AKCP SP-WTS Wireless Tunnel Server User Guide

Contents

AKCP SP-WTS Wireless Tunnel Server

Specifications:

- Supports up to 30 AKCP Wireless TunnelTM Sensors
- Accessible via Ethernet connectivity
- Supports access to sensor data via Web UI, SNMP, Modbus TCP/IP or MQTT
- Includes 3 wired sensor ports (RJ45)
- Does not support Wi-Fi and BEB expansion functionality

Product Usage Instructions

A) How to first power on the unit and get access to the WebUI

1. Connect the 5.5V Micro USB cable to power on the unit.
2. Connect the Ethernet cable to establish a network connection.
3. Configure your network card's IP with IPv4 address:1 92.168.0.200.
4. Connect the SP-WTS directly to your PC or laptop's network card with a crossover cable.
5. Open a supported browser (Chrome or Firefox) and access the WebUI using the default IP: 192.168.0.100.

B) How to add a Wireless Sensor (SP-WT) to the SP-WTS
Wireless sensors communicate with the SP-WTS using radio frequency signals. Follow these steps to add a wireless sensor:

1. Pair the wireless sensor with the SP-WTS.
2. It is recommended to first connect the wired sensor to the SP-WT before adding it to the SP-WTS to avoid detection delays.

C) SP-WTS Network Settings
Configure the network settings of the SP-WTS according to your network requirements for seamless connectivity.

D) License Management
Manage licenses for the SP-WTS as needed for optimal functionality.

E) Replacing the Batteries
If applicable, follow the instructions provided in the user manual for replacing batteries in the device.

F) Cloud WebUI
If using cloud services, refer to the manual for information on configuring and utilizing the Cloud WebUI.

G) Features Overview: Virtual Sensors, Graphing
Explore and utilize features such as Virtual Sensors and Graphing capabilities for enhanced monitoring and data visualization.

H) SP-WT 4SP Information
Refer to specific details regarding SP-WT 4SP for comprehensive understanding and usage.

FAQ:

- **Q: How many wireless sensors can the SP-WTS support?**

  A: The SP-WTS can support up to 30 AKCP Wireless TunnelTM Sensors.
- **Q: Can I connect the SP-WTS to a Wi-Fi network?**

  A: No, the SP-WTS does not support Wi-Fi connectivity.

SP-WTS QuickStart Guide

AKCP sensorProbe – Wireless Tunnel™ Server (SP-WTS)
The SP-WTS is a new product based on sensorProbe+ series, and supports up to 30 AKCP Wireless Tunnel™ Sensors.
SP-WTS can collect, store and graph data from all AKCP wireless sensors. It is accessible via Ethernet connectivity to access sensor data via the built-in Web UI, over SNMP, Modbus TCP/IP or MQTT. AKCPro Server provides central monitoring of multiple gateways.
SP-WTS includes 3 wired sensor ports (RJ45).

Options available:

- 4G Cellular Modem and GPS
- Modbus RS485 port
- PoE (planned, not yet available)

Note: SP-WTS does not support Wi-Fi and BEB expansion functionality.

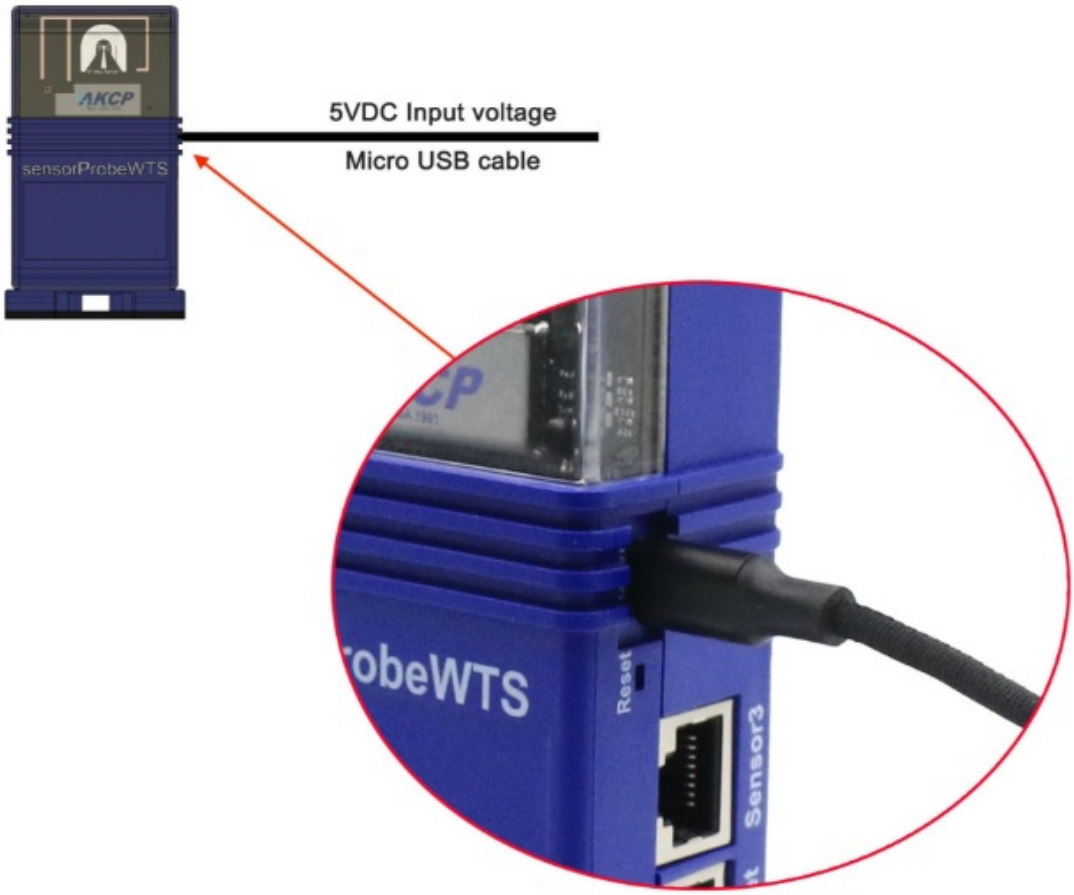
In this QuickStart Guide, we will cover the following:

- How to first power on the unit and get access to the WebUI
- How to add a Wireless Sensor (SP-WT) to the SP-WTS
- SP-WTS Network Settings
- License Management
- Replacing the batteries
- Cloud WebUI
- Features overview: Virtual Sensors, Graphing
- SP-WT 4SP information

A) How to first power on the unit and get access to the WebUI
To access and configure your SP-WTS unit:

- connect the 5.5VDC Micro USB power adapter
- connect a network (LAN) cable to the unit's Ethernet port
- power it on
- open a web browser and access the WebUI

Connecting the 5.5V Micro USB cable

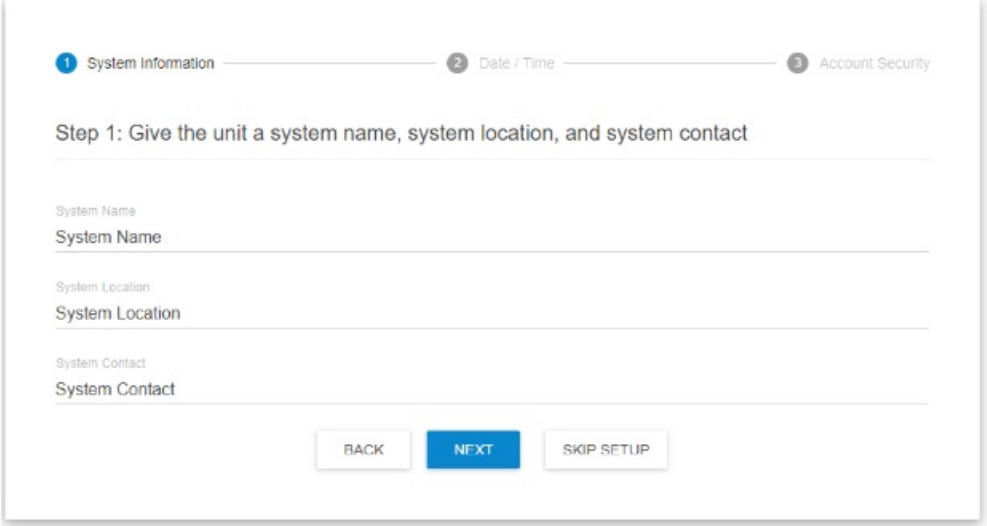


Connecting the Ethernet cable

- Using a PC or laptop, configure your network card's IP with IPv4 address: 192.168.0.200
- Connect the SP-WTS directly to your PC or laptop's network card with a crossover cable.
- First time configuration
- After the SP-WTS has boot up, open the WebUI using the unit's default IP 192.168.0.100

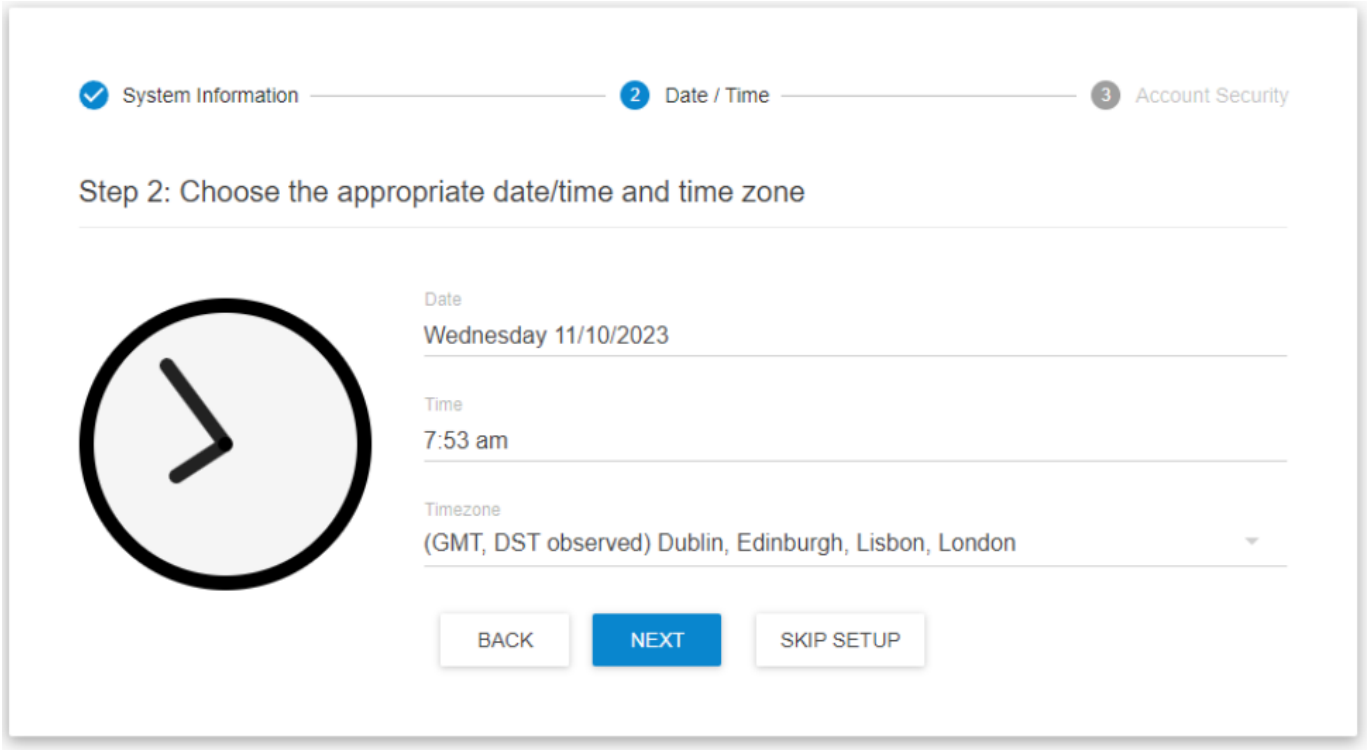
- Open http://192.168.0.100 with a supported browser (Chrome or Firefox).
- **Note:** the units ship with DHCP enabled. If you connect the unit to your local network instead of a direct crossover cable connection, you will need to find its IP address from your router's DHCP IP list.
- **Note2:** the units ship with CloudAPS connection enabled. If you want to use your unit with a local APS, you will have to disable this option first. Please refer to the Cloud APS manual for more information.

Welcome to SP-WTS Setup In the next few screens, we will help you set up your system information, date/time, network connections, and account security. This process will get your unit fully functional and ready to go.



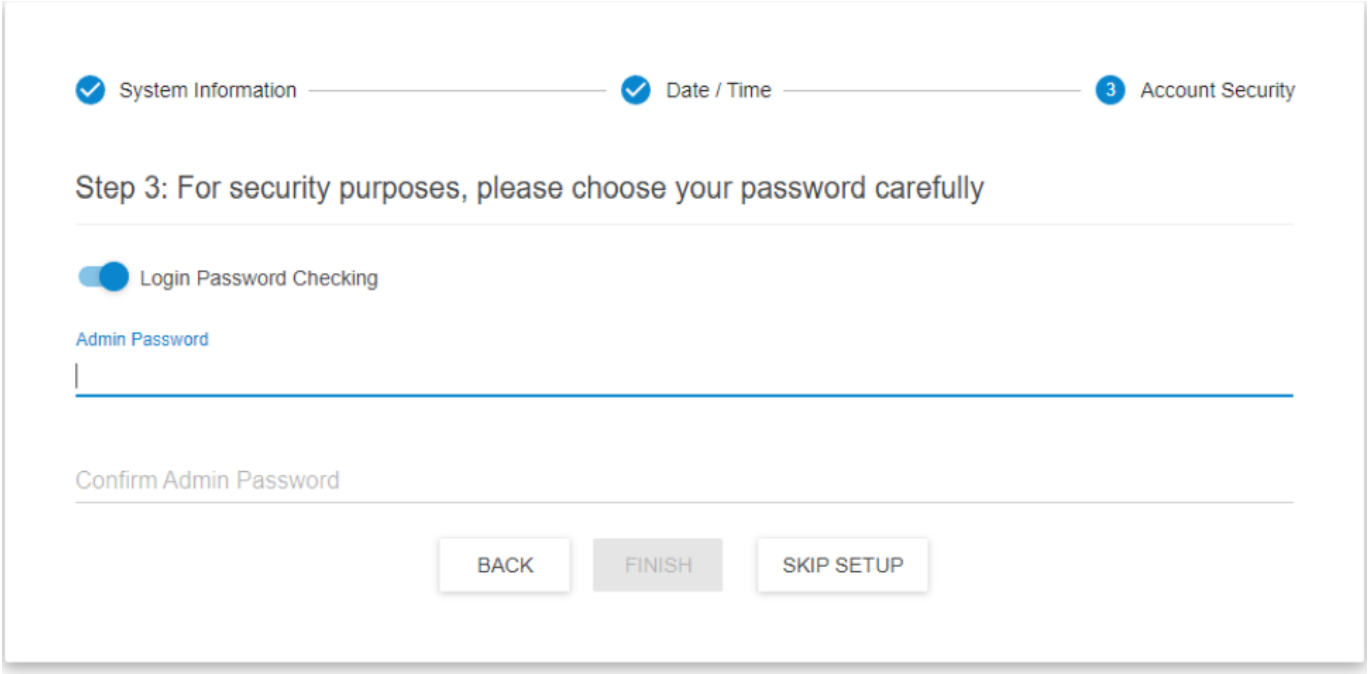
The unit's setup wizard will load.
You can customize the unit's basic parameters now (system name, location, contact, date & time, password checking, etc.), or you can choose "Skip setup" and do it later.

Welcome to SP-WTS Setup In the next few screens, we will help you set up your system information, date/time, network connections, and account security. This process will get your unit fully functional and ready to go.



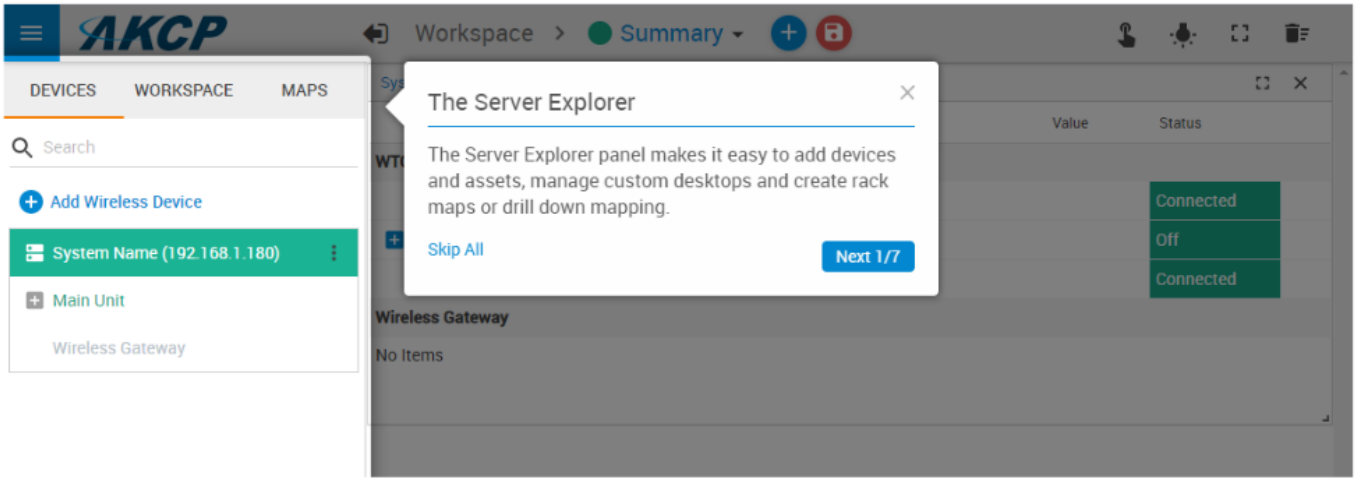
Choose your correct Timezone.

Welcome to SP-WTS Setup In the next few screens, we will help you set up your system information, date/time, network connections, and account security. This process will get your unit fully functional and ready to go.

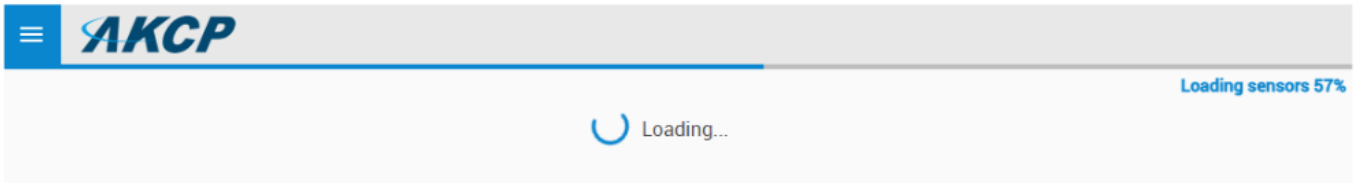


- It is recommended to enable WebUI password checking.
- Here you can set the built-in Admin user's password.
- For details about connecting to the cloud APS service, see below in this manual.

A WebUI tutorial will follow, where you can learn the basics of using the interface. You can skip the tutorial any time.



A new feature has been added in firmware 6028: if there are lots of sensors and the WebUI loading is slower than usual, you will see a progress indicator.

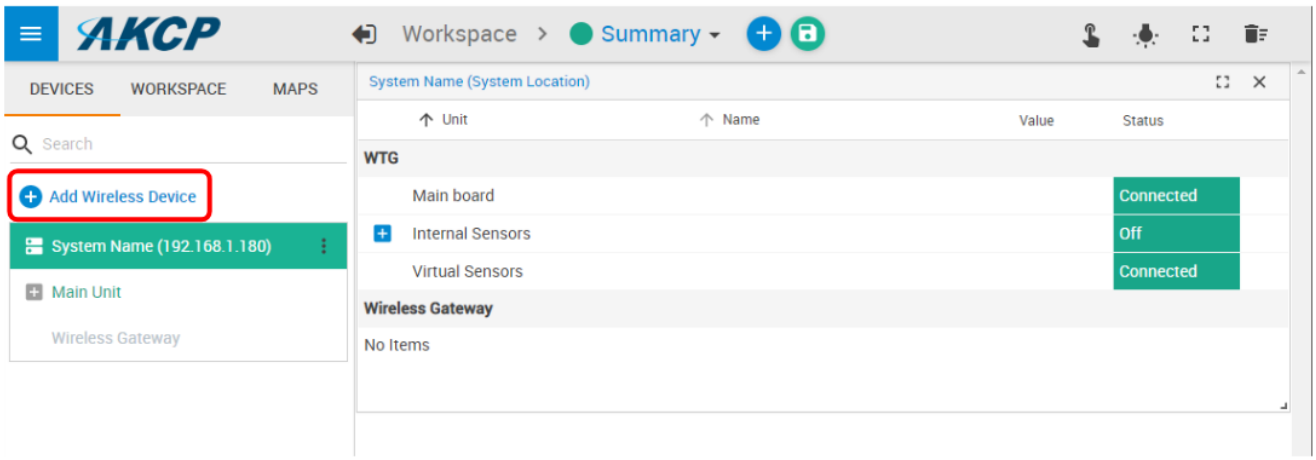


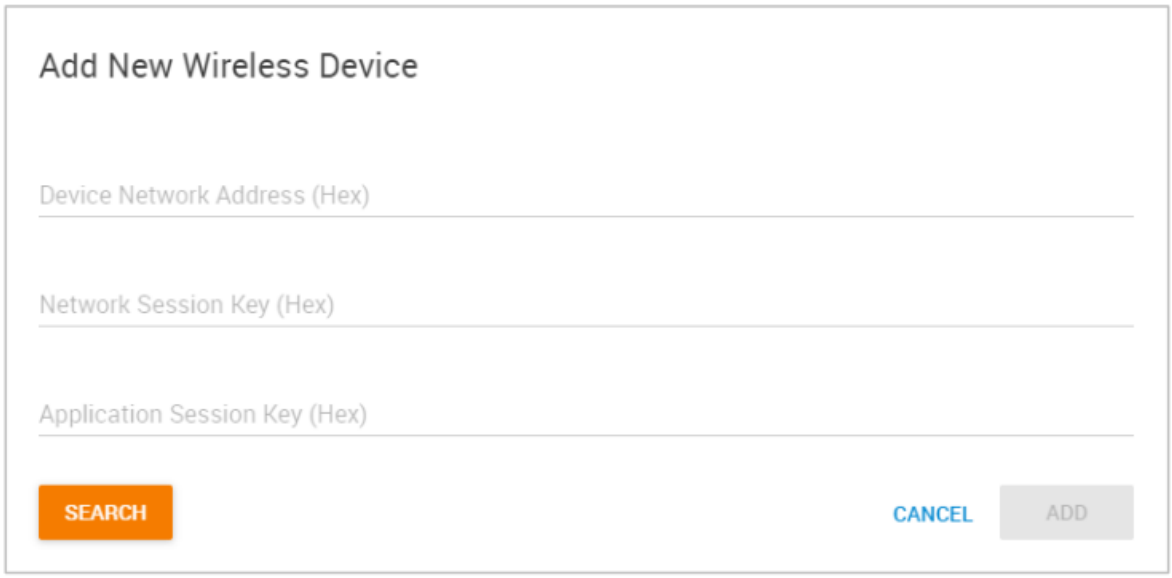
B) How to add a Wireless Sensor (SP-WT) to the SP-WTS

- Wireless sensors have the advantage of easy installation with no communication cables or power required. These sensors communicate with the SP-WTS using radio frequency signals, and you need to pair them with the SP-WTS to get their data.
- **Note:** SP-WTS still supports adding older wireless sensor types (BOS/WTS).
- It is recommended that you first connect the wired sensor to SP-WT prior to adding it to the SP-WTS, in order to avoid detection delays (as shown on the picture below).

Adding a wireless sensor

- First open the SP-WTS unit's WebUI. Click on the Add Wireless Device icon to begin.
- Then make sure that your wireless sensor is in RUN mode in order to complete the sensor pairing: press and hold the sensor's button for 3 seconds (for SP-WT; older sensors just need 1-2 seconds). The wireless sensor's LED will light up briefly.

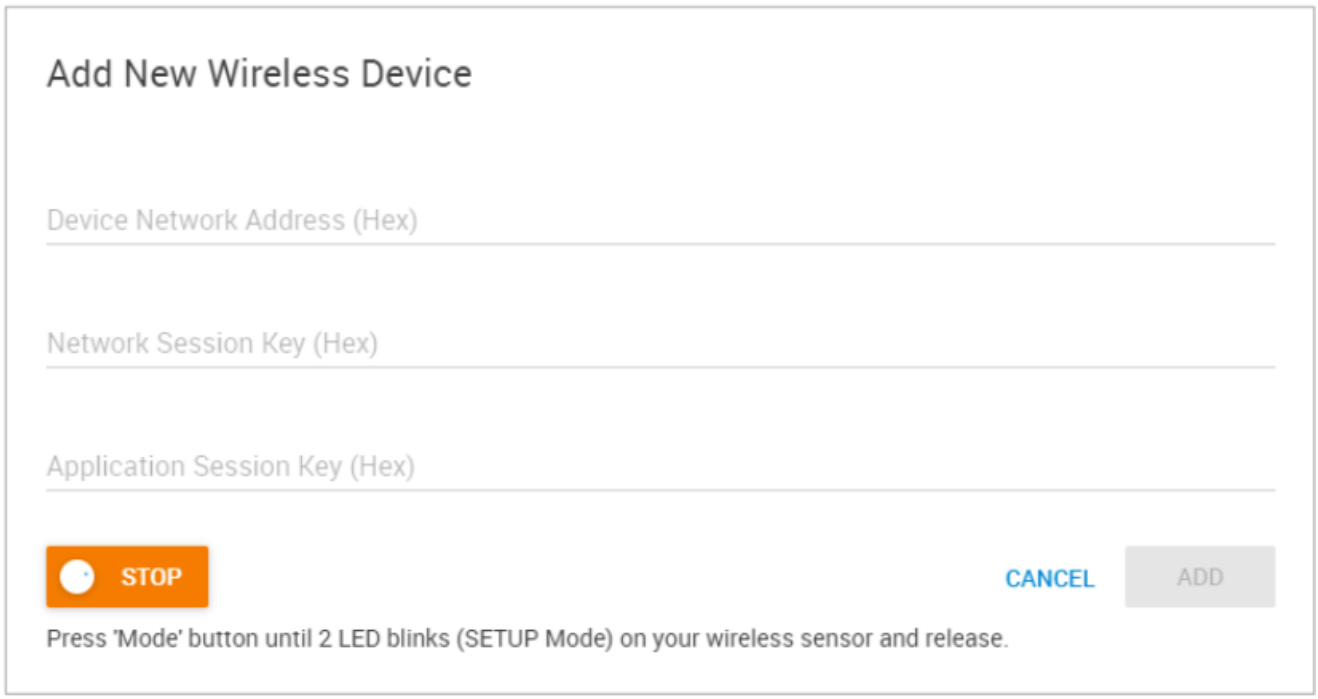


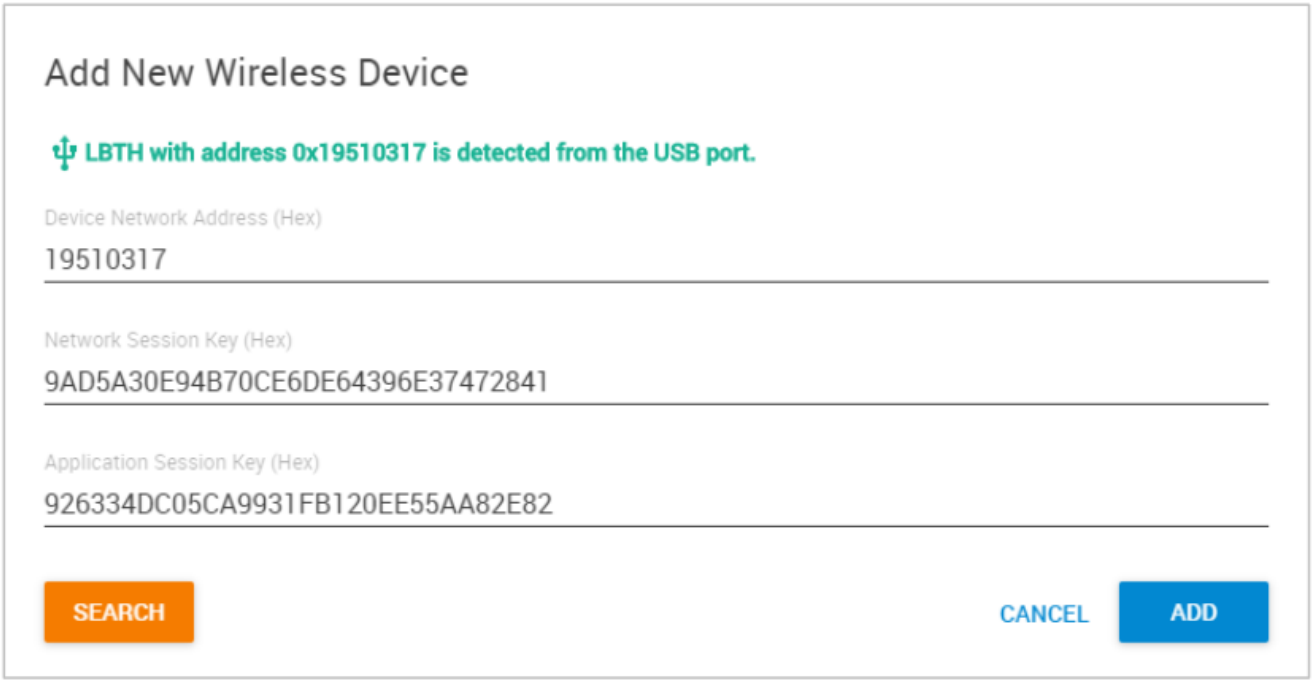


- You may either input the wireless key details manually, or use the automated method detailed below.

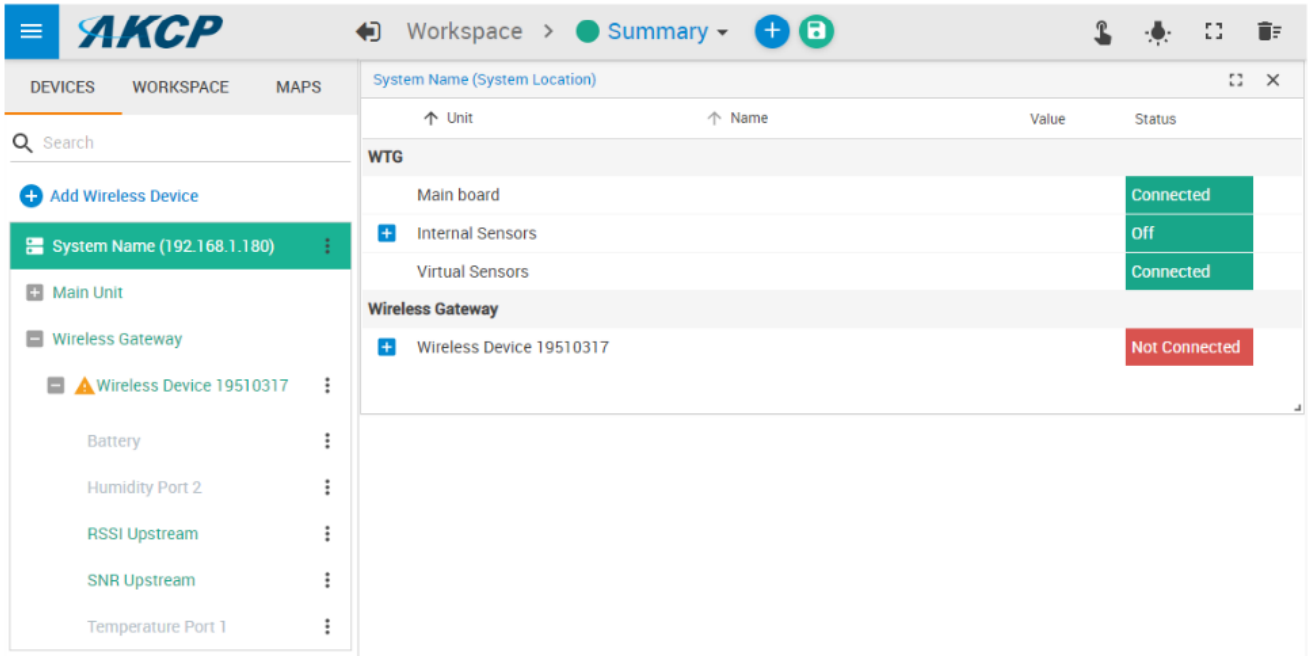
Search

- Instead of manually entering the HEX keys, you can use the wireless search method to automatically find a wireless sensor. The necessary network keys will be automatically detected.
- Click Add Wireless Device then click on the Search button on the lower left corner.
- Press and hold the button on the wireless sensor for 3 seconds until the LED begins to blink (SETUP mode).

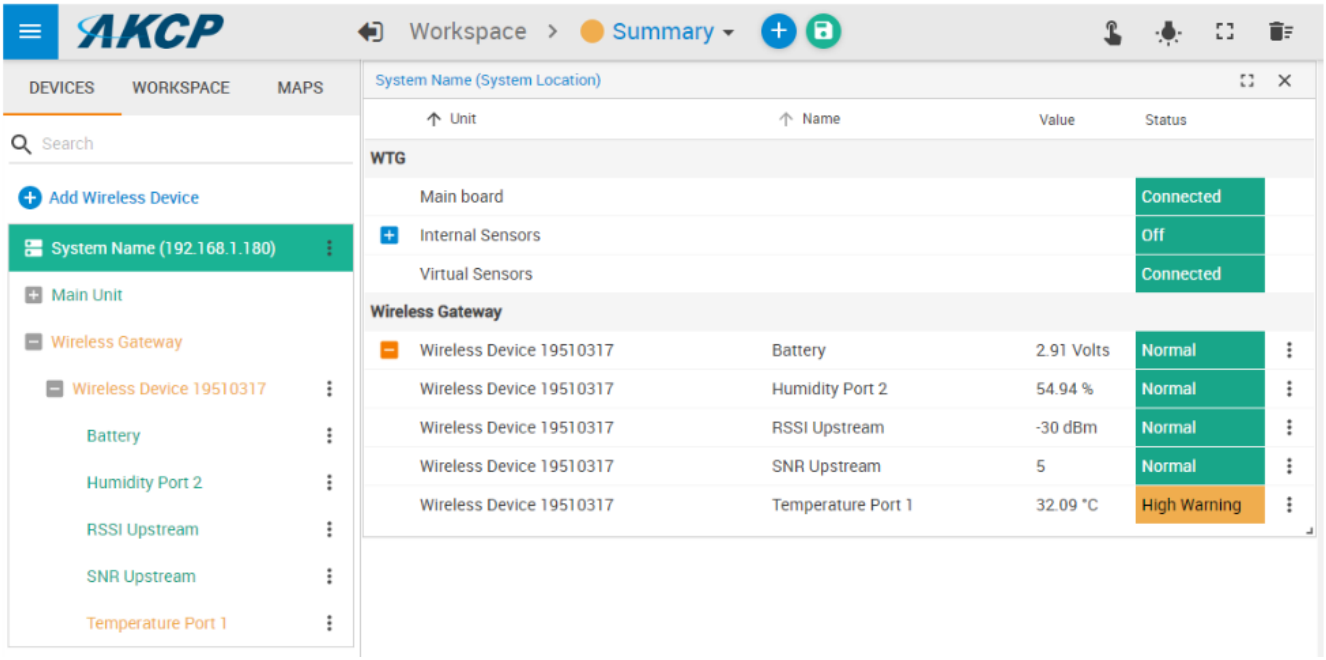




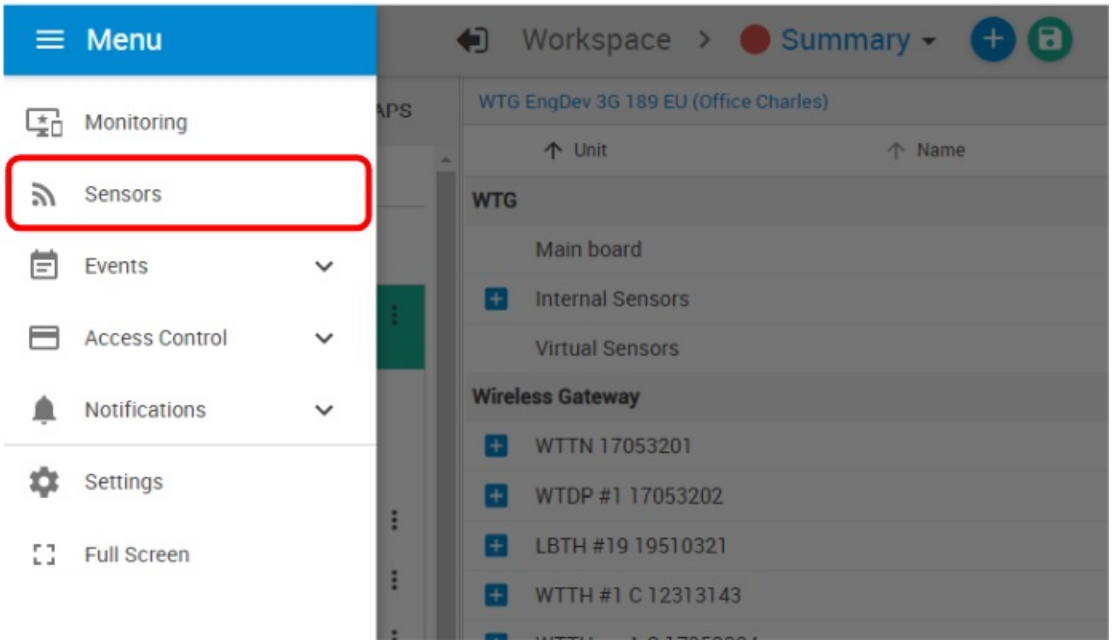
- After it's detected, click on Add to add it to SP-WTS.
- After a new sensor has been added, you will notice a warning triangle next to it:



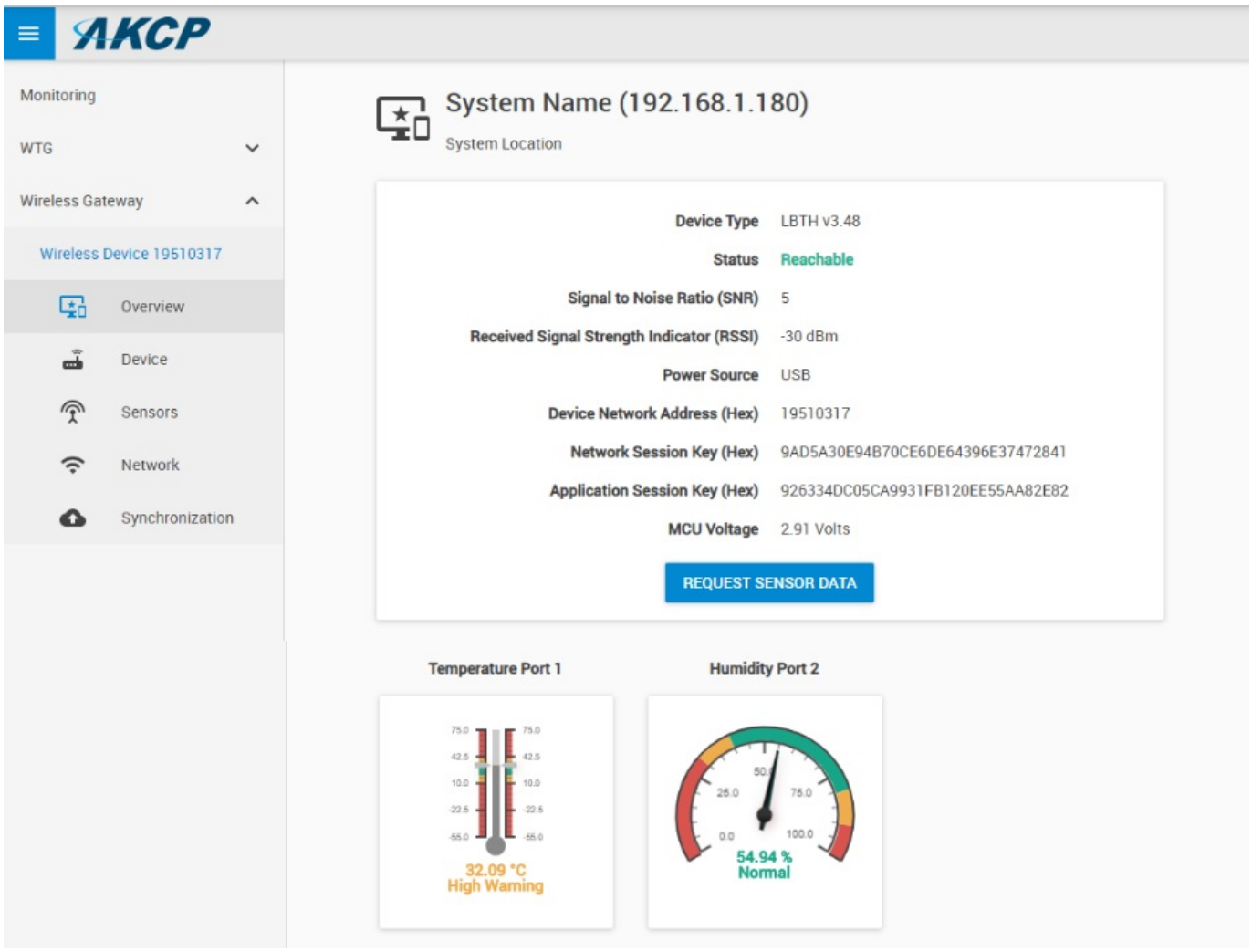
- This indicates that the sensor still requires sync (pairing) with the SP-WTS.
- Normally the sync will be done automatically, and after that the sensor readings should display correctly:



Further sensor configuration

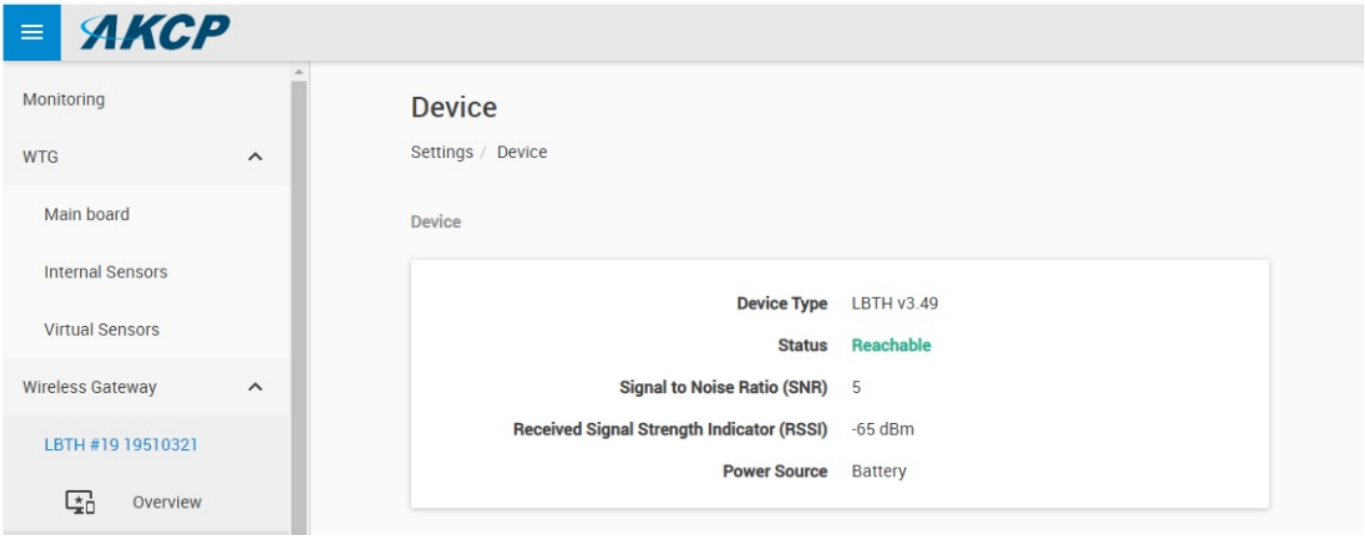


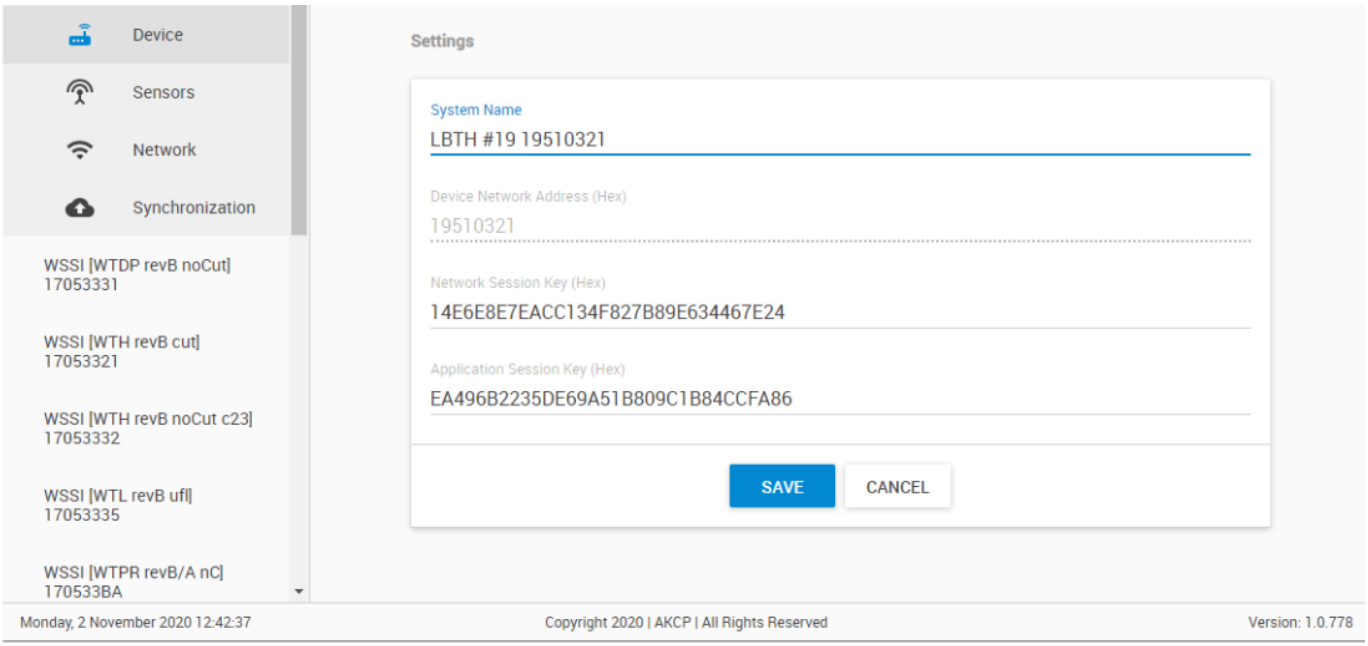
Access the menu on the top left corner and go to the Sensors page. The wireless sensors can be managed from this menu.



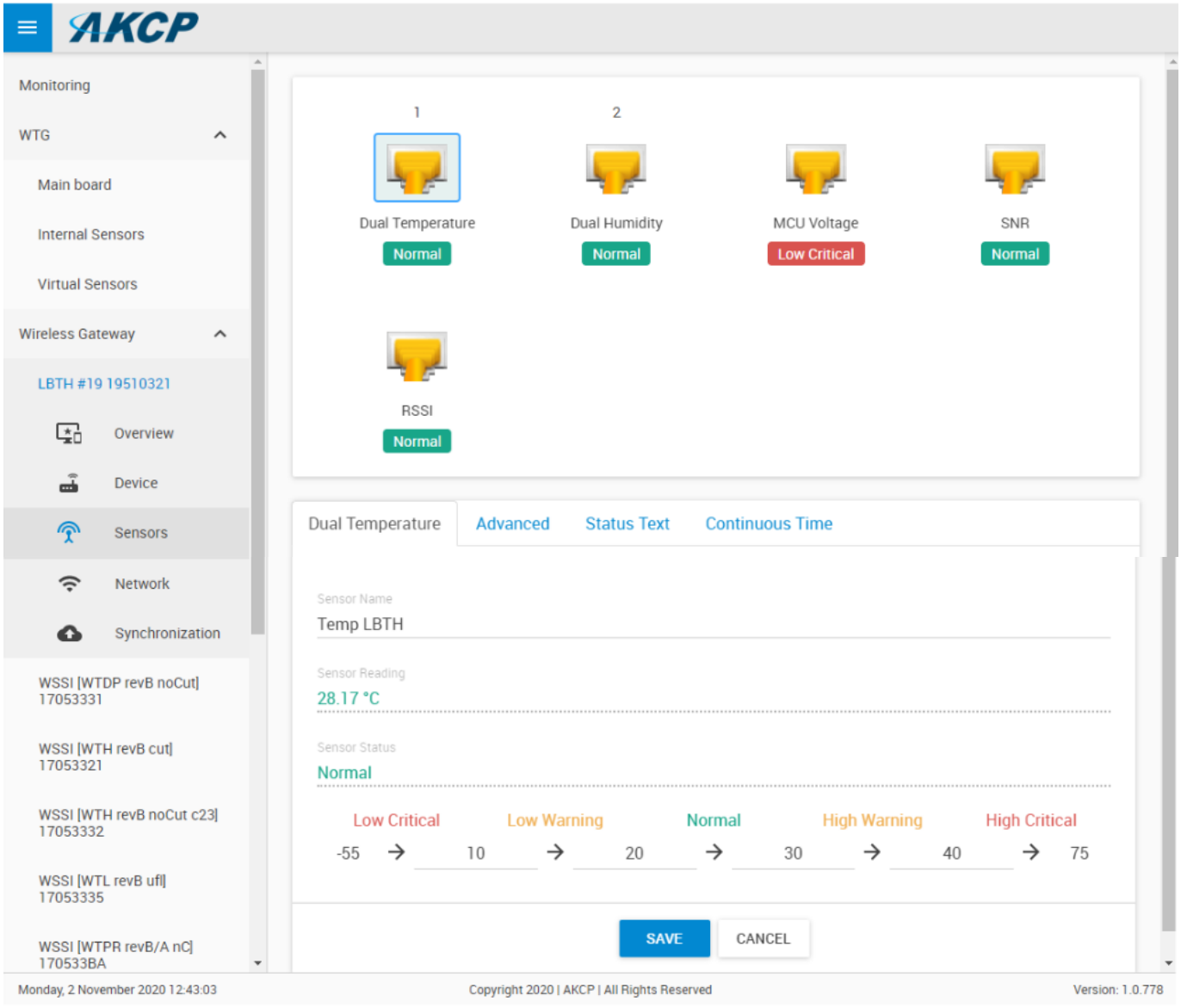
REQUEST SENSOR DATA

Note that the “Request Sensor Data” button is only available when the SP-WT is not powered by batteries (uses USB power).
On the Device tab you can rename the sensor for easier identification:

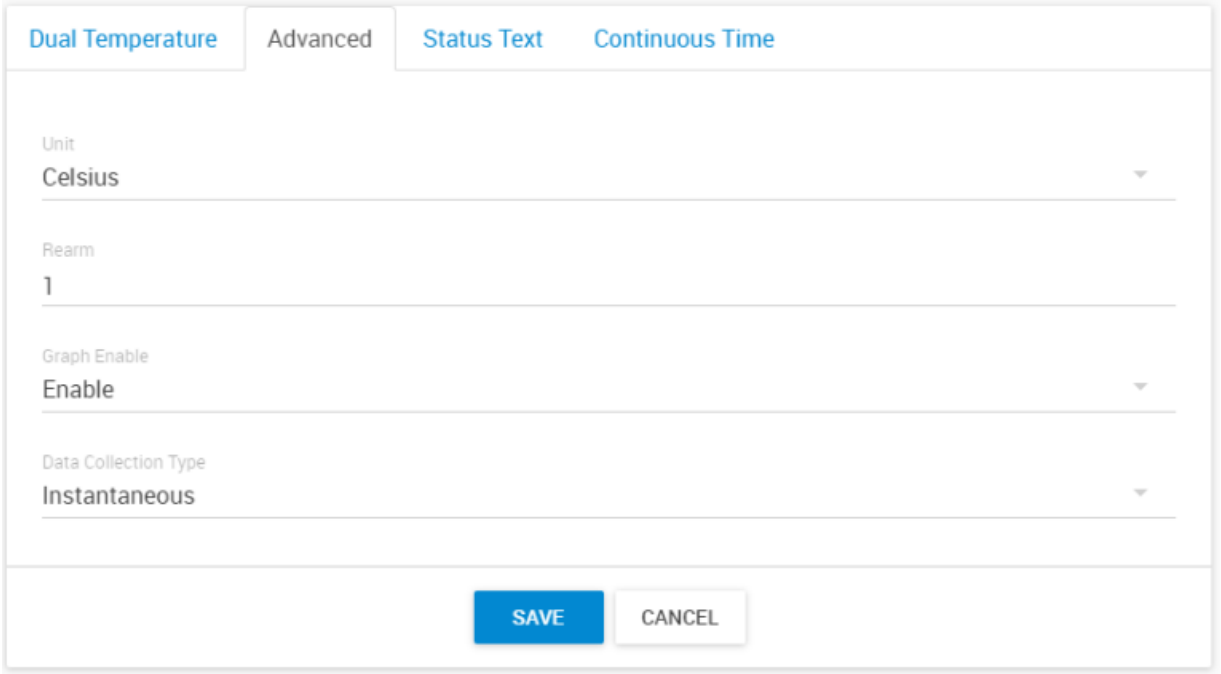




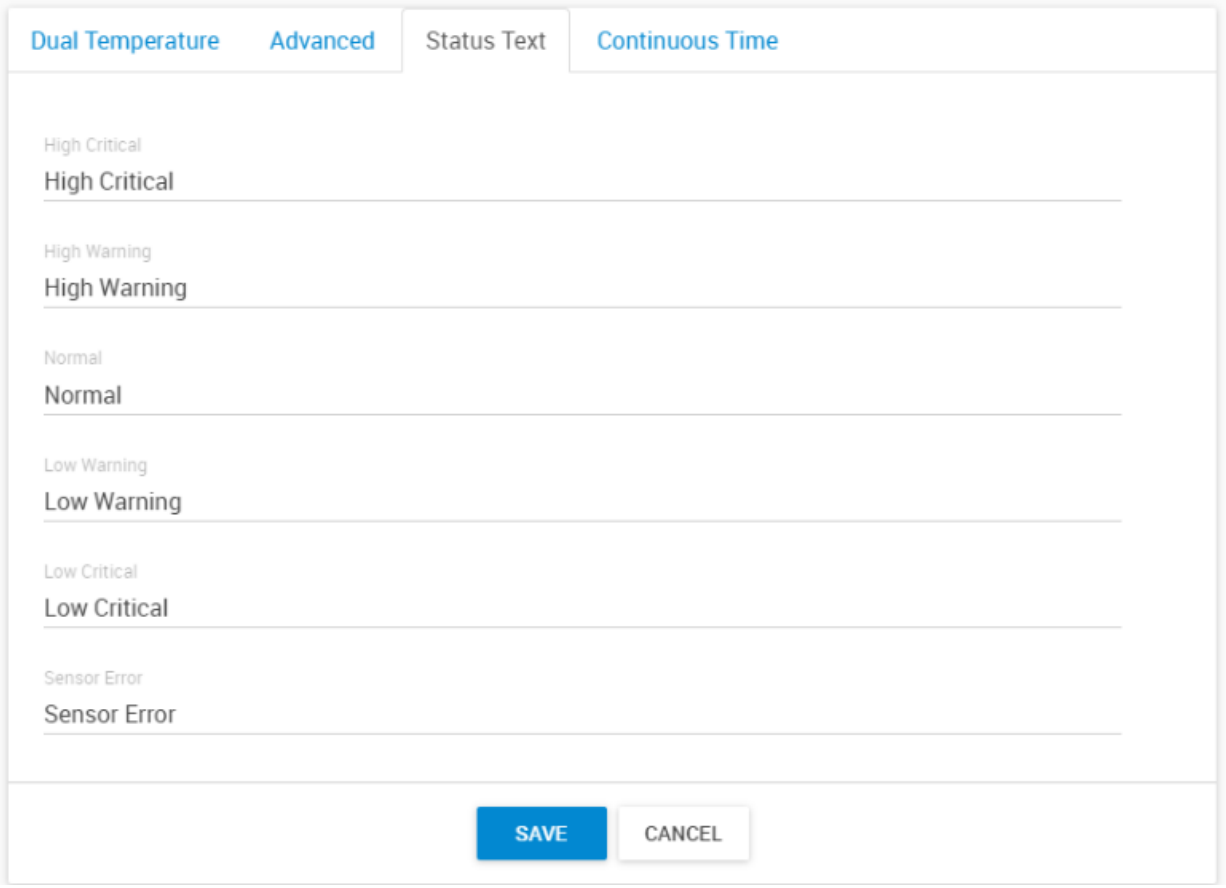
Adjust the sensor reading thresholds:



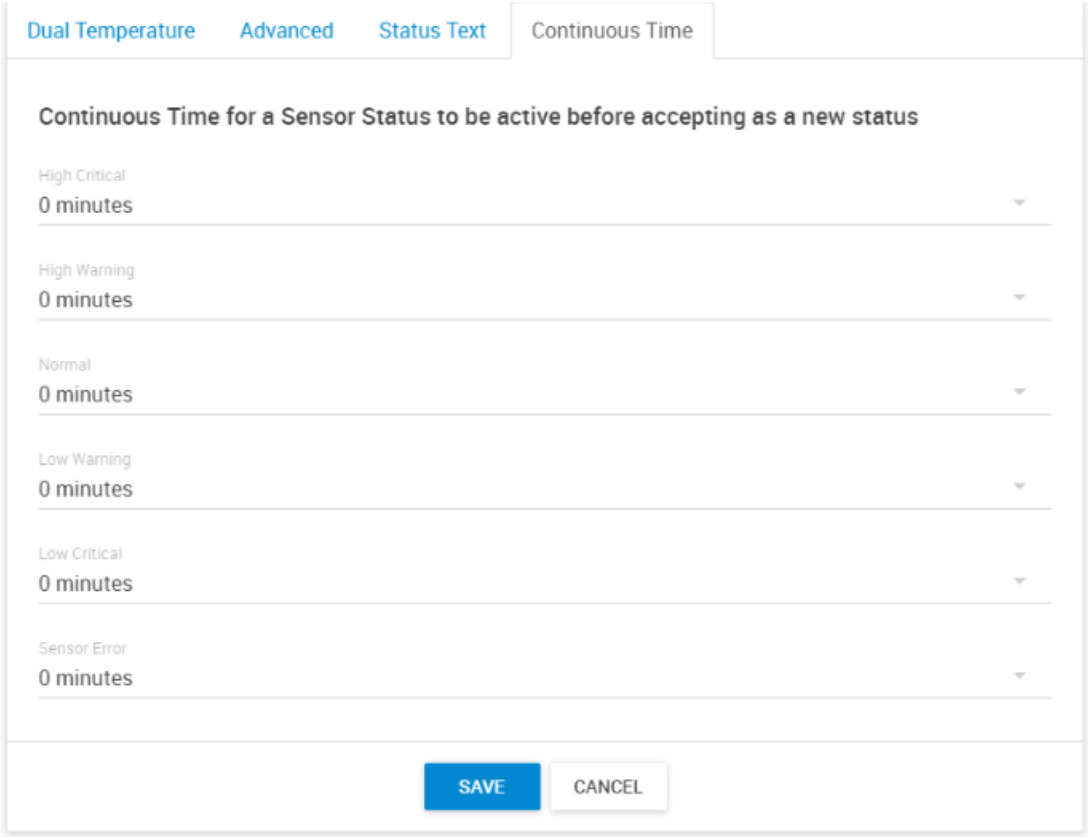
Access further fine-tuning of the readings:



Change the sensor reading status texts for each status:

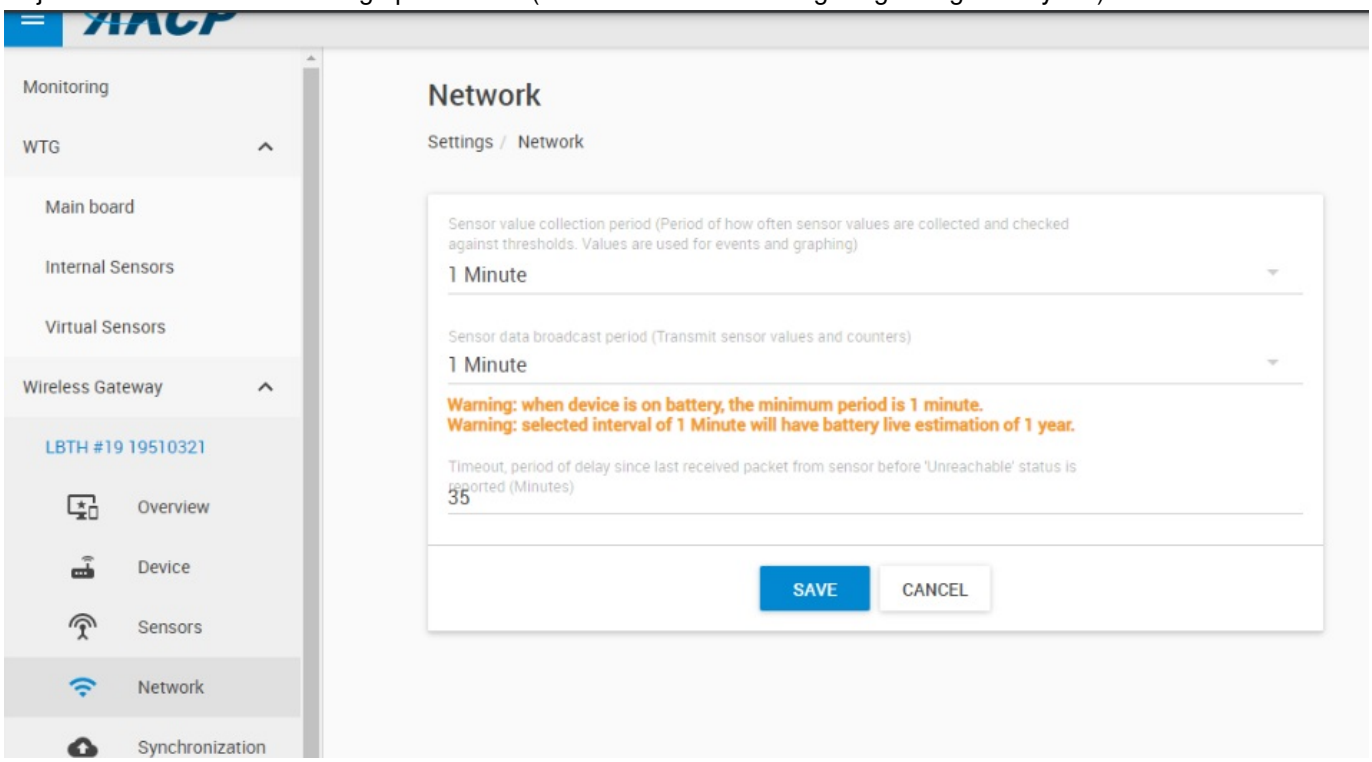


Adjust continuous time for each sensor status:



- For switch type sensor, it's working the same as the feature we have on the wired AKCP sensors.
- For analog sensor type, you can set the number of polling (we display in time, polling number * polling interval) before accepting the status.

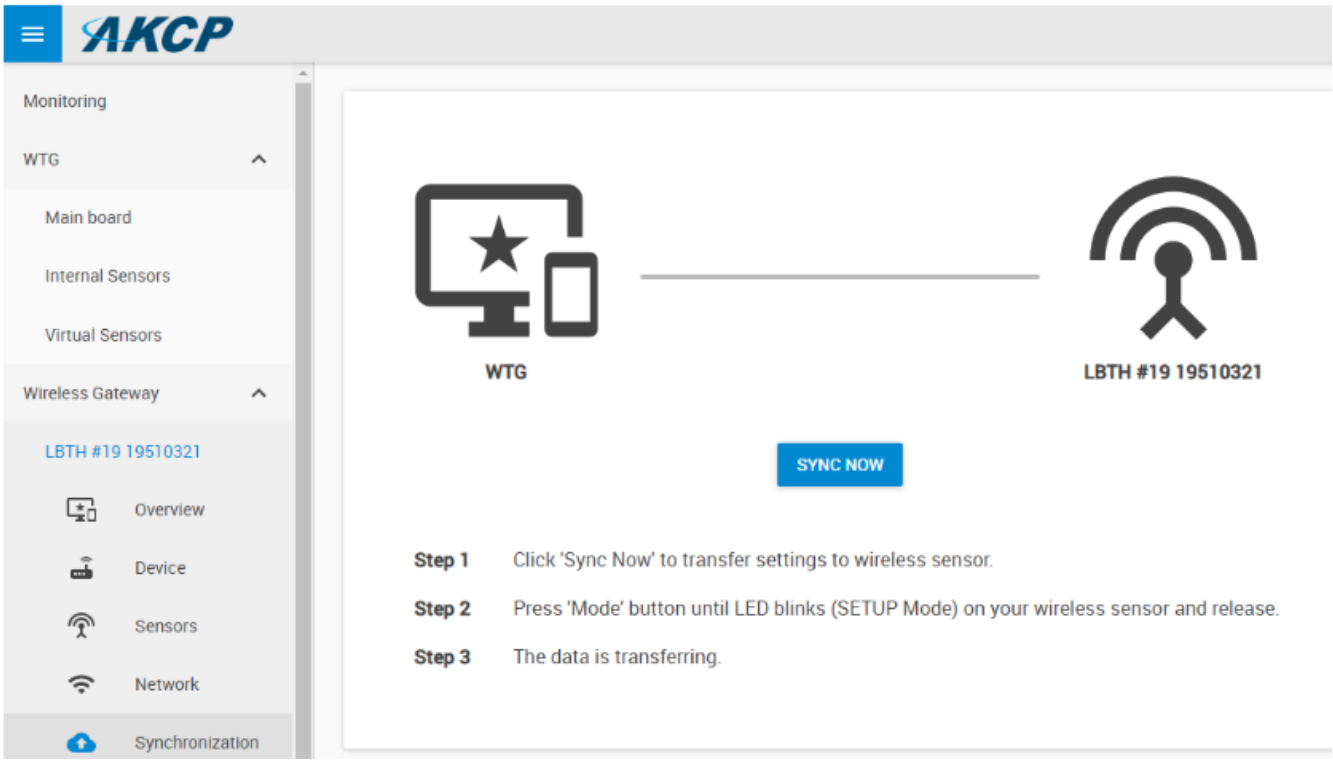
Adjust wireless network settings per sensor (take note of the warnings regarding battery life):



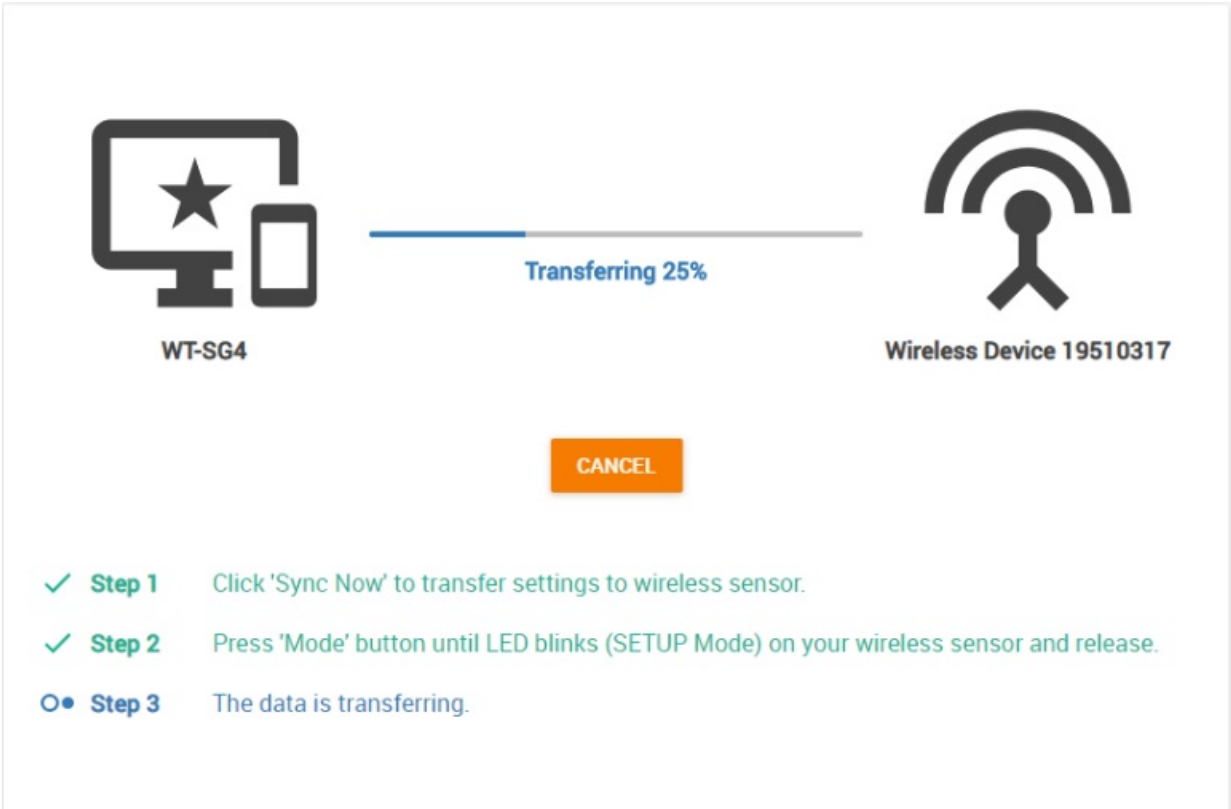
Important: the graph sampling period will use the "sensor value collection period" parameter. See details below in the Graphing feature overview.

- After making any changes, you would need to re-sync the sensor.

- This ensures that all configured settings will be sent to the sensor. Without sync, your new thresholds won't be applied.
- Note: the sensor settings can also be synced automatically the next time that the sensor broadcast a packet, but doing a manual sync is a faster way when the sensor is close at hands.

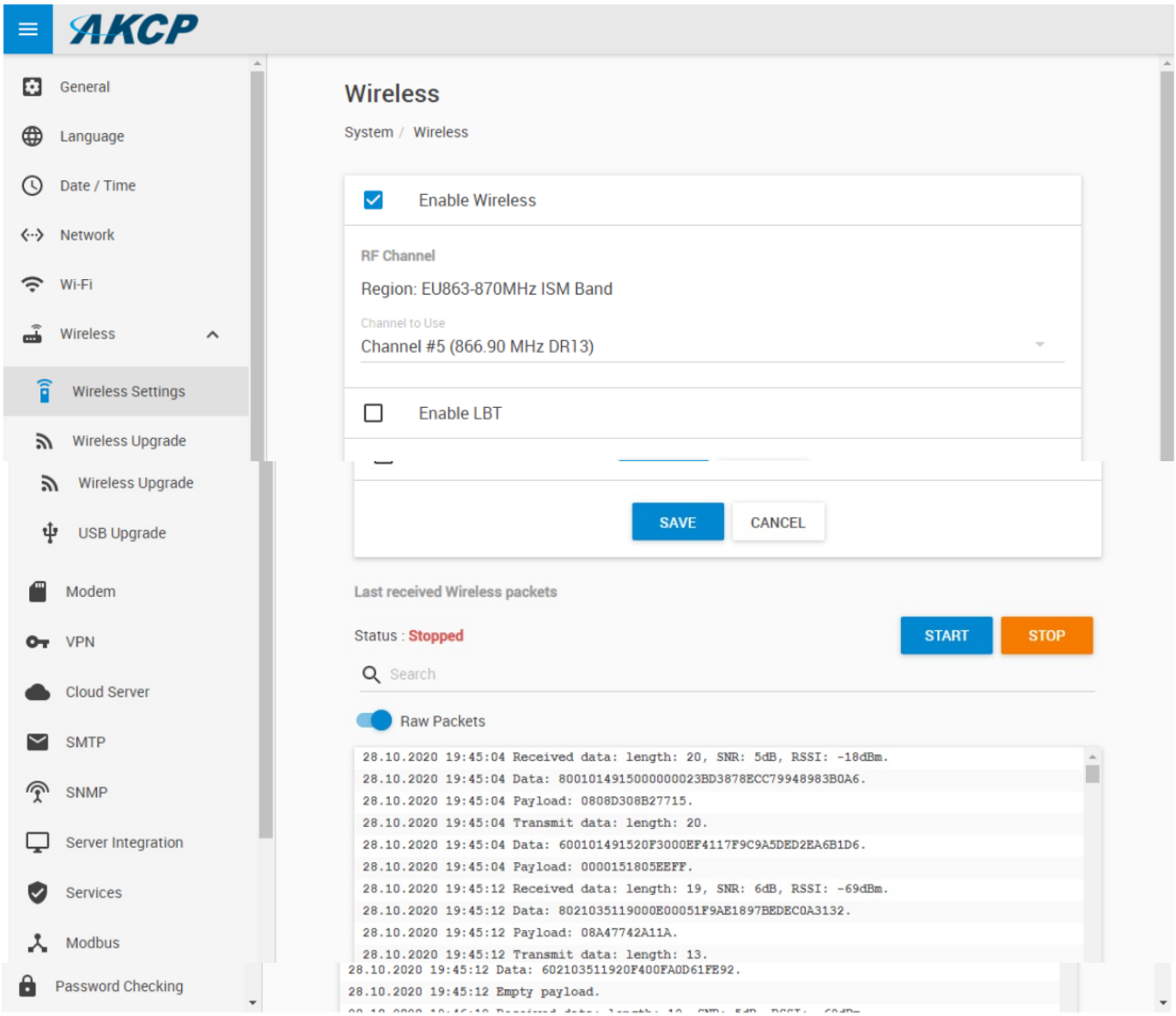


Click Sync Now button and follow the instructions on screen (switch the sensor to SETUP mode).



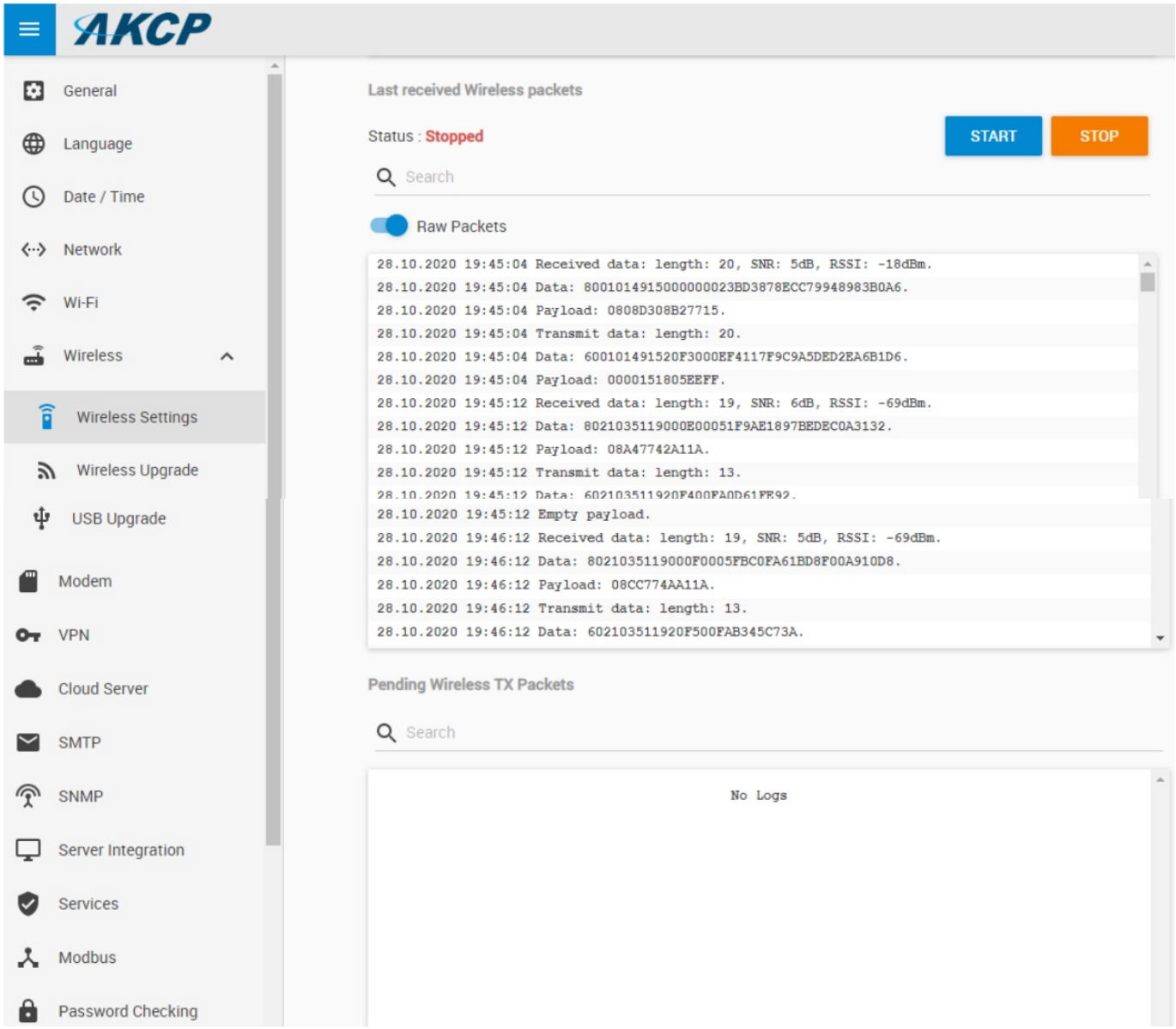
We recommend to change the used LoRa wireless channel, if you are in an environment with high radio traffic that affects sensor reading.

Go to Settings menu / Wireless / Wireless Settings:



- Choose a different channel which has less radio traffic.
- The available list of channels will depend on your country's radio frequency regulations.
- Important: after changing the channel, you will need to manually re-sync your wireless sensors!

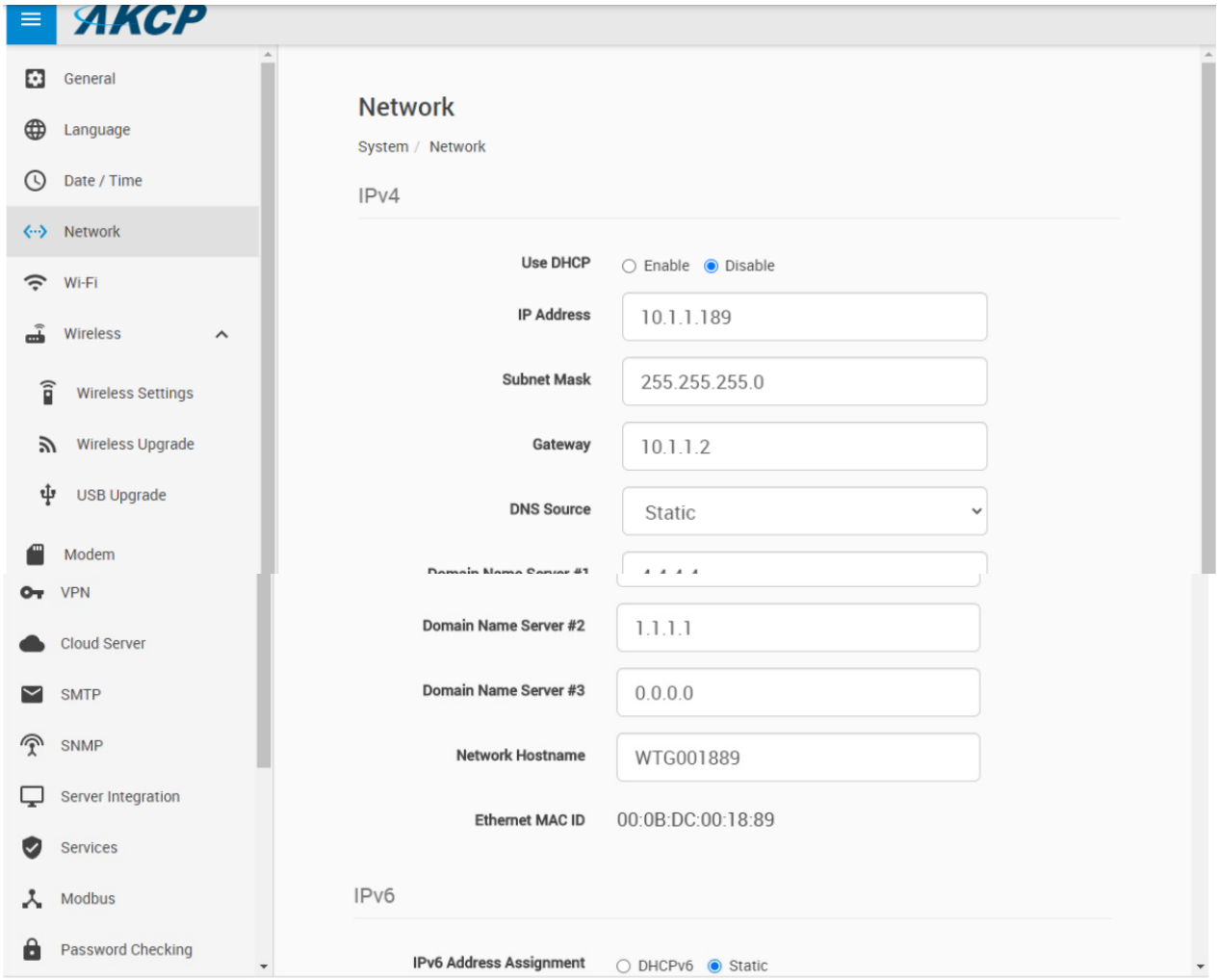
The Wireless Settings page also provides a packet logger feature for troubleshooting:



Press Start to begin logging of the wireless packets; it will show the received and transmitted packets. The logging will stop automatically, or you can stop it manually.

C) SP-WTS Network Settings

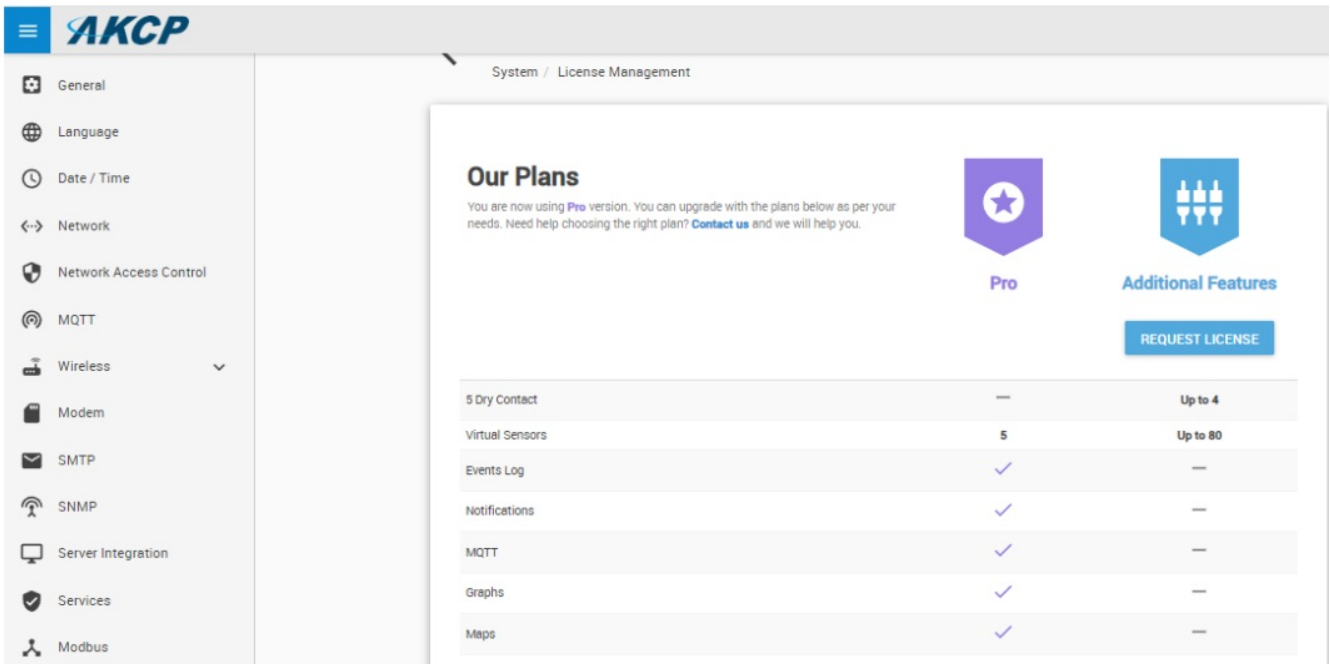
- **Ethernet**
  - You can change the SP-WTS unit's Ethernet network settings under Settings menu / Network:

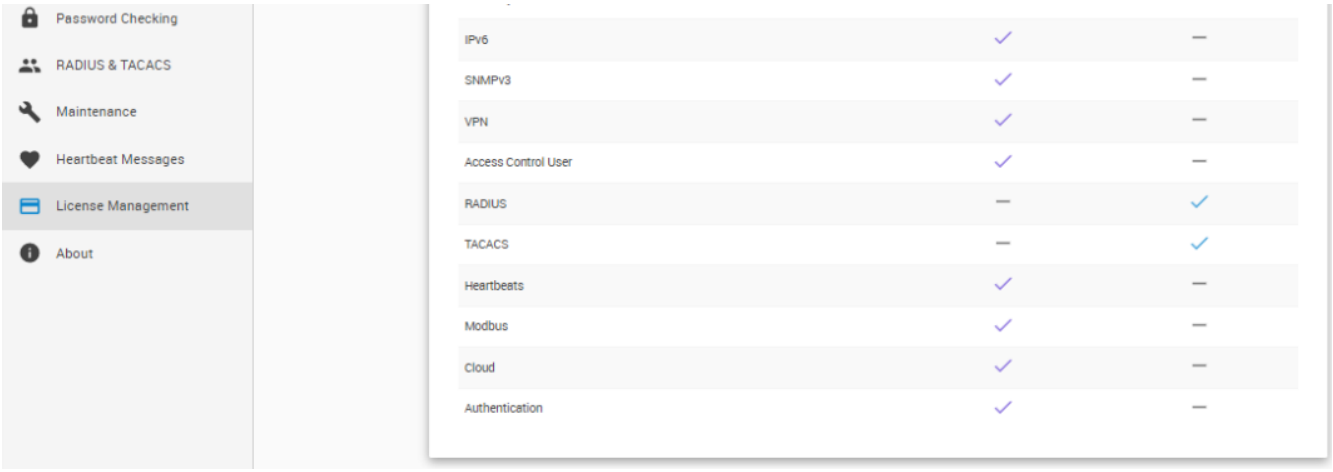


- These settings will affect the Ethernet interface only (wired connection). IPv6 is also supported on the SP-WTS.
- Press Save after making any changes.

D) License Management

You can review the current license under Settings menu / License Management:



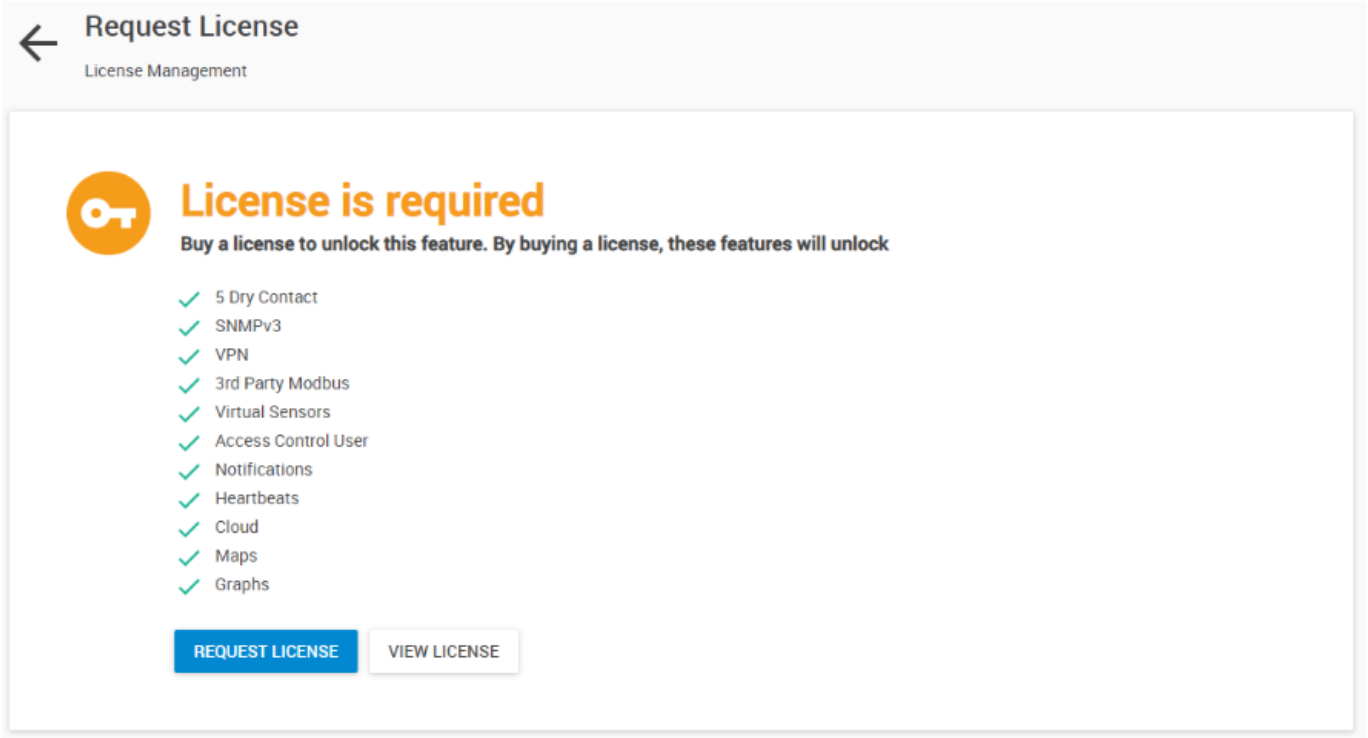


This page will show the current state of licensed features.

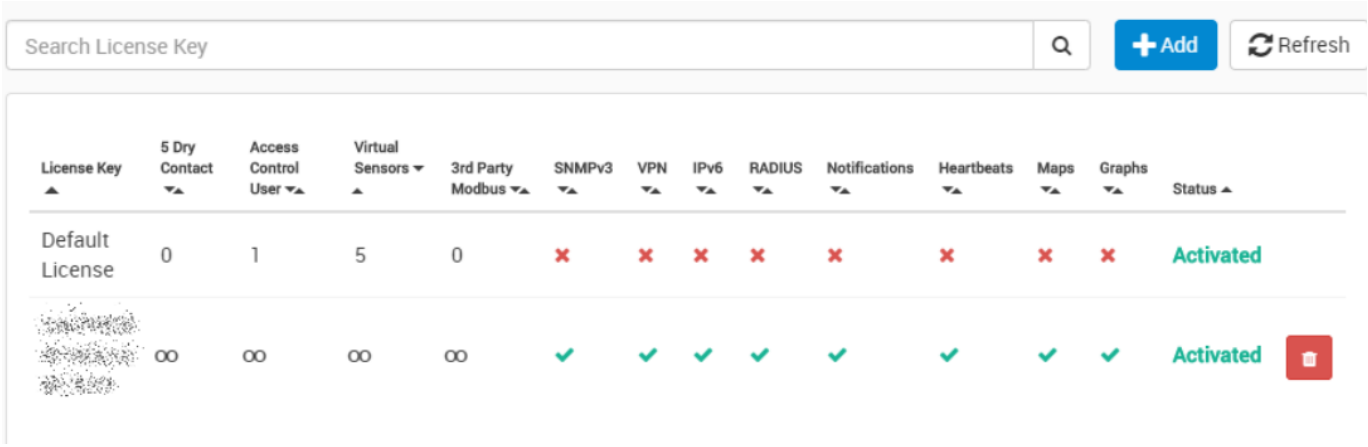
- Scroll down to view any License Keys that are installed for your SP-WTS.

All units are shipped with the default license. This has some restrictions on product usage – most features will be disabled, such as virtual sensors, graphing, notifications (see details below).

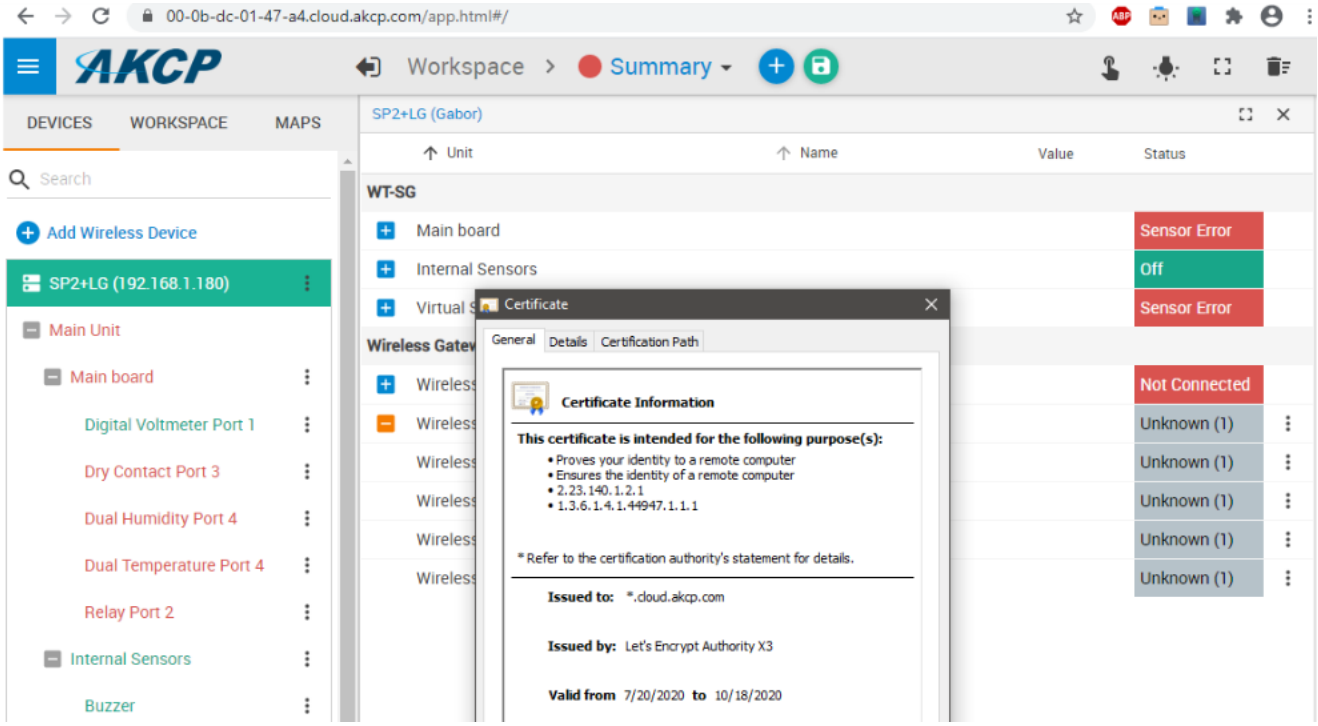
When you attempt to use a feature that requires a license, you will see a notification:



Contact Sales for a quotation for your required licensed features by clicking Request License.
When you receive the license key, click on Add and copy-paste the key:



- You will see a green tick-mark for the enabled features, and the number of Virtual Sensors, Access Control Users etc. that your license allows to use.
- **Note:** the entered license will remain in effect even if your unit is returned to factory defaults.
- You must reboot the device after making any changes.
- **Hint:** when prompted for reboot, the default Admin user password is “public”.



Replacing the batteries

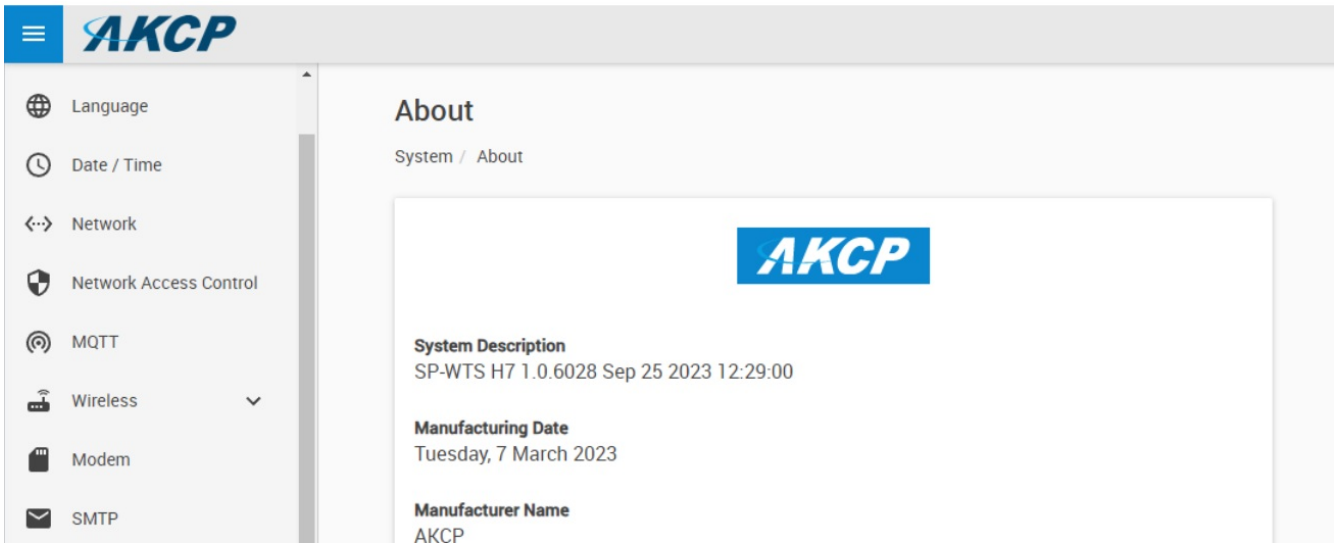
- Please follow this procedure to replace the batteries.
- When reassembling, make sure that the plastic cover is orientated correctly (note the TOP marking).

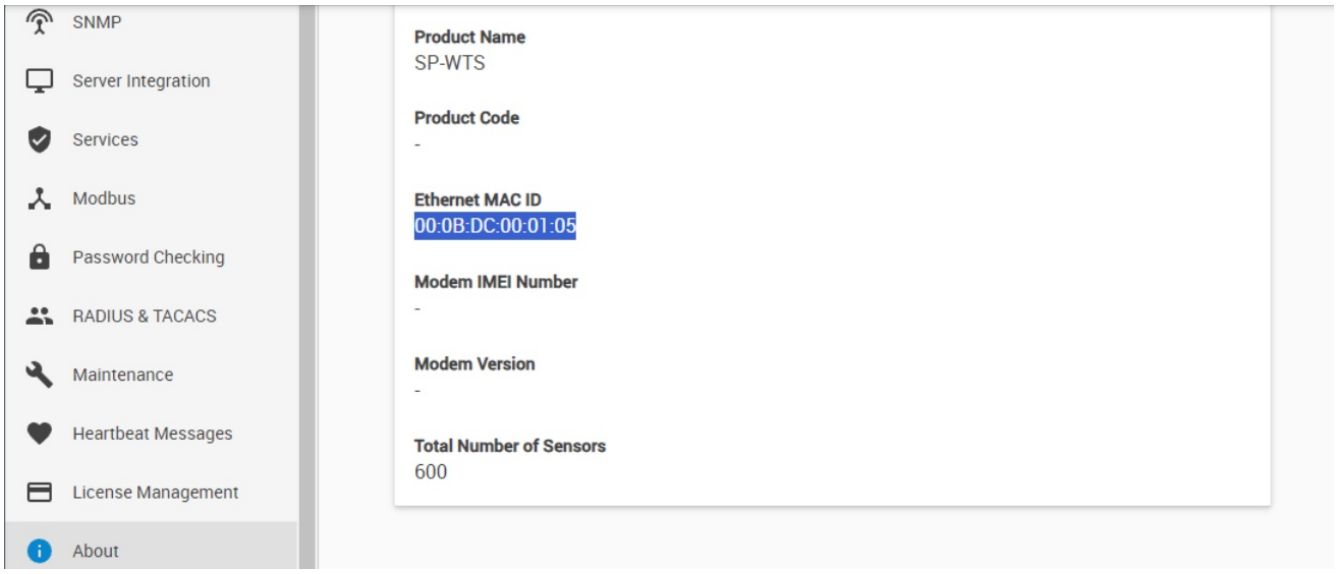
Cloud WebUI

- The AKCP Cloud service is used for WebUI forwarding of supported devices using VPN, and is a licensed feature. The forwarding will enable accessing the unit's WebUI from anywhere in the world by logging in to the AKCP
- Cloud dashboard with the unit's MAC ID.
- Because the Cloud service will enable world-wide access to the unit's WebUI by using the MAC ID, the unit's owner has to set up and enable the additional WebUI password protection to prevent unauthorized access.

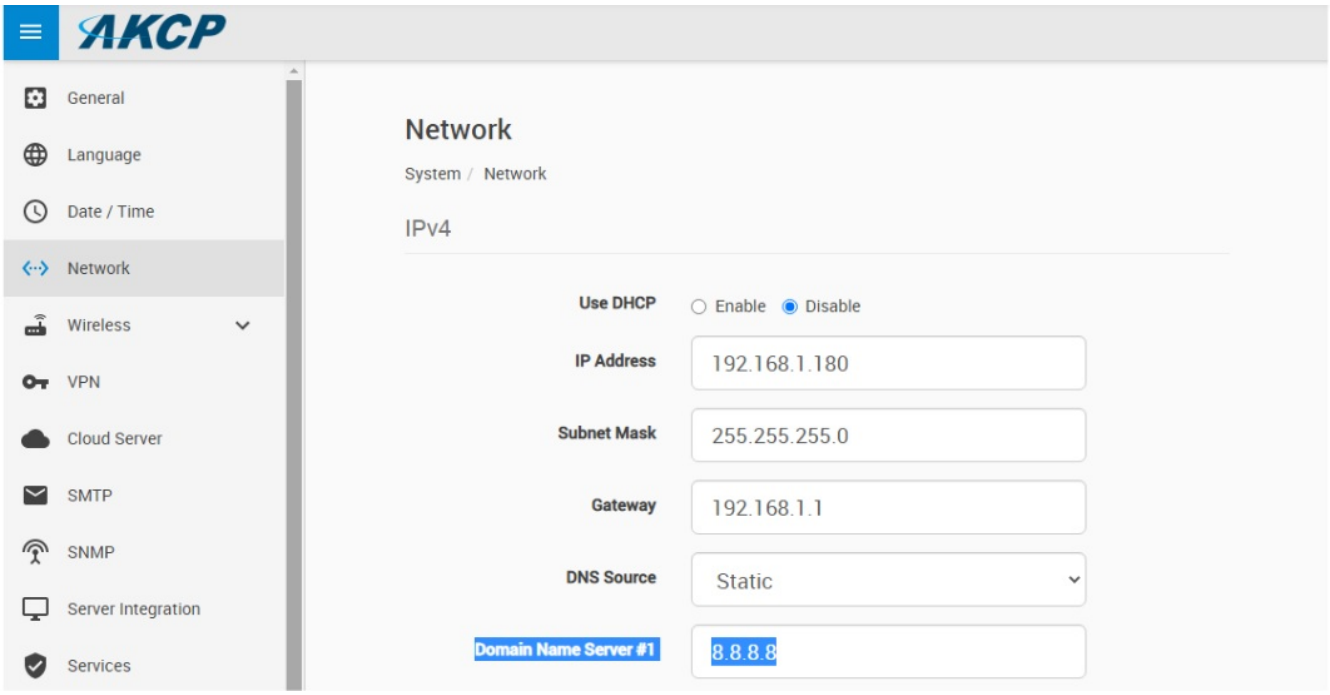
Connecting your device to **cloud.akcp.com**

1. Copy the device MAC ID from the unit's About page, for example: 00:0B:DC:01:47:A4

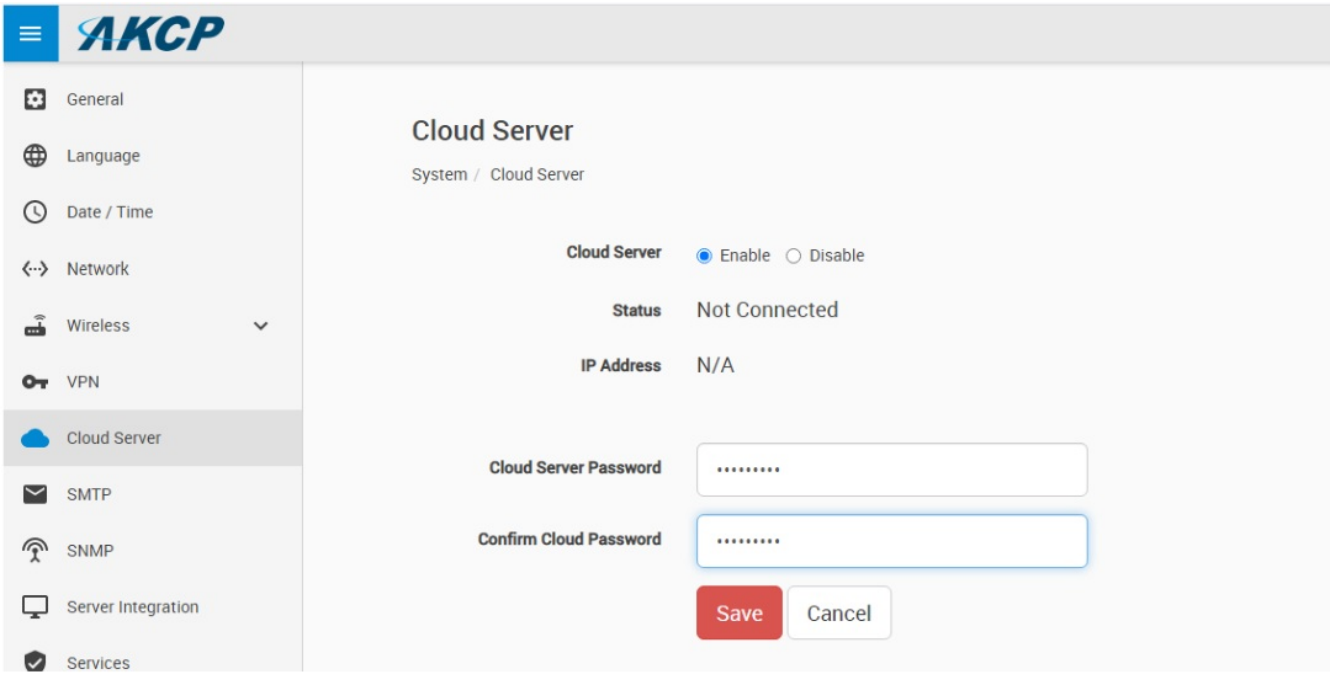




2. Send a request email to AKCP Sales sales@akcp.com to add your unit to AKCP Cloud
   You will get a reply with the Cloud VPN password, which you will need to enter manually on your unit to connect.
3. Check that your unit can resolve hostnames with DNS server correctly (contact your network administrator, if you are not sure)



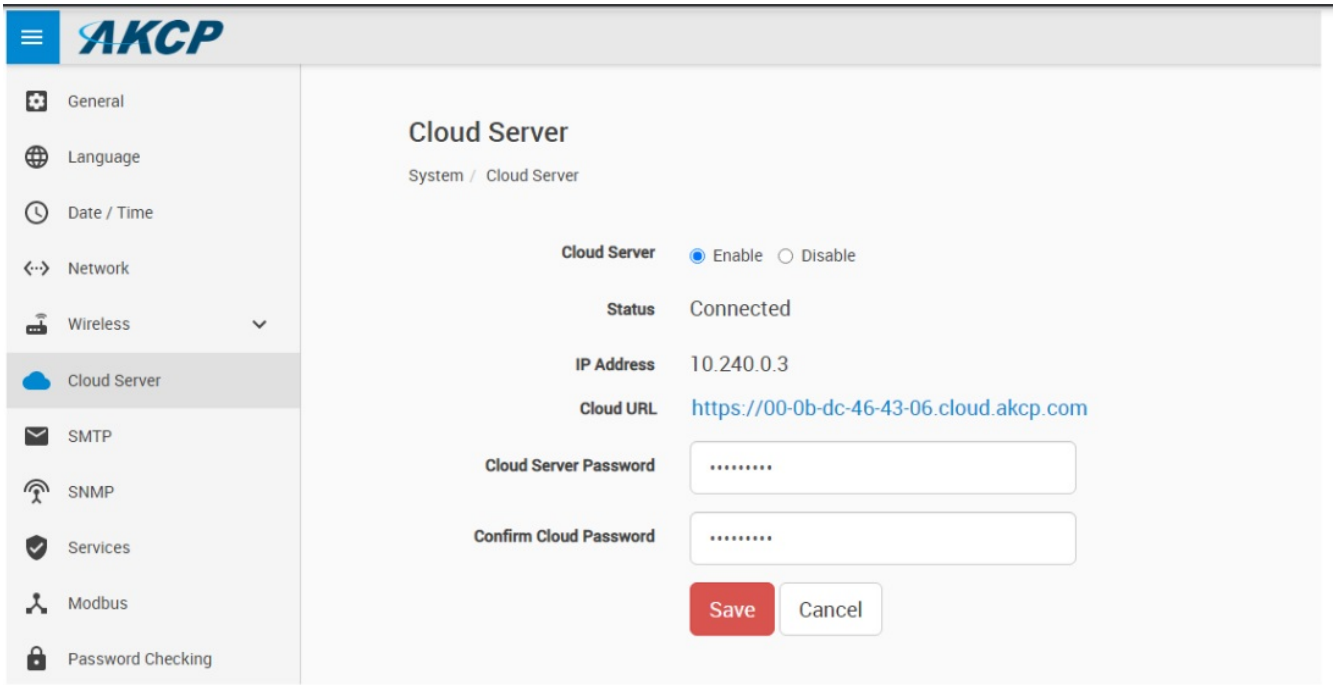
4. Go to Cloud Server page on the unit and fill out the password which was set up for your unit at the AKCP Cloud dashboard, click Enable and then Save.



Important: The unit will need to be rebooted after the changes.

Note: the VPN and Server Integration pages will be automatically hidden if the Cloud Server settings are set up. This is because Cloud server uses VPN, and Server Integration needs to be disabled when using Cloud service.

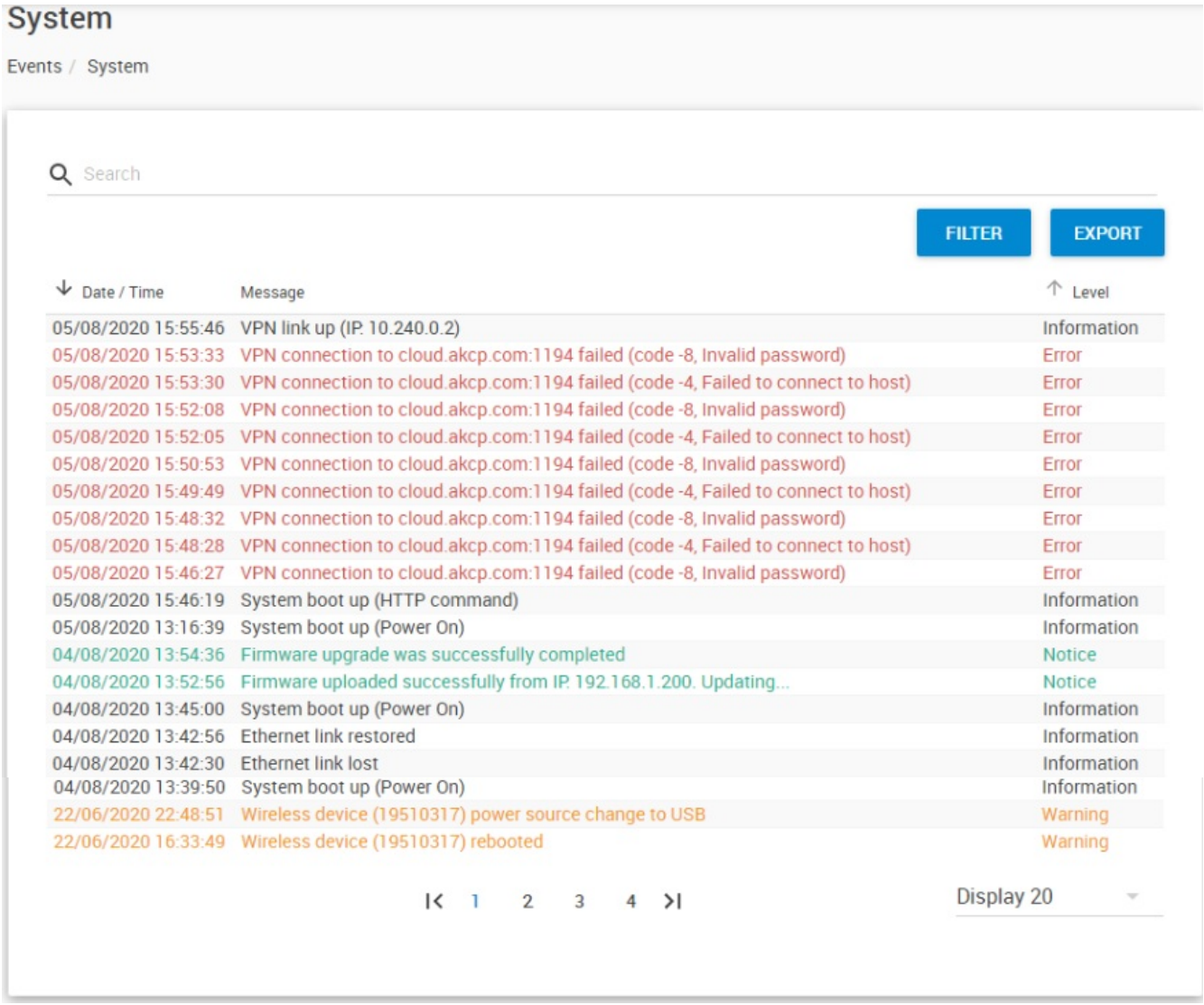
5. Reboot the unit and wait for the device to be connected.



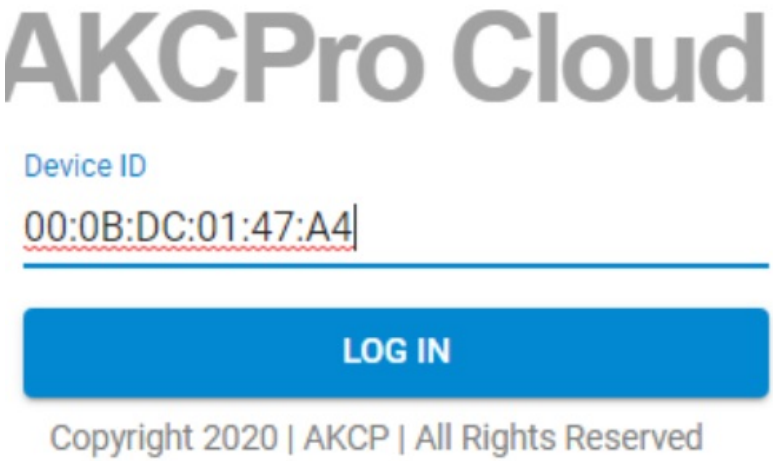
The Cloud URL will also be displayed for quick access.

If there's any connection issues (password, cannot resolve name etc.), it will be logged in the Event Log:

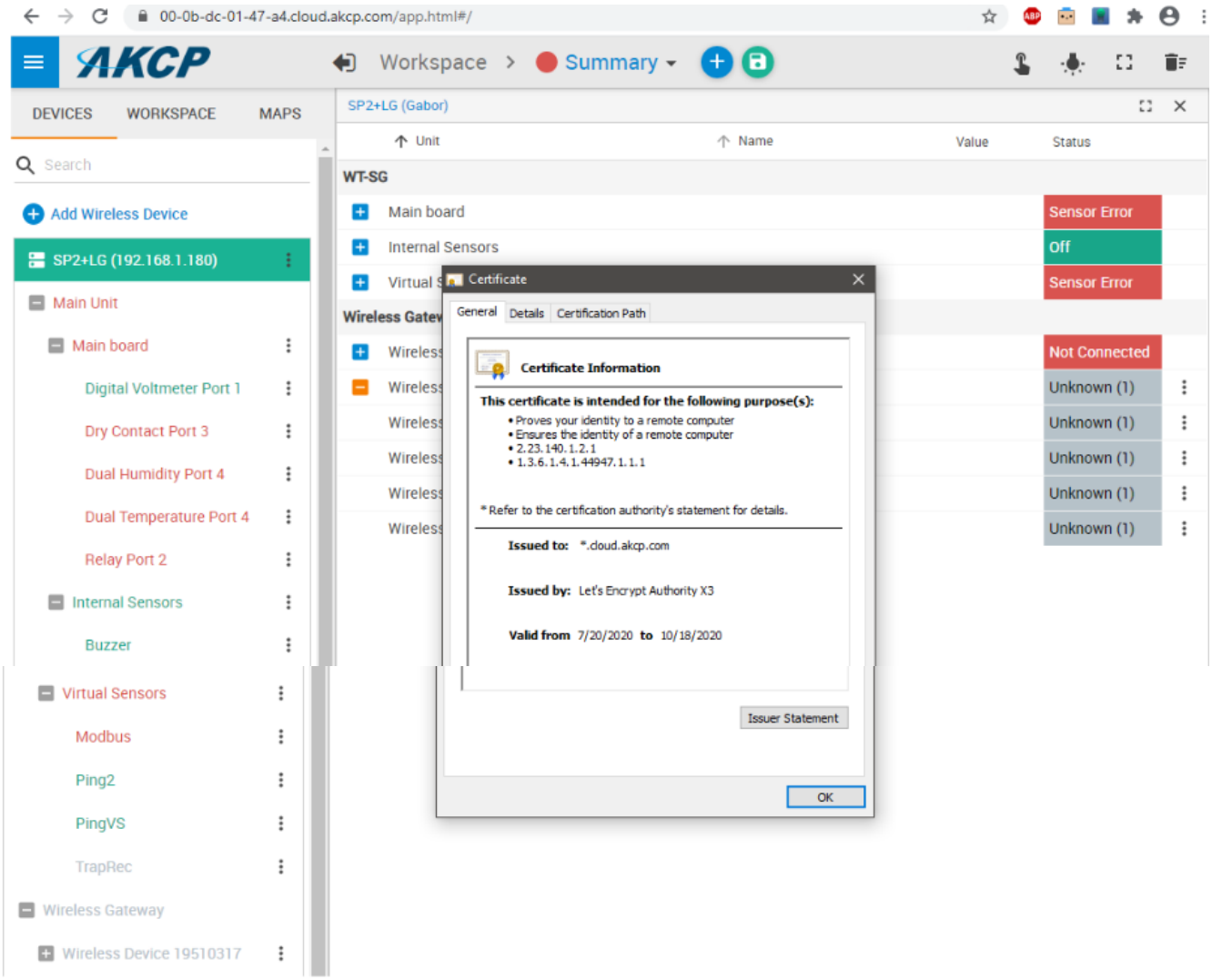
6.



Go to http://cloud.akcp.com, and log in with the Device MAC ID, e.g. 00:0B:DC:01:47:A4



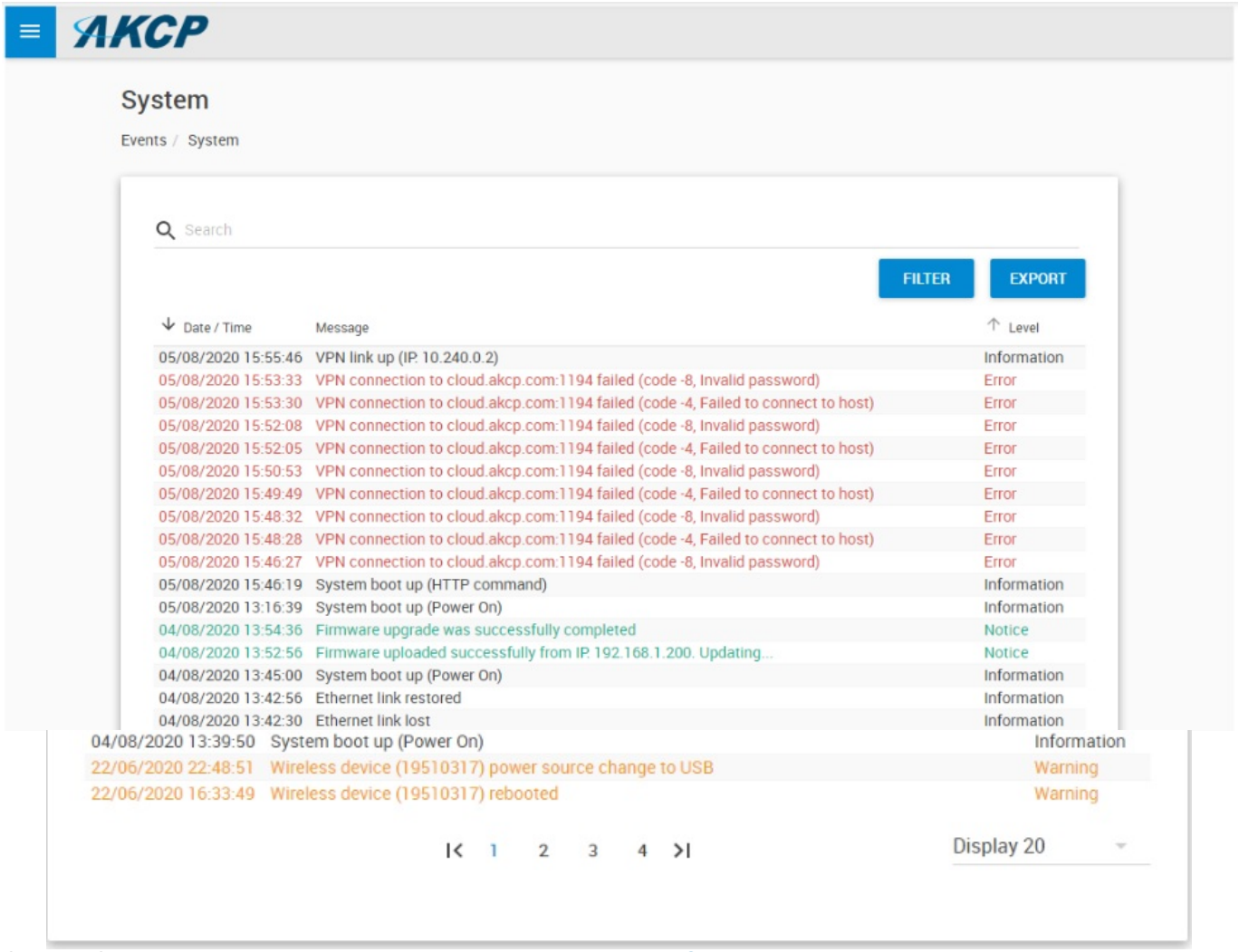
7. The WebUI of the connected device will load (first time loading could be slow), and the HTTPS certificate should show as valid from LetsEncrypt



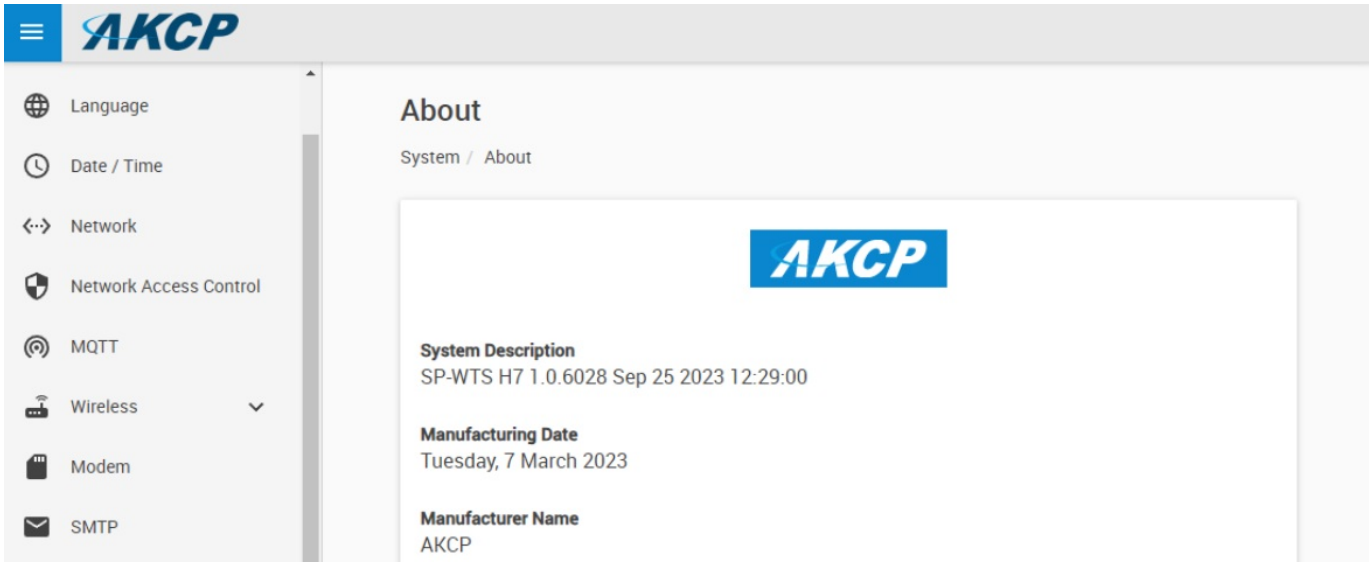
Cloud Troubleshooting

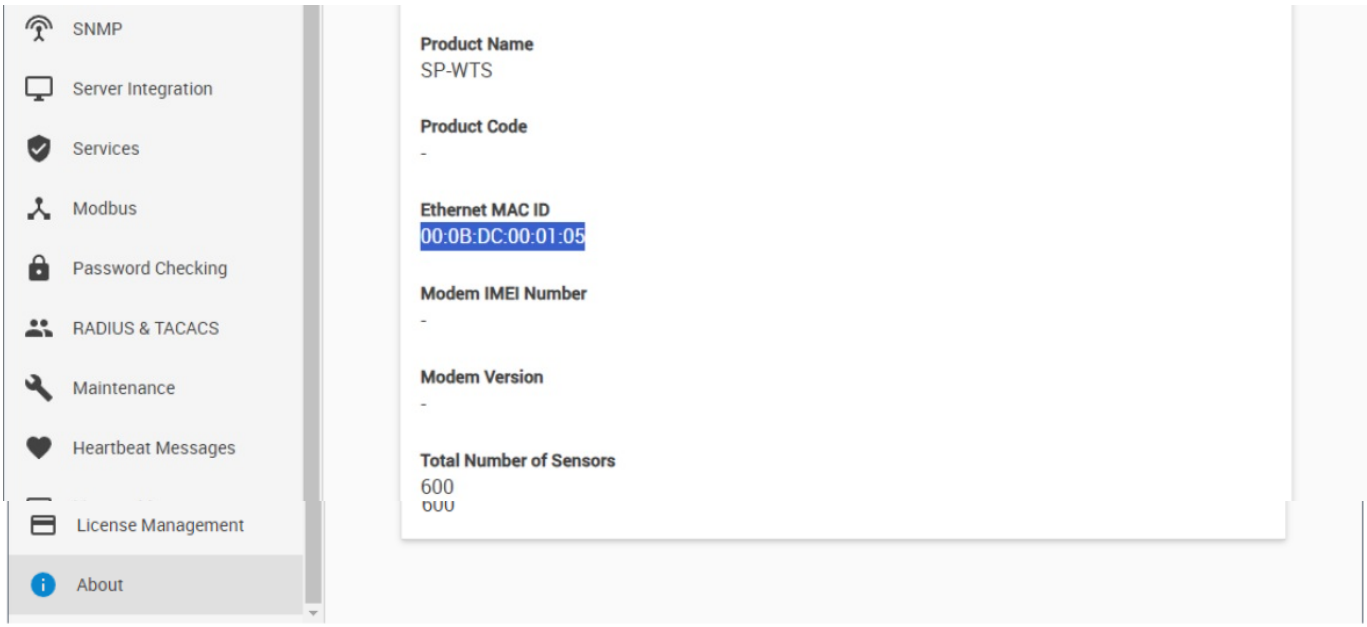
1. First check for common connection issues:
    1. Wrong password
    2. Unit cannot resolve DNS name or no Internet access
    3. Unit's cloud license expired
    4. Unit disabled in Cloud console

Check the unit's Event Log for problems:



Contact Support and ask for help resolving the issue: **support@akcp.com**



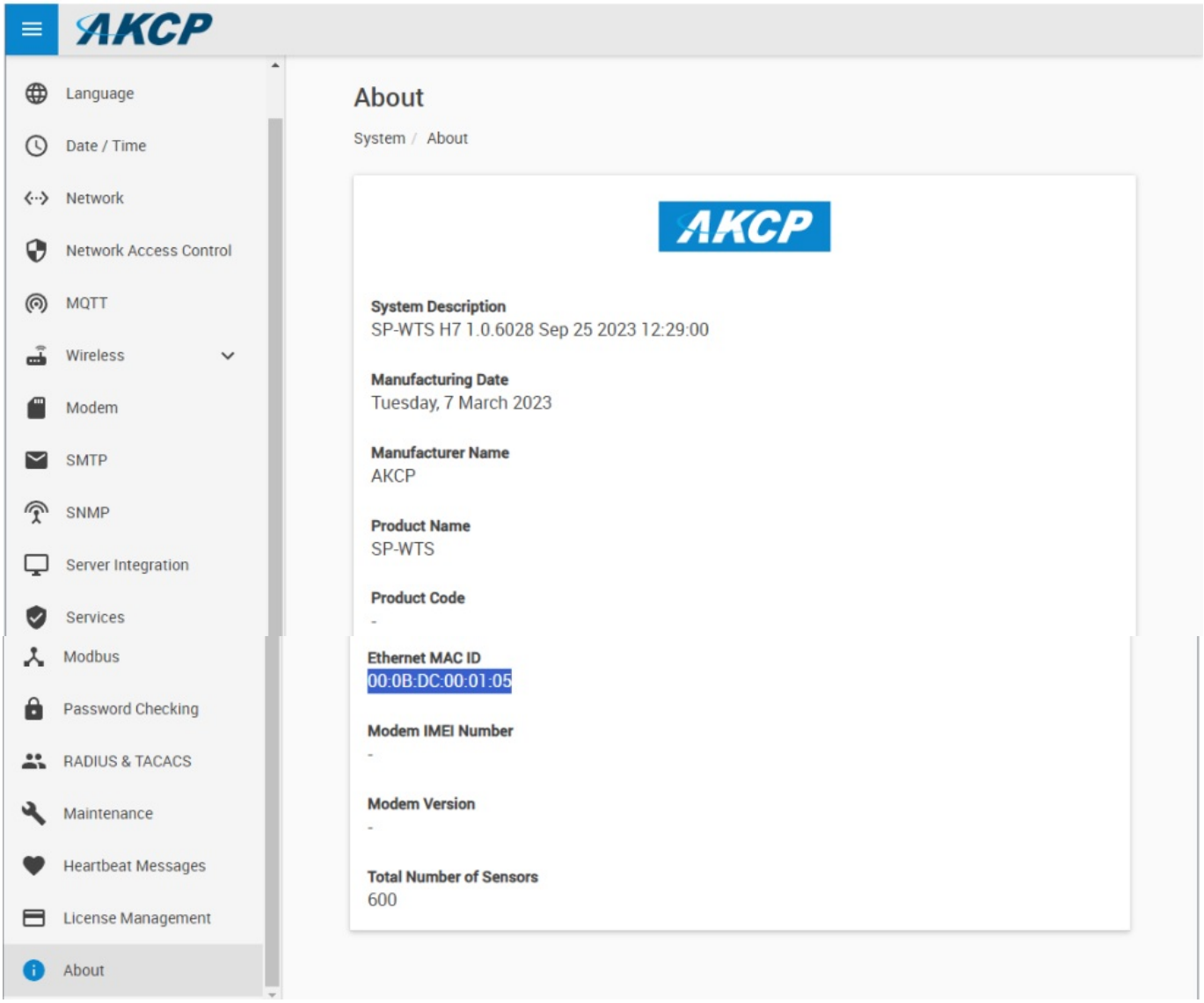


Note your device's MAC ID and System Description.

Features overview

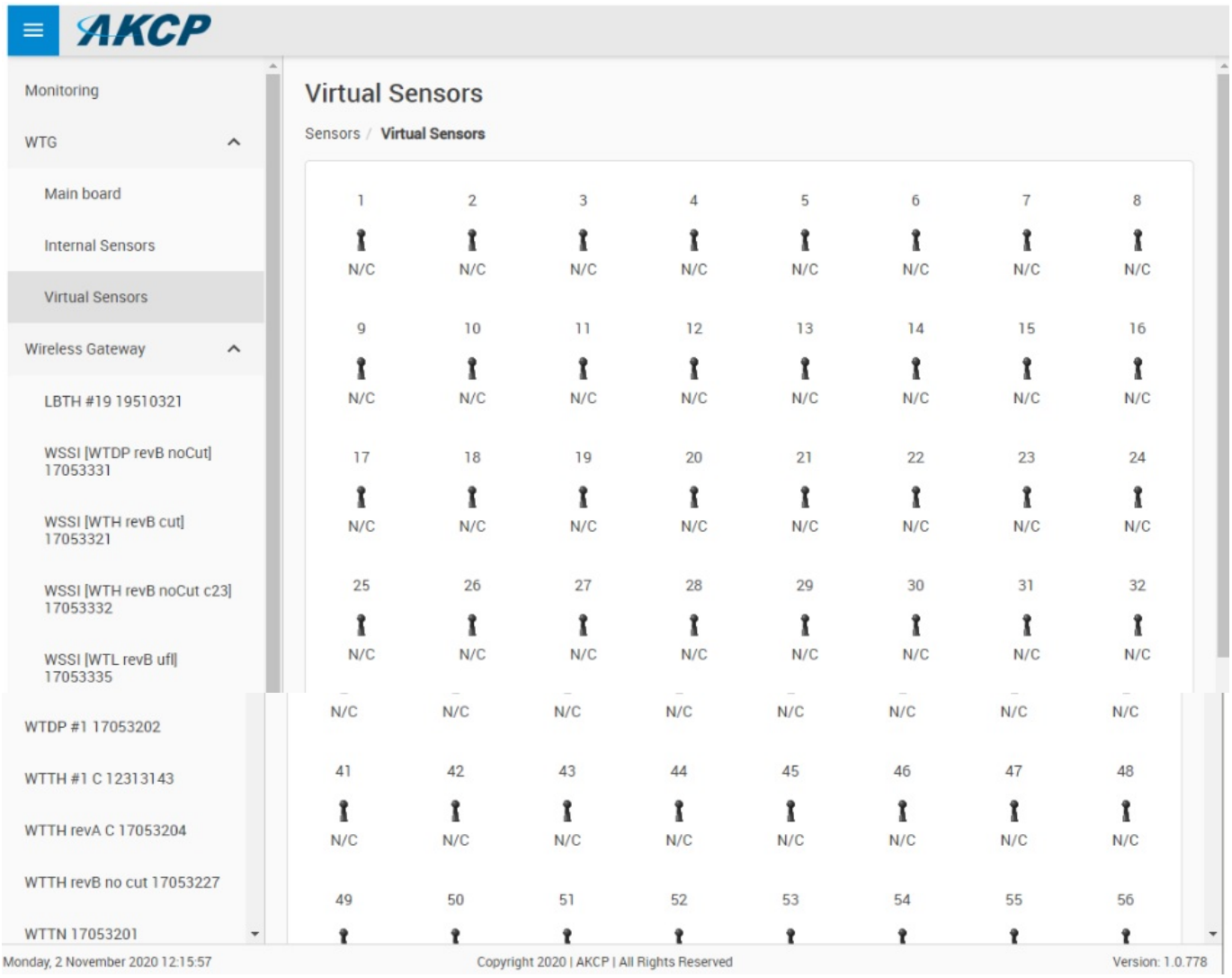
About device

In Settings menu / About you can review the details of your device:



It contains important information such as the firmware version, product type, MAC ID and the total number of sensors.
It is a good practice to make a screenshot of this page when you contact Support.

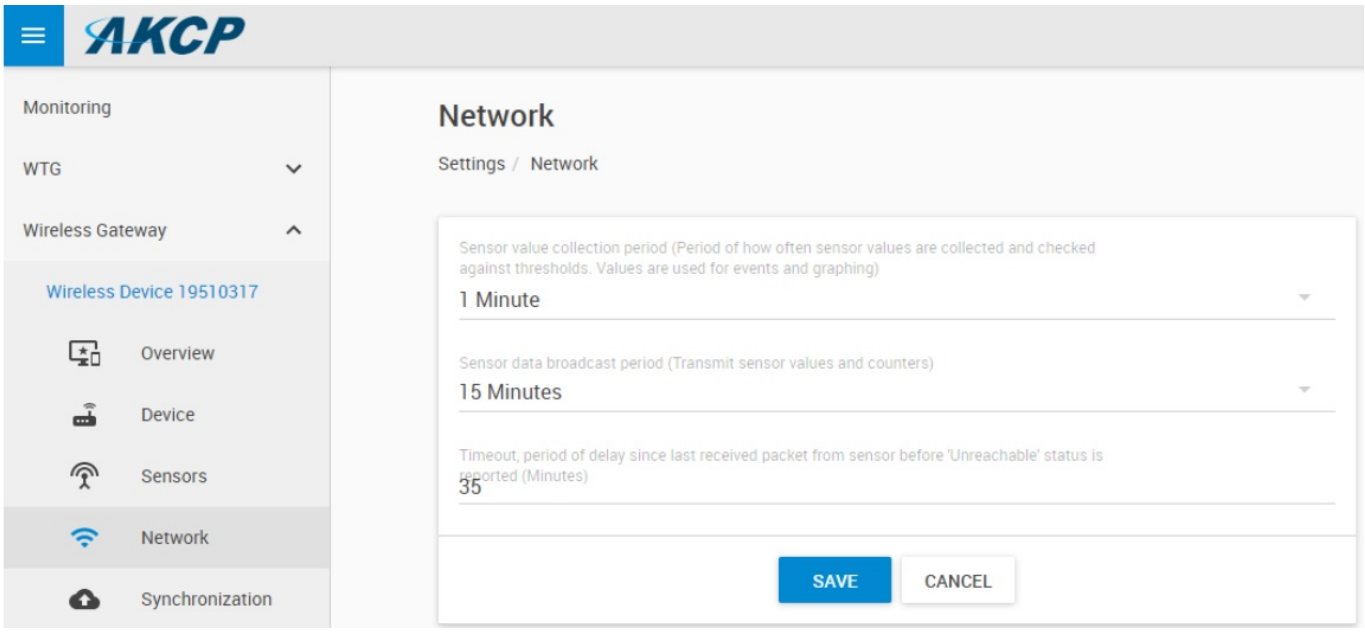
Virtual Sensors
You can access the Virtual Sensor configuration under Sensors menu / Virtual Sensors:



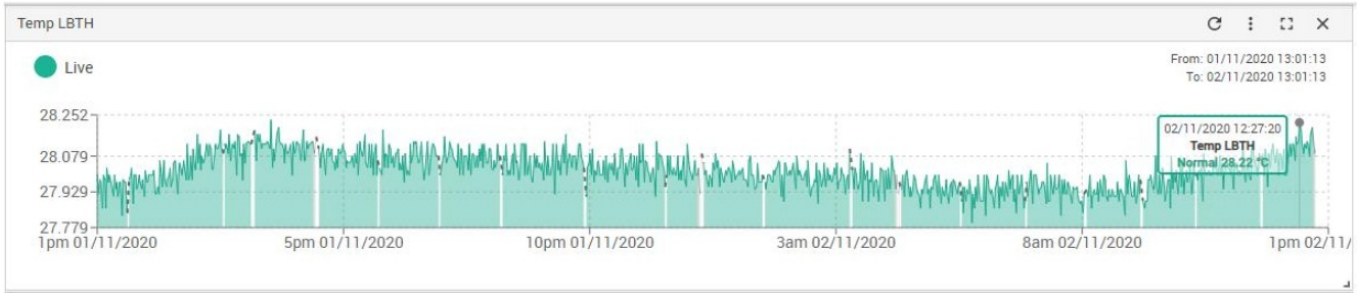
- The configuration and supported features are the same as on our sensorProbe+ family units. Contact Support for the sensorProbe+ manual that contains the Virtual Sensor configuration details.
- **Note:** you will need virtual sensor license to be able to use this feature.

Graphing

- You will need to manually enable graphing collection for any virtual sensors one by one.
- For wireless sensors, the graphing is automatically enabled – but to be able to see the collected graph data, you will need graph license.
- The supported graph features are the same as on our sensorProbe+ family units.
- The wireless sensor graph collection period settings are set on each sensor’s settings page (sensor value collection period):

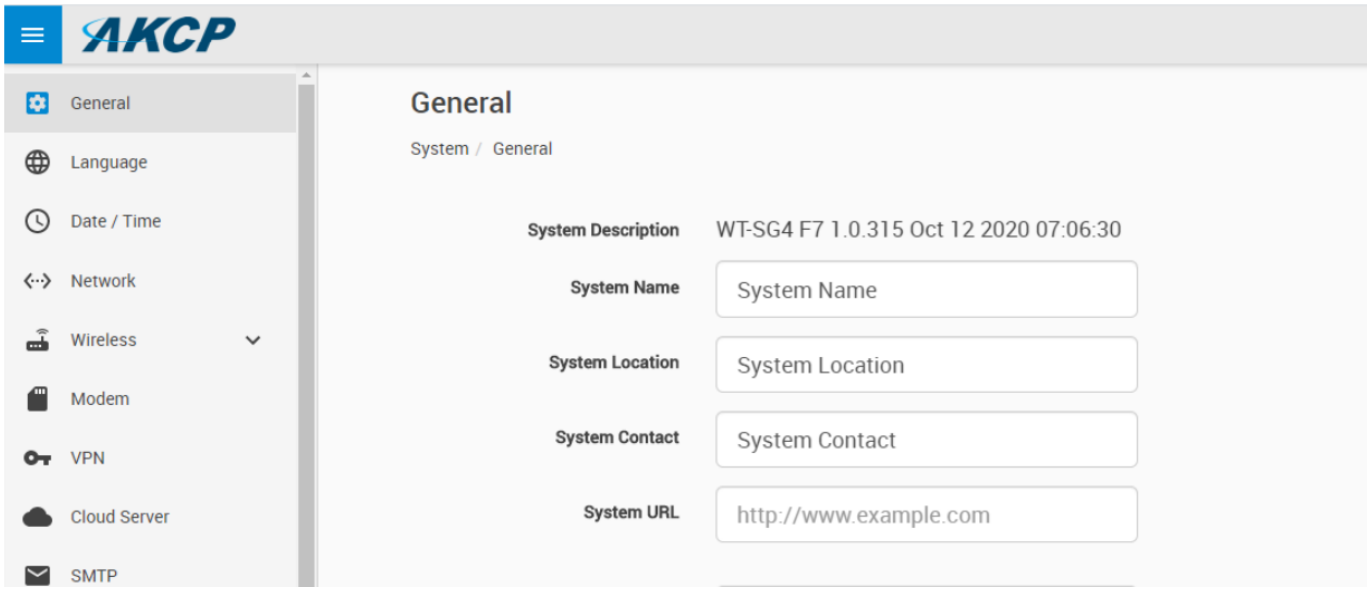


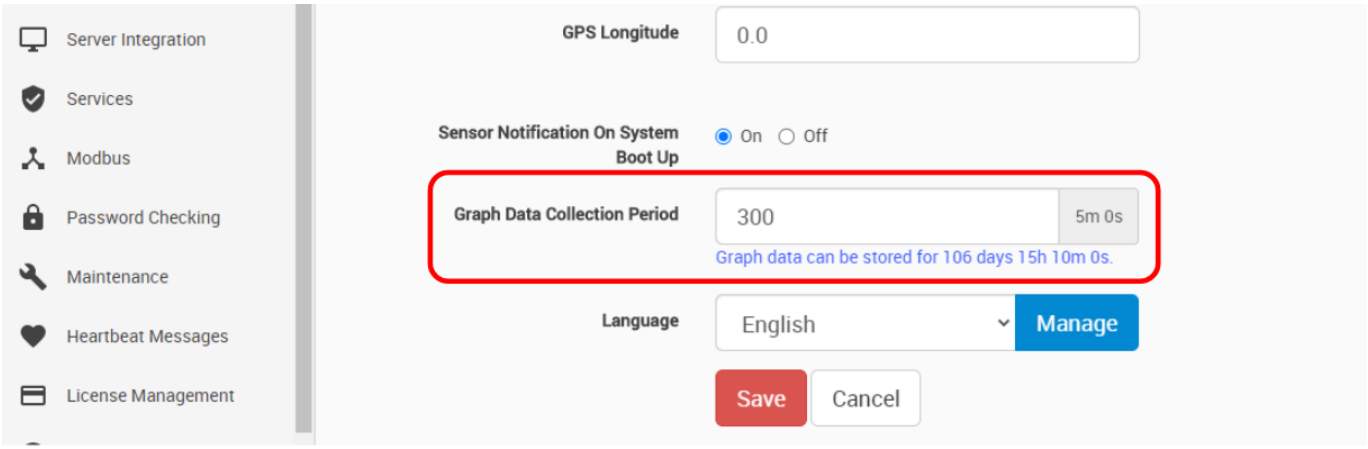
Note: after making changes, you will need to re-sync the wireless sensor and any existing graph data will be deleted!



Important: SP-WTS supports up to 32 WTS sensors graph, including multi-sensor WTS. For example, on WTS-TH there are both Temperature & Humidity sensors.

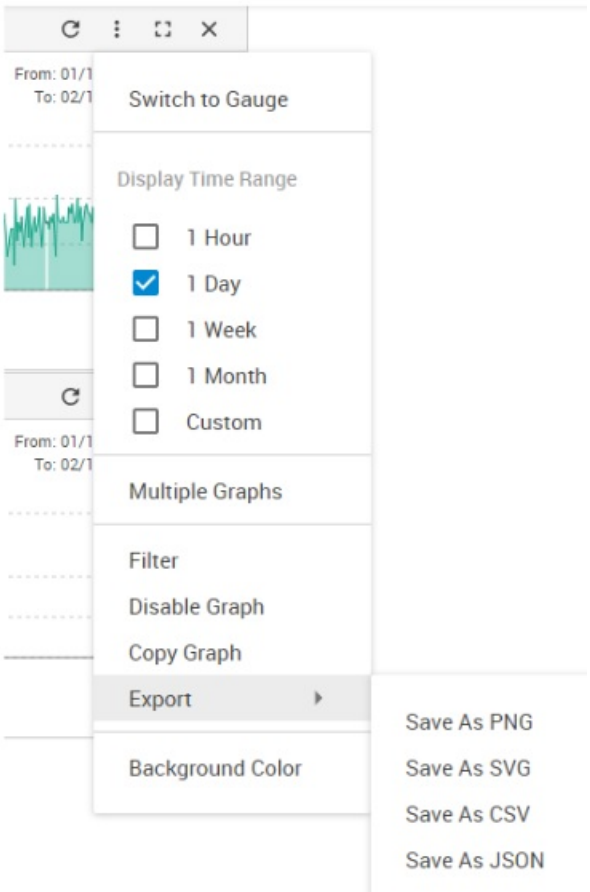
The virtual sensor graph collection period is set on the General page under the Settings menu:





- **Note:** after making changes, any existing graph data will be deleted!
- **Important:** SP-WTS supports up to 14 virtual and wired sensors graph.

You can set further graph options for a sensor after opening the graph gauge and clicking the 3-dot menu in the top right corner.
Remember to export your graph data as it is not included in the backup.



H) SP-WT 4SP information

- Please note the following important limitations for this wireless sensor type.
- The total sensors count is 32x on the SPWT-4SP.
- If you connect multiple sensors (such as CTHMSv2 Thermal Maps) to all 4x ports, you would see only 32x sensors in total.
- Also note that the 3 SP-WT-4SP battery sensors will also count towards the 32 sensors limit. Because of the

battery sensors, the actual useable sensors for the 4 sensors ports will be:

- 32 – 3 = 29
- **Example:** if you attempt to connect 4 CTHMSv2 Thermal Maps (4×11 parameters), that will be
- 4 x 11 = 44 sensors.
- The SPWT-4SP's limit is 32, so only 2x CTHMS strings will show the complete list of its sensors. The 3rd one will be incomplete, and the 4th will not show at all.

There are 2 ways to circumvent this limitation:

1. You can split the Thermal Maps into another SP-WT-4SP (2x on each)
2. You can disconnect the rear Thermal Map string, keeping only the front (on the splitter box), which will effectively turn a CTHMS into THMS and free up the sensor count

See the image and step-by-step instructions below how to do the second method.

You can disconnect this Rear Thermal Map string on the Splitter Box

Example: if you only need the temp sensors on the Thermal Map strings, do the following:

1. Unplug all sensors from all ports on the SP-WT-4SP.
2. Disconnect the rear thermal map string, keeping only the front (turning the CTHMSv2 sensor into THMSv2).
3. Offline all current sensors on all ports, press the SP-WT-4SP button once each time after pressing offline on Web UI (to force sync the setting changes).
4. Plug in 1st Thermal Map to port 1 and press the SP-WT-4SP button once then wait for it to online all sensors. There should be only 4 sensors online (3 Temperatures, 1 Humidity, 7 Total).
5. Plug in 2nd Thermal Map to port 2 and press the SP-WT-4SP button once then wait for it to online all sensors

(6 Temperatures, 2 Humidity, 11 Total).

6. Plug in 3nd Thermal Map to port 3 and press the SP-WT-4SP button once then wait for it to online all sensors (9 Temperatures, 3 Humidity, 15 Total).
7. Plug in 4nd Thermal Map to port 4 and press the SP-WT-4SP button once then wait for it to online all sensors (12 Temperatures, 4 Humidity, 19 Total).

Please contact **support@akcp.com** if you have any further technical questions or problems.
Thanks for Choosing AKCP!

Documents / Resources

	**AKCP SP-WTS Wireless Tunnel Server** [pdf] User Guide SP-WTS Wireless Tunnel Server, SP-WTS, Wireless Tunnel Server, Tunnel Server

References

- **User Manual**