">Edit</a>
Gadget	97	97	<a href="#">Edit</a>
Login	6	6	<a href="#">Edit</a>
Sensor Setting	519	519	<a href="#">Edit</a>
Event	120	120	<a href="#">Edit</a>
Notification Type	21	21	<a href="#">Edit</a>
Action Selection	2	2	<a href="#">Edit</a>
Sensors Control Action	6	6	<a href="#">Edit</a>
Relay Action	15	15	<a href="#">Edit</a>
Dry Contact Action	15	15	<a href="#">Edit</a>
Siren Action	13	13	<a href="#">Edit</a>
Door Action	16	16	<a href="#">Edit</a>

## Date/Time



**AKCP SP2+**

System / Date/Time

**Date/Time**

Timezone: (GMT+07:00) Bangkok, Hanoi, Jakarta

Date/Time: 11/01/2018 10:55:56

Network Time Protocol: Continuously

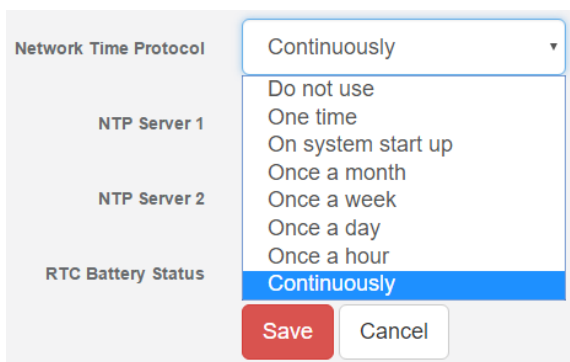
NTP Server 1: time.windows.com

NTP Server 2: 127.0.0.1

RTC Battery Status: Good

**Save** **Cancel**

The system date and time with time zone is user configurable, with NTP server synchronization. If the unit is connected to APS (AKCP Pro Server), then it will sync with the APS NTP service. Also displayed is the status of the RTC battery (good/bad).



Network Time Protocol: Continuously

Do not use

One time

On system start up

Once a month

Once a week

Once a day

Once a hour

**Continuously**

**Save** **Cancel**

You can also select the frequency of NTP synchronization with the drop-down menu.





Connection Mode	Normal
Access Point Name	Normal
Redial Attempt	PAP:Unsecured
	PAP:Secured
	GPRS:Unsecured
	GPRS:Secured
	Ras

You may select a different *Connection Mode* (PAP/GPRS/RAS).  
The most commonly used is *GPRS Unsecured*.

Connection Method	Never Dial-Out (Use Ether
Connection Type	Never Dial-Out (Use Ethernet Only)
	Dial-Out If Ethernet failed
	Use Dial-Out Only

You may change the *Connection Method* as follows:

- *Never Dial Out (Use Ethernet only)*: the unit will never try to use the modem for sending out notifications. If you don't have Ethernet connection, you should change this setting; otherwise you won't get any notifications.
- *Dial-Out if Ethernet failed*: the unit will only use the modem for sending out notifications, if the Ethernet connection fails.
- *Use Dial-Out Only*: the unit will only use the modem to send out the notifications, regardless of the state of the Ethernet connection.

Connection Type	<input checked="" type="radio"/> Always On <input type="radio"/> On-Demand
-----------------	--

Also you may change the *Connection Type*:

- *On-Demand*: the unit will initiate a connection only when it's necessary for sending out the notifications.
- *Always On*: the unit will keep the connection up, even when there is nothing to send.

*Note 1*: There's no auto-detection feature for the internal modem module, the configuration is always shown even if your unit is not equipped with the module.

*Note 2*: Only insert and remove the SIM card when the unit is turned off. Otherwise you can damage the SIM and the modem.

*Note 3*: The PIN code for the SIM card needs to be removed; otherwise the modem can't use it.

**VPN**

AKCP

SP2+

System

General

Date/Time

Network

Modem

VPN

SMTP

SNMP

Server Integration

Services

Modbus

Password Checking

Maintenance

Heartbeat Messages

License Management

About

Get SNMP OID

## VPN

System / VPN

This feature has no license. To request a license click here.

VPN

☐ Enable ☒ Disable

Status

Not Connected

IP Address

0.0.0.0

VPN Server Address

VPN Server Address

VPN Server Port

1194

VPN Password

Password

Confirm VPN Password

Confirm VPN Password

VPN Encrypt Method

Blowfish

Save

Cancel

This feature requires a separate license. You can read more details about the licensing later in this manual.

This feature is used by connecting the SP2+ with the APS VPN server. After the license has been activated and the APS VPN server is set up, you'll need to fill out the same options here to be able to use the VPN connection (see below).

A screenshot of a dropdown menu for 'VPN Encrypt Method'. The menu is open, showing four options: 'None', 'Blowfish' (which is highlighted with a blue background), 'AES', and 'Triple DES'. The 'Blowfish' option is selected.

*Note 1:* You can also configure these settings from the APS console for the unit.

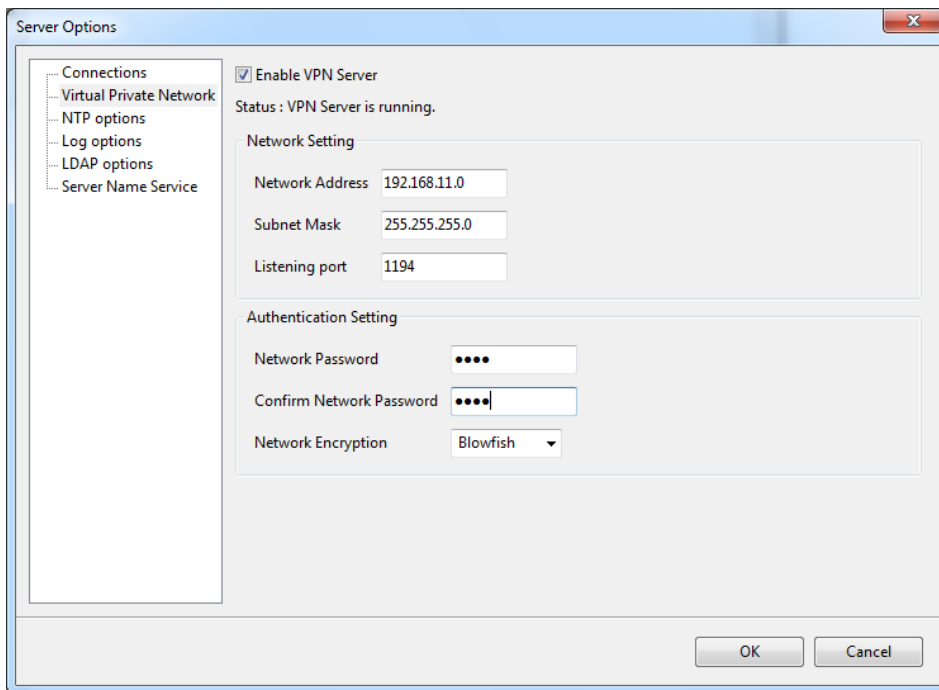
*Note 2:* If you use the VPN option, the maximum number of sensors that can be used by the unit will be reduced to 50.



## Set up VPN connection to APS

In the following pages, we'll describe how to set up the VPN connection to APS.

1. On APS, Go to **Settings>Server Option>Virtual Private Network**.



**Enable the VPN Server** by clicking on the checkbox, and then change the **Network Password** in Authentication Setting. Remember the **Network Encryption Mode** that you have chosen; you'll need to provide the same setting on the SP+.

*Note:* Make sure Network Password and Confirm Network Password is the same.

You can also make changes to the network settings, but you'll have to use the same port on both sides of the VPN.

*Note:* The VPN virtual network has to be an entirely different subnet from the one you're currently using, otherwise it won't work!

Ex. if you're using 192.168.1.x network subnet on your LAN, use 192.168.11.x (or any other that's different from 192.168.1.x) for the VPN link.

You could also configure the VPN settings using the APS HTML5 interface:

**Settings > Server Settings > VPN**

AKCP Pro Server

Server Settings

Connections

**VPN**

Event Logs

Notification

NTP

LDAP

Language

Services

### Virtual Private Network

Settings / Server Settings / Virtual Private Network

☒ Enable VPN Server

Status:

Network Settings

Network Address

192.168.22.0

Subnet Mask

255.255.255.0

Listening Port

1195

Authentication Settings

Network Encryption

AES

Network Password

SAVE

CANCEL

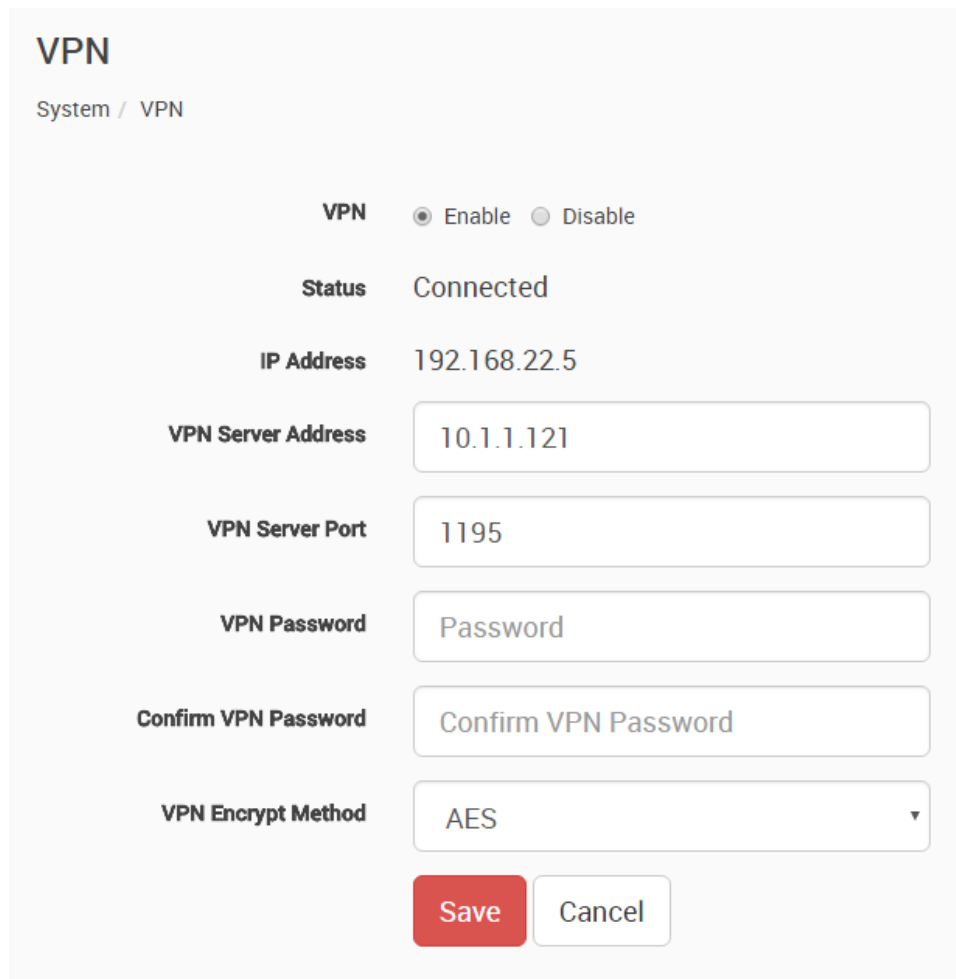
## 2. On the SP+ Web UI, enable the VPN

First change the VPN Client on the top to "Enabled" and configure the VPN Settings on the form:

- Specify the AKCP Pro Server's IP or DNS name in VPN Server Address
- Use the VPN Network Password that you have specified on APS
- Set up the the VPN Encrypt Method on the Encryption tab; use the same setting that you have specified on APS.

After clicking the "Save" button, the unit will ask you to reboot.

After the unit has rebooted and shows "Connected", it will show the VPN client's IP Address.



**VPN**

System / VPN

**VPN** ☒ Enable ☐ Disable

**Status** Connected

**IP Address** 192.168.22.5

**VPN Server Address**

**VPN Server Port**

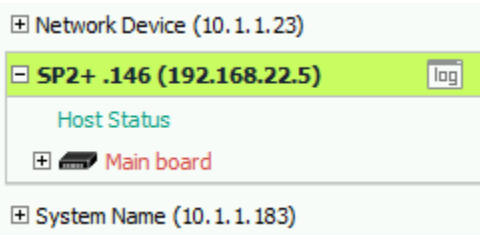
**VPN Password**

**Confirm VPN Password**

**VPN Encrypt Method**

**Save** **Cancel**

3. On your APS console, the SP+ unit will be added to the **Server Explorer** automatically, with an IP address automatically assigned from the range you specified.



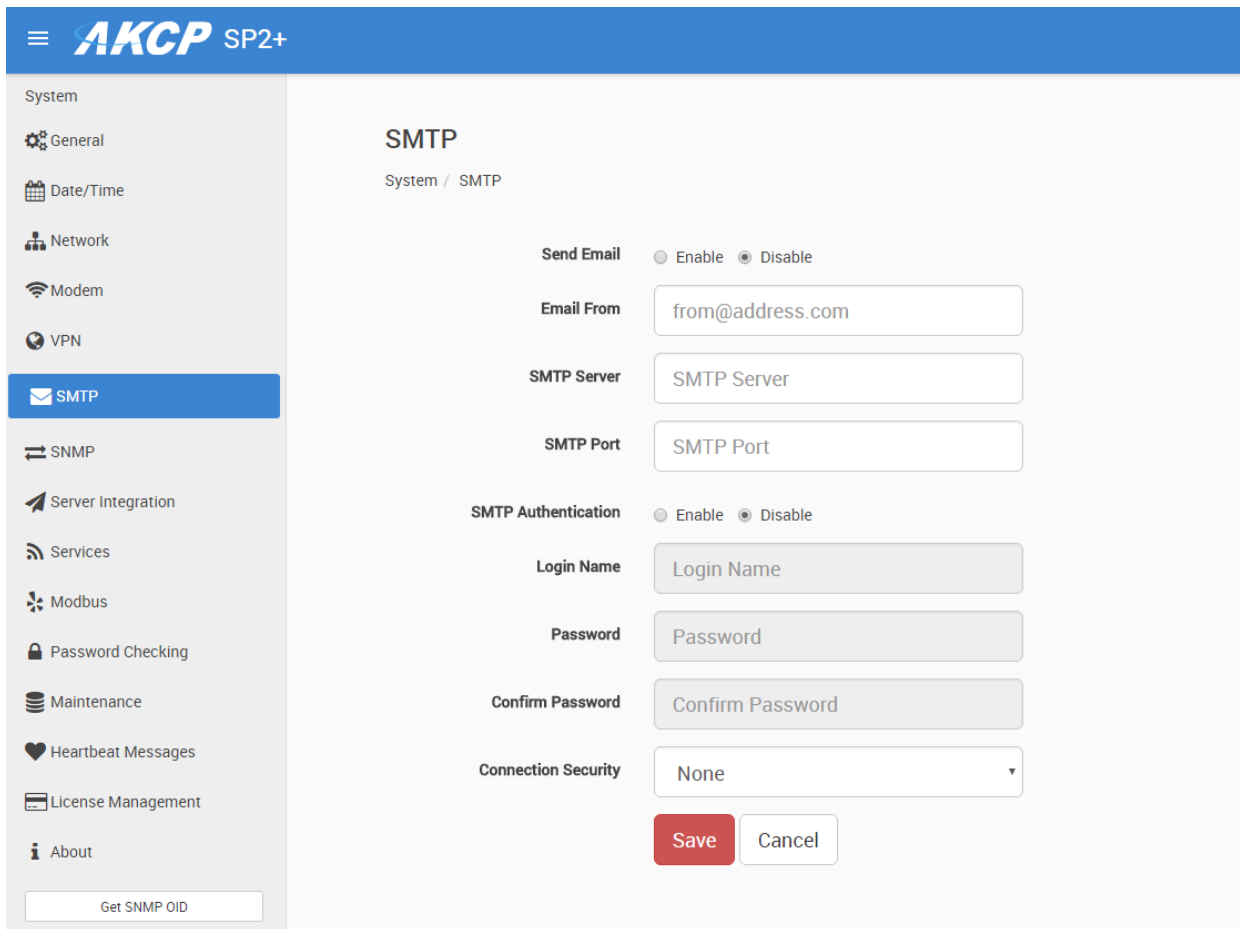
#### Important notes:

- A) If the SP+ was previously added to the APS using a LAN IP, it has to be removed (delete host). Connecting by VPN will use a different IP address for SP+ but the unit's MAC address is the same, and they'll be in conflict. This is not an issue if the unit has never been added to APS before.
- B) If the SP+ unit was previously monitored by APS, you should do a "reset to factory defaults" from the Maintenance menu to fully remove the APS integration from the unit (the existing IP configuration can be kept).
- C) The Virtual Sensor Ping cannot ping an IP address on the VPN network.

#### Important notes for VPN setup with modem connection:

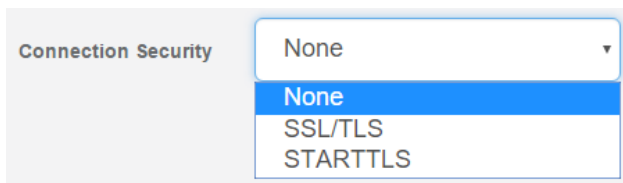
- Port Forwarding to the APS is needed to be set up on your router (allow incoming VPN connection on your selected port)
- The Internal Modem on the unit has to be configured first with the correct APN settings

## SMTP



The SMTP server configuration options are shown here, it's required to be set up for the Email actions.

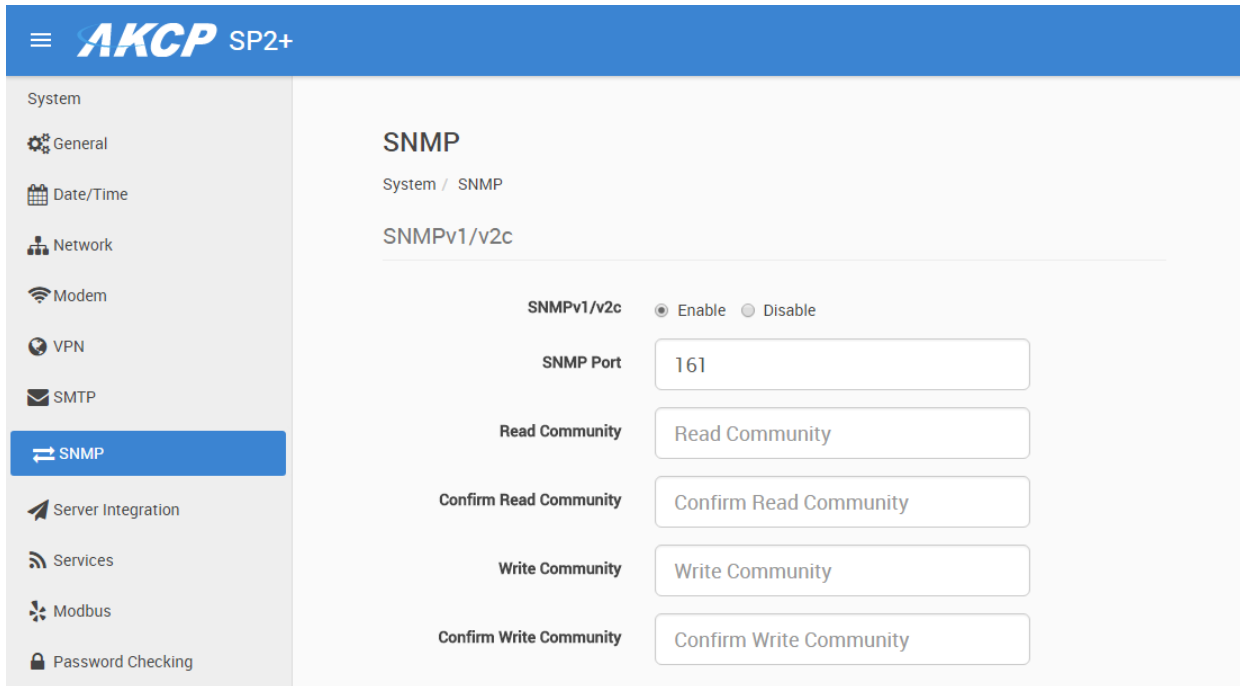
Fill out all parameters; the address in the *Email From* parameter will be used by the Email actions by default, but you could change it if your mail server supports it (when it's not required to match the SMTP user for example).



SSL/TLS and STARTTLS are supported for the connection security.

You could also turn off any email sending from the unit by disabling the *Send Email* option.

## SNMP



System / SNMP

SNMPv1/v2c

SNMPv1/v2c ☒ Enable ☐ Disable

SNMP Port

Read Community

Confirm Read Community

Write Community

Confirm Write Community

The SNMP service configuration options are shown here, it is required for SNMP operations. SNMPv1 is enabled by default, with community password “**public**”.

Scroll down for SNMPv3 options.

## SNMPv3

SNMPv3

This feature has no license. To request a license click [here](#).

SNMPv3
☐ Enable
☒ Disable

SNMPv3 Mode
Authentication Only

SNMPv3 engineID
AKCP
engineID parse: 80001F8804414B4350

SNMPv3 Username
admin

Access Privilege
Read Only

Authentication Protocol
SHA

SNMPv3 Pass Phrase
SNMPv3 Pass Phrase

Confirm SNMPv3 Pass Phrase
Confirm SNMPv3 Pass Phrase

Privacy Protocol
AES

Privacy Protocol Pass Phrase
Privacy Protocol Pass Phrase

Confirm Privacy Protocol Pass Phrase
Confirm Privacy Protocol Pass Phrase

The SNMPv3 options can be found by scrolling down on the SNMP page.

This feature requires a separate license. You can read more details about the licensing below in this manual.

Below we'll give a quick description of each setting:

<u>Level</u>	<u>Authentication</u>	<u>Encryption</u>	<u>Description</u>
No Authentication	Username	No	Match Username (same as SNMP v1/v2c)
Authentication Only	MD5 or SHA	No	Auth Based on Algorithms (check password)
Auth&Privacy	MD5 or SHA	Yes - DES	Auth Algorithms and Encryption

Basically if you select **No Authentication** then the setup will be the same as with SNMP v1 and v2c versions: authentication is only checked by unencrypted username.

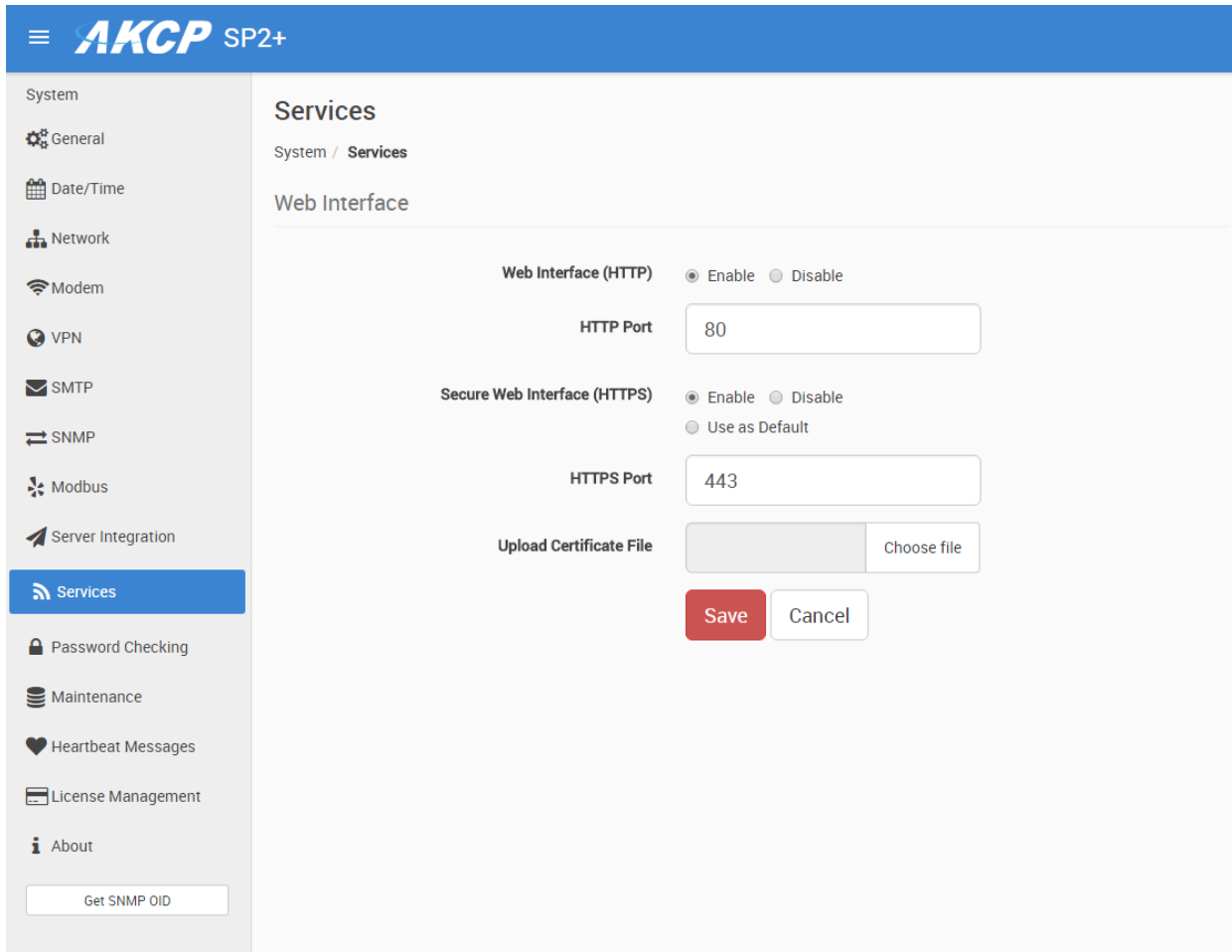
**Authentication Only** will provide password protection but no encryption.

**Authentication&Privacy** provides encrypted username and password protection.





## Services



**Services**

System / **Services**

Web Interface

Web Interface (HTTP) ☒ Enable ☐ Disable

HTTP Port

Secure Web Interface (HTTPS) ☒ Enable ☐ Disable

☐ Use as Default

HTTPS Port

Upload Certificate File

Get SNMP OID

You can close or change the ports used to access the unit’s web interface, disable HTTP and enable HTTPS only, which can also be set to be used as default.

On the SP+ family, the HTTPS supports TLS v1.1 and v1.2.  
The HTTPS cypher suites are not customizable.

Using the “Upload Certificate File” option you can upload an SSL certificate that will be used by the unit’s Web UI for HTTPS connection (see below).

## SSL Certificate

SSL certificates are generated for DNS host names and not IP addresses. You should set a host name for the SP+ unit in your local DNS server or DHCP server, and then generate the SSL certificate for that host name.

*Example:* spplus.mycompany.org

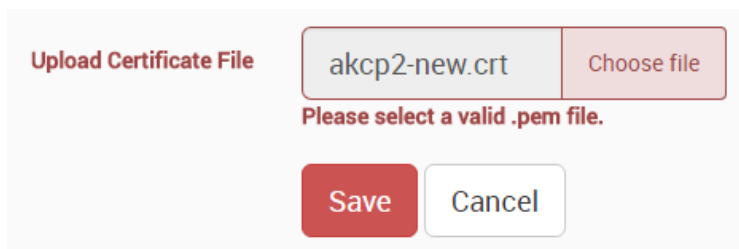
The unit's DNS host name is "spplus". Wildcard SSL certificates should also work, but this hasn't been tested.

If the name doesn't match with the one in the certificate, the browser will still show a security warning.

You can purchase a certificate from a trusted, verified Certificate Authority such as GoDaddy or use your company's own CA if you have one.

Please note that only non-password protected certificate files are supported.

When you select the file for uploading, you'll get a warning if the file is not in .PEM format:



The screenshot shows a web interface for uploading a certificate file. On the left, the text "Upload Certificate File" is displayed. To its right is a text input field containing the filename "akcp2-new.crt". Further right is a button labeled "Choose file". Below the input field, a red error message states: "Please select a valid .pem file." At the bottom of the dialog, there are two buttons: a red "Save" button and a white "Cancel" button with a grey border.

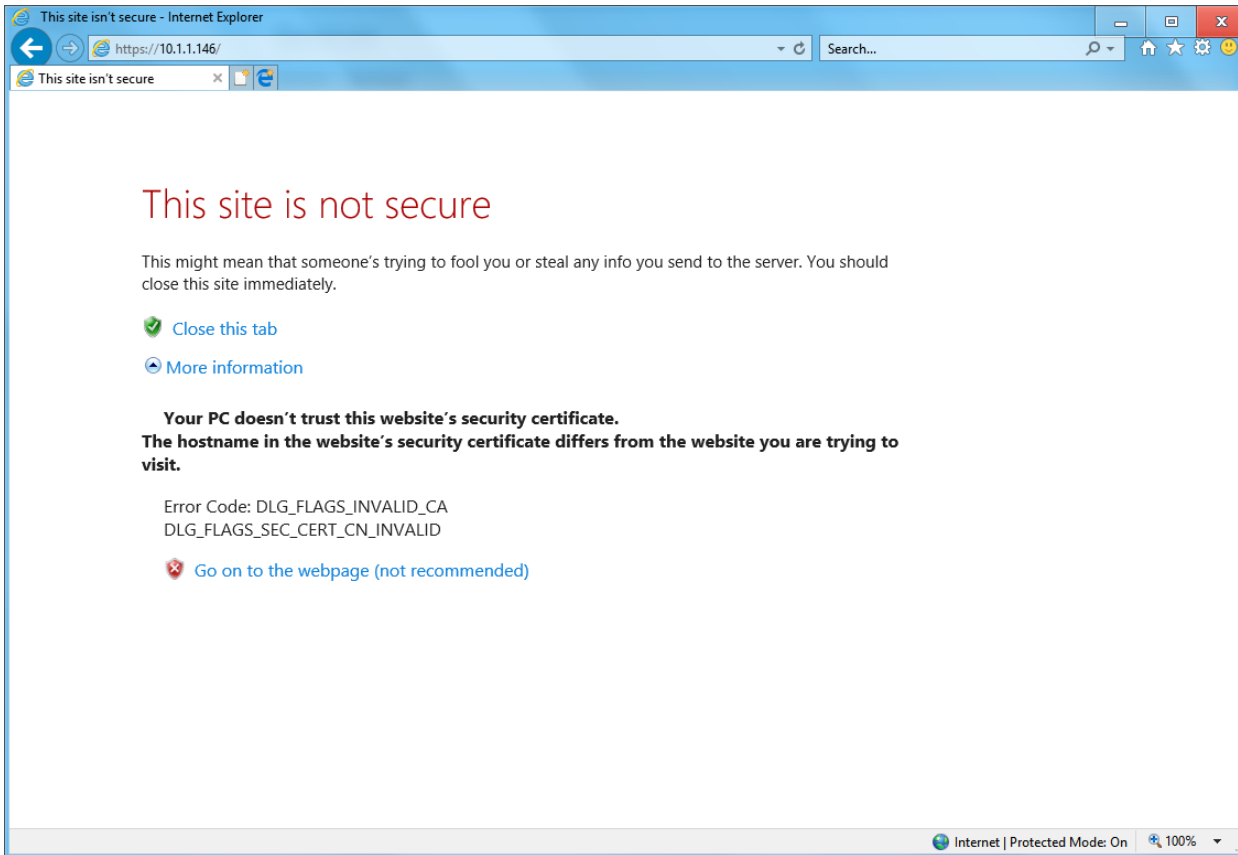
The .PEM file is the private key + certificate combined. You can copy them to one file using Notepad++ if you have 2 separate files, as shown below (it has to be in Unix Line Format and not Windows):

```

userkey.pem - Notepad++
File Edit Search View Encoding Language Settings Macro Run Plugins Window ?
1 -----BEGIN RSA PRIVATE KEY-----
2 MIIEowIBAAKCAQEA2wkw35S96aYwv9KK3RzABhpVB9S70pPQVmxRc2YhKrBFF
3 IfIV1/mn1IPqFVUJyKwpSIg9D38d0TCfSU5bMT400q61/V4gYQz2AU79qfVUQ19I
4 DhJq7CMp4HpLq9McrdJ+Rs0Xyy+Z3TITceiAktA6GDxY2mEfVUTPgGubEYw0pQqA
5 LEBN0WcRgU7nRipbp5f/EnAuYoLGN3DqwbB7zXmyg9ZRDQSFQKB69Sus11bNgw
6 8Mc5dmFCXgFucubQuUpynaR7fr1xfNIw3b9on7EkFM5TCCIT4wDSgzww0dpxp1CH
7 Eo3QVA/1+tS0Aqooa+ypuZ4cR4yIexYAdukseQIDAQABaoIBAQCf6t+S1viZC5WY
8 m0c4vFDXfRvG5mnpfbBpTyKqXVurcGXfRAU2FPIAA1b2WtTSyBRcSc5P12Q1x11v
9 md+5JRu6RsLeIhwi3HTFgYwJdQ20rT0gl+/REremunUPFxa071s5d1nXZeunQeo7
10 0DMNUM7TdFYgnTzh/8GNe622YZQEZFZxbCXBoLnFs/NVnMQ8Umx8+7prRhPAI4cA
11 v5hmcNJSFox0Wdn1c36wY9pvEkyoHdd35cA8d0J/5kVY3mxSS4HrzLhUwUnid3x5
12 RsVH0IHI0YEckmVBkoZrdLMcWl/400z6wjdB8X0aKw9aj2BtxUPKxIFRx/WsUcJTX
13 c+vl1brRAoG8AP6C2M252J0nZB5CKJTMaa4xKm/RazD8iWkjhF98fH2uKm6Z5fsR
14 /ek0ID0t+2xI7tX7jf0ZS5rz18e3ymB2970DnwcMi288yb00kcEwfk1Hc1Rrfag
15 +PZz1v5yctqTmhj3bMML6e837T5usvCvPhL2ByCycfeQ+J14TmXR1AoGBANxR
16 N16JsjfppcBDhwQ7HSL9W9YbV0s6VXEP9JYx1aNYwvQAWjle1ct0eBcm8LbCgq/
17 qmVZ185Id/v85mBP/w+tV5pnh3aejZG5rFJh0oezVf/+5311oeGN77e+LIcf7Ave
18 NikCNfHwERShvVa6y4eU5U4y4bzJ21UzhPQMD1AoGAIRHnqDPbiaDjdXpV1KT
19 jBF7vX6I5EapFXRMru+1EOT7N9SW+2D6ghjPDGx9R8exd04xjv0xx0/J5xok5n2R
20 StF4jldxcpgQzdAqxnE75oEEpsSFOI0x0Db+aYQCTrEZYqnoFWsA3A+ThgiR8CKH
21 XdwbNHCXgJ/TuwCavUdCDKcGyAdjYtm1A0i+mVwd94xxrgu1Ft4SeyYu7dsrMl+
22 1selrjuF/x3hr32TASlW+J5aMfWT4Yf4TMfjPGAQ49ThgeJu8/Pd2m1YK10zCHF
23 XzfVmoEH9Y/fwL69YydwJYy1LDVm4CaWaBZNGXmCYMv8Euxx4Ggt8YgjjwRP5w1
24 WRQwbQKBAj8pPlz3TC0sdgPYldxo7Cxo+0J1eBF1LrtMFk2H75WIp/QYYNcpJ3
25 PjaGvuxOay09tm1ZCRNACSTs08bhW404z0DOAIzF0ty4X3k06p5Mhbi0nbLeEZB
26 e6nvTbd2a5lmPhUdDhYiaZuk1czEp/P20RbNN0PRdsaoU2ZJJVEB
27 -----END RSA PRIVATE KEY-----
28 -----BEGIN CERTIFICATE-----
29 MIIDTjCCAjYCCQDLi/D8hB/C1DANBgkqhkiG9w0BAQUFAQBMAQswCQYDVQGEwJa
30 WjEwMBQGA1UECgAwVXN1c19Mb2NhZG1vb3RlcjEwMBQGA1UECgwwVXN1c19Mb2NhZS55
31 MQ0wCwYDVQDDARVz2VYMRwwGgYJKoZIhvcNAQkBFg11c2VYQHVzZXIubmV0MB4X
32 DTE3MDcwNDAA4MzkyM1oXDTE3MDcwMjA4MzkyM1owaTElMAkGA1UEBhMC10xFjAU
33 BgNVBAGMDVZzZXJfTG9jYXRpb24xFTATBgNVBAQMDmFVZzZXJfQ29tcGFueTEMAAG
34 A1UEAwwEVXN1c19Mb2NhZG1vb3RlcjEwMBQGA1UdEgN1c19Mb2NhZS55dDCCASIdQDYJ
35 KoZIHvcNAQEBBQADgEPADCCAQoCggEBANsJMMH+UvemML/Sit0cwAYaVQfUu9K
36 T0FZ1610XNmISqWxShyFdf5p9S06hVVCcisKUIIPQ9/HdEwn010WzE+NDqutf1e
37 IGEM9gFO/an1VENfSA4SauwjKeB6S6vTHK3SfkbNF8svmd0yE3HogJLQ0hg8Wnph
38 H1VEz4B8mxGFjqUKGcXATT1nKkYF050YqW6eX/xJwLmKcXjdW61mwe815soPWUXQ
39 kEHUgcgvUrrItWzYFvDHOXzhXBV4H1HLM0LlKcp2ke365cXzSMN2/aJ+xJBTOUwg
40 iE+MA00M8FthcadQhXKN0FQP5frUtAKqKGVsqbmeHEEm1HsWAHbpLHkCAwEAATAN
41 BgkqhkiG9w0BAQUFAAOCAQEAmmovR87VQaMYTtUI+pmTg1IFLsg8DULXFau7kymr
42 MPIuYFFLBNyZgeXHSsHuJvgveKh8mAnZiWewKK2RRkveBqZeb3XCutohuHTxU17
43 72lmHw1kuyWnQnRsupOwZcxR5c05uhXzvs1xP2HHzGa7h8m/Zzxaz00j5s8Ced
44 7ElbAKt7E5nr0D8yzESqb4uS8onhUuy7/XKdNHc8IBzNYtnTjwOdVLo9srQy4Ka9
45 Axm3yrInytIF+0mWt+VOiAfWlUX2J1Xmp8VJnM5H1UGh7NZG59qGvGKEx1qcKXxH
46 rr3DPTV54Xcws4eCE9YsvDBcbngd7Ye8cqTd/Wt+Qk1P4A==
47 -----END CERTIFICATE-----
48
Normal text file length: 2,884 lines: 48 Ln: 1 Col: 1 Sel: 0 | 0 Unix (LF) UTF-8 INS

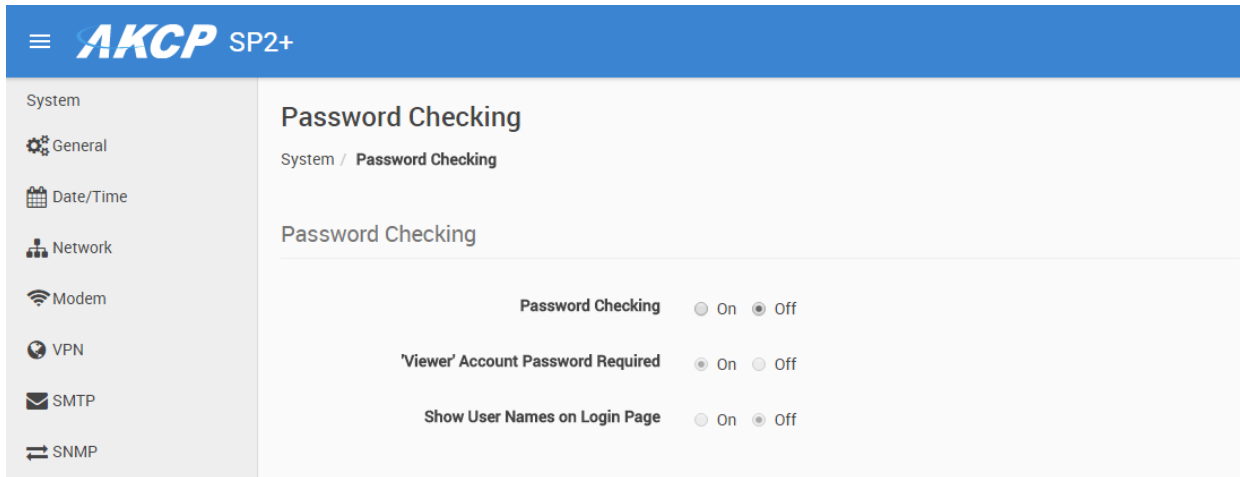
```

If you don't upload a certificate but enable HTTPS, a built-in certificate will be used. You'll get a browser warning upon opening the Web UI about an incorrect certificate. This is normal and you should add it as an exception or proceed, depending on your browser:





## Password Checking and Security



You can turn on the password checking for the Web UI to ensure only authenticated users have access to the unit. You can also specify to show all user names on the login page, or keep them confidential.

After you enable the password checking, you'll need to re-login.

If you don't remember the Admin password, you can hold the unit's reset button for 7-12 seconds to be able to log in to the Web UI without a password.

*Note 1:* The passwords can only be set from the unit's Web UI; this option is not available from APS.

*Note 2:* The default password is "public" for all access levels.

### Web UI user access levels and permissions

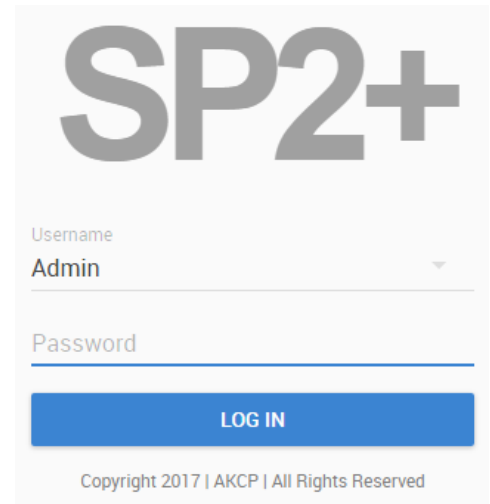
**Admin** - full access to all settings, system and notification configurations

**Viewer** - read-only guest access for every page

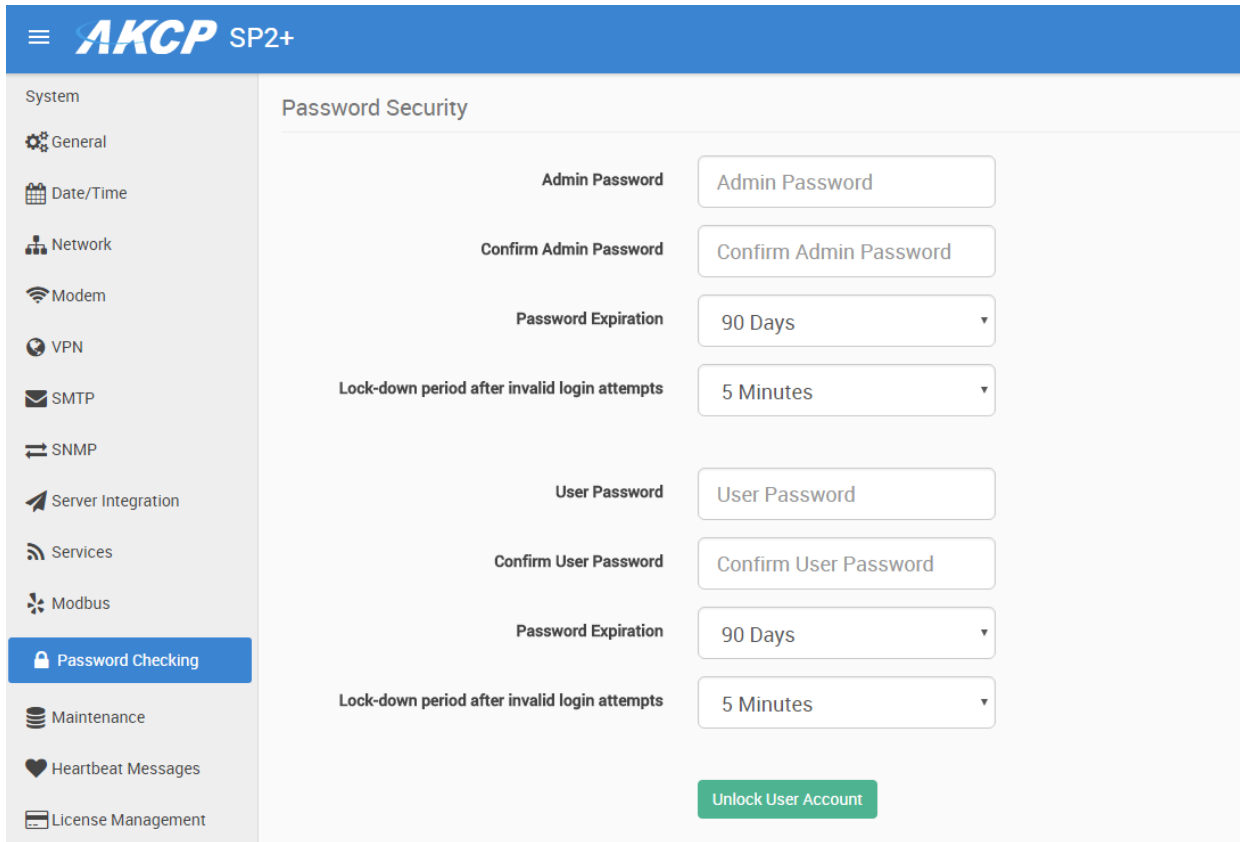
**User** - full access to most settings except for those which are the system-related such as network

In detail, the User access level provides these permissions in addition to the Viewer level:

- Allow modifying board/sensor settings
- Allow add/modify/remove notifications
- Allow add/modify/remove heartbeats
- Allow open/close the door on the Handle Lock
- Allow send configuration to Support
- Allow change Graph settings
- Allow change the Web UI language



## Password Security options



All user account types (Admin, User, Viewer) have adjustable password expiration and lockdown periods.

The password can be up to 15 characters (a-z, A-Z, 0-9 and special characters).

The IP address of the remote user's computer will be logged in the syslog so you can trace back each login session to its origin.

## Lockdown

User Password	<input type="password" value="User Password"/>
Confirm User Password	<input type="password" value="Confirm User Password"/>
Password Expiration	90 Days ▼
Lock-down period after invalid login attempts	5 Minutes ▼
Viewer Password	None
Confirm Viewer Password	1 Minute
	3 Minutes
	5 Minutes
	10 Minutes
	15 Minutes
	30 Minutes
	60 Minutes
	90 Minutes
	<b>Indefinitely</b>
Password Expiration	90 Days ▼

### ⚠ Error!

The username or password is incorrect.

### ⚠ Error!

The username or password is incorrect.

### ⚠ Error!

Your account has been locked because you have reached the maximum number of invalid login attempts. Please try again later.

### ⚠ Error!

Your account has been locked because you have reached the maximum number of invalid login attempts. Please try again later.

Username

User ▼

•

LOG IN

Copyright 2017 | AKCP | All Rights Reserved

The accounts can be set to lock down the account after 3 invalid login attempts, to prevent brute-force hacking attempts. You can specify how long the account will automatically unlock itself.

Note that for the Admin user, you can't select "indefinitely" as this would prevent you from logging in to the Web UI if it has locked itself.

If an account has been locked, you can unlock it immediately by logging in with the Admin user, and by using the green unlock button:

Unlock User Account



## Password Expiration

Admin Password	<input type="password" value="Admin Password"/>
Confirm Admin Password	<input type="password" value="Confirm Admin Password"/>
Password Expiration	<div>90 Days ▼</div> <div>None</div>
Lock-down period after invalid login attempts	<div>15 Days</div> <div>30 Days</div> <div>60 Days</div> <div>90 Days</div>
User Password	<input type="password" value="User Password"/>

You can specify password expiration between every 15 and 90 days for all account types. You could also set “none” to disable expiration.

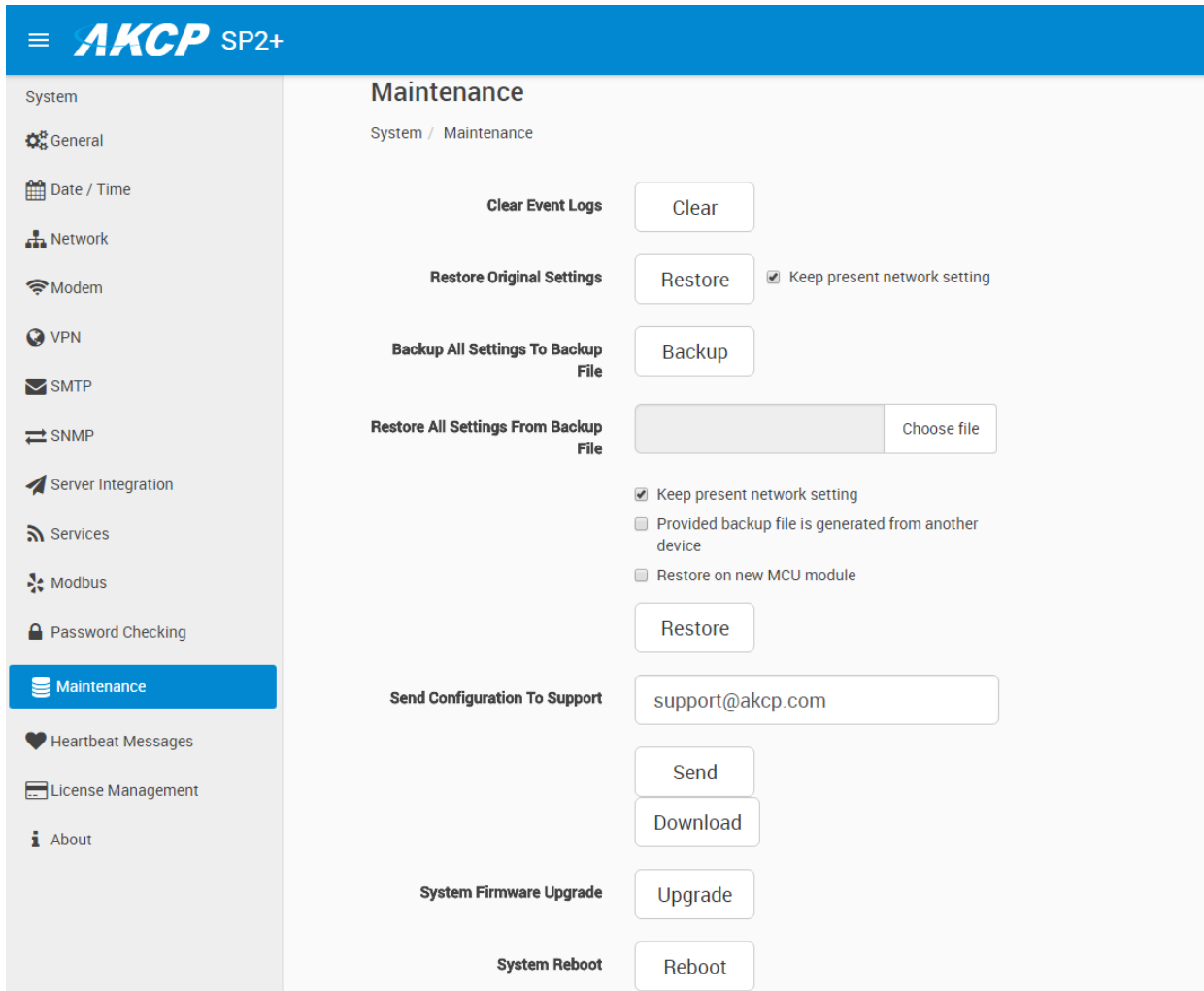
## Confirmation

Your password has expired. Would you like to change it now?

YES NO

You’ll get a notification upon login when the password has expired, and will be asked to change it. It’s advised to change it when asked, but you can still proceed without changing.

## Maintenance



On this page the following options are available:

**Clear Event Logs:** clears all logged events.

**Restore Original Settings:** removes all customized settings and returns the unit to factory defaults - you can also choose to keep the network configuration intact.

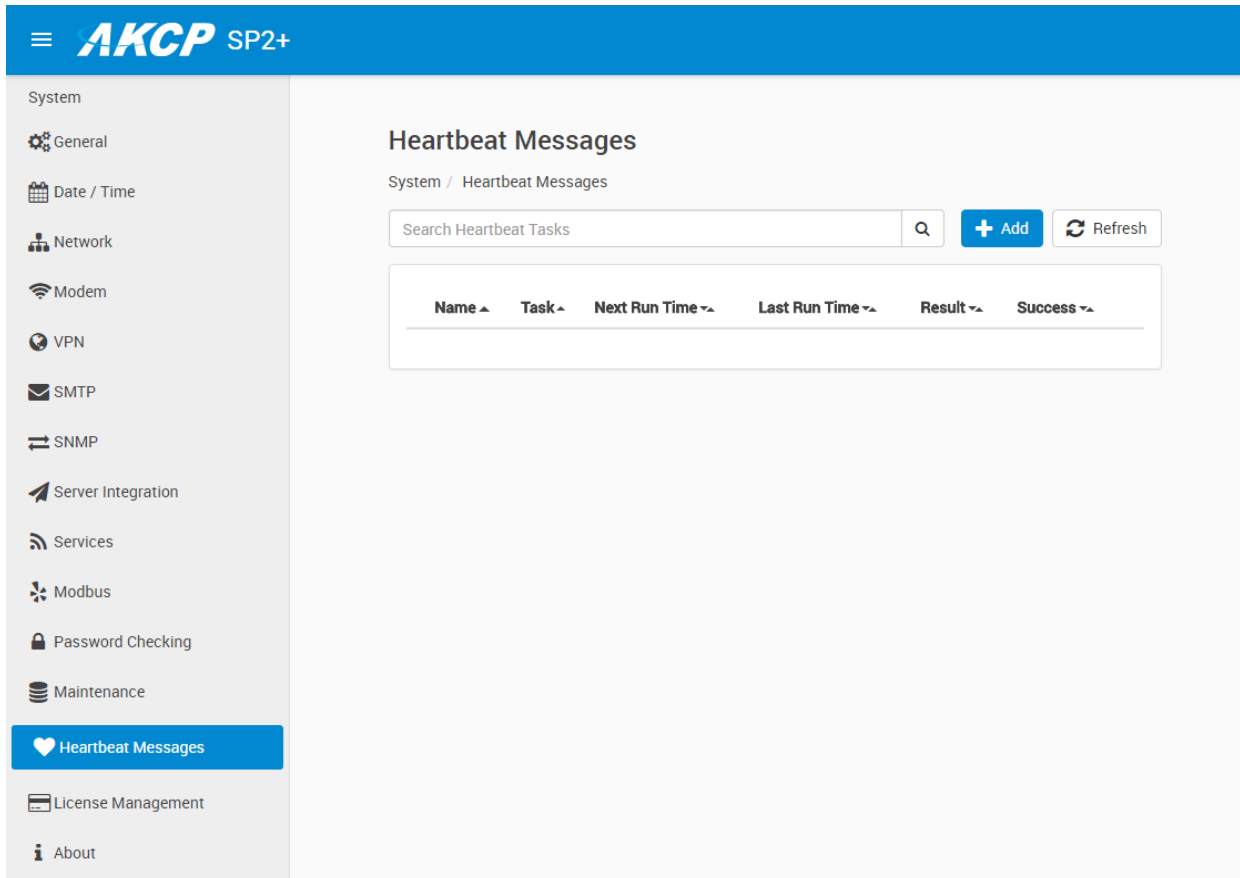
**Backup/Restore All Settings:** the unit's configuration can be backed up to a file and restored quickly and easily. You can choose to keep the present network settings, if the backup file is from another unit. The backup file contains all settings and notifications for the unit.

**Send Configuration To Support:** when asked by Support, this sends the unit's backup file to us. This also contains the device's internal logs which are useful for troubleshooting.

*System Firmware Upgrade:* allows you to upgrade to the latest firmware of the unit - alternatively you could upgrade from APS. We'll show you the process of the Web UI firmware upgrade below in another section.

*System Reboot:* this will initiate a software reboot of the unit, useful when you only have remote access. You'll need to specify the Admin user's password again.

## Heartbeat Messages



The screenshot displays the AKCP SP2+ web interface. On the left is a sidebar menu with various system settings. The main content area is titled "Heartbeat Messages" and includes a search bar, an "Add" button, and a "Refresh" button. Below these is a table with columns for Name, Task, Next Run Time, Last Run Time, Result, and Success. The "Heartbeat Messages" menu item in the sidebar is highlighted with a blue background.

Name ▲	Task ▲	Next Run Time ▼	Last Run Time ▼	Result ▼	Success ▼
--------	--------	-----------------	-----------------	----------	-----------

This feature allows you to set up periodical “keep alive” notifications task by email, SMS or SNMP Trap to indicate the unit is still working properly.

We'll show you how to set up these in another manual with the other notifications and actions.

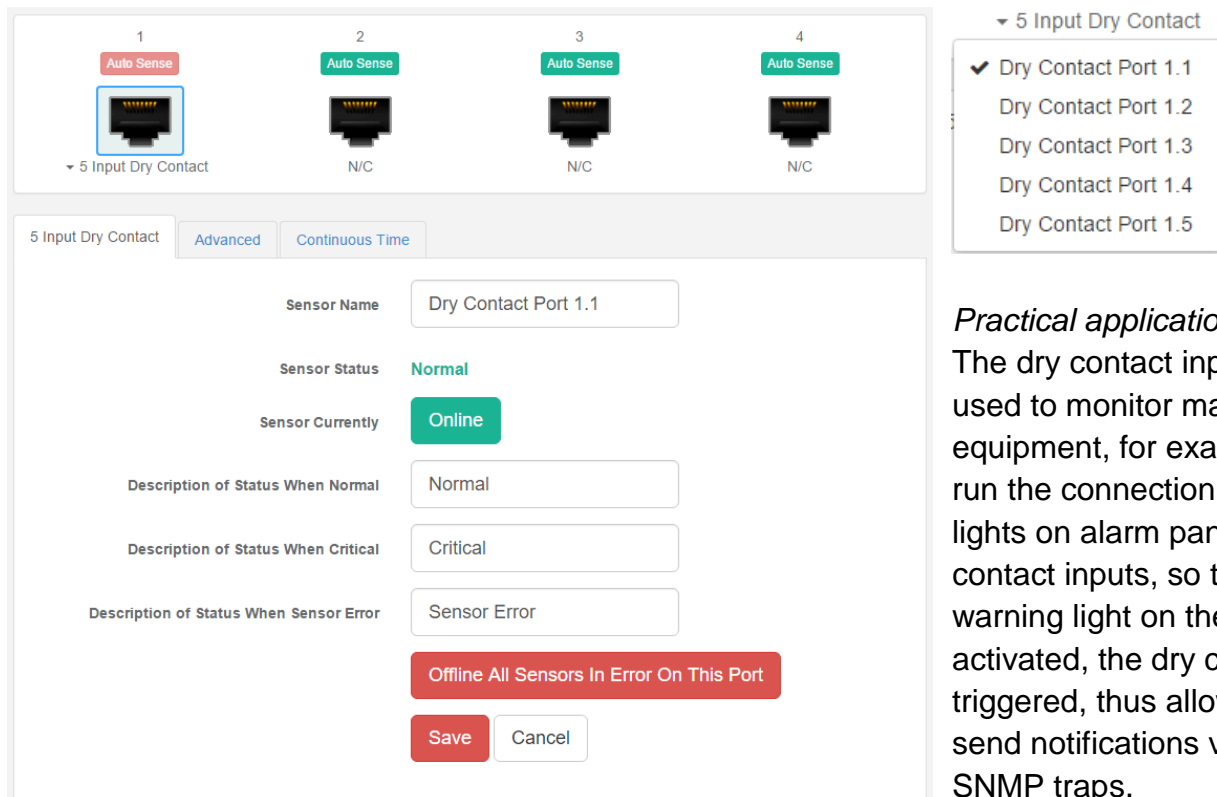


### Features that needs separate licensing:

- **5 Dry Contact option:** Allows you to connect 5 dry contacts (input only) per sensor ports. See below for more information.
- **Access Control User licenses over 100:** The first 100 user licenses are free (1 is always used for the Admin user), and you can get more licensed users in blocks of 100; the limit is 1000.
- **SNMPv3 feature:** Allows you to use and configure secure, authenticated SNMP trap messages.
- **Virtual Sensors:** Allows you to use and configure virtual sensors. The first 5 sensors are free, you can get more license in blocks of 5; the limit is 32.
- **VPN feature:** Currently the APS VPN integration is supported, to use a secure VPN channel between the unit and APS. Please note that when using this option, the number of maximum sensors that can be used by the unit will be reduced to 50.
- **3<sup>rd</sup> Party Modbus Device:** Allows you to easily integrate your Modbus devices with the SP+ units using configuration template files. This is only available on units with expansion ports.

### About Dry Contact Inputs

The dry contact inputs can be configured as **inputs only up to 5 Volts**.



The screenshot shows the configuration interface for Dry Contact inputs. At the top, there are four sensor ports labeled 1, 2, 3, and 4. Port 1 is configured as 'Auto Sense' and '5 Input Dry Contact'. Ports 2, 3, and 4 are also 'Auto Sense' but currently show 'N/C' (Not Connected). Below this, the '5 Input Dry Contact' configuration is shown in 'Advanced' mode. The 'Sensor Name' is 'Dry Contact Port 1.1'. The 'Sensor Status' is 'Normal' and the 'Sensor Currently' status is 'Online'. There are three text input fields for status descriptions: 'Description of Status When Normal' (set to 'Normal'), 'Description of Status When Critical' (set to 'Critical'), and 'Description of Status When Sensor Error' (set to 'Sensor Error'). At the bottom, there is a red button labeled 'Offline All Sensors In Error On This Port', and 'Save' and 'Cancel' buttons.

▼ 5 Input Dry Contact

- ✓ Dry Contact Port 1.1
- Dry Contact Port 1.2
- Dry Contact Port 1.3
- Dry Contact Port 1.4
- Dry Contact Port 1.5

5 Input Dry Contact | Advanced | Continuous Time

Sensor Name: Dry Contact Port 1.1

Sensor Status: Normal

Sensor Currently: Online

Description of Status When Normal: Normal

Description of Status When Critical: Critical

Description of Status When Sensor Error: Sensor Error

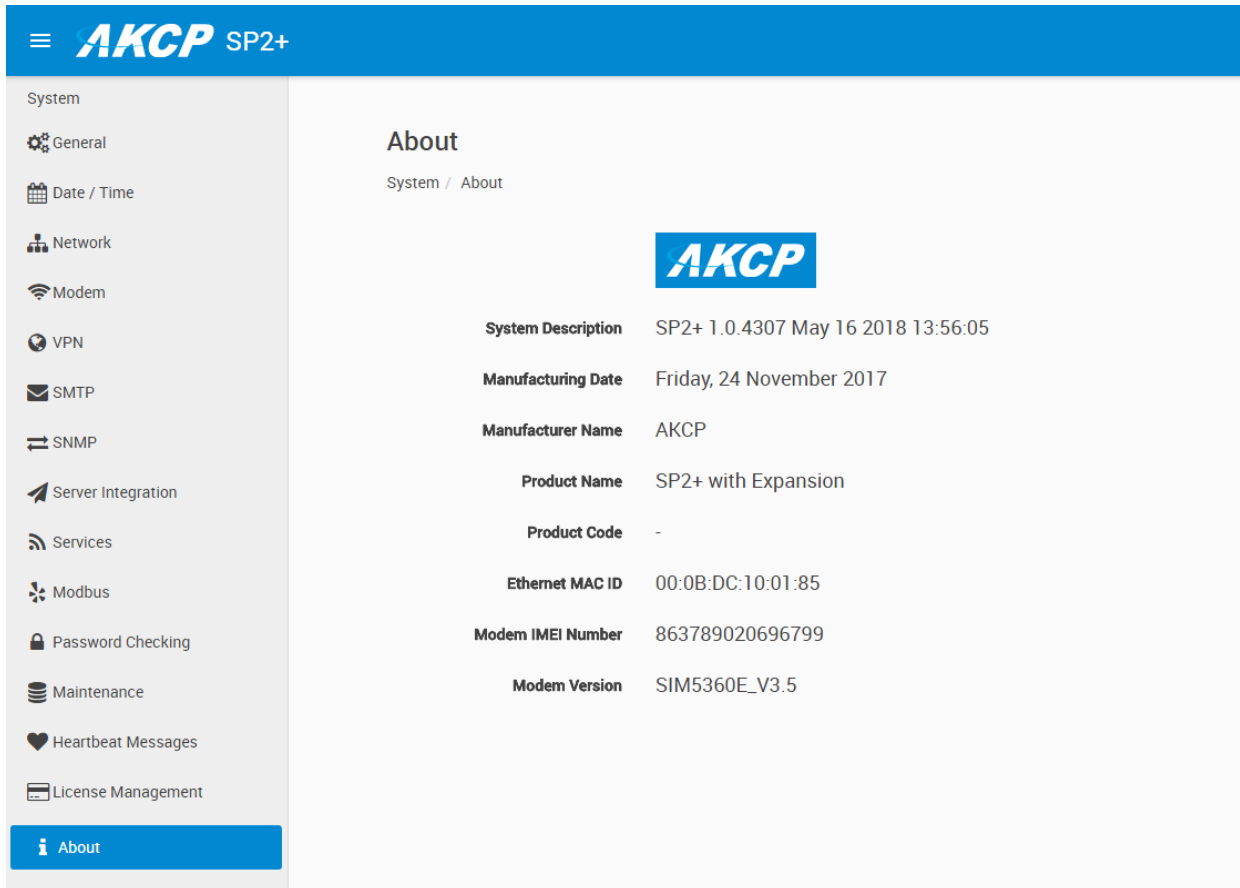
Offline All Sensors In Error On This Port


Save Cancel

### Practical applications:

The dry contact inputs can be used to monitor many types of equipment, for example, you can run the connection from warning lights on alarm panels to the dry contact inputs, so that when the warning light on the alarm panel is activated, the dry contact is triggered, thus allowing you to send notifications via emails or SNMP traps.

## About



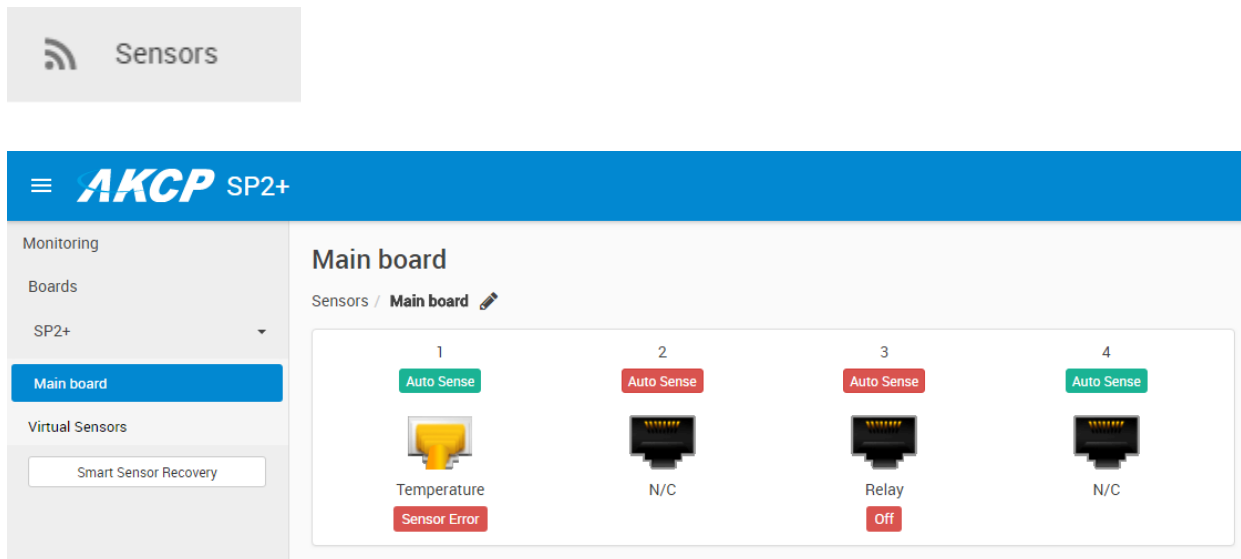
<b>About</b>	
System / About	
	
<b>System Description</b>	SP2+ 1.0.4307 May 16 2018 13:56:05
<b>Manufacturing Date</b>	Friday, 24 November 2017
<b>Manufacturer Name</b>	AKCP
<b>Product Name</b>	SP2+ with Expansion
<b>Product Code</b>	-
<b>Ethernet MAC ID</b>	00:0B:DC:10:01:85
<b>Modem IMEI Number</b>	863789020696799
<b>Modem Version</b>	SIM5360E_V3.5

This page shows information about the **Manufacturing Date**, **Ethernet MAC ID**, and **System Description** which are important when you request support.

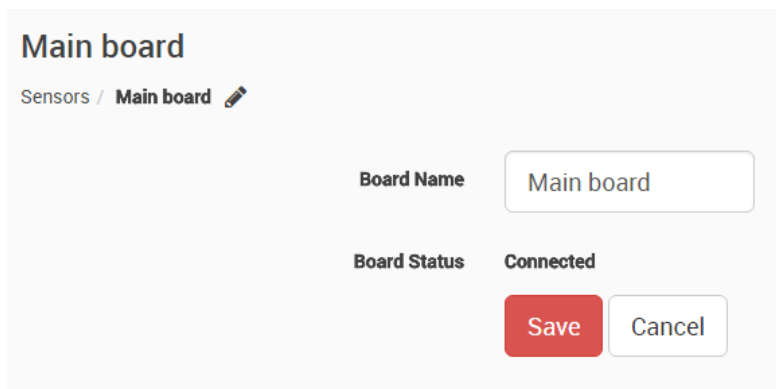
If equipped, the internal modem's details will be also listed here.


You could make a similar screenshot when you need help with your unit, as this information can help us diagnose the problem.

## Sensors page



On this page you can view all sensors connected to the unit per port. Non-connected sensors will be also displayed, until you re-attach or manually remove them from the configuration.



You could also rename the unit's Main board by clicking on the pencil icon: 

Please note the **maximum supported cable length to use with Thermal Map Sensors:**

Maximum extension cable length from the SP2+ sensor port to the TMS using CAT5 = 28 Feet

Maximum extension cable length from the SP2+ sensor port to the TMS using CAT5e & CAT6 = 60 Feet

**Important note:** If you're using analog pins on the sensor ports (with manually on-lined DCV sensors, and pin 7 of the RJ45 connector) make sure that the **voltage doesn't exceed 3 Volts**. Otherwise you can damage the unit!



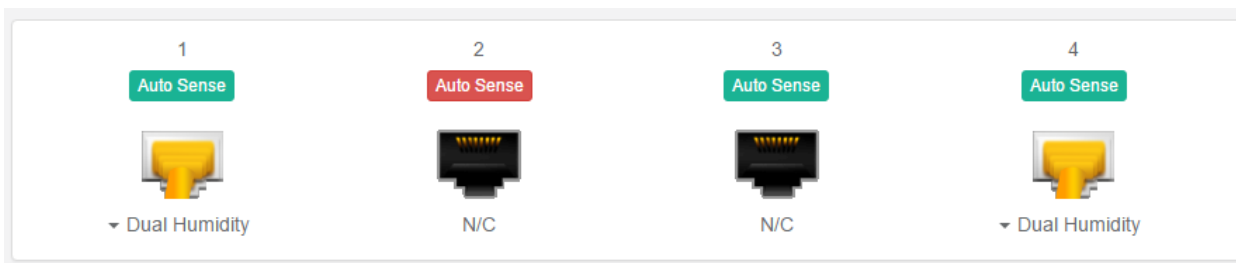
## General options for all sensors

You can change the following general options for all sensors:

### Disable Auto Sense

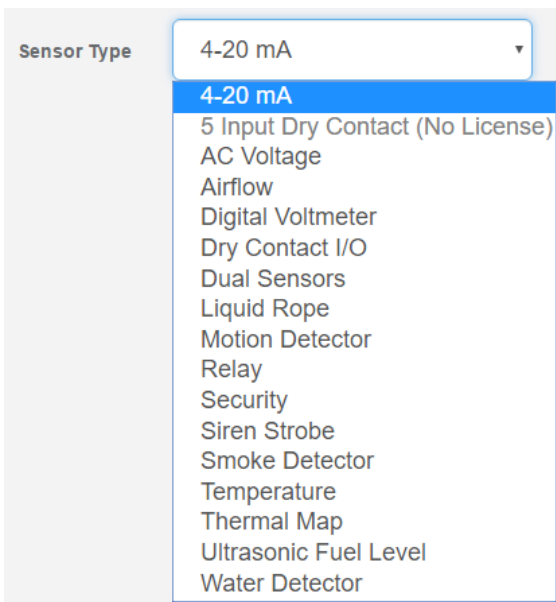
Auto Sense

Click on the **Auto Sense** button to turn off the automatic sensor detection for a port.



This feature is useful if you want to simulate a sensor (this works for Relay type sensors) or to prevent a sensor from going offline state. Note however that the sensor will be in “sensor error” state if the unit can’t get any reading from the sensor.

### Choose Sensor Type



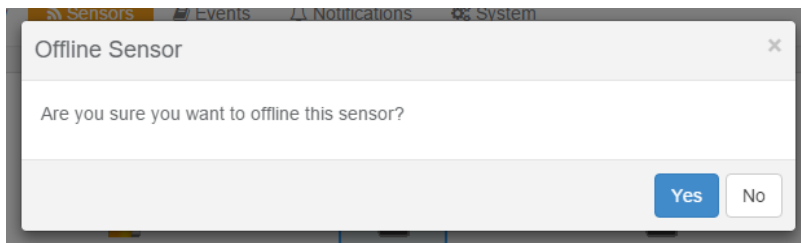
You can pre-configure a specific sensor type if needed, for example if you put the sensor offline before.

## Offline a sensor

Sensor Currently

Online

You can manually offline any sensor by clicking on the green **Online** button on the sensor's configuration page.



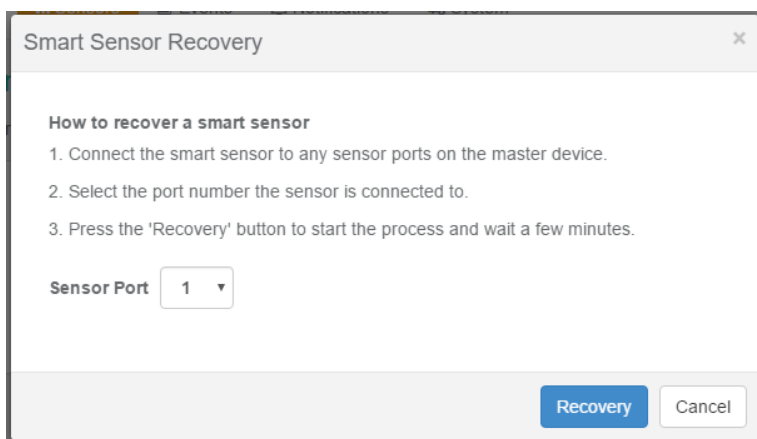
You'll be asked for confirmation in a popup window.

*Note:* if you change a sensor to “offline” it will no longer be displayed on the web interface. In order to reactivate it, you have to toggle it back to “online”.

## Smart Sensor Recovery

Smart Sensor Recovery

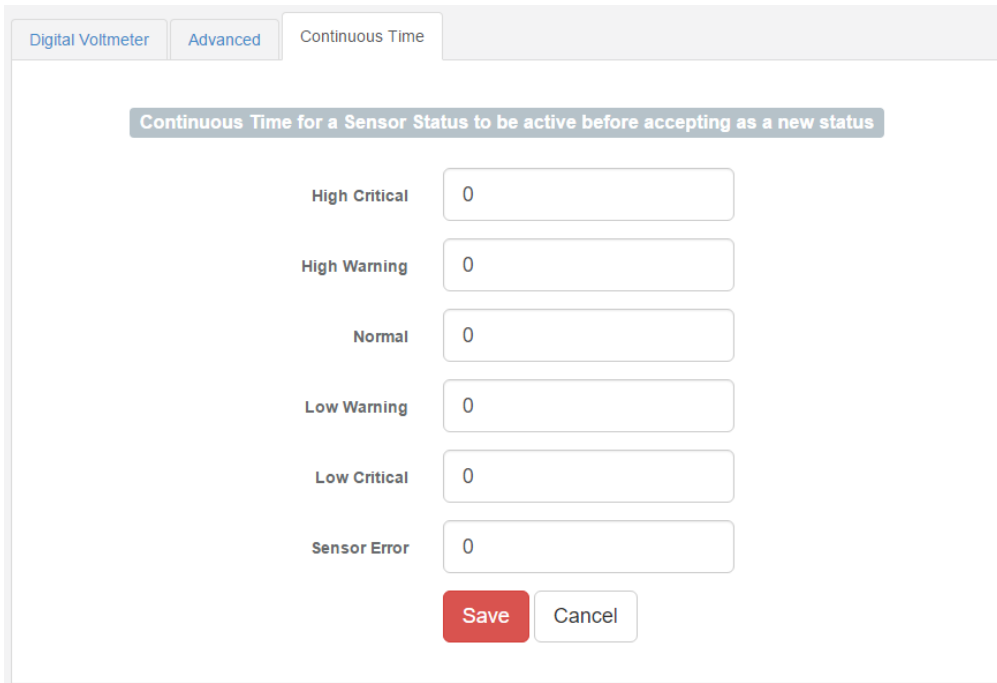
This feature will be used **only** for the new **Smart Sensor** type. The firmware can be updated on these sensors automatically, and if the upgrade has failed for some reason and the sensor becomes unresponsive, with this option you can recover them to the default firmware. It's not used by other sensor types.



*Note:*

If there's a difference between the version stored in the unit's firmware and the sensor's firmware, it will upgrade/downgrade the sensor's firmware upon powering up/reboot of the unit, or on sensor reconnection. If you need to downgrade the smart sensor firmware, you can only do so together with the unit's firmware.

## Change Continuous Time



Digital Voltmeter Advanced Continuous Time

Continuous Time for a Sensor Status to be active before accepting as a new status

High Critical	0
High Warning	0
Normal	0
Low Warning	0
Low Critical	0
Sensor Error	0

Save Cancel

The following advanced functions are for setting the time frame in which the system should delay a notification being triggered when a sensor gives a reading that exceeds the thresholds (high warning, normal, etc).

**Continuous Time to Report High Critical:** This helps to eliminate unnecessary messages during minor fluctuations. You can set the amount of time to delay a notification of a status change from high warning to high critical. Enter the time in seconds and press the “Save” button. The amount of time that can be entered is between 0 and 65535 seconds which equals approximately 18 hours.

**Continuous Time to Report High Warning:** As above but delays notification for “High Warning”.

**Continuous Time to Report for Normal:** As above but delays notification for return to “Normal” state.

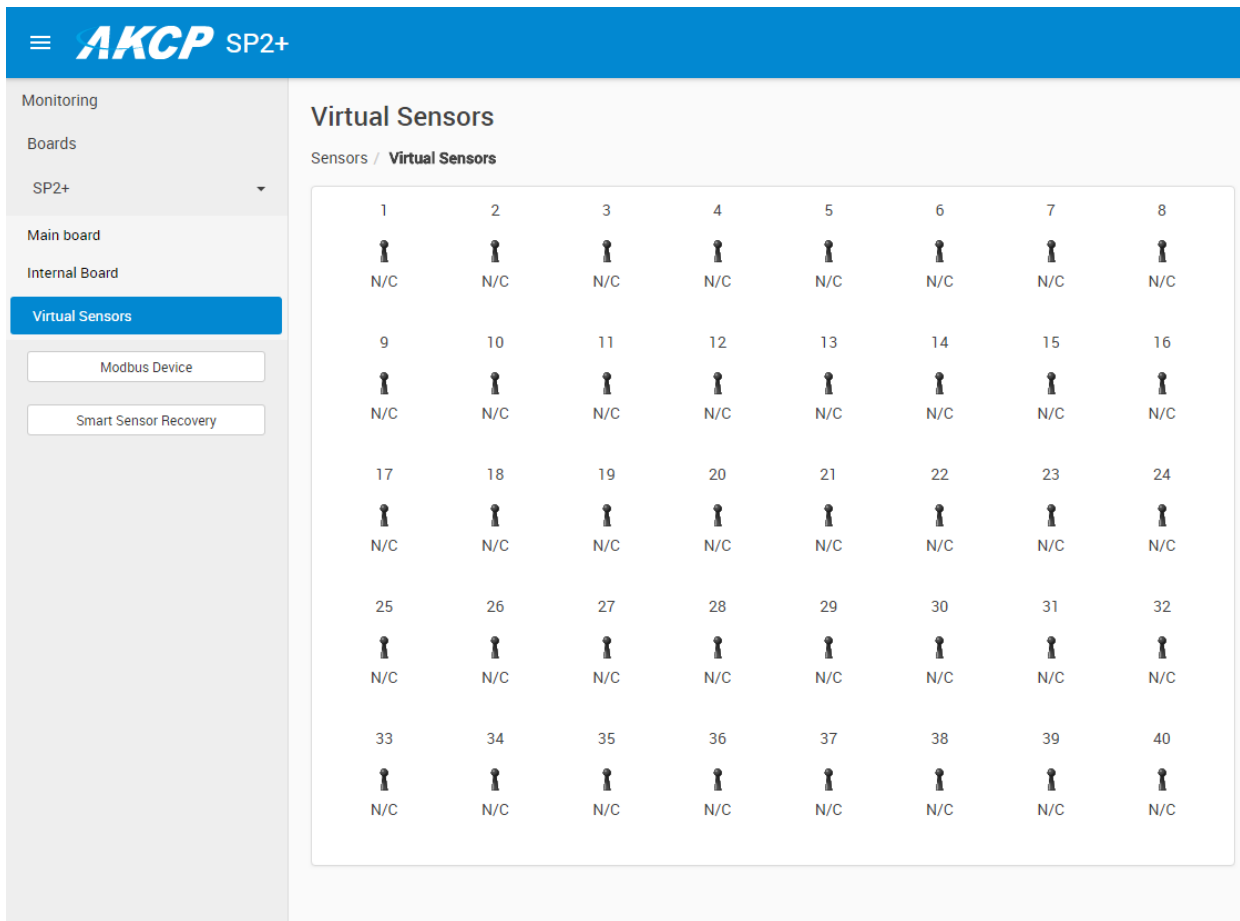
**Continuous Time to Report for Low Warning:** As above, but delays notification for “Low Warning” state.

**Continuous Time to Report for Low Critical:** As above but delays notification for “Low Critical” state.

**Continuous Time to Report for Sensor Error:** As above, but delays notification being sent for sensor going into an error state.

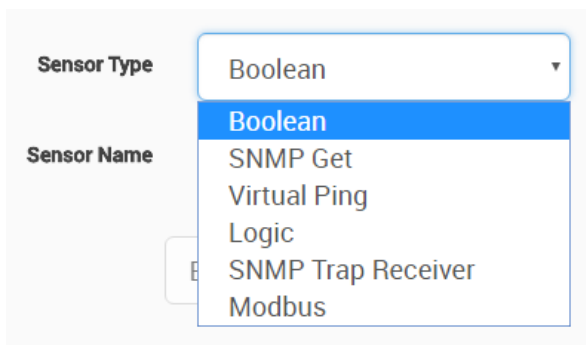
**Example:** An airflow sensor or humidity sensor may have temporary drops in readings which are normal operating characteristics; a logical time limit is set to show abnormal conditions.

## Virtual Sensors



The screenshot displays the 'Virtual Sensors' configuration page in the AKCP SP2+ interface. The page features a sidebar on the left with navigation options: Monitoring, Boards, SP2+, Main board, Internal Board, and Virtual Sensors (which is currently selected). Below the sidebar, there are two buttons: 'Modbus Device' and 'Smart Sensor Recovery'. The main content area is titled 'Virtual Sensors' and shows a grid of 40 sensors, numbered 1 through 40. Each sensor is represented by a key icon and the text 'N/C' (Not Configured) below it. The grid is organized into 5 rows and 8 columns.

On this page you can configure the Virtual Sensors. The first 5 sensors are free; if you need to use more you can purchase additional licenses (see the Licensing section in this manual).



The screenshot shows a close-up of the 'Sensor Type' dropdown menu in the Virtual Sensor configuration form. The dropdown is open, displaying a list of options: Boolean, SNMP Get, Virtual Ping, Logic, SNMP Trap Receiver, and Modbus. The 'Boolean' option is currently selected and highlighted in blue. The 'Sensor Name' field is visible below the dropdown and is currently empty.

Virtual Sensors can be a very powerful tool in your monitoring system. On the SP2+ you can have up to 32 of these virtual sensors and they allow for a multitude of applications.

SNMP Get, sensor logic evaluation and ping commands among others are all possible from the virtual sensors. An example use of this could be to use the SP2+ as a probe manager. If you had a SP2+ and multiple sensorProbe devices they could all be monitored, mapped and alerted via the SP2+. You can perform SNMP Get commands on a server to monitor memory or CPU load, or you can ping network enabled devices and be alerted if they go offline.

*Please note:*

The Virtual Sensor Ping cannot ping an IP address on the VPN network.

We'll explain more about the Virtual Sensors and how to configure them in the **Notifications manual**.

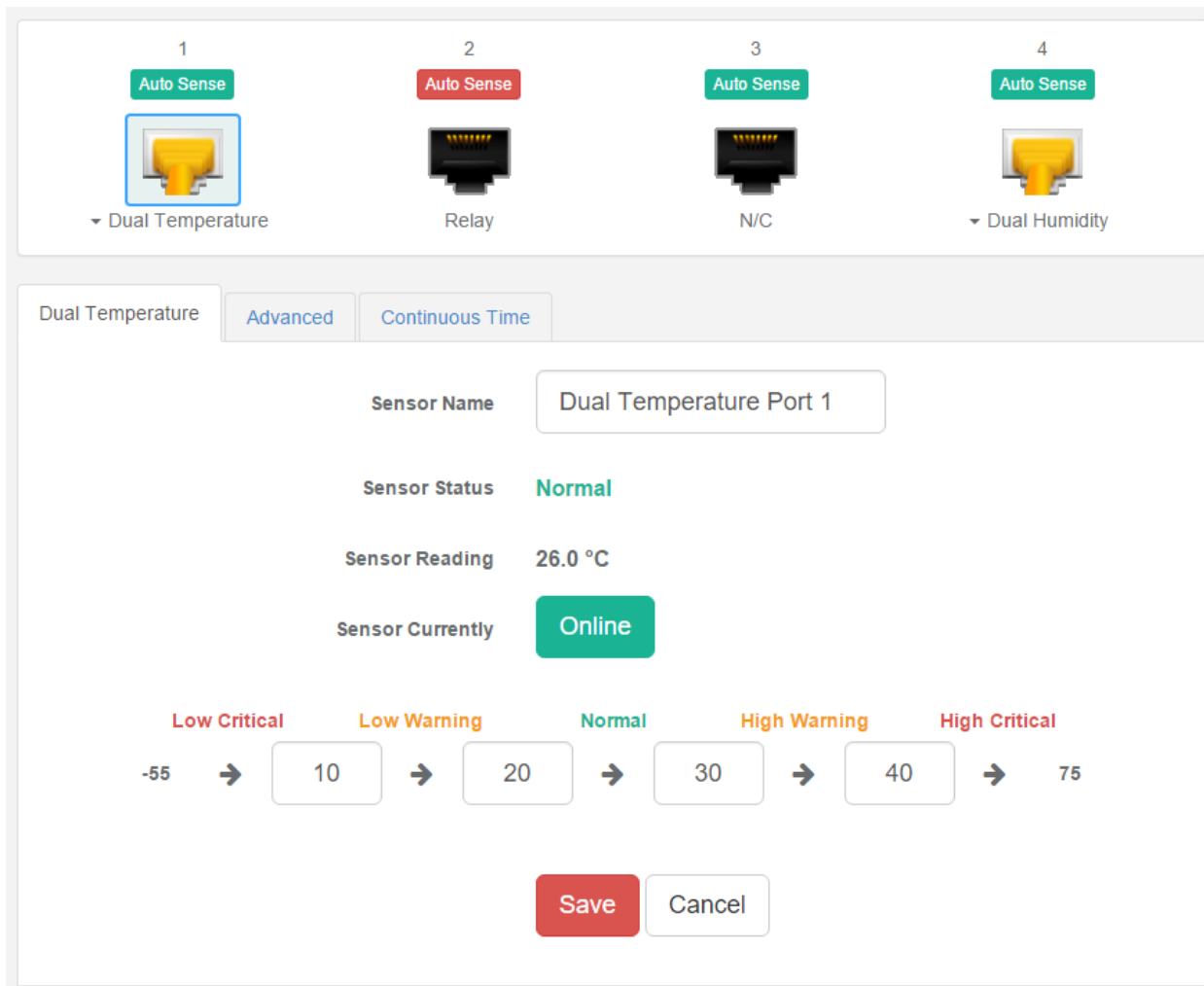
## Example sensor configuration

Below we'll show the configuration of 2 sensor types: the Temperature/Humidity and a Relay sensor. The configuration of these 2 types of sensors covers most settings that can be configured for other sensor types.

### Temperature/Humidity Sensor

Click on the sensor port where the sensor is connected to open the sensor's configuration.

*Note:* another way of accessing this page is to click on the sensor from the Summary page.



1 Auto Sense  
Dual Temperature

2 Auto Sense  
Relay

3 Auto Sense  
N/C

4 Auto Sense  
Dual Humidity

Dual Temperature Advanced Continuous Time

Sensor Name Dual Temperature Port 1

Sensor Status Normal

Sensor Reading 26.0 °C

Sensor Currently Online

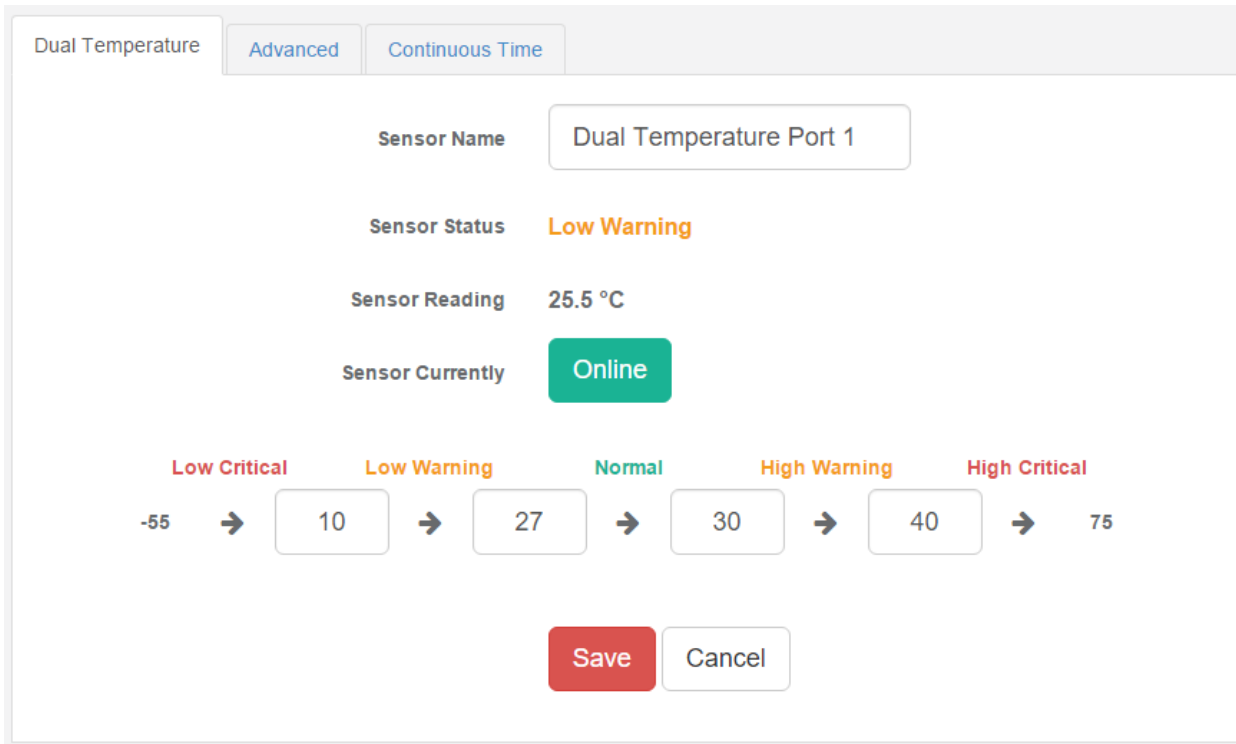
Low Critical Low Warning Normal High Warning High Critical

-55 → 10 → 20 → 30 → 40 → 75

Save Cancel

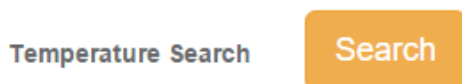
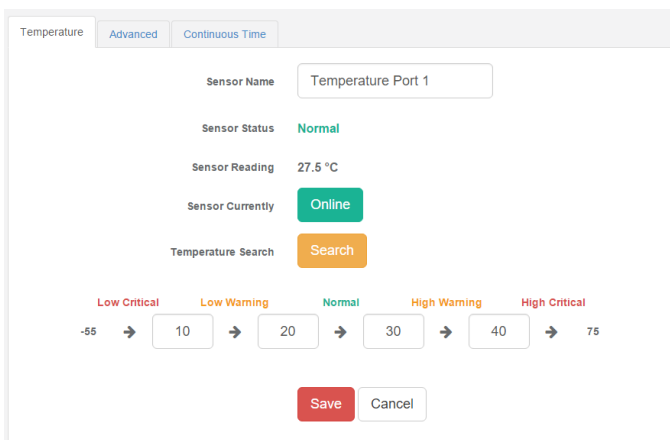
From this page you can carry out various operations. You can view the current status (normal, low critical, high critical etc), rename the sensor, put it offline and change the thresholds. In the screen shot above you can see the sensor is indicating a temperature of 26 degrees °C, and a status of Normal.

You can re-configure the thresholds for each sensor state. After changing a threshold value, click **“Save”**. In the next screen shot you can see that a threshold has been changed to 27 make a new “low warning” state, and along with it the sensor status has changed:



Note: the Humidity sensor has the same configuration options as the Temperature sensor.

You might see a **Temperature Search** option for the connected Temperature sensors:

What this button does is to search for new temperature sensors in a chain, if you’ve connected more than 1 sensor in a Daisy-Chain Temperature (DCT) sensor chain. It is **not** available for Thermal Map Sensors (TMS).

## Advanced sensor configuration for Temperature/Humidity sensors

Dual Temperature
Advanced
Continuous Time

Unit
☒ Celsius
☐ Fahrenheit

Rearm

Reading Offset

Data Collection Type

Enable Calendar
☐ On
☒ Off

Graph Enable
☒ Enable
☐ Disable

Filter Status
☐ Enable
☒ Disable

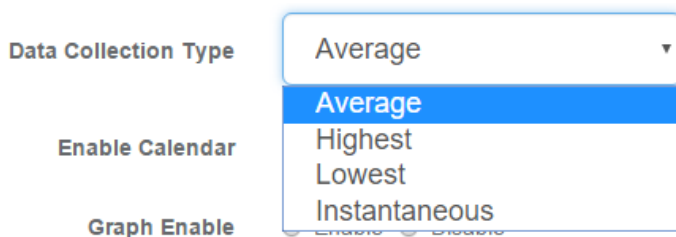
*Units:* changes units from °C to °F or vice versa.

*Rearm:* The Rearm parameter is useful for sensors whose values can vary such as the temperature and humidity sensors.

It is used to prevent the sensor from rapidly changing between two states. For example if the **Warning High** threshold for the temperature sensor is set to 80 degrees and the sensor were to vary between 79 and 80 you could be faced with a very large number of emails, traps, and events logged. The Rearm parameter prevents this by forcing the temperature to drop by the Rearm value before changing the state back to normal. In this example, if Rearm is set to 2 then the sensor would have to drop from 80 down to 77 before the status would change from **Warning High** back to normal.

*Reading Offset:* The Reading Offset feature is a calibration tool. If you wish to calibrate the temperature sensor, for example, you could enter an offset value of 5. This would mean if the sensor reads 20 degrees then it would record as 25 degrees. This figure can also be a minus figure (e.g. -5 would show 15 degrees instead of 20).





The image shows a web interface with three labels: "Data Collection Type", "Enable Calendar", and "Graph Enable". To the right of "Data Collection Type" is a dropdown menu. The menu is open, showing four options: "Average" (highlighted in blue), "Highest", "Lowest", and "Instantaneous". The "Enable Calendar" and "Graph Enable" labels are followed by input fields that are partially obscured by the dropdown menu.

**Data Collection Type:** This refers to the data collection from the sensor and how the data is then displayed on the graphs.

There are four options for the collection of data: Average, Highest, Lowest and Instantaneous. The default setting is "Average".

When the data collection type is set to "Average" the averaged value between 2 graph intervals is stored and output graphs for the daily, monthly, and yearly all have the same size on the screen. For the daily graph, each data point on the graph is one data point collected from the sensor. But for the monthly and yearly graph, in order to display more data into the same size as the daily graph, some consolidation on the data is needed. One data point on the monthly and yearly graph is an average of the sensor data in a range.

The maximum and minimum values showing on the monthly and yearly graphs are the value of this consolidated data and not the raw data over that period of that time.

When the Data Collection Type is set to the Highest setting then you will get the graphing output displaying the sensors highest average readings during sampling. This is the same for the Lowest setting (lowest average).

With the Instantaneous setting you can store the actual value of the sensor at the sampling interval without averaging.

**Graph Enable:** In order to save the data from the sensors on the unit you will need to enable the Graphing feature on the unit. You need to change the Enable Graph to the On position and click on the Save button to enable the graphing. Note that you could also enable the graphing from the Summary page.

**Filter Status:** The Sensor Filter Status is a feature that you can Enable or Disable and when enabled will check the sensor status. If the status of the sensor changes very rapidly, then it will report how many times the sensor status changed, instead of having multiple separate entries in the syslog. When enabled, this will report the changes and status of a sensor only once.

## Relay Sensor


Click on the sensor port where the sensor is connected to open the sensor's configuration.

*Note:* another way of accessing this page is to click on the sensor from the Summary page.

You can directly see the Relay's current status below the sensor port.

1

Auto Sense




Temperature

Sensor Error

2


Auto Sense



N/C

3

Auto Sense




Relay

Off

4

Auto Sense



N/C

Relay
Advanced

**Sensor Name**

**Sensor Status**

Off

**Sensor Currently**

Online

**Boot Up State**

☐ On ☒ Off

**Description of Status When Off**

**Description of Status When On**

Save

Cancel

**Boot Up State:** You can change the state of the relay when the unit starts. The default is Off.

**Description of Status When Relay Off/On:** These fields are the custom description, which will be displayed in the Relay Status field when the relay state is off/on. The same text is listed as one of the relay actions used to turn off/on the relay. Examples for this field are Close/Open Door, Turn Pump Off/On, Turn Light Off/On, etc.

**Color:** You could assign a custom color for the Off/On status: click on the color and the color picker will be shown.

## Advanced sensor configuration for Relay sensors

Relay
Advanced

Sensor Control

Action ▾

Toggle

5

5s

Enable Calendar

☐ On
☒ Off

Graph Enable

☐ Enable
☒ Disable

Filter Status

☐ Enable
☒ Disable

Save

Cancel

### Sensor Control:

Sensor Control

Action ▾

Toggle

On

Off

Toggle Off-On

Toggle On-Off

Enable Calendar

This button allows you to manually control the relay by controlling the cycle of the relay in an on-off-on or an off-on-off cycle. You can also set the “Toggle” (Cycle Time) here in seconds.

You don’t need to change an option to be able to link the relay to an action.

The following actions can be chosen in an action: Turn on until sensor normal, turn off until sensor normal, cycle the relay, turn on until acknowledged, and turn off until acknowledged.

We’ll explain more about these options in the Notifications manual.

**Enable Calendar:** Allows you to setup a *Calendar Profile* for what days and times you want or do not want the relay to be active.

**Enable Calendar** ☒ On ☐ Off

**Calendar Profile**

Calendar #1

Edit

Click on the **Edit** button next to a selected calendar to modify it.

Summary
Seasons
Events
Notifications
System

Calendar Filter

Calendar Name
Calendar #1

All	AM											PM												
	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11
Sunday																								
Monday																								
Tuesday																								
Wednesday																								
Thursday																								
Friday																								
Saturday																								

\* To select a minute, right click at a cell.
Working Hours / Inverse All

Close
Save changes

Blue cells means that the notification is on, white cells means it's off.

All	AM											PM												
	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11
Sunday																								
Monday																								
Tuesday																								
Wednesday																								
Thursday																								
Friday																								
Saturday																								

0	1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18	19
20	21	22	23	24	25	26	27	28	29
30	31	32	33	34	35	36	37	38	39
40	41	42	43	44	45	46	47	48	49
50	51	52	53	54	55	56	57	58	59

On ☐
Off ☒

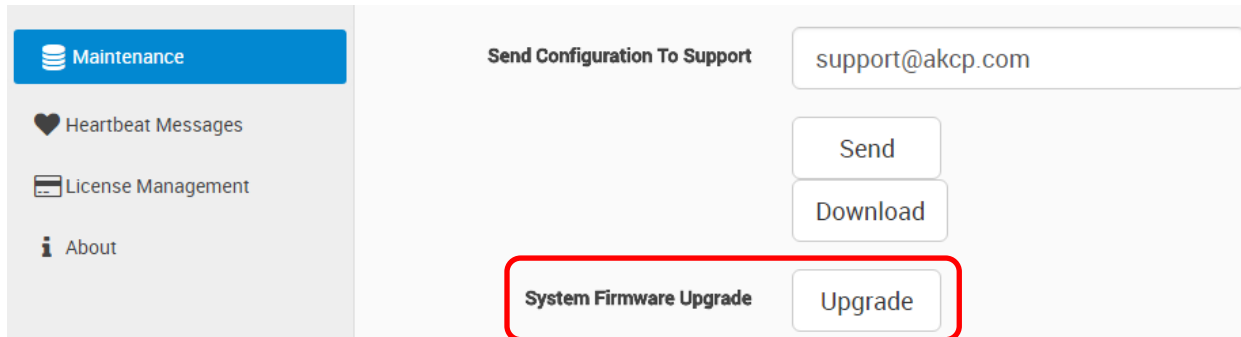
\* To select a minute, right click at a cell.

Working Hours / Inverse All

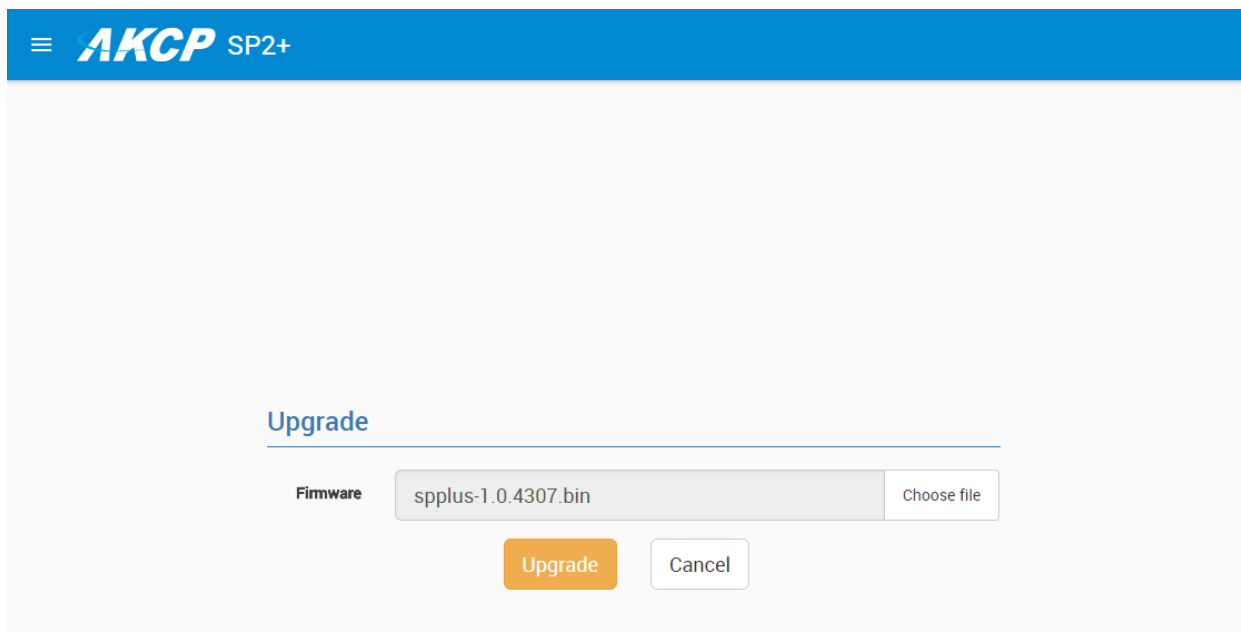
You can quickly select the Working Hours only, and specify a custom schedule down to minutes by right clicking on a cell.

## Firmware upgrade through the Web UI

The firmware upgrade process is very simple and straight-forward.



Open the **System/Maintenance** page and click on the **Upgrade** button at the System Firmware Upgrade section.



This will load the Upgrade page. Choose the firmware file from your PC and click on **Upgrade** to start the process.

The firmware file for SP2+ has the following format:

spplus-1.0.1804.bin

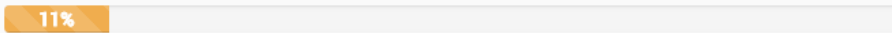
- where 1.0.1804 is the build version.

Uploading...



First the file will be uploaded to the unit...

Upgrading..



...then the upgrade process will run. The whole process can be done in a few minutes.  
The Power/Ethernet LED will be red during the upgrade.

Upgrade Completed



Refresh

The unit will reboot at the end of the upgrade. Click on the **Refresh** button to reload the Web UI.

## Network ports used by SP+ units

Below we list the ports used by our SP+ units. Most of them are needed for external communications with APS, and to use network features.

Most ports are user configurable, these are the default ports.

Main ports:

- 5000 TCP for RPC with APS - note: not fully user configurable
- 161 TCP/UDP for SNMP
- 80 TCP for HTTP of Web UI

Other ports:

- 123 TCP for NTP (Network Time Protocol) - note: port is not user configurable
- 162 TCP/UDP for SNMP Trap
- 25 TCP for Email SMTP (if used)
- 1194 TCP/UDP for VPN (if used)
- 443 TCP for HTTPS of Web UI
- 502 TCP for Modbus TCP (if used)



Please contact [support@akcp.com](mailto:support@akcp.com) if you have any further technical questions or problems.

**Thanks for Choosing AKCP!**