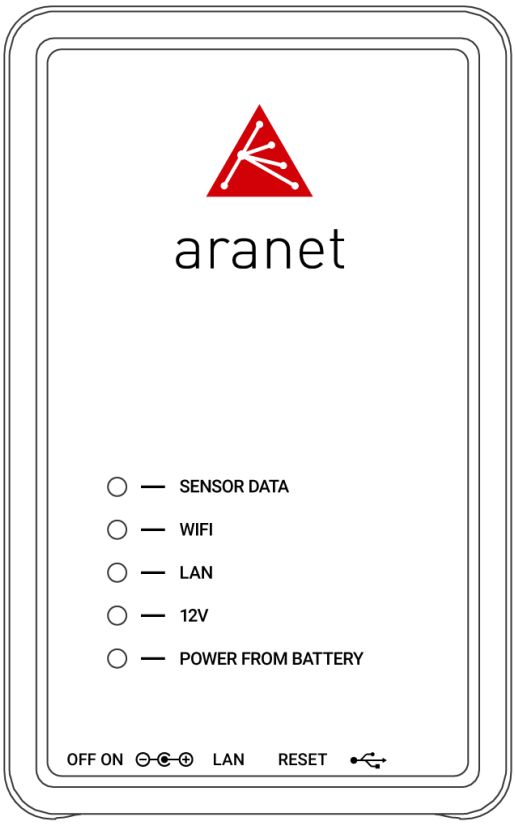
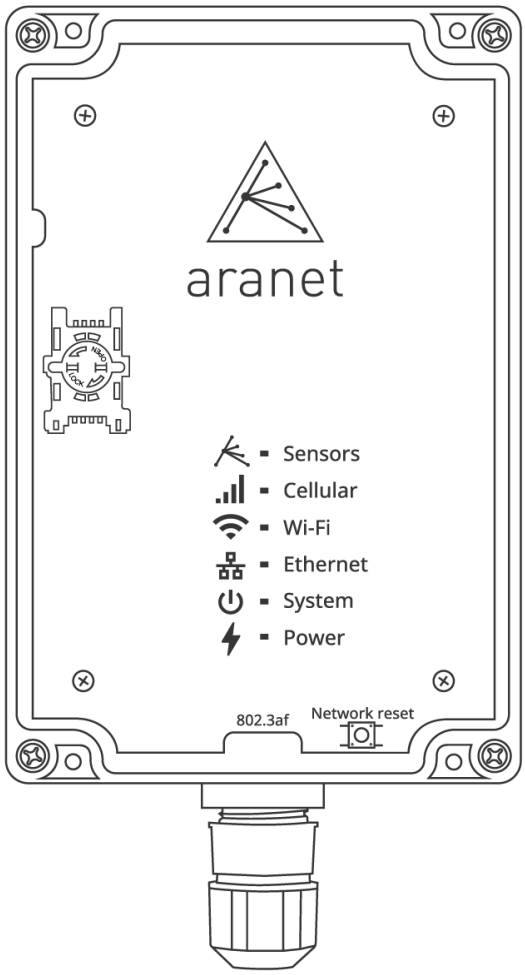
aranet

USER GUIDE

Aranet PRO/Aranet PRO Plus/ Aranet PRO Plus LTE





Applicable for **Aranet PRO/Aranet PRO Plus** with firmware starting from v.4.13.5

Document revision v.9.7

January 2026

FCC Compliance statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the device.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from the one the receiver is connected to.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and your body.



Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Aranet PRO/PRO Plus does not contain serviceable parts. Warranty will not be applicable in the event that Aranet PRO has been opened or Aranet PRO Plus warranty seals are damaged.

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Industry Canada Regulatory Statement

This device complies with Industry Canada's license-exempt RSSs. Operation is subject to the following two conditions:

1. This device may not cause interference; and

2. This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

LP0002 3.8 Low Power Radio Frequency Warning

根據 NCC LP0002 低功率射頻器材技術規範_章節 3.8.2：

取得審驗證明之低功率射頻器材，非經核准，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

低功率射頻器材之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。

前述合法通信，指依電信管理法規定作業之無線電通信。

低功率射頻器材須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

Brasil

Para maiores informações, consulte o site da Anatel: www.gov.br/anatel

Este equipamento não tem direito à proteção contra interferência prejudicial e não pode causar interferência em sistemas devidamente autorizados.

TABLE OF CONTENTS

1 INTRODUCTION 6

1.1 ARANET PRO BASE OVERVIEW 7
1.1.1 What's in the box 7
1.1.2 Aranet PRO indicators 8
1.1.3 Aranet PRO mounting 9
1.1.4 Aranet PRO ports 9
1.1.5 Aranet PRO power options 10
1.1.6 Internal battery backup 10

1.2 ARANET PRO Plus BASE OVERVIEW 11
1.2.1 What's in the box 11
1.2.2 Aranet PRO Plus front view 12
1.2.3 Aranet PRO Plus indicators 13
1.2.4 Aranet PRO Plus mounting 13
1.2.5 SIM-card installation 14
1.2.6 Aranet PRO Plus power options 15
1.2.7 Emergency switching off 15

1.3 ARANET PRO/PRO Plus SPECIFICATIONS 16

2 INITIAL SETUP 18

2.1 Initial setup of Aranet PRO/PRO Plus 18
2.1.1 Initial setup of Aranet PRO/PRO Plus using built-in Wi-Fi Access Point 18
2.1.2 Initial setup of Aranet PRO/PRO Plus using Ethernet cable 19
2.1.3 Initial Login and Fast Settings 20

2.2 Pair sensors to Aranet PRO /PRO Plus 24

2.3 Connecting Aranet PRO/PRO Plus to internet network 26
2.3.1 Connecting Aranet PRO/PRO Plus to internet network using Ethernet cable 27
2.3.2 Connecting Aranet PRO/PRO Plus to internet network using local Wi-Fi network 29
2.3.3 Connecting Aranet PRO Plus LTE to internet network using LTE Modem 32

2.4 Accessing the Aranet PRO/PRO Plus from Internet 33

3 ARANET SENSORHUB OVERVIEW 34

3.1 Main navigation bar 34

3.2 Main menu 34

3.3 Graphs 36

3.4 Sensors 39

3.5 Groups 39
3.5.1 Using groups 39

3.6 System 42
3.6.1 Status menu 42
3.6.2 Region menu 43
3.6.3 Time menu 44
3.6.4 Network menu 45
3.6.5 Firmware menu 49
3.6.6 Backup menu 51
3.6.7 Tools menu 52
3.6.8 Licenses menu 52
3.6.9 Notifications 52
3.6.10 Radio menu 59
3.6.11 Aranet MINI monitor mode 59

3.6.12 Users menu 62
3.6.13 SNMP menu 63

3.7 Aranet Cloud *65*

3.8 Integrations *69*
3.8.1 MQTT 69
3.8.2 Modbus 72
3.8.3 BACnet IP 74
3.8.4 InfluxDB v2 79

4 SENSORS' SPECIFIC NOTES **83**

4.1.1 Weight Sensor 83
4.1.2 Soil (Substrate) VWC, EC and T Sensor 84
4.1.3 4-20 mA and Voltage Sensors 88
4.1.4 Stem Micro-Variation sensor 89
4.1.5 Ultrasonic Distance sensor 92
4.1.6 NH3 Sensor kit 93

5 LEGAL INFORMATION **94**

5.1 TERMS OF USE *94*

5.2 WARRANTY *94*

5.3 RMA (RETURN MERCHANDISE AUTHORIZATION) FORM *96*

5.4 INTELLECTUAL PROPERTY RIGHTS *96*

5.5 DATA SECURITY *97*

5.6 CLEANING AND MAINTENANCE *97*

5.7 ACCESSORIES *97*

5.8 DISCLAIMER *98*

5.9 ADDITIONAL INFORMATION *98*

1 INTRODUCTION

Aranet offers environmental monitoring solutions for a variety of businesses. Aranet PRO and Aranet PRO Plus are industrial-grade environment monitoring solutions.

Aranet PRO/PRO Plus can support 12, 50 or 100 sensors depending on the license purchased.

The base station has exceptional sensitivity and allows placing the sensors within line-of-sight range of at least 3km/1.9mi.

All Aranet PRO/Aranet PRO Plus base stations include embedded local webserver Aranet SensorHUB. Easy to use interface allows viewing, analyzing, and comparing data in real-time, setting thresholds for alarms as well as exporting reports. The responsive design of the software adapts to smartphone, tablet, or laptop.

The document describes the functionality of Aranet PRO/Aranet PRO Plus with firmware version starting v3.0.1.



Aranet PRO and Aranet PRO Plus /PRO Plus LTE differences in hardware and software are highlighted in corresponding chapters using the icon.

Aranet PRO Plus and Aranet PRO Plus LTE differ by 4G LTE modem incorporated in PRO Plus LTE only. The common title “Aranet PRO Plus” is used in this document except the chapters concerning the modem presence.

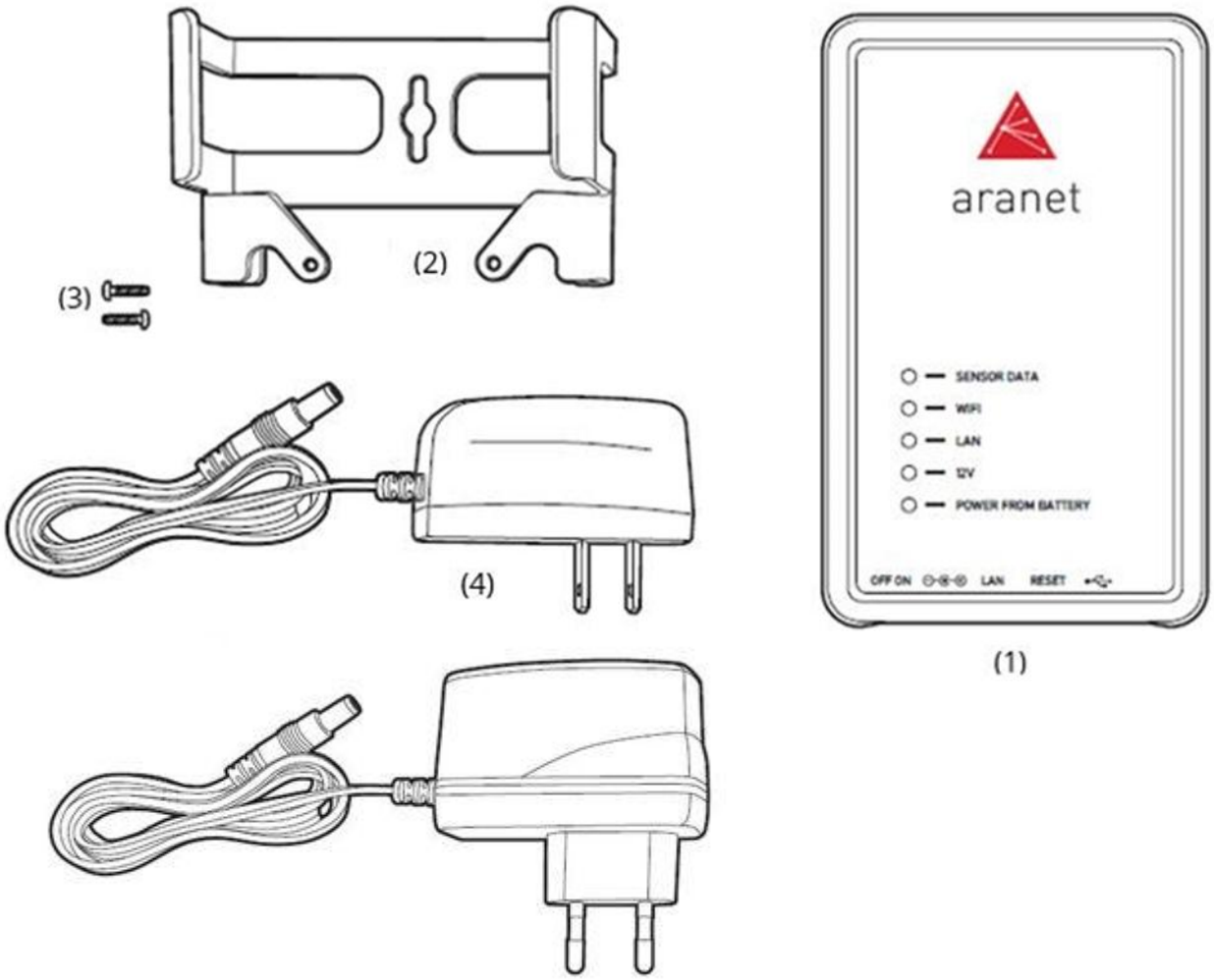


Aranet PRO with part numbers TDSBWPA1.xxx, TDSBWPA2.xxx, TDSBWPC2.xxx are referred to this document as **Aranet PRO Mk2** and their specific differences in software are highlighted in corresponding chapters using the icon.

Visit **www.aranet.com** for more information.

1.1 ARANET PRO BASE OVERVIEW

1.1.1 What's in the box



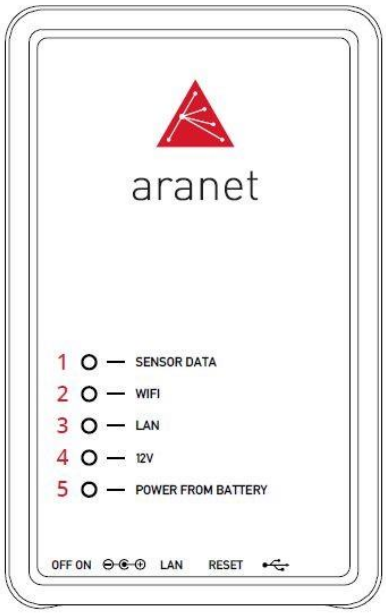
(1) 1 pc of Aranet PRO base station with installed Aranet SensorHUB software and License

(2) 1 pc of Aranet PRO base station mount

(3) 2 pcs of W1412 screws

(4) 1 pc of AC power adapter (EU or US version depending on product version)

1.1.2 Aranet PRO indicators



(1) Sensor data indicator LED – flashes amber every time a data packet is received from a sensor.

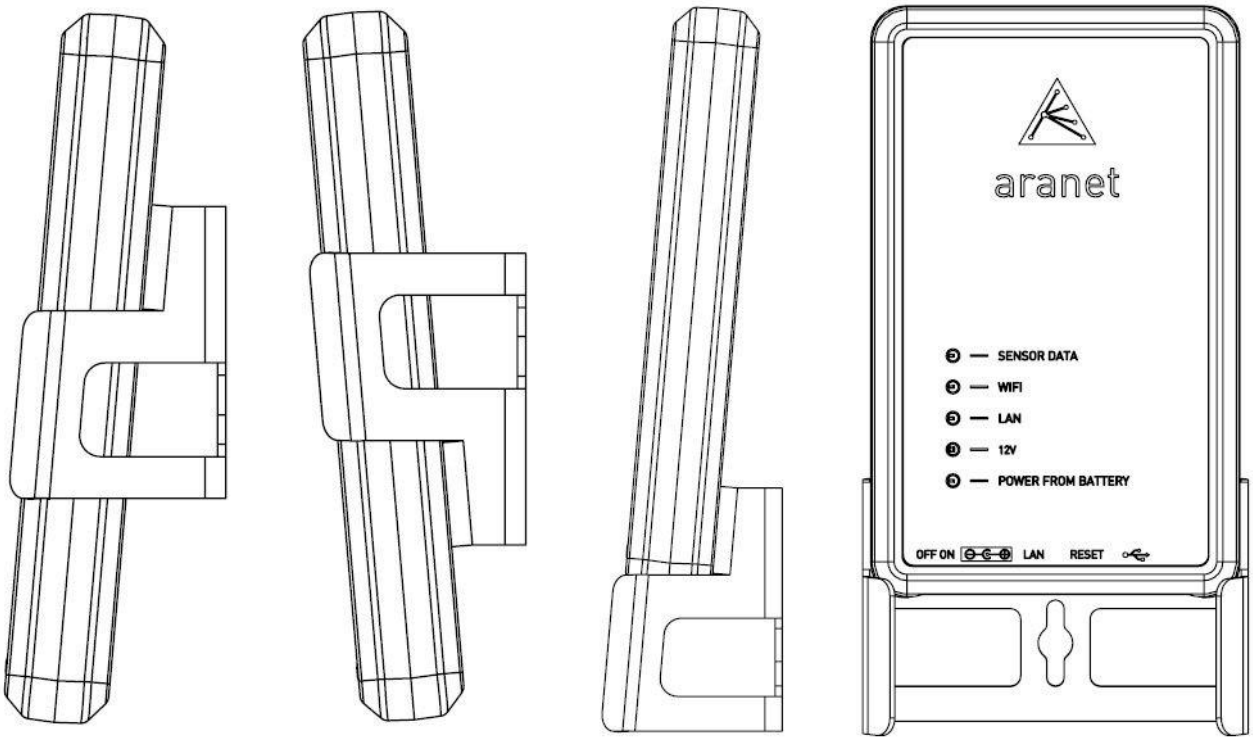
(2) Wi-Fi connection indicator LED – amber light when Aranet PRO is connected to Wi-Fi or works in Access Point mode

(3) LAN connection indicator LED – amber light when Aranet PRO is connected to LAN interface using an Ethernet cable

(4) 12V power indicator LED – green light when Aranet PRO is connected to 12V power either through a PoE connection or with the included AC power adapter

(5) Battery power indicator LED – red light when Aranet PRO is using built-in backup battery power

1.1.3 Aranet PRO mounting



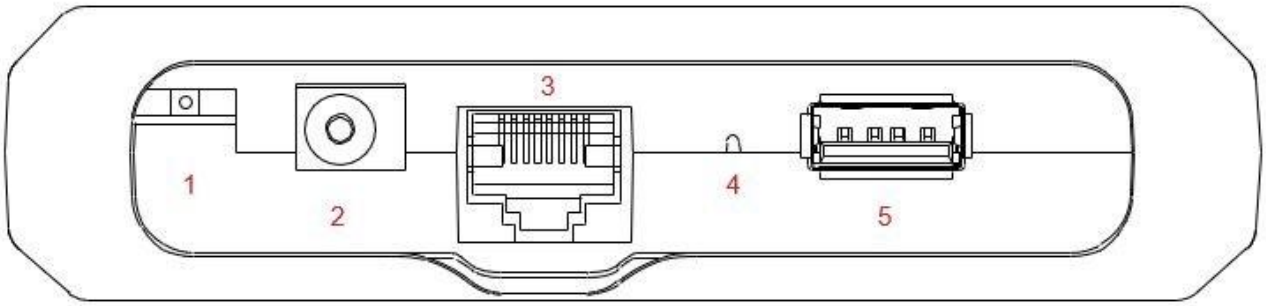
(1) (2) (3)

(1) Base station mount configuration for positioning on a vertical surface (e.g., wall).

(2) Base station mount configuration for positioning on a vertical surface (e.g., wall).

(3) Base station mount configuration for placement on a horizontal surface (e.g., table).

1.1.4 Aranet PRO ports



(1) On-Off switch – switch in the left position means Aranet PRO is turned off, switch in the right position means Aranet PRO is turned *ON*

(2) AC Power port - for using the included AC power adapter to power Aranet PRO

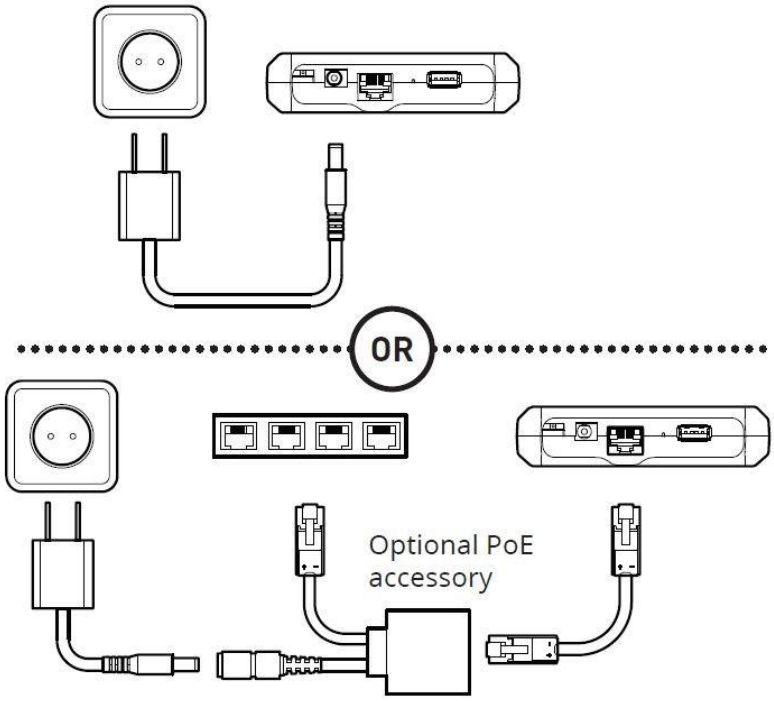
(3) Ethernet port – for LAN connectivity as well as PoE connectivity

(4) Reset button — press, and hold for 5 seconds or more and then release the button to reset network settings and password of “root” user account. The reset button is accessed through the hole with some thin object like pencil.

(5) USB port – for connecting USB modem to enable SMS notification functionality.

1.1.5 Aranet PRO power options

Aranet PRO can be powered with the included power adapter either directly or via the optional passive Ethernet injector PN TDAPOE01.



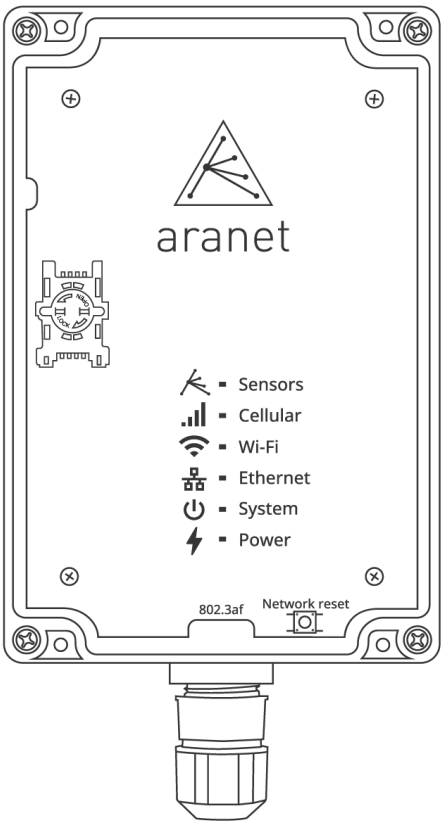
1.1.6 Internal battery backup

Aranet PRO is supplied with built in battery backup providing up to 30 minutes of power supply in case of main power failure. It is meant only as a backup and allows Aranet PRO to shut down safely. System warning (if enabled) will be issued in case of main power failure and before Aranet PRO switches off completely. Warning will be sent as email and/or SMS to the destination configured by users belonging to the Administrator group.

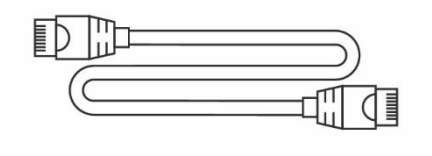
!WARNING! ARANET PRO BASE STATIONS CONTAIN A LI-ION 14500 PROTECTED TYPE RECHARGEABLE BATTERY AND A CR2032 TYPE BATTERY. RISK OF DAMAGE IF BATTERY IS REPLACED BY AN INCORRECT TYPE. THE USER IS RESPONSIBLE FOR DISPOSAL OF BATTERIES ACCORDING TO THE STATE LEGISLATION.

1.2 ARANET PRO Plus BASE OVERVIEW

1.2.1 What's in the box



(1)

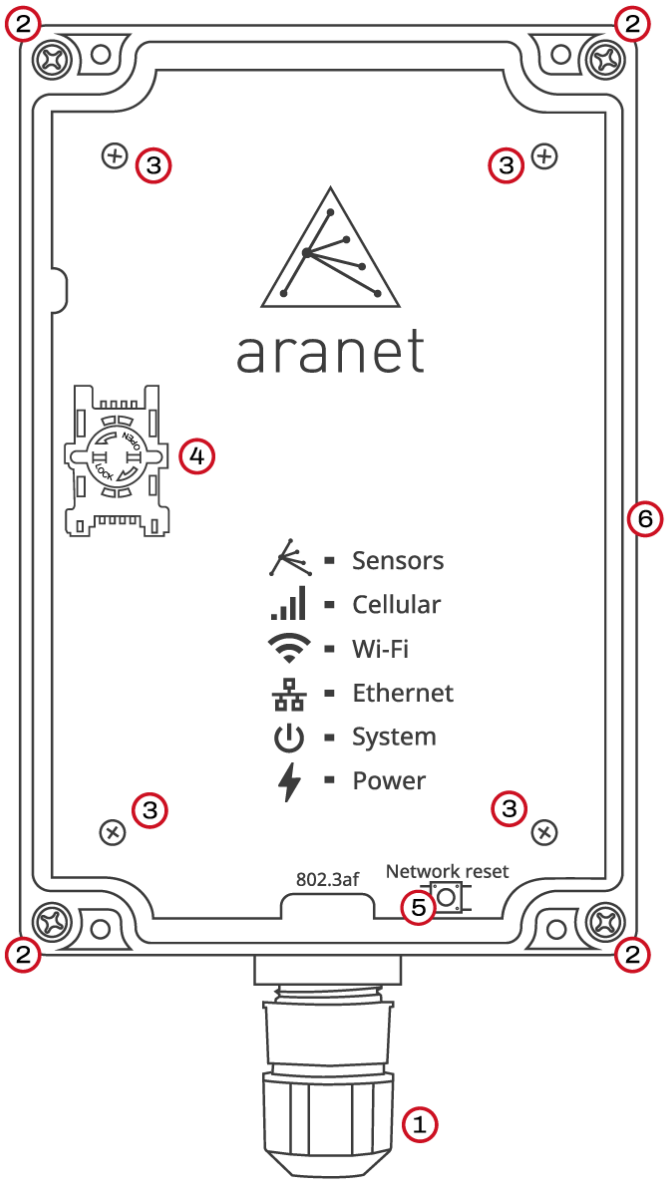


(2)

(1) 1 pc of Aranet PRO Plus base station with installed Aranet SensorHUB software and License

(2) 1 pc of Cat.5 Ethernet cable 1m

1.2.2 Aranet PRO Plus front view



(1) IP68 protected RJ-45 Ethernet port for Network and Power connection.

(2) Screws for detaching/securing Aranet PRO Plus case lid – 4 pcs.

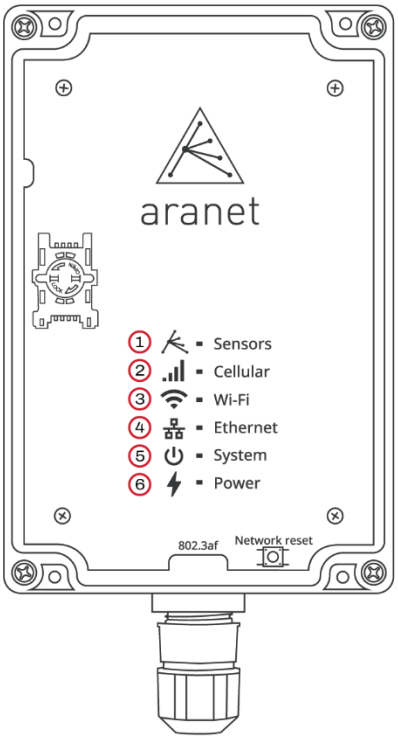
(3) Warranty seals - Nylon screws – 4 pcs. Warranty is lost if damaged.

(4) SIM-card holder (Aranet PRO Plus LTE P/N TDSBOB03, TDSBOBU3, TDSBOBC3 only).

(5) Network Reset button; press and hold for 5 seconds or more and then release the button to reset network settings and password of “root” user account.

(6) Humidity membrane.

1.2.3 Aranet PRO Plus indicators



(1) **Sensors** data indicator LED – flashes amber every time a data packet is received from a sensor.

(2) **Cellular** connection indicator – slow flashes red when no SIM-card is installed, or no connection is established; fast flashes with steady pauses when connected to GSM LTE network.

(3) **Wi-Fi** connection indicator LED – yellow light when Aranet PRO Plus Wi-Fi network interface is enabled, and the base is connected to Wi-Fi or works in Access Point mode.

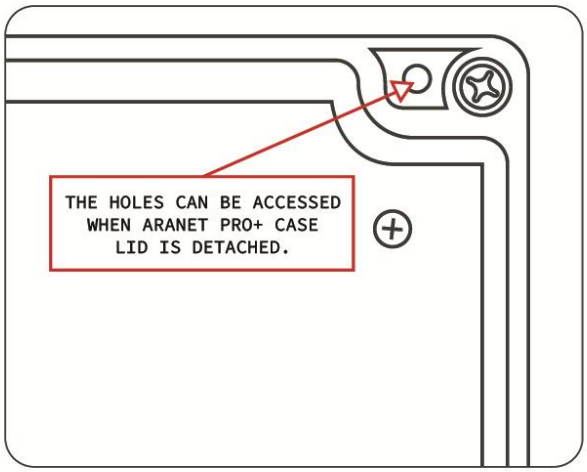
(4) **Ethernet** connection indicator LED – yellow light when Aranet PRO Plus is connected to LAN using cable

(5) **System** indicator – green light when Aranet PRO Plus system is started.

(6) **Power** indicator LED – green light when Aranet PRO Plus is powered.

1.2.4 Aranet PRO Plus mounting

Aranet PRO Plus case has four dedicated holes for 4...4.5 mm screws by which the base can be mounted to smooth surface:



1.2.5 SIM-card installation

Aranet PRO Plus LTE P/N TDSBOB03, TDSBOBU3, TDSBOBC3 is equipped with GSM LTE 4G modem accepting Mini size SIM-card.

To install SIM-card into modem:

(1) Disconnect Aranet PRO Plus LTE from a power source and wait for the system to shutdown (all LEDs go Off).

(2) Detach Aranet PRO Plus LTE transparent lid by loosening 4 screws at the base's case corners.

(3) Locate the SIM-card holder.

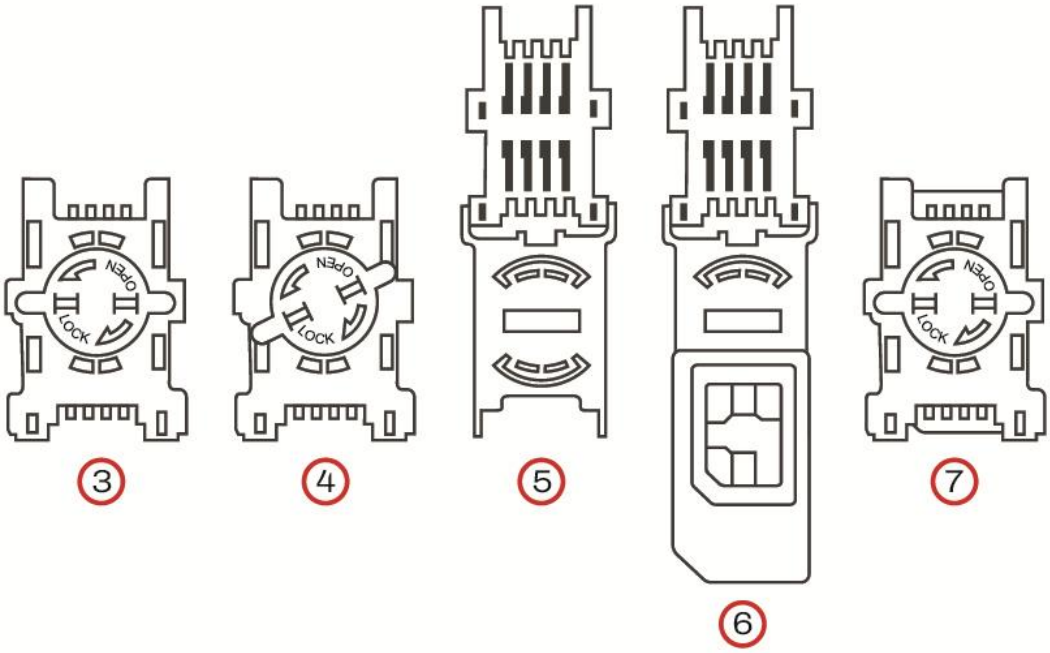
(4) Loosen the holder cover by rotating the metal locking plate counterclockwise.

(5) Flip the cover off.

(6) Insert SIM-card into the cover observing correct orientation.

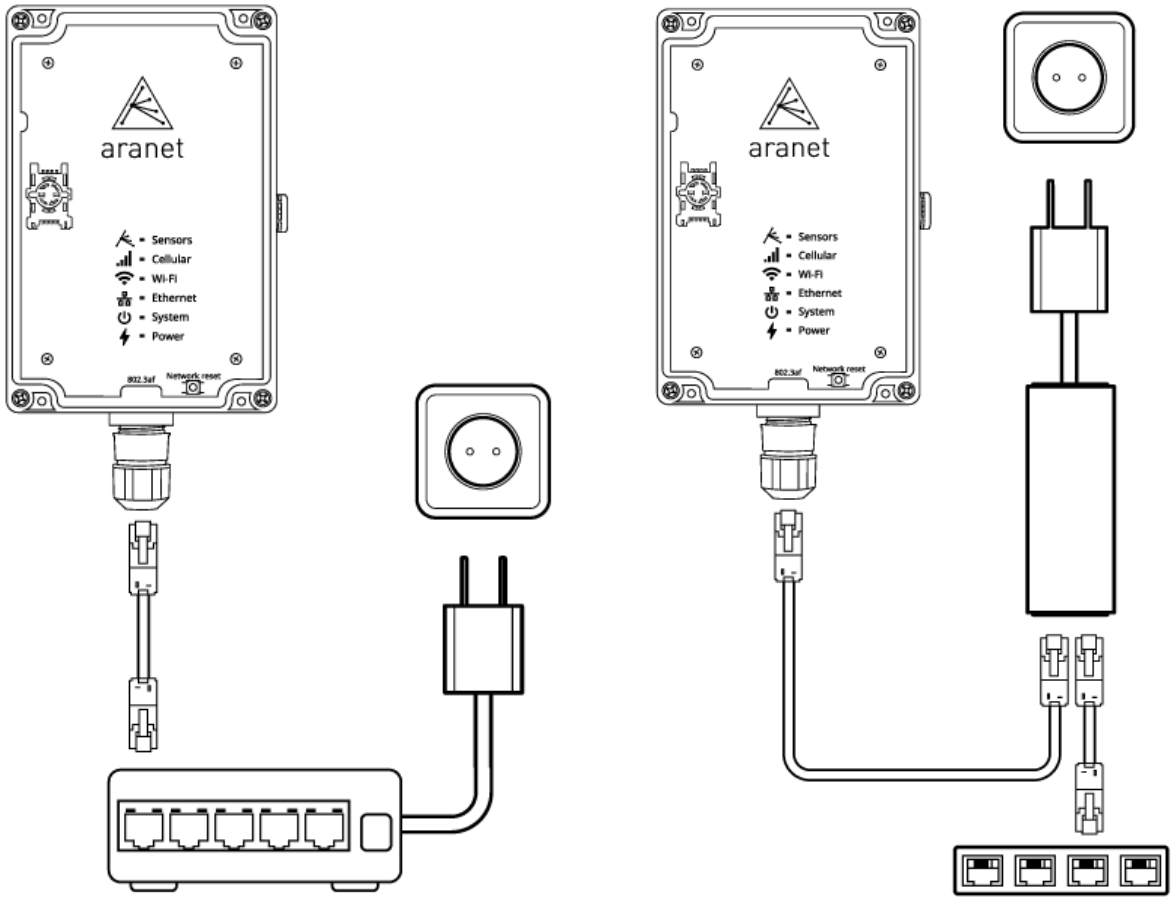
(7) Flip the cover back and fasten it by rotating the metal locking plate clockwise.

(8) Put back Aranet PRO Plus LTE lid and fasten 4 screws.



1.2.6 Aranet PRO Plus power options

Aranet PRO Plus is powered by 802.3af PoE directly from the PoE-enabled Ethernet switch or using optional active PoE injector PN TDAPOE03.



1.2.7 Emergency switching off

Aranet PRO Plus can shut down and switch off safely in case of main power failure. System notification will be sent as email and/or SMS to the destination configured by users belonging to the Administrator group.

!WARNING! ARANET PRO Plus BASE STATIONS CONTAIN CR2032 TYPE BATTERY. RISK OF DAMAGE IF BATTERY IS REPLACED BY AN INCORRECT TYPE. THE USER IS RESPONSIBLE FOR THE DISPOSAL OF BATTERIES ACCORDING TO THE STATE LEGISLATION.

1.3 ARANET PRO/PRO Plus SPECIFICATIONS

	Aranet PRO	**Aranet PRO Plus**	**Aranet PRO Plus LTE**
Part Number (P/N)	TDSBWB01, TDSBWBU1, TDSBWBC1, TDSBWPA1.xxx, TDSBWPA2.xxx, TDSBWPC2.xxx	TDSBOA03, TDSBOAU3, TDSBOAC3	TDSBOB03, TDSBOBU3, TDSBOBC3
Maximum sensor count*	100/50/12		
Alarm type	Email		
Optional alarm	SMS notification through an external USB modem	N/A	SMS notification
Memory	10 years of measurements of 100 sensors**		
Receiver sensitivity	-127 dBm		
Channels – Europe EU868	Channel 1: 868.10 MHz		
	Channel 2: 868.30 MHz		
	Channel 3: 868.50 MHz		
Channels – Americas US920	Channel 1: 917.3 / 922.9 MHz		
	Channel 2: 917.5 / 923.1 MHz		
	Channel 3: 917.7 / 923.3 MHz		
	Channel 4: 917.9 / 923.5 MHz		
Channels – Russia RU869	Channel 1: 868.85 MHz	N/A	
	Channel 2: 869.05 MHz	N/A	
Channels – Asia (AS1) AS920	Channel 1: 923.2 MHz		
Channels – Asia (AS2) AS923	Channel 1: 923.1 MHz		
	Channel 2: 923.3 MHz		
User interface	Aranet SensorHUB		
Interface accessibility	PC, tablet, or smart phone connected via Ethernet cable or local Wi-Fi connection		
Interface languages	English, French, Spanish, Nederland, Russian, Latvian, German, Portugal		
Temperature scale	Celsius, Fahrenheit, Kelvin		
Data protection	Password-protected user accounts, encryption for data		

Communication	Ethernet cable, local Wi-Fi (2.4 GHz)	Ethernet cable, local Wi-Fi (2.4 GHz),	Ethernet cable, local Wi-Fi (2.4 GHz) GSM LTE 4G
Browser compatibility	Latest versions of Chrome Safari Edge		
Power options	AC/DC power adapter	PoE 802.3af	
	Optional power supply with Passive 12V PoE injector	Optional PoE injector P/N TDAPOE03	
	Built-in battery (backup power up to 30 min)	Supercapacitors for safe shutdown	
Operating temperature	0°C to 40°C / 32°F to 104°F	-40 °C to +60 °C / -40 °F to 140 °F	
Operating humidity	0% to 100% non-condensing		
Dimensions	107x170x26 mm / 4.2×6.7×1.02 in w/o mounting bracket	180 x 120 x 45 mm / 7.09 x 4.72 x 1.77 in	
Ports	12VDC power port, 1 x Ethernet, 1 x USB A	1 x Ethernet	
SIM-card	N/A	N/A	1 x Mini size
Weight	190g/ 6.7oz w/o mounting bracket	250 g /(8.8 oz	
Construction	ABS Plastic, steel mounting bracket	PC plastic	
Protection class	IP42	IP67	
CE / FCC / IC Marking	Yes	CE	
Included	AC/DC power adapter, mounting bracket	Cat.5 Ethernet cable 1 m	

* Depending on the license purchased

** Aranet4 PRO sensor with 5-minute TX interval chosen for calculation.

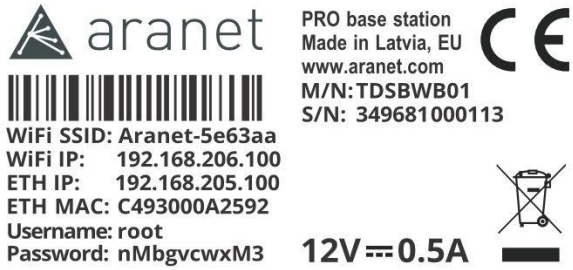
2 INITIAL SETUP

2.1 Initial setup of Aranet PRO/PRO Plus

Aranet PRO/Aranet PRO Plus can be configured with a built-in Wi-Fi Access Point or with an Ethernet connection to the local network. This allows quick and easy access to Aranet PRO using any personal device like a PC, tablet, or smartphone.

Aranet PRO/Aranet PRO Plus base station Network factory settings are:

- Wi-Fi interface configured as Access Point:
  - SSID - "Aranet-******" (refer to the label attached to Aranet PRO/PRO Plus);
    Encryption – WPA2-PSK-CCMP;
  - **Aranet PRO Mk2** SSID - "Aranet-******"
    Encryption – None;
  - IP address – 192.168.206.100;
  - Subnet Mask – 255.255.255.0



- Ethernet Interface:
  - DHCP client – On;
  - Static IP fallback – On;
  - IP address – 192.168.205.100;
  - Subnet Mask – 255.255.255.0

2.1.1 Initial setup of Aranet PRO/PRO Plus using built-in Wi-Fi Access Point

Aranet PRO/Aranet PRO Plus setup using a built-in Wi-Fi Access Point is the easiest way to start working.

(1) **Aranet PRO Plus**: Interconnect base station using Ethernet cable with the port of the PoE injector TDAPOE03 marked as "OUT" or a port of a PoE-enabled switch.
Wait until LED indicators "Power", "System", and "Wi-Fi" turn On.

Aranet PRO: Plug in included AC power adapter jack and switch base on using the On-Off switch.
Wait until the LED indicators next to "12V" and "Wi-Fi" turn on and wait for another 30 seconds.

(2) Using a smartphone or a PC open its Wi-Fi network settings and find a new wireless network access point called "Aranet-******".
Connect to it using the password from the label.

Aranet PRO Mk2 – connect without a password.



(3) Open an internet browser and type in the URL bar IP address: 192.168.206.100 or the SSID.local. In this example: aranet-5e63aa.local

(4) You should now see the Aranet PRO/Aranet PRO Plus login screen (refer to chapter Initial Login and Fast Settings of this manual).

2.1.2 Initial setup of Aranet PRO/PRO Plus using Ethernet cable

I. Aranet Pro connection to Local Network (LAN) with working DHCP server

PRO PRO+

(1) **Aranet PRO Plus**: Plug in an Ethernet cable connected to the powered PoE-enabled switch or powered PoE insert TDAPOE03 “OUT” terminal; plug in another Ethernet cable to PoE insert “IN” terminal and connect it to the LAN Ethernet switch (router).
Wait until LED indicators “Power”, “System”, and “Ethernet” turn On.

Aranet PRO: Plug in Aranet PRO into a power source using the AC power adapter and plug in the Ethernet cable that connects Aranet PRO to the local network (Router or Ethernet Switch) Wait until LED indicators next to “12V” and “Wi-Fi” turn on and wait for another 30 seconds.

(2) Search for a new IP-address assigned to Aranet PRO/Aranet PRO Plus by the DHCP server. You can consult your local network administrator or scan your local network with any Network scanner. Or use use the SSID.local to connect in this example: aranet-5e63aa.local
(3) Open an internet browser and type in the URL bar discovered in the previous step IP address.
(4) You should now see the Aranet PRO/Aranet PRO Plus login screen (refer to chapter Initial Login and Fast Settings of this manual).

II. Aranet PRO/Aranet PRO Plus connection to PC

PRO PRO+

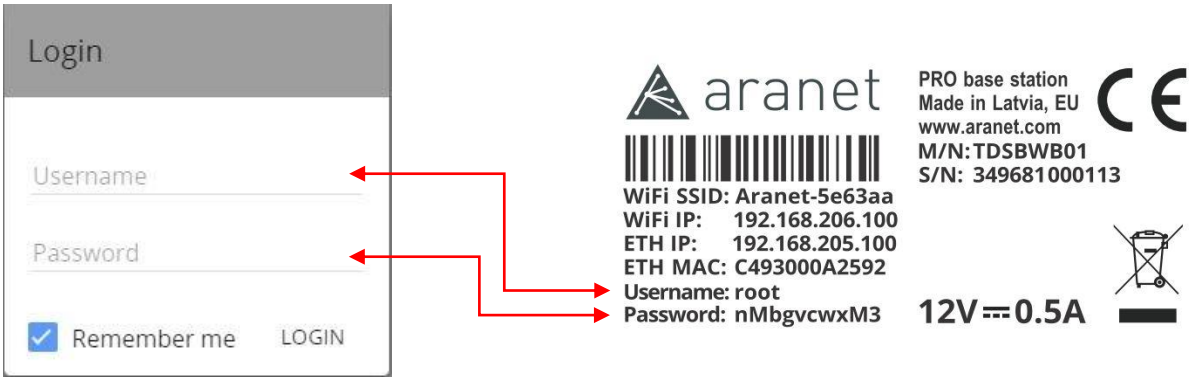
(1) **Aranet PRO Plus**: Plug in an Ethernet cable connected to the powered PoE TDAPOE03 “OUT” terminal; plug another Ethernet cable into the PoE “IN” terminal and connect it directly to your PC. Wait until LED indicators “Power”, “System”, and “Ethernet” turn On.

Aranet PRO: Plug in included AC power adapter jack and switch the base on using the On-Off switch, plug in the Ethernet cable that connects Aranet PRO directly to your PC. Switch your Aranet PRO on. Wait until LED indicators next to “12V” and “LAN” turn on and wait for another 30 seconds.

(2) Make sure the PC is not connected to any Wi-Fi Internet connections.
(3) For Windows 10, in the Control Panel menu navigate to **Control Panel >Network and Internet >Network and Sharing Center**.
(4) Click “Change adapter settings”.
(5) Right-click on “Local Area Connection” and click on “Properties”.
(6) Select “Internet Protocol Version 4 (TCP/IPv4)” and click on “Properties”.
(7) Select “Use the following IP Address”, set the IP address to 192.168.205.101 and subnet mask to 255.255.255.0, leave the rest of the fields blank and press “Save”.
(8) Open the Internet browser and in the URL bar type the IP address of Aranet PRO/PRO Plus: 192.168.205.100 Or use use the SSID.local to connect in this example: aranet-5e63aa.local
(9) You should now see the Aranet PRO/PRO Plus login screen (refer to chapter Initial Login and Fast Settings of this manual).

2.1.3 Initial Login and Fast Settings

The username and password for login can be found on the label attached to Aranet PRO/PRO Plus (see example below).



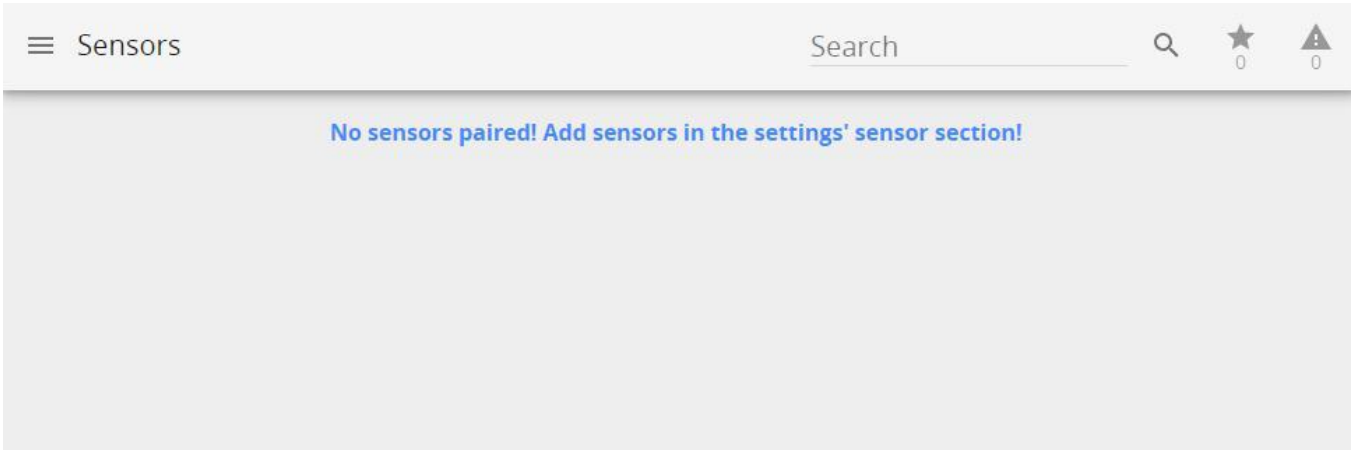
PRO

Aranet PRO Mk2:
Username: *root*
Password: *changeme*

!NOTE! Root is an administrator account. For security reasons, we recommend changing the password as soon as possible.

We also recommend creating separate accounts for users as required. There are two levels (groups) of access – **user** and **administrator**. **User** group accounts have read-only permissions, can only view parameters, and can subscribe to notifications. The total account limit is 20 (including **root** account).

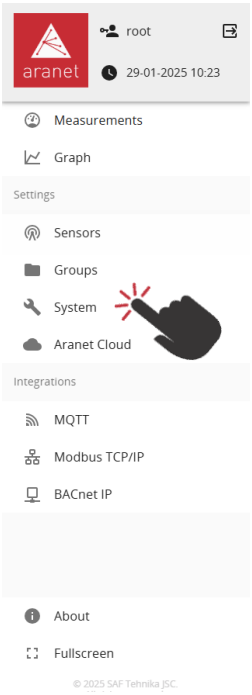
After entering the Username and Password, and clicking **LOGIN** button for the first time, the following page will open:



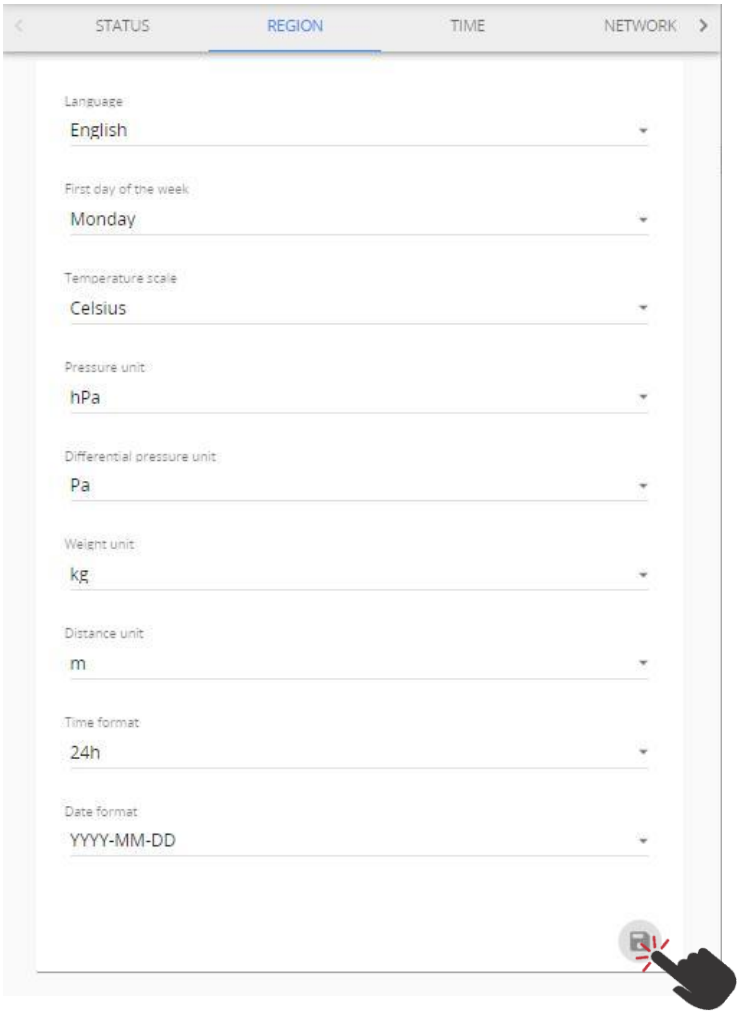
Now you can change the regional, network, and other settings, as well as start pairing the sensors.
Refer to chapter ARANET SENSORHUB OVERVIEW for detailed information about Menu.

It is a good practice to start with **System** settings.

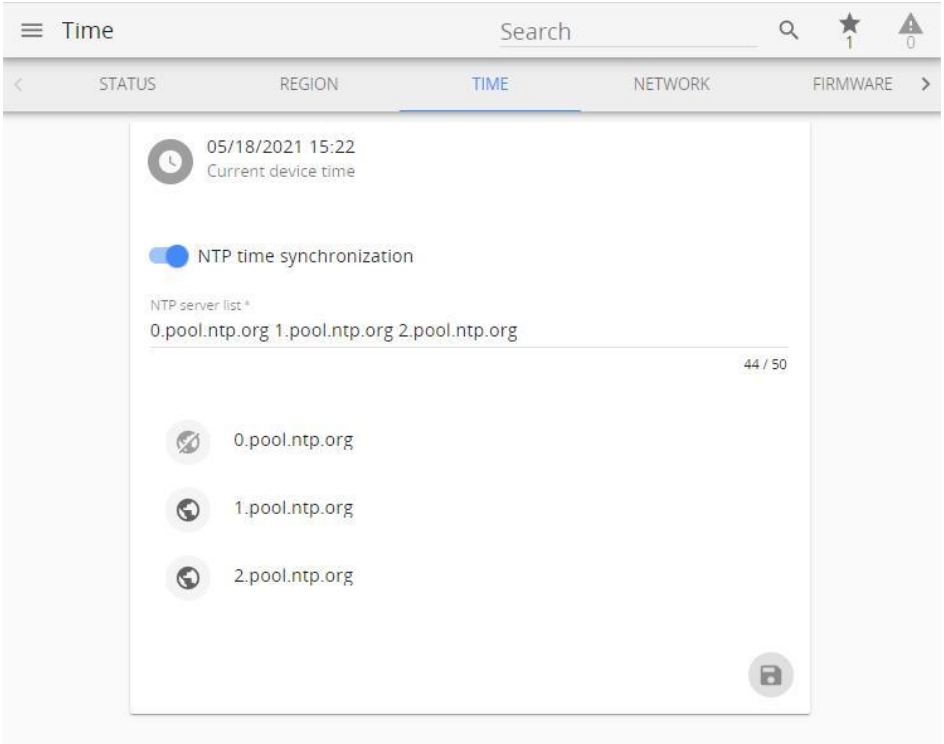
Click with your mouse on the **Menu** icon ☰ to open **MAIN** menu and select **System**:



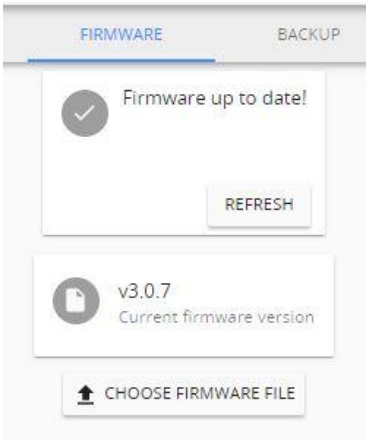
Navigate to **Region** menu and set your preferred *Language, Units, Time,* and *Data* formats. Click **Save** 💾



Navigate to **Time** menu and set the time *manually*, *synchronize with your PC* or *NTP*. Click **Save** 💾.



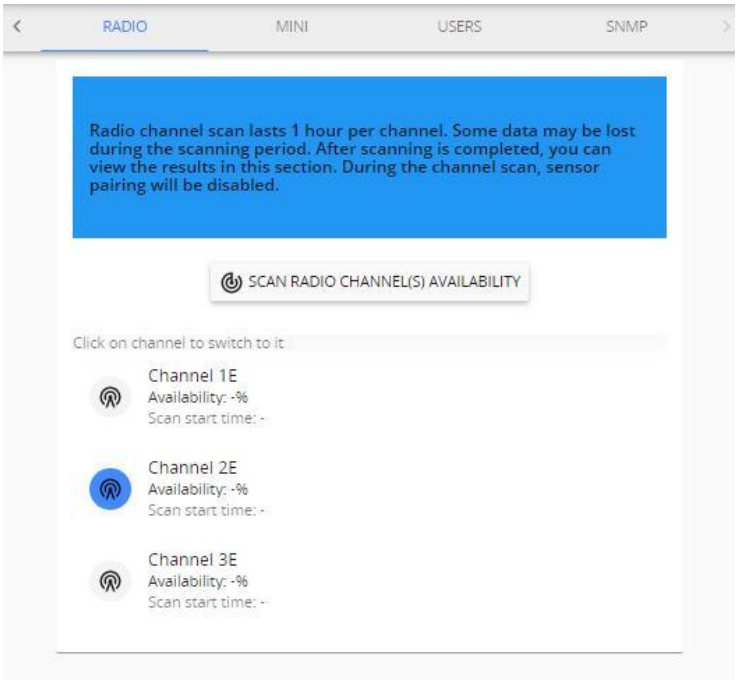
Navigate to **Firmware** menu.



It is highly advised to install the latest firmware for your Aranet PRO/PRO Plus base. Visit aranet.com/downloads/ to download the latest firmware version and upgrade your device if it has an older firmware version installed. Refer to this document chapter Firmware menu for upgrade instructions.

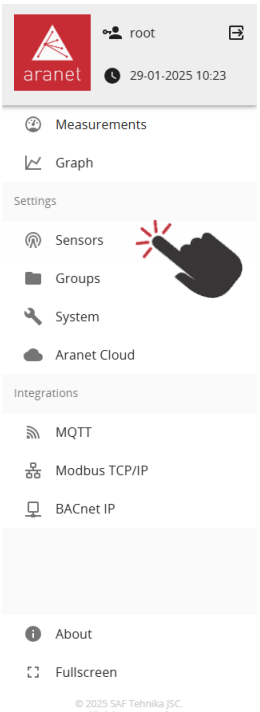
Navigate to **Radio** menu.

It is advised to scan radio channels for better availability before pairing the sensors because of possible interference from other devices using the same frequency range that might be installed near your location. Be patient, it is a long-lasting process and can take up to 3 hours. You can skip scanning by now and select any available channel, but this can lead to worse communication between sensors and Aranet PRO/PRO Plus base.



!NOTE! Keep in mind: you will have to repeat the pairing process for all sensors if you decide to change the radio channel.

You can leave the **System** menu now and switch to the **Sensors** menu for sensor pairing.

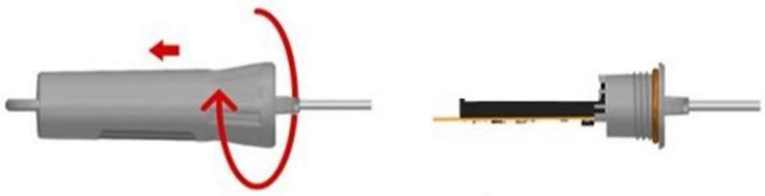


2.2 Pair sensors to Aranet PRO /PRO Plus

Aranet PRO/PRO Plus supports several types of sensors. To connect them to the system the same steps apply for all types of sensors. Sensors can be paired by-one or in batches.

When pairing the sensor, it should be physically located within around 20 meters of Aranet PRO/PRO Plus.

(1) Open the battery compartment of the sensor, see the example image below. While holding with one arm the plastic cup, turn clockwise the main plastic body of the sensor (do not remove or twist the cable).



Most other sensors have a visible battery compartment or screws on the body. Loosen the screws to take out the lid and expose the battery compartment. Take out battery(ies) from the sensor(s) you want to pair. If there are two batteries in the battery compartment, it is enough to take out one.

!NOTE! When pairing **Aranet4 PRO** sensor, make sure that “Radio” switch is in ON (upper) position:



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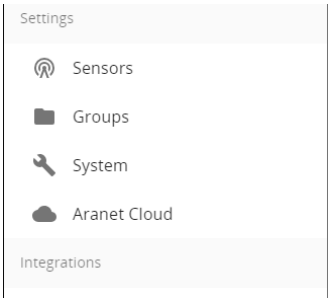
(2) Log in to Aranet PRO/PRO Plus web-interface using an account with Administrator rights

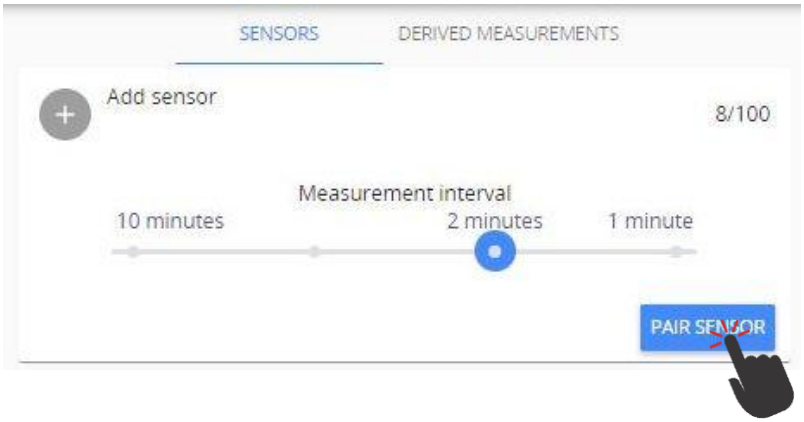
(3) Navigate to Aranet PRO/PRO Plus Main menu

(4) Choose “Sensors” menu

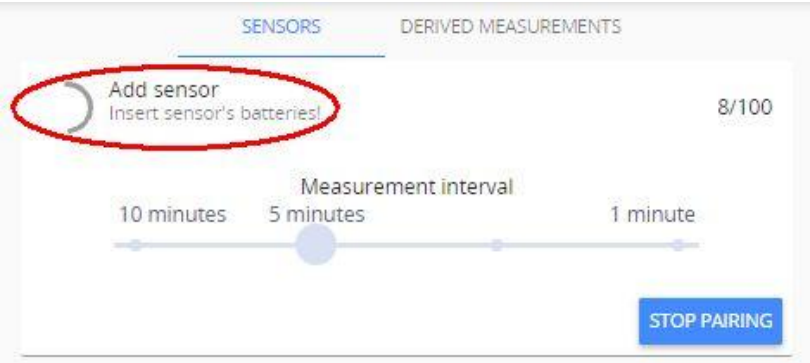


(5) Set the Measurement interval (10, 5, 2 or 1 minute).

(6) Click “PAIR SENSOR” button to initiate pairing for a sensor.



2-minute timer indicated by closing ring is started:



(7) Insert sensor's battery(ies) by observing the correct polarity. Refer to datasheet of respective sensor for information on supported battery types.

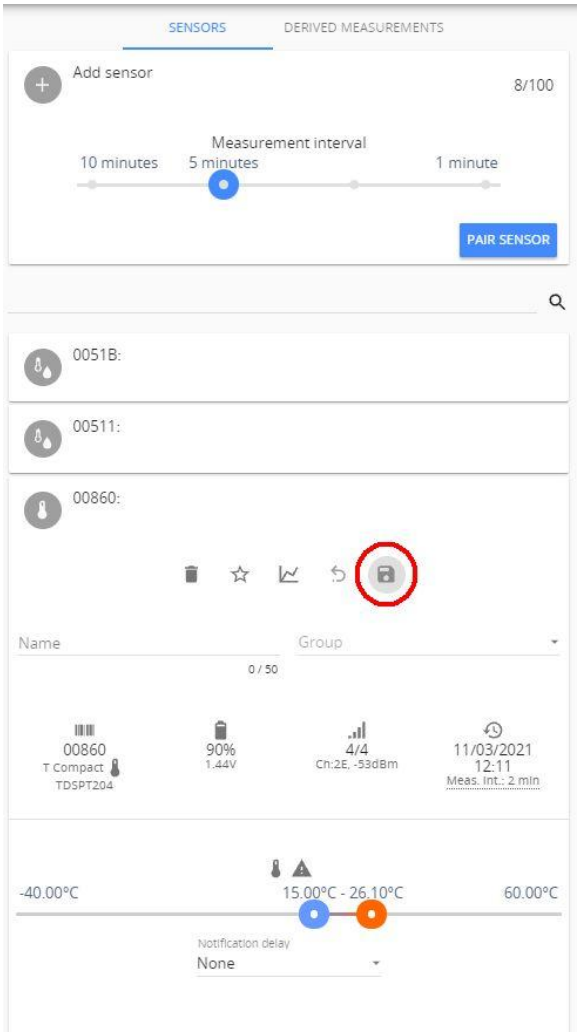
(8) Red LED light will flash on the sensor. Three short flashes followed by a long flash will signal a connection failure, the pause between flashes will be the same. In case of successful pairing the long flash will follow immediately after a short flash. Observing the LED light indications can save time while pairing sensors, however, Aranet PRO/PRO Plus software will also display successfully paired sensor in the sensors list: new sensors are indicated by green triangle. Sensor pairing process usually lasts 10-15 seconds but can be prolonged up to 30 seconds.
Each time new sensor is successfully paired, 2-minutes timer is restarted. If sensor pairing was not



successful within 30-seconds period, take out battery from the sensor, wait 10 seconds and place battery back to repeat pairing process. When you finish pairing all sensors, press "STOP PAIRING" button or wait for the timer to close pairing process automatically.

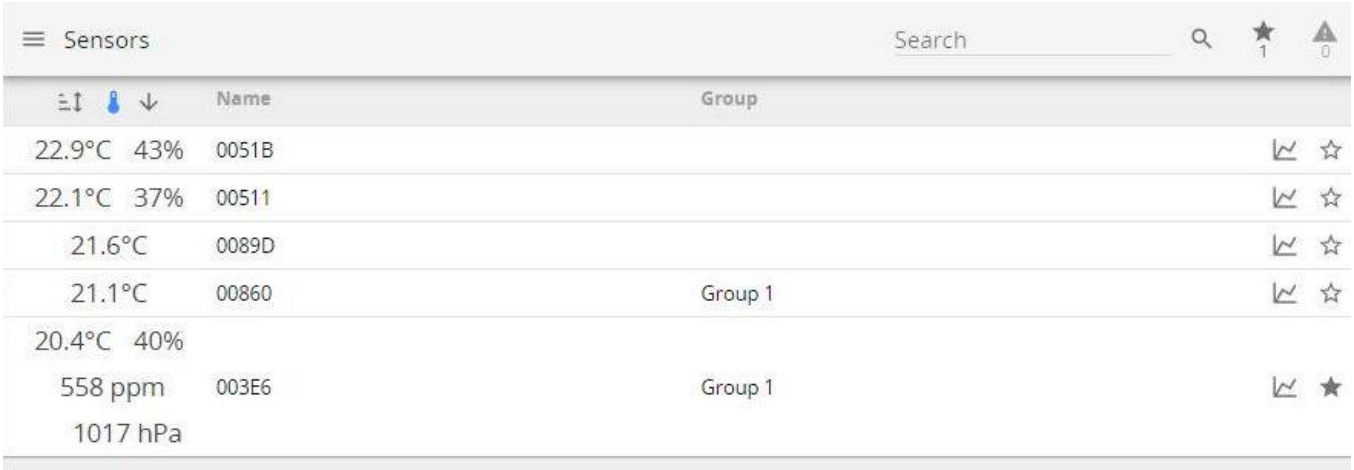
(9) After successful pairing, close the battery compartment of sensor(s).

(10) Now you can rename the sensor(s), set thresholds for alarms, add it(them) to *favorites*, etc. After completing your tasks click **Save** button for every modified sensor.



You have now paired sensors to Aranet PRO/PRO Plus and can place it in the desired location.

All paired sensors appear on the **Measurements** page of SensorHUB:



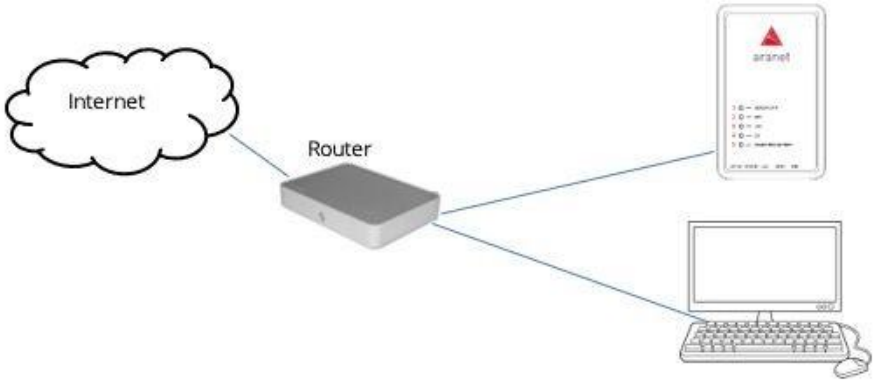
The fast set-up process is finished.

2.3 Connecting Aranet PRO/PRO Plus to internet network

Additional features like network time synchronization (NTP), reporting and alarm notifications using e-mail, connection to Aranet Cloud etc. require connectivity to Internet (or internal data (Local) network).

Connection to Local Area Network (LAN) and Internet using Ethernet cable is preferable, however connection using Wi-Fi and LTE is also possible.

2.3.1 Connecting Aranet PRO/PRO Plus to internet network using Ethernet cable



If during the initial setup process you connected your Aranet PRO/PRO Plus to Local Network with working DHCP server, most probably Aranet PRO/PRO Plus is connected to Internet already. Consult your network administrator to be sure.

If you are connected to Aranet PRO/PRO Plus using its built-in Wi-Fi Access Point, you should change Ethernet settings on Aranet PRO/PRO Plus in the following way:

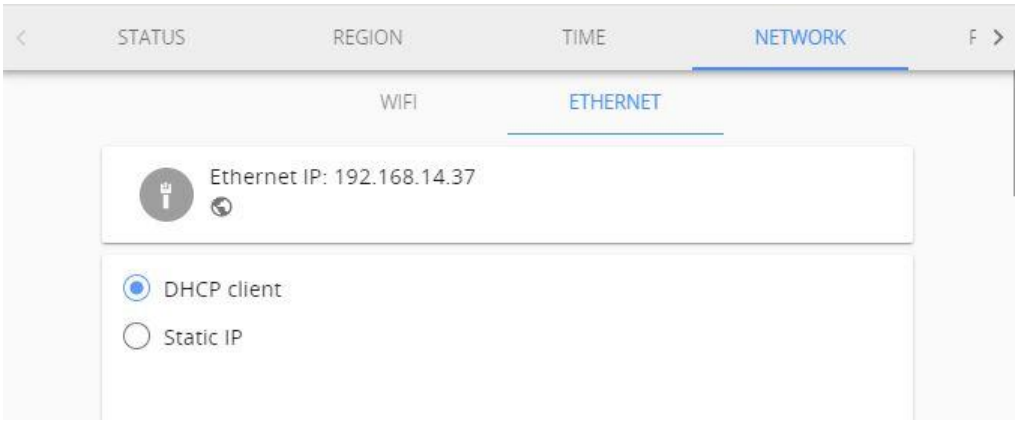
(1) Navigate to **SYSTEM > NETWORK** and select the **ETHERNET** tab

PRO PRO+

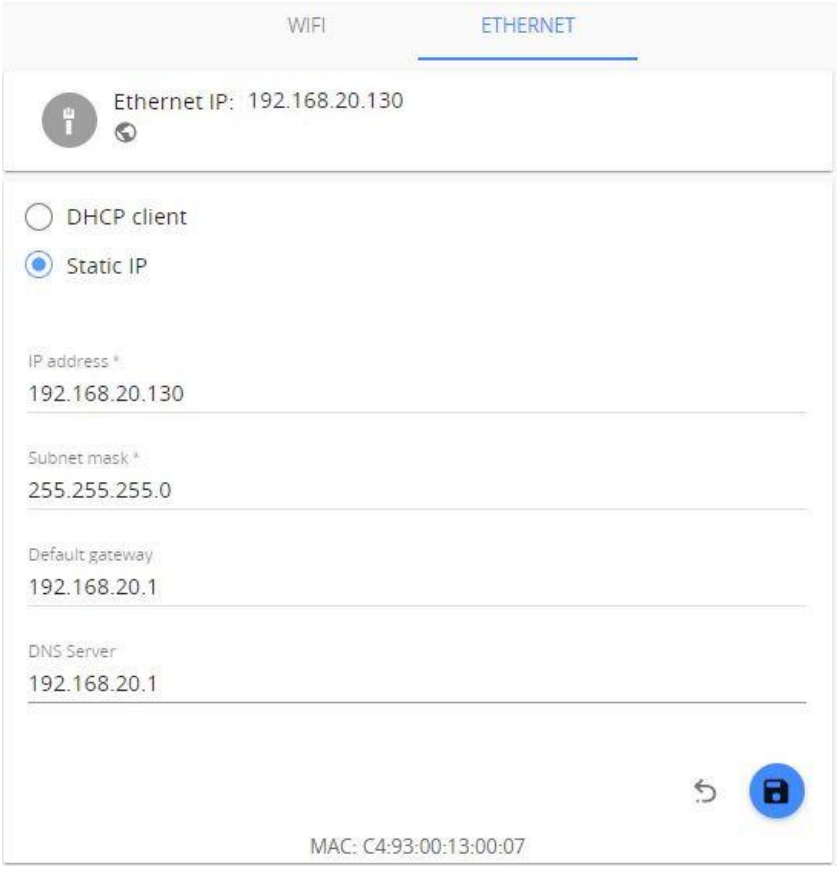
(2) **Aranet PRO Plus**: Interconnect Aranet PRO Plus base station with the port of the PoE injector TDAPOE03 marked as "OUT" or a port of a PoE-enabled switch. Wait until the LED indicator "Ethernet" turns On. Wait until LED indicator "Ethernet" turns On.

Aranet PRO: Connect Aranet PRO LAN port to external router (or Switch) LAN port using an Ethernet cable. Check if the LED indicator next to "LAN" is On.

(3) As a factory setting, Aranet PRO/PRO Plus DHCP client is ON. If there is working DHCP server in the network (as usually is when connecting to router), Aranet PRO/PRO Plus will receive new IP address automatically. While connected to Aranet Wi-Fi, you can verify the new Ethernet IP address assigned by an external router like shown in the picture below. Note the **globe** symbol is not crossed, which indicates successful connectivity to the Internet.



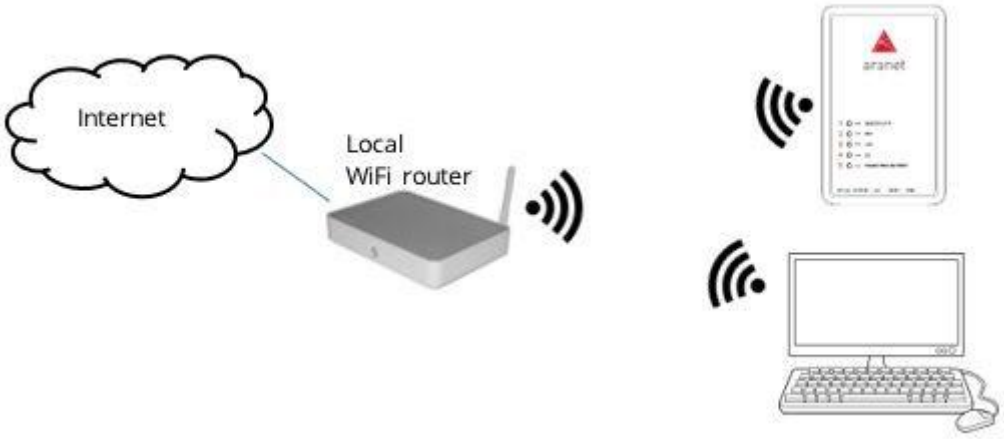
In case of static IP, select **Static IP** and fill in all needed fields: *IP address*, *Subnet Mask*, *Default gateway* and *DNS server*, an **example** is shown in the picture below, and click **Save** . Consult your network administrator for these parameters in your local network.



!Note! DHCP is a dynamic protocol for IP address assignment. There might be occasions when the DHCP server's assigned IP address for Aranet PRO/PRO Plus Ethernet port is changed. Consult your network administrator or refer to the user manual of the external router on how to always reserve the same IP address assigned to the Aranet PRO/PRO Plus Ethernet port (MAC address).

2.3.2 Connecting Aranet PRO/PRO Plus to internet network using local Wi-Fi network

In case you wish to connect your Aranet PRO/PRO Plus to your local Wi-Fi network, you should change Wi-Fi settings on Aranet PRO/PRO Plus in the following way:



(1) Navigate to **SYSTEM > NETWORK** and select the **WIFI** tab

(2) Choose the "**Client**" mode (see picture below).

(3) Under "Select from this list or input manually" find the name of your local Wi-Fi network

(4) Choose the required **Encryption**

(5) Fill in the Wi-Fi password (if required)

(6) Write down the MAC-address of the W-Fi interface (12 symbols separated by semicolon)

(7) Click on  to save the settings

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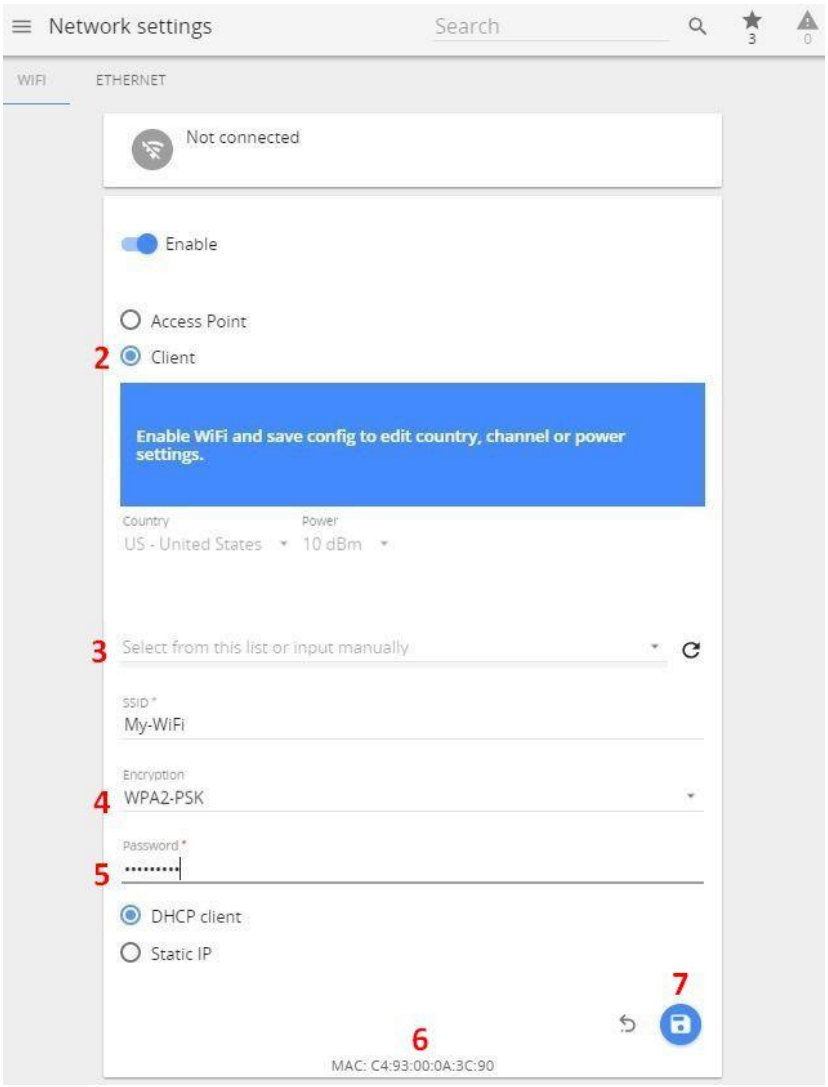
!NOTE! Most Wi-Fi routers have DHCP enabled by default, we recommend keeping this setting for ease of set up. For advanced users, however, static IP address set up is possible.



(8) After the new Wi-Fi settings on Aranet PRO/PRO Plus are saved, the web page will reload, and new IP address will be assigned to the base by the external Wi-Fi router. **If you were connected to the base using its Wi-Fi Access Point, your connection to the base will be lost.**

(9) Connect your PC to the same Wi-Fi network you had chosen at p. (3).

(10) Wait for base station to load (observe its LED indicators)

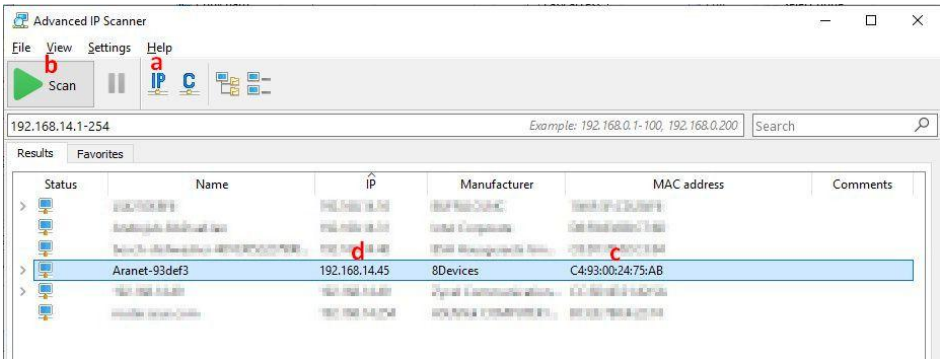
(11) Consult your network administrator about the IP-address assigned to the base by local DCHP server or use any Network Scanner to find it.
Here is shown an example “Advanced IP-scanner” for Windows (https://www.advanced-ip-scanner.com/download/); Mac users can use f.e. LanScan (https://apps.apple.com/us/app/lanscan/id472226235)

a Launch scanner and press “IP” button to select the range of network your PC is connected to.

b Press the “Scan” button to start the scanning

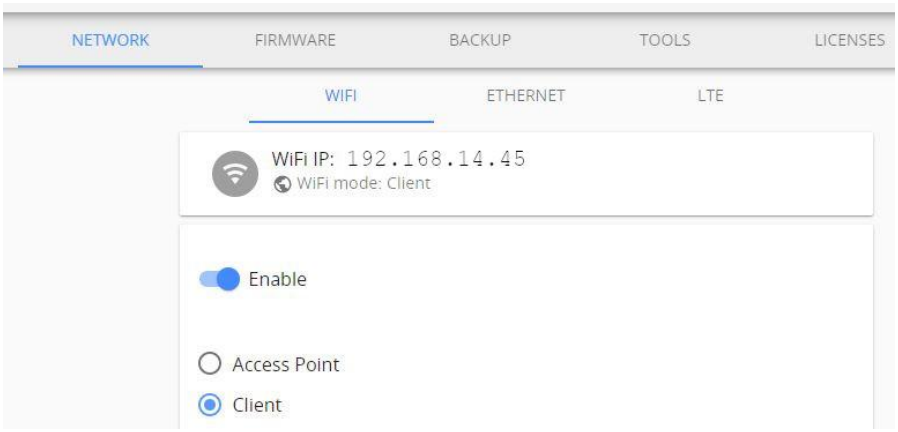
c Wait for the scanning to complete and locate the MAC address you wrote down at p. (6) in “MAC Address” column

d The address in the column “IP” is the one assigned to Aranet PRO/PRO Plus base.



(12) Type in this IP address into the browser URL field and login to Aranet PRO/PRO Plus.

Note the globe symbol is not crossed, which indicates successful connectivity to the Internet.



!NOTE! Most Wi-Fi routers have DHCP enabled by default, we recommend keeping this setting for ease of set up. For advanced users, however, static IP address set up is possible.

2.3.3 Connecting Aranet PRO Plus LTE to internet network using LTE Modem

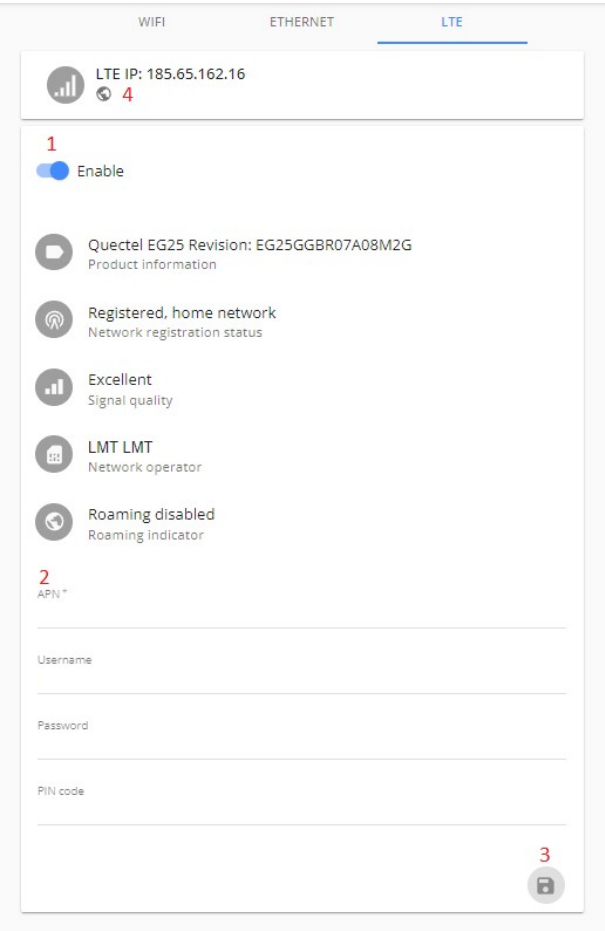
PRO PRO+

Aranet PRO Plus LTE P/N TDSBOB03, TDSBOBU3, TDSBOBC3: LTE menu is visible when a modem is detected by the system. Mini size GSM SIM-card with a valid Mobile Internet contract must be inserted into the modem to ensure its functionality. SIM-card is not included in the Aranet PRO Plus LTE scope of delivery. It is the customer's duty to sign the contract for Mobile Internet connection usage. Using Mobile Internet can cause additional expenses not covered by Aranet PRO Plus LTE manufacturer.

Please consult your Mobile Internet provider for data to fill out connection configuration fields.

If you've bought the Aranet Cloud Connectivity Service (P/N TDLCLCS0100G or TDLCLCS010RG), please contact support@aranet.com to activate your SIM card, the SIM card EID number found on the back of the provided card, S/N of the base station and the country where it will be used should be provided to support.

(1) Enable LTE connection
(2) Fill out APN (mandatory) and other fields (if required)
(3) Click on to save the settings
(4) Wait for the settings to take effect, page reload may be required. Successful connection will be indicated by IP address assigned to the base and **Globe** symbol with no crossover:



This screen also shows the status of the modem.

It is possible to access Aranet PRO Plus LTE web interface from internet over an LTE connection. For this purpose, please contact your Mobile Internet provider and request *static* IP-address for the SIM-card inserted into modem.

!NOTE! LTE connection configuration with *static* IP-address may differ from one with dynamically assigned IP-address. Please consult your Mobile Internet provider for details.

2.4 Accessing the Aranet PRO/PRO Plus from Internet

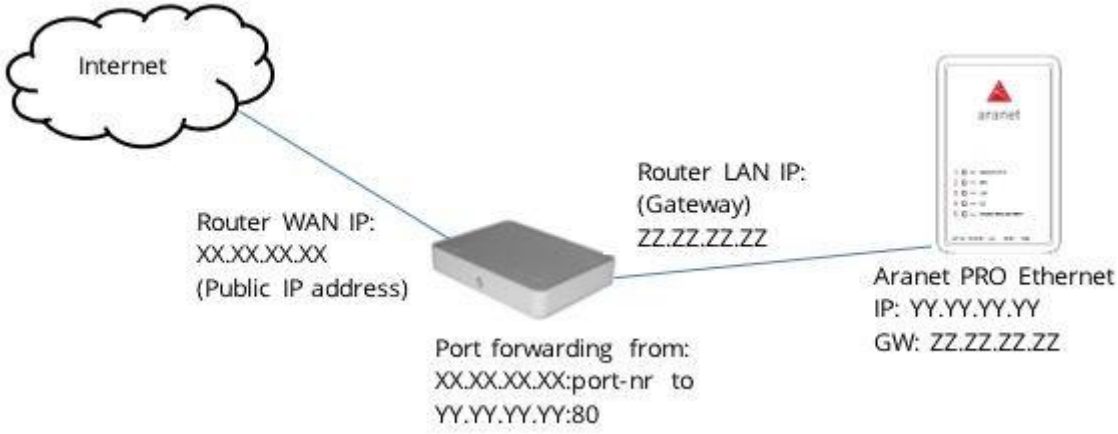
For remote access to Aranet PRO/PRO Plus from the Internet, a public (fixed, static) IP address is required.

While all Aranet PRO/PRO Plus network interfaces can be used for accessing the base from Internet, ***Ethernet interface is the most preferable option for this purpose.***

IP address is assigned to the selected Aranet PRO/PRO Plus network interface as a Static IP address. Refer to chapter "**Network"** and corresponding interface menu section.

In case you have a router (fixed or mobile) with an already available fixed IP address, you can use port forwarding feature on your router to setup an access to Aranet PRO/PRO Plus. Port forwarding is configured on your router. Refer to the User Guide of your router on how port forwarding should be configured.

Below is an example of possible configuration.



For accessing Aranet PRO/PRO Plus, open the Internet browser and in the URL bar, type the IP address with port number, xx.xx.xx.xx:port-nr (for instance, 213.100.100.1:8100).

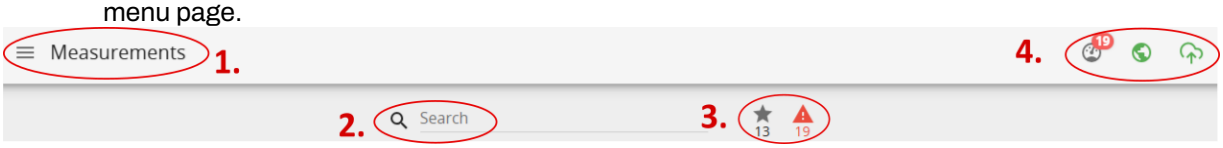
These were the main steps needed for monitoring your sensor data. To make monitoring more convenient and illustrative, you can create **Graphs**, set up **Sensor Groups** and alarms, **Notification** sending, etc. For instructions, please read the corresponding chapter in following ARANET SENSORHUB OVERVIEW.

It is also possible to enable Aranet sensor data upload to **Aranet Cloud** - Plug & Play Cloud solution for Aranet IoT ecosystem.

3 ARANET SENSORHUB OVERVIEW

3.1 Main navigation bar

1. The main navigation bar contains the icon for *the main menu*, an indication of the page you are viewing, a *search box*, *favorites*, and *alarm* filter icons.
2. The search box allows you to quickly locate paired sensor or sensor group from any location of the menu page.



For filtering, type in the Search bar any of the following characteristics of the sensor you are looking for:

- Name of the sensor
- Sensor ID
- Group of sensors

3. The *favorites* ★ icon allows you to quickly access all the sensors you have added to your favorites list. Each user account has its own favorites list.

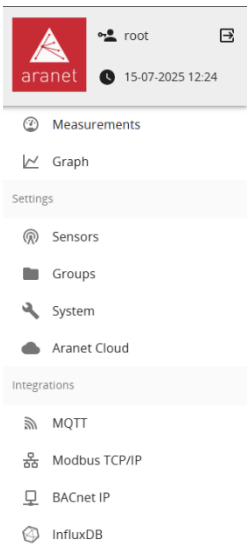
   The *alarm* ⚠ icon allows you to quickly see a list of all sensors that have current alarms and may need attention.
4. The 3 icons show at a quick glance sensor status with the amount of alerts present, connection to the internet and connection to the Cloud. Clicking on the icons will open the corresponding page.

3.2 Main menu

The main menu contains the following sections - **Measurements, Graph, Sensors, Groups, System, MQTT, Aranet Cloud, Modbus TCP/IP**.
From these sections you can navigate to all options of the Aranet PRO/PRO Plus software.

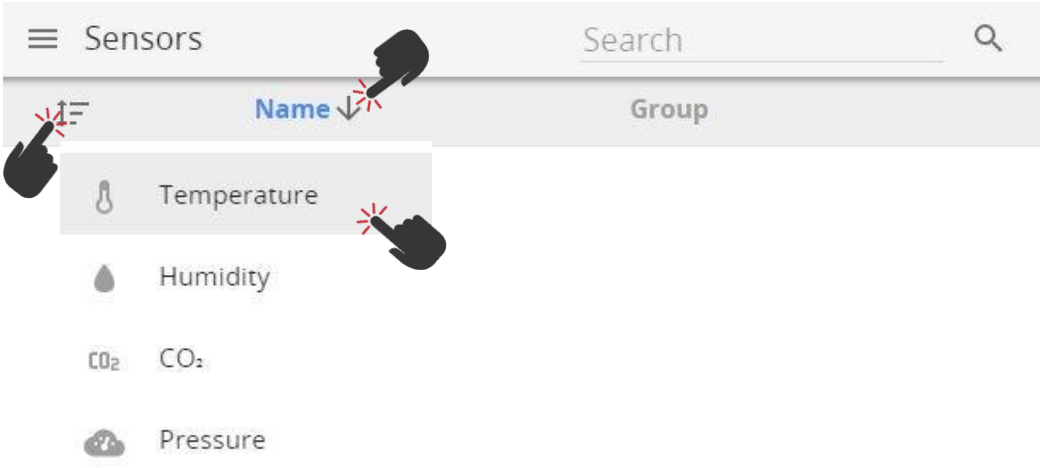
General information about the user login, current device time and date as well as log off option are displayed here. For better visibility, you can choose Fullscreen mode.

The "**Measurements**" menu is the main monitoring page that lists all the added sensors. Sensor information is updated in real-time.



It is possible to arrange the sensors by their highest or lowest measurement values, by name or by group.

Click on the **Sort** button ↕ to open a sub-menu of measurement types. Click on a measurement type to sort by this measurement and hide sensors which do not provide it. Clicking on "**Name**" or "**Group**" will list all sensors.

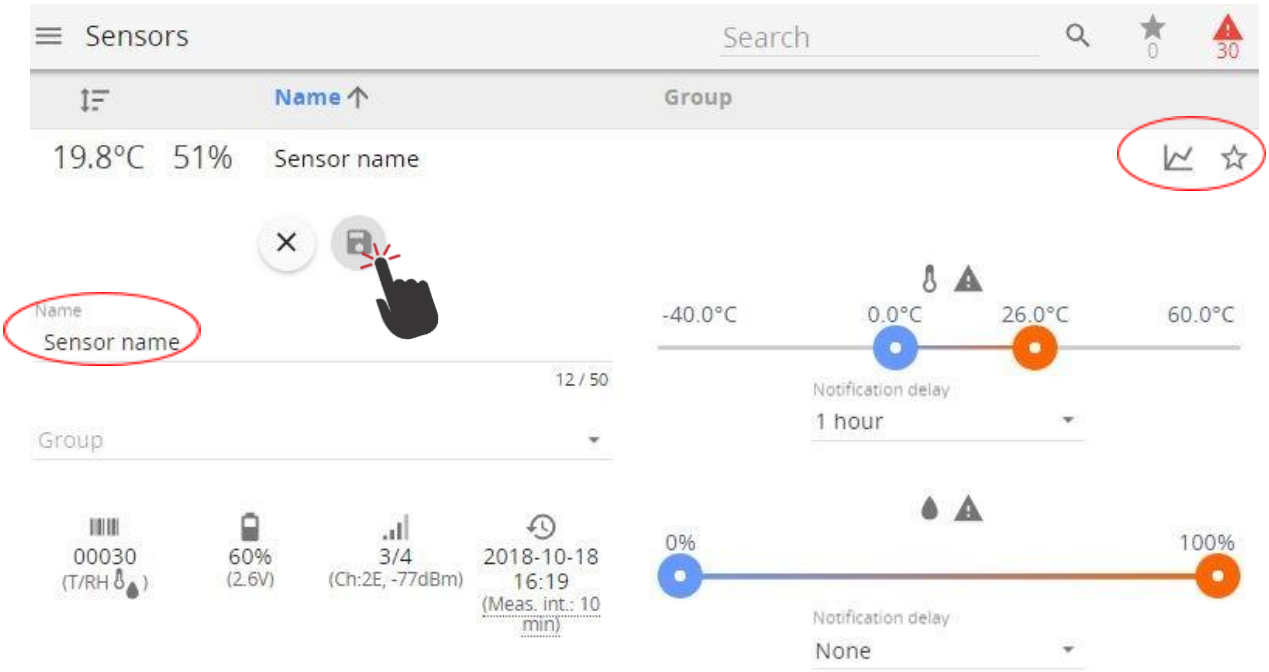


Click on ↑ to sort by name or value in descending order. Click on ↓ to sort by name or value in ascending order.

By selecting the respective sensor, a submenu opens with sensor information (sensor serial number, type, name, group, thresholds, last time data was received, battery level, signal strength).

All changes for sensor settings can be adjusted here. Selecting *the Graph* icon will open the Graph screen for the respective sensor.

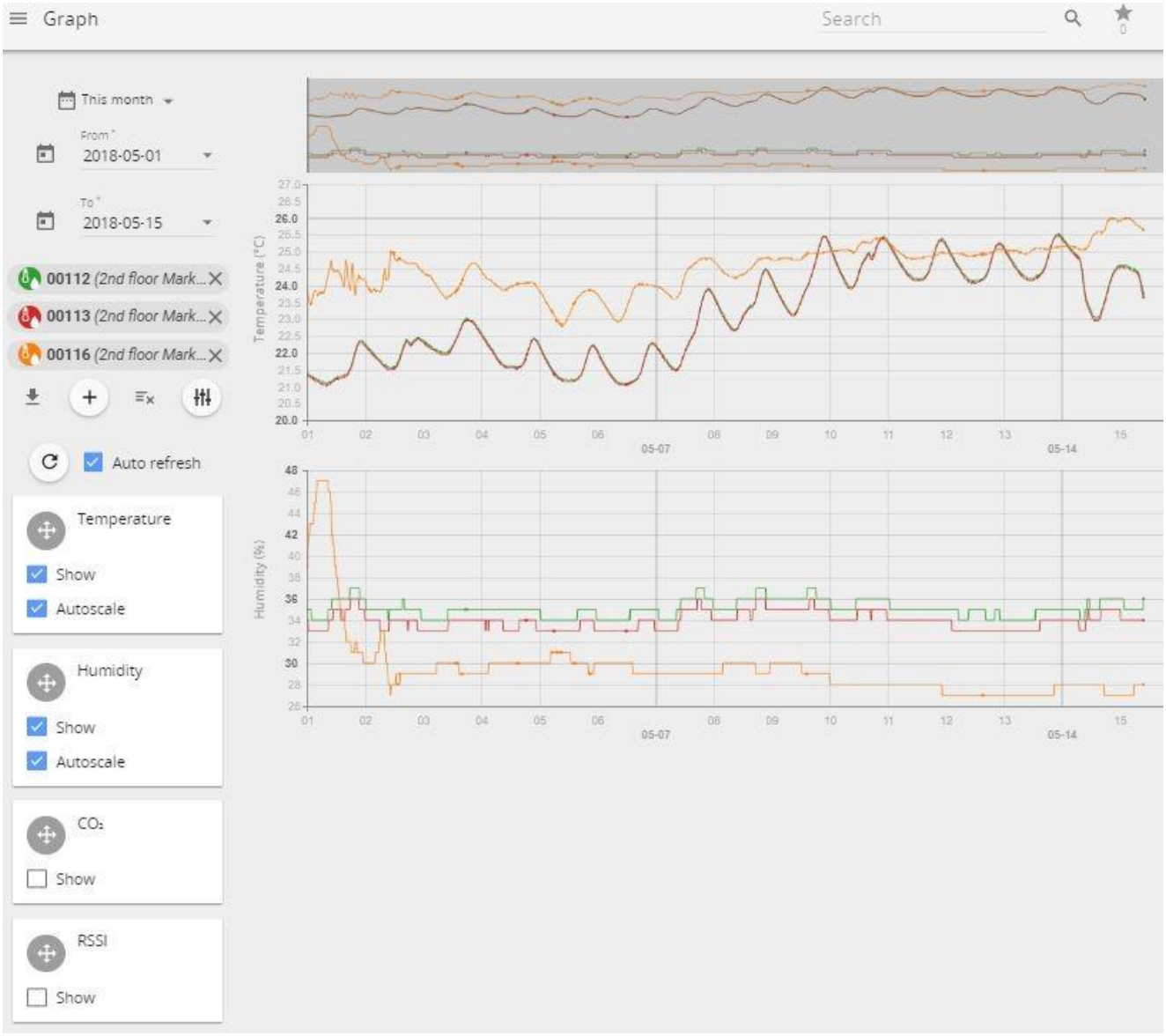
The *Favorite* icon ★ enables a user to add/remove the sensor as a favorite.



Notification delay allows the user to define a delay for exceeded threshold alarm notification messages. Please refer to Notifications for further information.

3.3 Graphs

Graphs screen enables the user to view, compare, and analyze data from the sensors. The "**Graph**" page enables the user to look at historical data, patterns, and changes, as well as compare multiple sensor readings over time to see potential correlations.



(1) By pressing the + icon, you can add up to 20 sensors at once for analysis one by one or use the +≡ icon to add the first 20 sensors at once.

(2) Choose which values to graph depending on the attached sensor and receive as much information as needed.

(3) Set a custom period to look for historic data analysis.

(4) Export data to *.xlsx, .csv, .png* or *.svg* files by using the **Download** button.

Use the **Tune** button to open a sub-menu allowing the user to select or deselect additional parameters to display on graphs (received signal strength level RSSI, battery level, and others).

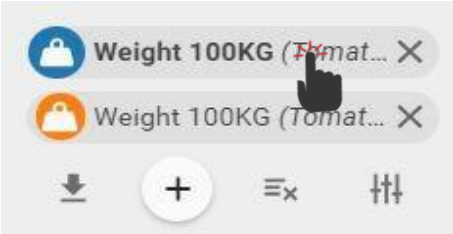
On a computer, timeline zoom-in and zoom-out can be done using the mouse scroll wheel while the mouse pointer is positioned in the graph area (some applications require holding down the **Control** button (**ctrl**) while scrolling the mouse wheel).

On a smartphone device it is possible to use the multi-touch and panning functions with two fingers for navigation.

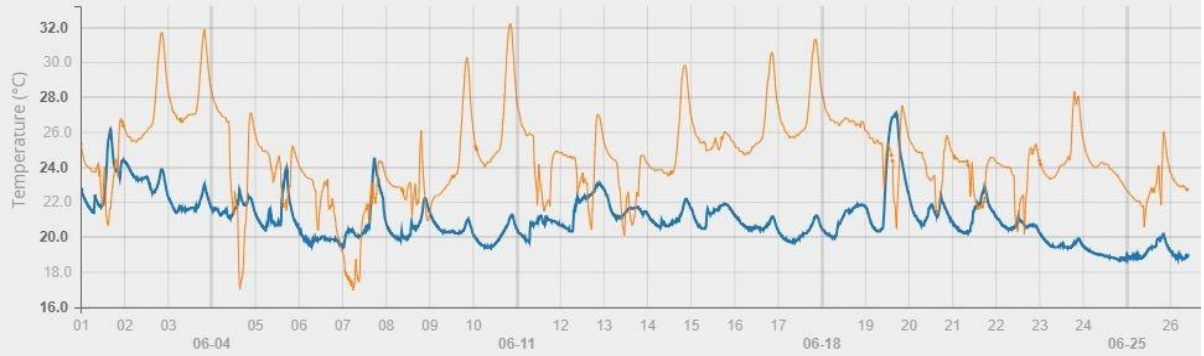
Positioning the cursor on a specific point on the graph, detailed information about a measurement reading will be displayed.



If you wish to highlight some sensor data in the graph, click on the sensors name.



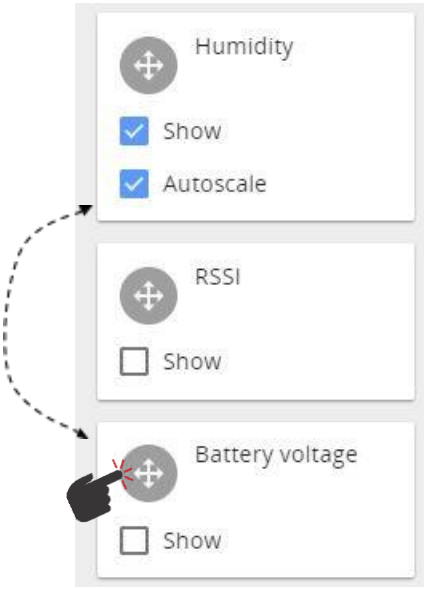
The graph line of the selected sensor will be highlighted in **bold.**





To display the measurement curves with more granularity, untick the **Autoscale** and choose the Min and Max values by moving the slide bars or typing in the required values.

To rearrange the order in which the graphs are displayed, drag the parameter boxes by the **Move** handle. Release it in the desired position.



3.4 Sensors

Sensors settings is where sensors can be paired and the sensor information, such as the group, name and thresholds, can be adjusted (see Pair sensors to Aranet Pro and Groups sections).

By checking the RSSI values of the sensors you can see their signal level.:
RSSI > -40 Excellent
-60 < RSSI <= -40 (Very good)
-80 < RSSI <= -60 (Good)
-100 < RSSI <= -80 (Acceptable)
-100 < RSSI (Weak)

Some parameters are applicable only to specific sensors, see chapter SENSORS' SPECIFIC NOTES.

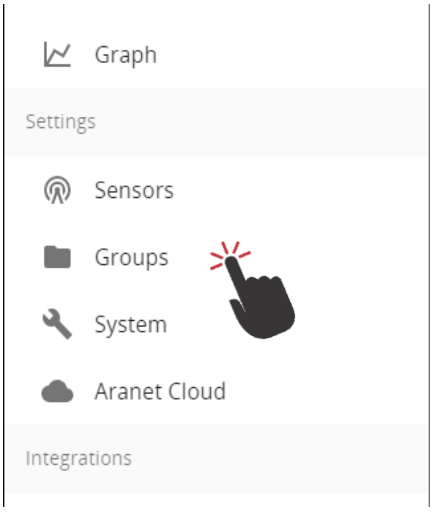
3.5 Groups

Aranet SensorHUB allows users to create sensor **groups**, which can be helpful when managing large number of sensors. **Groups** can have names that represent for instance their type, location, room, etc. As well as set alert thresholds and choose different alarm types applicable for whole group. Maximum number of supported groups is 20.

3.5.1 Using groups

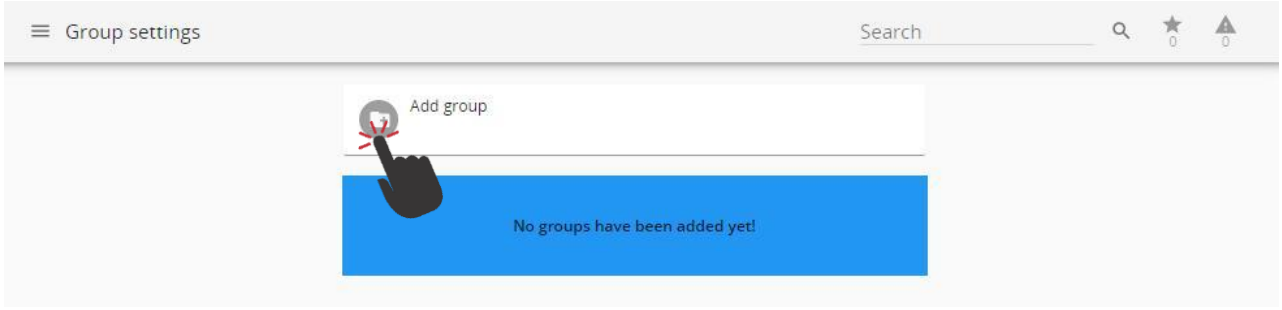
(1) You should be logged in using an account with administrative rights.

(2) To create a new group, go to Aranet PRO/PRO Plus Main menu and choose the "**Groups**"



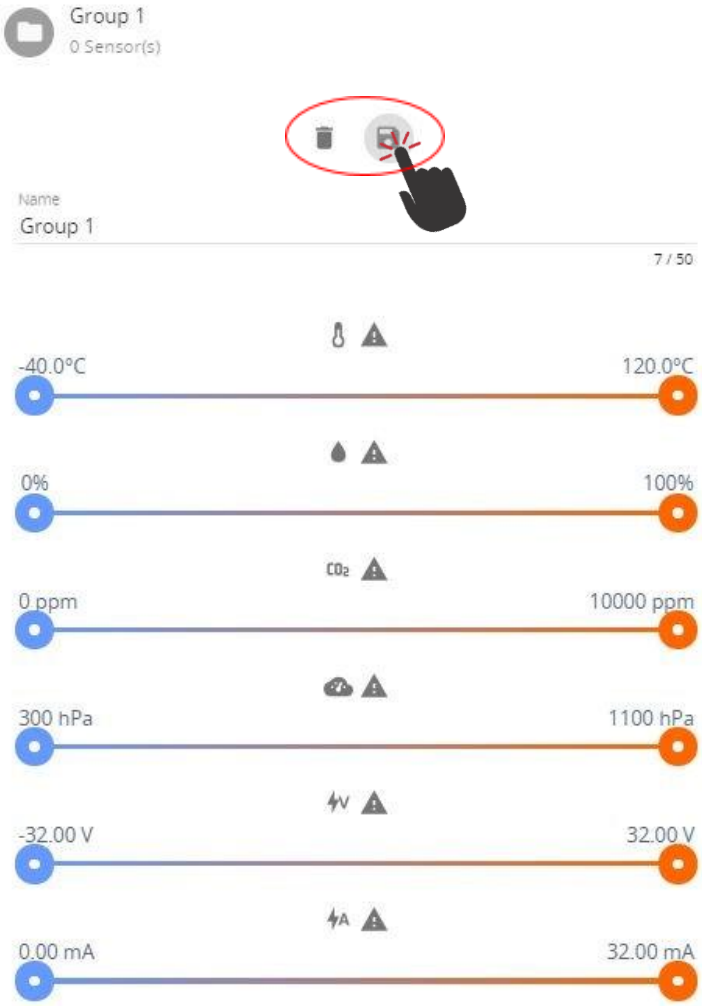
menu.

(3) Click "Add group" .

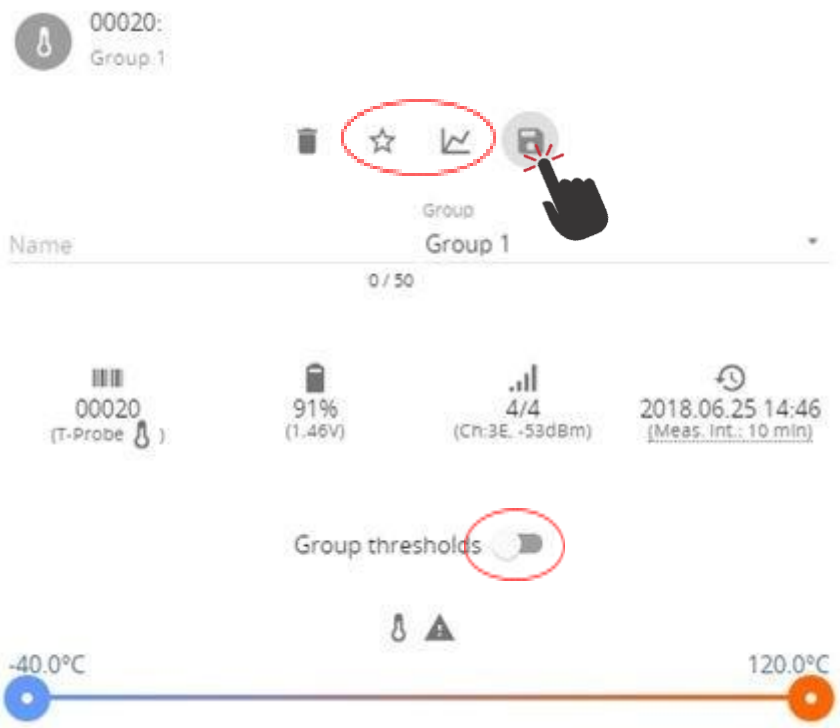


(4) Now the group can be renamed and the thresholds for alarms can be set. These thresholds work for all sensors in the group, unless a sensor is specified to use its own threshold in the

sensor menu. After editing click the **Save** button.



(5) To add sensors to a group, choose the "**Sensors**" menu and click on the item you would like to add. (The same is possible from the main menu "**Measurements**")



(6) In sensor options click on the group drop-down menu. Choose the group you would like to add the sensor to.

(7) In sensor options it is also possible to toggle between sensor thresholds and group thresholds as preferred, so even grouped sensors can have individual thresholds.

(8) Click the **Save** button to save changes.

3.6 System

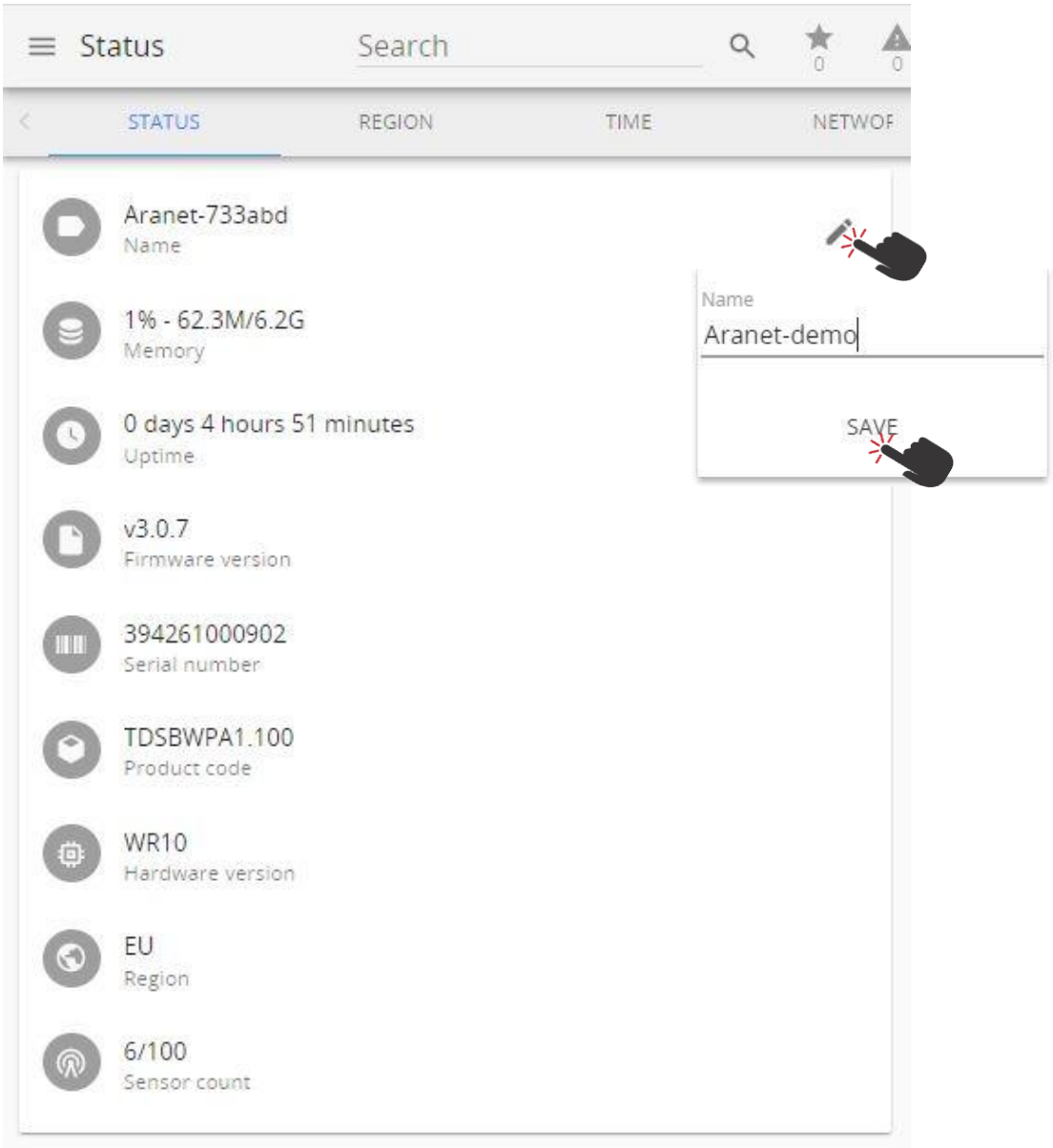
The “**System settings**” screen is where you will find critical information and options for your Aranet PRO/PRO Plus.

3.6.1 Status menu

The “**status”** screen is a status information screen that will provide you with information about the Aranet PRO/PRO Plus.

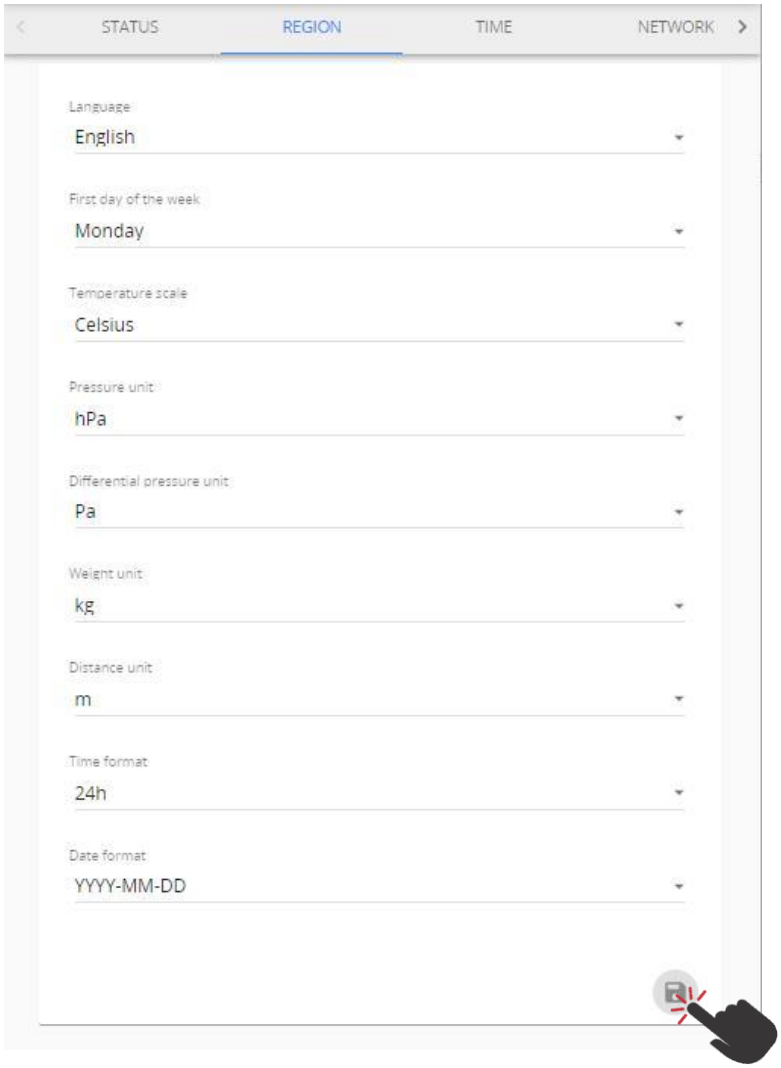
You can change the name of the Aranet PRO/PRO Plus device by clicking on the **pencil** sign and typing in the new name and confirming the change with the **SAVE** button.

Aranet PRO/PRO Plus device name will be used in the email notifications to more easily identifywhich Aranet PRO/PRO Plus device is sending the message.



3.6.2 Region menu

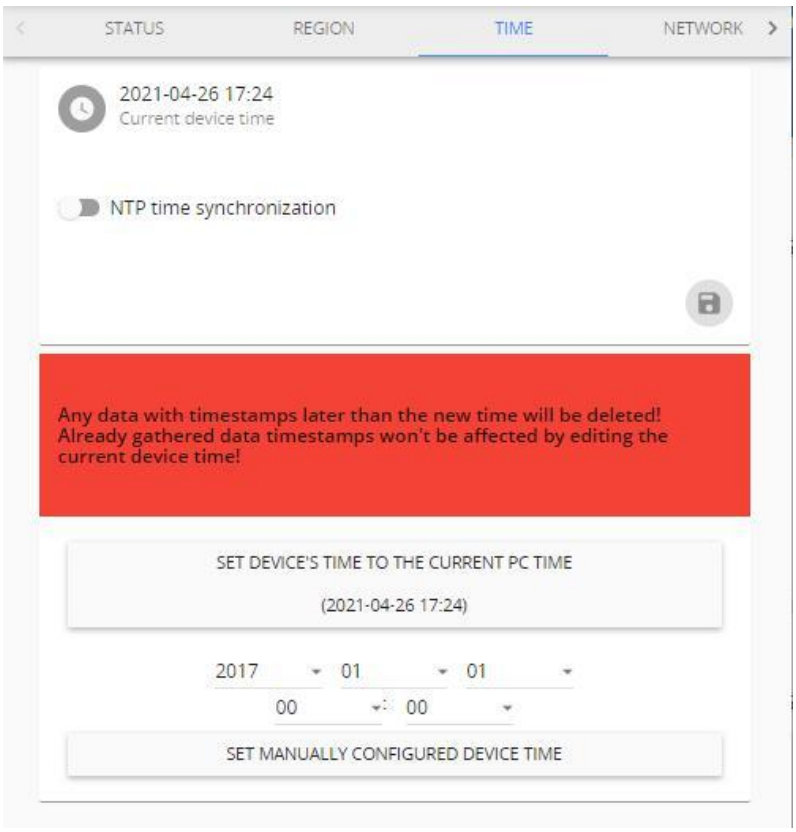
The “**Regional settings**” menu is where the interface of an Aranet PRO/PRO Plus can be set up with the preferred language, temperature scale,time and date format settings. To apply new settings, click the **Save** button.



3.6.3 Time menu

By default, Aranet PRO/PRO Plus uses the local devices time settings, however it is possible to change the time and set it up manually, if it is preferred, as well as to use an NTP server for time synchronization.

NTP time synchronization requires connectivity with the Internet (refer to chapter Network menu).



!NOTE! If the devices time is adjusted backwards, any data previously gathered with a timestamp later than the newly set time will be discarded and permanently lost.

It is recommended to enable NTP time synchronization if Aranet PRO/PRO Plus is registered to Aranet Cloud.

3.6.4 Network menu

The "**Network settings"** menu is where you can configure the connectivity of Aranet PRO/PRO Plus. Wi-Fi and Ethernet connectivity is supported for connecting to the internet; however, Ethernet connectivity is preferred for stability. It is also recommended to disable the unused network interfaces to lower the processor load.

PRO PRO+

Aranet PRO Plus LTE P/N TDSBOB03, TDSBOBU3, TDSBOBC3 have a built-in GSM LTE 4G modem accepting a MINI size SIM-card. A SIM-card as well as a Mobile network connection plan are not included in the scope of delivery and should be purchased by the Aranet PRO Plus LTE base owner separately.

3.6.4.1 WIFI menu

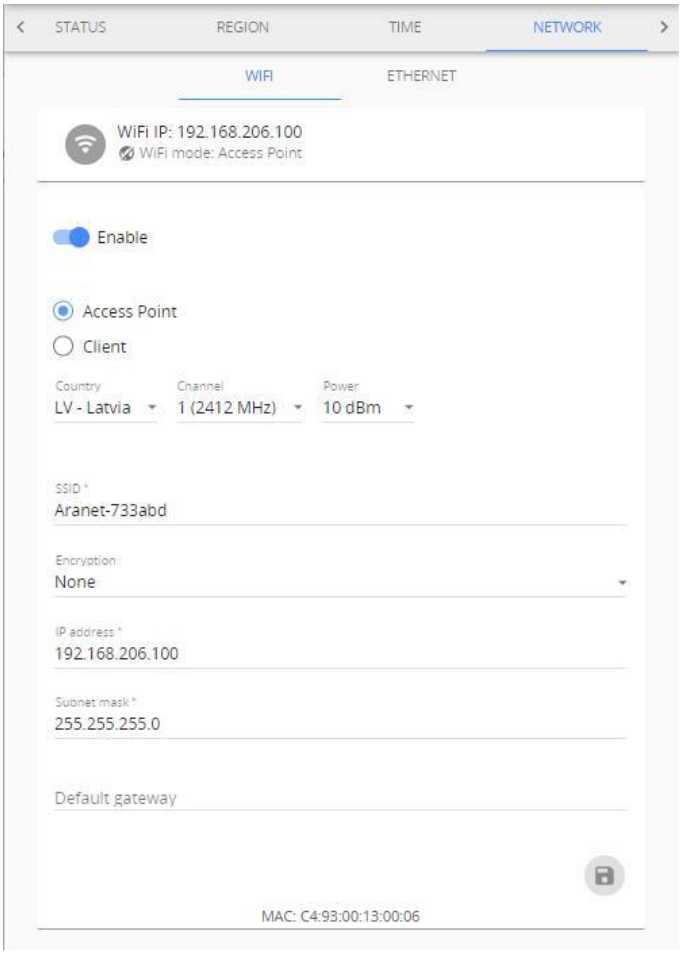
By default, Aranet PRO/PRO Plus is configured as a **Wi-Fi Access Point** for easy initial configuration. However,this can be changed. The first menu screen is for the Wi-Fi setup where you can choose between **Access Point** and **Client** connectivity.
Factory settings of an Aranet PRO/PRO Plus Wi-Fi interface are:

- Wi-Fi interface configured as an Access Point
  - SSID - "Aranet-******" (refer to the label attached to Aranet PRO/PRO Plus); Encryption – WPA2-PSK-CCMP;
  - **Aranet PRO Mk2** SSID - "Aranet-******" Encryption – None;
  - IP address – 192.168.206.100;
  - Subnet Mask – 255.255.255.0

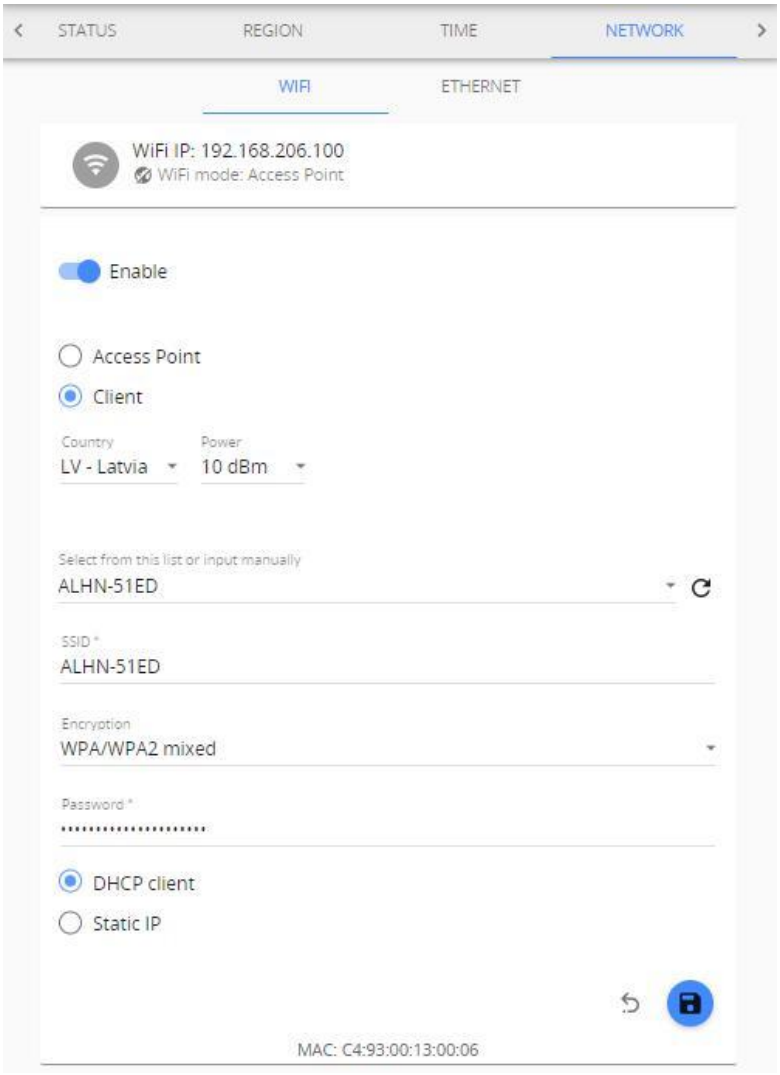
PRO



(1) In an Access point connectivity, it is possible to add/change the password to your Aranet PRO/PRO Plus Wi-Fi, as well as change its name, IP address and subnet mask. Apply the changes by using the **Save** button.



(2) In case you wish to connect an Aranet PRO/PRO Plus to a local Wi-Fi network, choose the **Client** mode, find the appropriate Wi-Fi connection, and fill in the Wi-Fi password. Apply the changes by using the **Save** button.



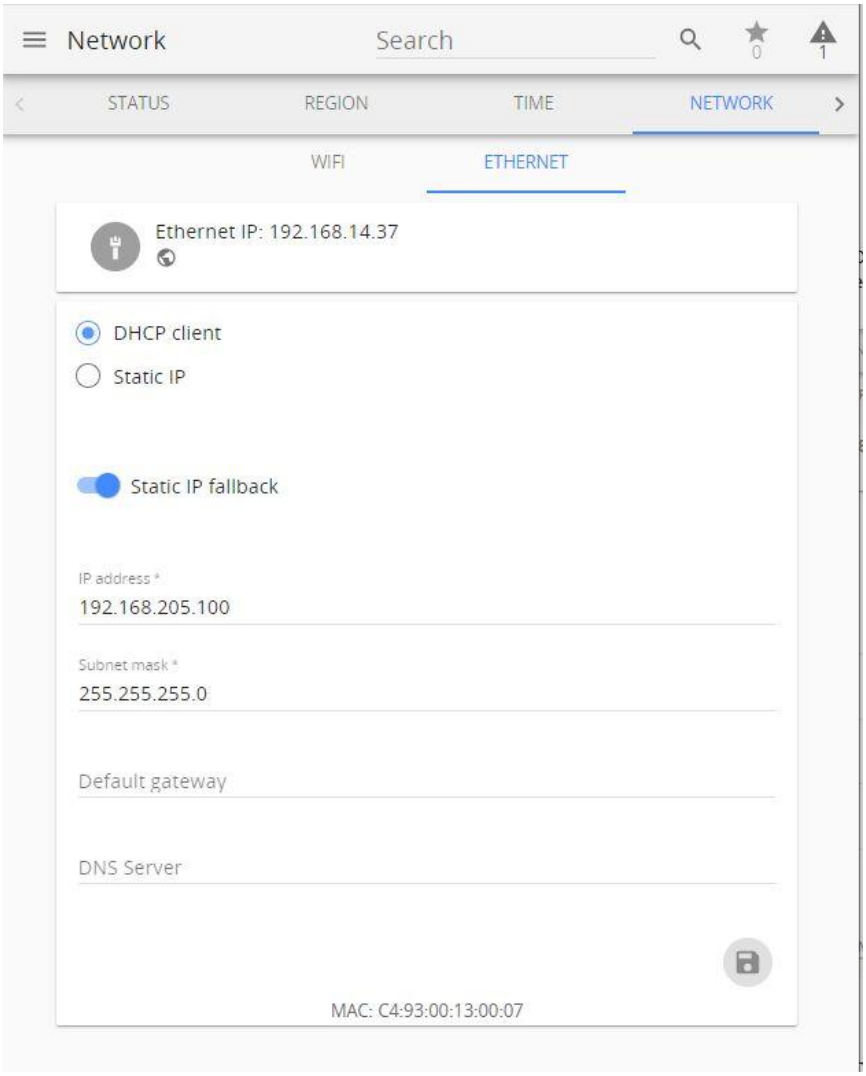
!NOTE! Most routers have DHCP enabled by default, we recommend keeping this setting for ease of set up. For advanced users, however, static IP address set up is possible.

The **Globe** symbol with no crossover indicates a successful connectivity to the network.

3.6.4.2 Ethernet menu

An **Ethernet** connection is preferred for Aranet PRO/PRO Plus, as it is generally more reliable. In the **Ethernet** menu there are two options - either to have it work in **DHCP** client mode or have a **Static** IP. **Factory settings** of an Aranet PRO/PRO Plus Ethernet interface are:

- DHCP client – On;
- Static IP fallback – On;
- IP address – 192.168.205.100;
- Subnet Mask – 255.255.255.0.



Static IP fallback switch is visible when DHCP client mode is selected. When switched *ON*, and Aranet PRO/PRO Plus *did not receive an IP address* from the DHCP server, the last settings entered in: *IP address*, *Subnet mask*, *Default gateway* and *DNS server* fields, are applied. If no settings were entered before, default Factory settings are in force. The same settings are in force after a NETWORK RESET.
If **Static IP fallback** is switched *OFF,* no valid IP address is assigned to the Aranet PRO/PRO Plus Ethernet interface, when it *did not receive an IP* address from DHCP server.

!NOTE! Most routers have DHCP enabled by default, we recommend keeping this setting for ease of set up. For more advanced users, however, static IP address set up is possible.

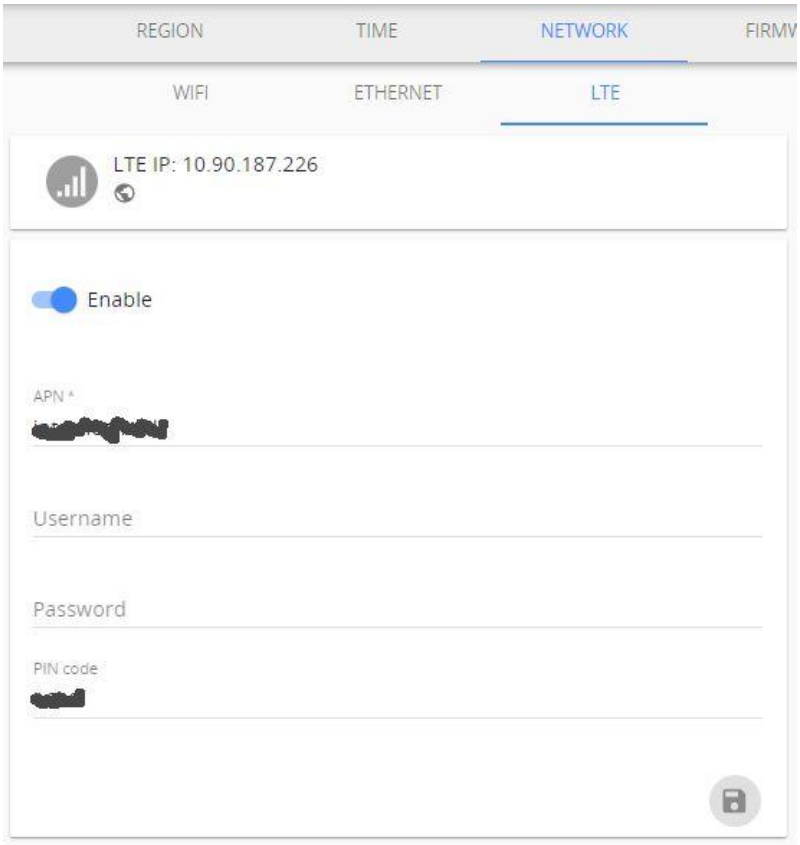
The **Globe** symbol with no crossover indicates a successful connectivity to the network.

3.6.4.3 LTE menu

PRO PRO+

Aranet PRO Plus LTE P/N TDSBOB03, TDSBOBU3, TDSBOBC3: The LTE menu is visible when a modem is detected by the system. Mini size GSM SIM-card with a valid Mobile Internet contract must be inserted into the modem, to ensure its functionality. A SIM-card is not included in the Aranet PRO Plus LTE scope of delivery. It is the customer's duty to sign the contract for Mobile Internet connection usage. Using Mobile Internet can cause additional expenses not covered by the Aranet PRO Plus LTE manufacturer.

Please consult your Mobile Internet provider for data to fill out in connection configuration fields.



It is possible to access the Aranet PRO Plus LTE web interface from the Internet over an LTE connection. For this purpose, please contact your Mobile Internet provider and request the *static* IP-address for the SIM-card inserted into modem.

!NOTE! An LTE connection configuration with *static* IP-address may differ from one with a dynamically assigned IP-address. Please consult your Mobile Internet provider for details.

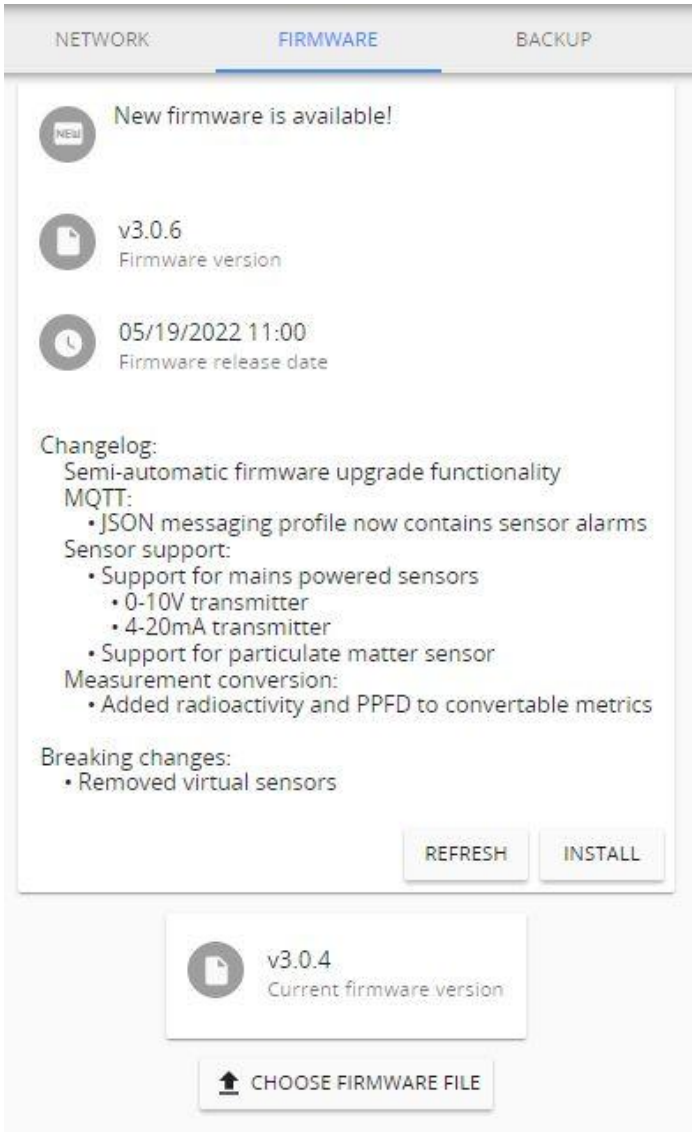
The **Globe** symbol with no crossover indicates a successful connection to the network.

Before removing the SIM card from the base station, all of the LTE configuration fields must be cleared, the LTE connection disabled, and the SAVE button pressed. Otherwise there is a potential risk of blocking the SIM card inserted into the Aranet PRO Plus LTE base.

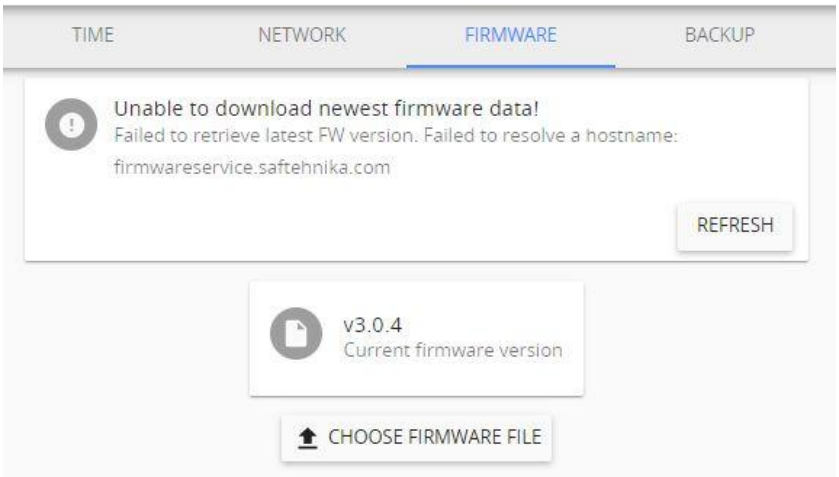
3.6.5 Firmware menu

The **firmware** submenu shows the current software version and allows to update it. The semi-automatic update has been implemented since Aranet PRO/PRO Plus firmware v. 3.0.1.; manual update is possible too. For a semi-automatic firmware update Aranet PRO/PRO Plus must be connected to internet.

When navigating to this menu, the Aranet PRO/PRO Plus connects to the *SAF Tehnika* server over HTTPS protocol TCP on port 443, to check for newer firmware version availability. If a newer firmware version is released, a notification is shown.

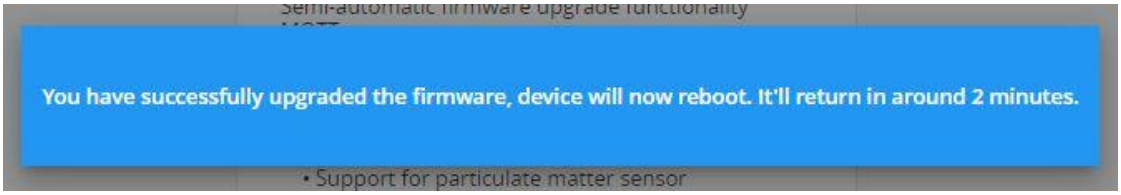


If the base is not connected to the Internet, the error message is displayed:



To update the firmware, press the **INSTALL** button. After confirming the update with an Administrator password, the process will start.

The following message is displayed when the process is finished:



To update firmware manually, first download the firmware update file from aranet.com/downloads/ and store it on your PC. Extract the file with extension **.gz** from the archive. Do not unpack the firmware file! Then click on the "**CHOOSE FIRMWARE FILE**" text box and locate the **.gz** file on the PC. Once that is done press the upload button next to it.

!NOTE! Firmware can be upgraded to the same or higher version only. A downgrade is possible to the subversion only. I.e. downgrade from v.3.x.x **is not** possible to v.2.x.x. A 3.y.y; downgrade **is** possible from v.3.x.x to v.3.x.y.

The firmware upgrade file name should not be changed, as it might not be recognized otherwise.

The software update usually takes about two minutes to complete. During that period, the device will reboot to complete the update. After the firmware upgrade, if the Aranet PRO/PRO Plus web interface does not function properly, we recommend clearing the browser's cache.

Example of clearing the cache for Chrome web browser:

(1) On your computer, open Chrome.

(2) At the top right, click **More** ⋮

(3) Click **More tools > Clear browsing data**.

(4) At the top, choose a time range. To delete everything, select **All time**.

(5) Next to "**Cookies and other site data**" and "**Cached images and files**," check the boxes.

(6) Click **Clear data**.

3.6.6 Backup menu

The **backup** menu is where a user can create a backup for device settings.

When an Aranet PRO/PRO Plus base is registered to the Aranet Cloud (see Chapter Aranet Cloud) it sends a backup file to the Aranet Cloud once per day when any changes in the base configuration or sensors list are made. Up to 10 latest backup files are visible to the Aranet Cloud user and can be downloaded from the base information card in Aranet Cloud.

(1) To perform a backup just click the "**EXPORT BACKUP**" button and a file will automatically be downloaded. It enables quick cloning of settings and sensors of the current Aranet PRO/PRO Plus for either duplication reasons, or if a full factory reset is necessary, which also can be performed in this menu.

(2) To upload a backup file, click on "**IMPORT BACKUP**" and locate a backup file. Once that is done click the upload icon next to it. You will be asked for the administrator's password: type it in and click "**OK**".

(3) To upload a backup file to Aranet Cloud manually, click on "**UPLOAD BACKUP**".

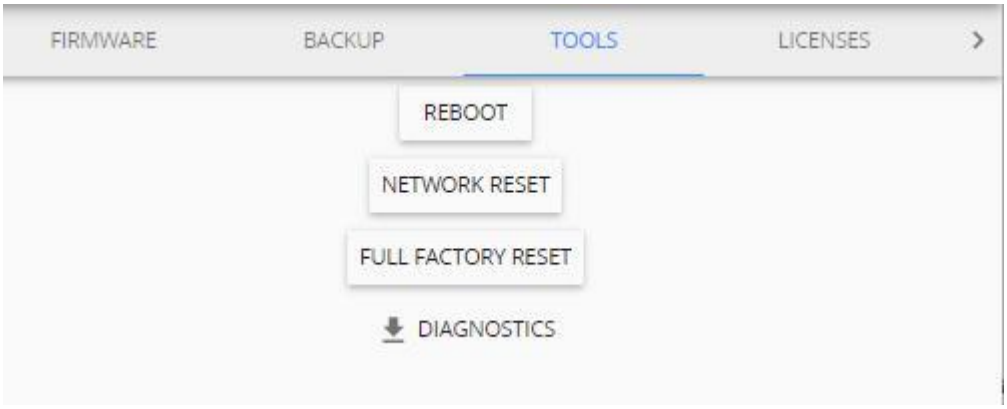


!NOTE! It is important to remember that the gathered data will not be saved in the backup file, it needs to be exported in case you wish to save it.

Aranet PRO/PRO Plus **Name** and **Network settings** are saved in the backup file; if you duplicate (clone) the base station, current Aranet PRO/PRO Plus name and Network configuration will be overwritten with the imported one!

3.6.7 Tools menu

Aranet PRO/PRO Plus base management options, such as **remote reboot**, **network reset**, **full factory reset,** and **diagnostics file download** are available here:



REBOOT – reboots the Aranet PRO/PRO Plus.

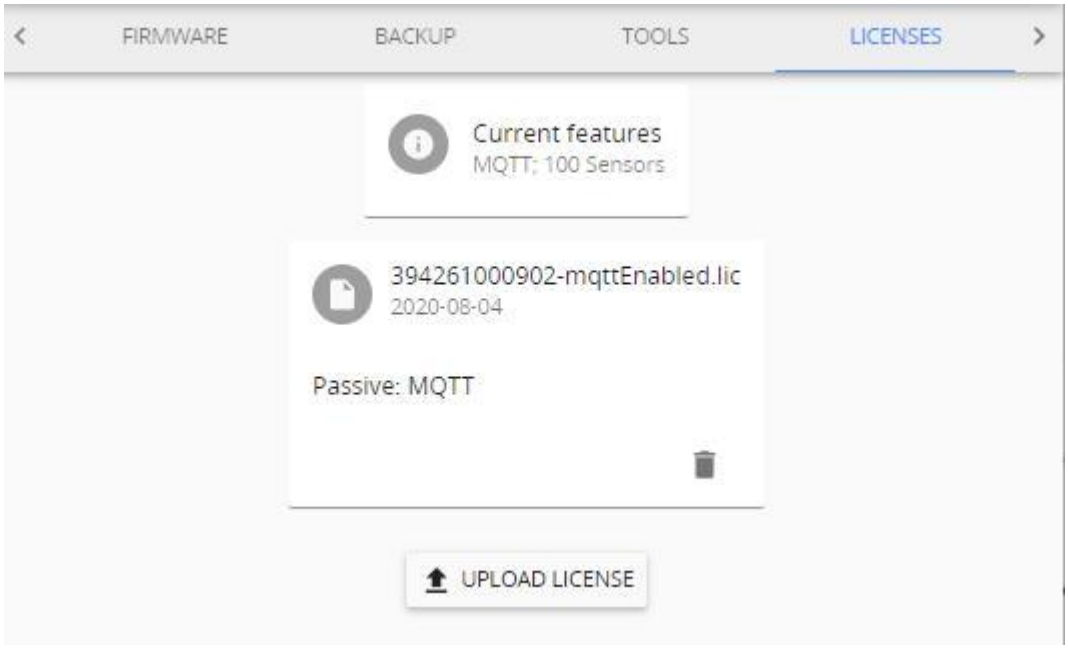
NETWORK RESET will load the default network settings for Aranet PRO/PRO Plus and can also be performed by a **network reset button** on Aranet PRO/PRO Plus by holding it for 5 or more seconds, however that will also reset the root user password.

FULL FACTORY RESET will delete all the configuration data and reset the Aranet PRO/PRO Plus to default settings. Previously recorded measurement data will be available and not be deleted.

DIAGNOSTICS –the file containing specific Aranet PRO/PRO Plus base station information is downloaded by clicking this button. This file could be helpful for malfunction investigation and ought to be sent to the manufacturer for analysis.

3.6.8 Licenses menu

The list of purchased and installed Aranet PRO/PRO Plus licenses is available here.

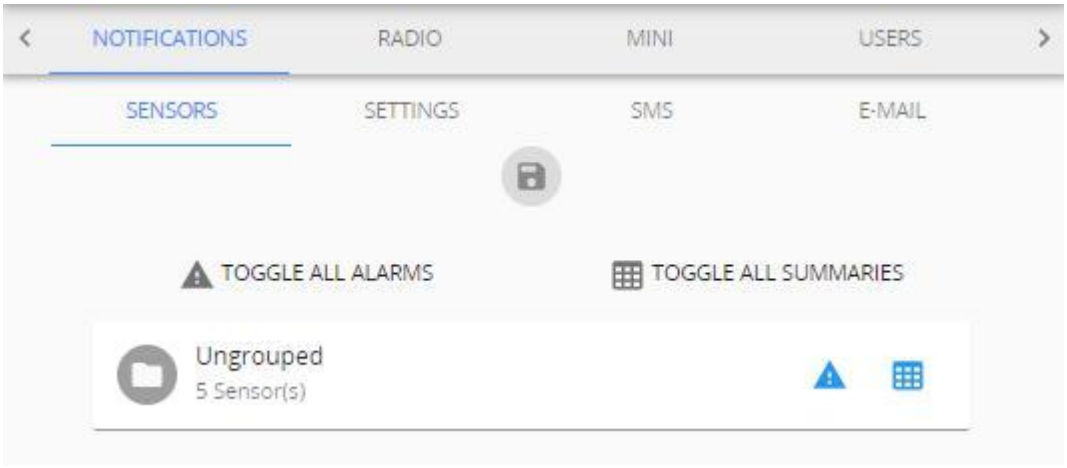


To add a new license to the Aranet PRO/PRO Plus base station click the **UPLOAD LICENSE** button, select the license file, and click **OK**.

3.6.9 Notifications

The "**Notifications**" menu offers management of alarms and summaries. Aranet PRO/PRO Plus offers receiving alarms and summaries via e-mail notifications or text messages (SMS).

Notification settings are applicable for each individual user account. Each user account can have different notification settings like summary, alarms, e-mail, and phone number for SMS delivery.



3.6.9.1 Sensors screen

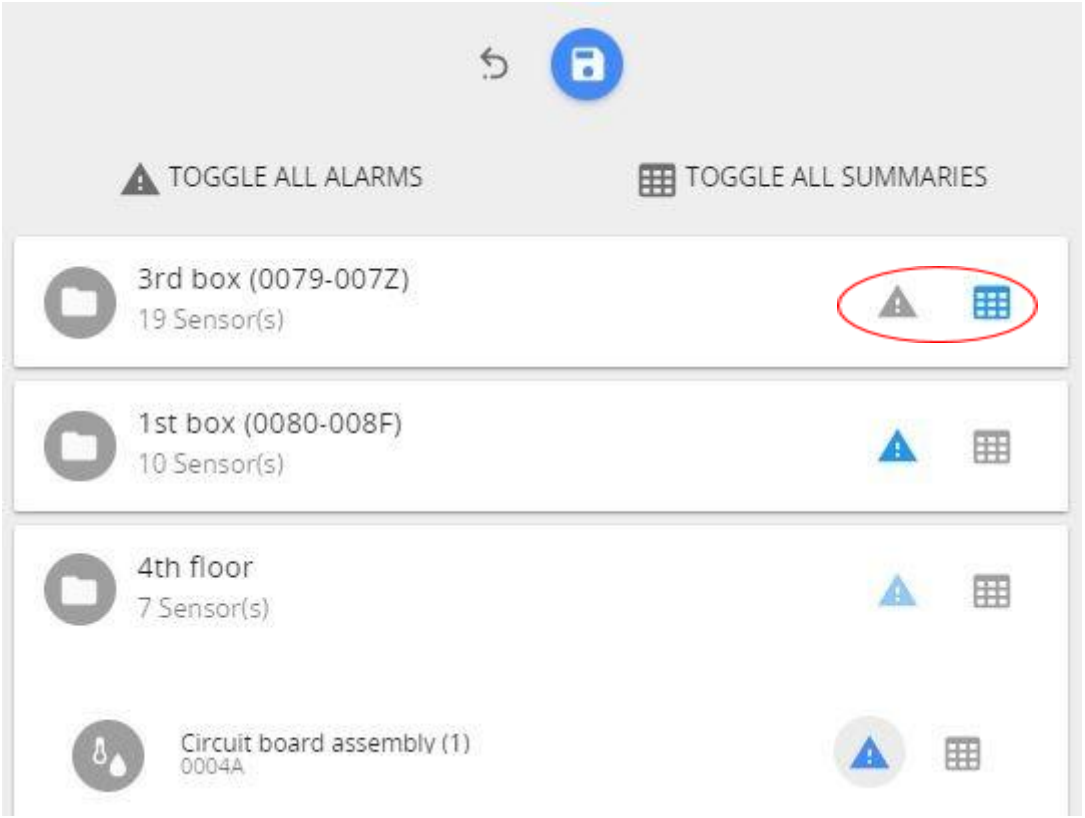
The first **Sensors** screen shows groups of sensors and allows you to choose individual settings for each group.

(1) Click the icons to receive **alarms** ⚠ for thresholds crossed, **summaries** ▦ or both.

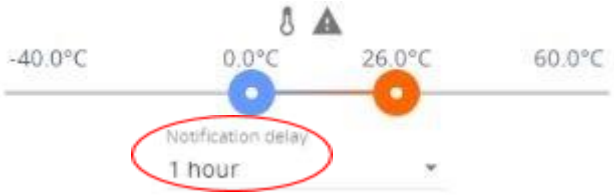
(2) If sensors are not added to any group, they will be automatically grouped together under "*Ungrouped*".

(3) If you click on the group, it will expand to show individual sensors in case you wish to individually manage which sensors you will be notified about.

(4) Click on the **Save** 💾 button.



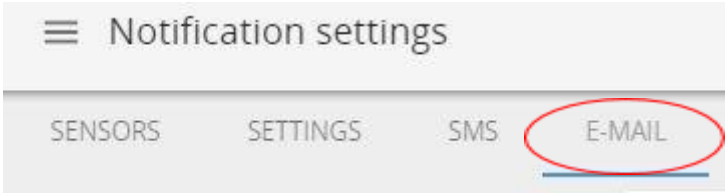
An e-mail and/or SMS will be sent immediately or after the delay time set under "**Notification delay**" for the respective sensor. For setting a Notification delay, navigate to the **Main menu (Measurements)** and click on the required sensor.



3.6.9.2 Settings screen

The **Settings** screen is where you can choose if you want to receive notifications via email, text messages or both, and what type of notification to receive.

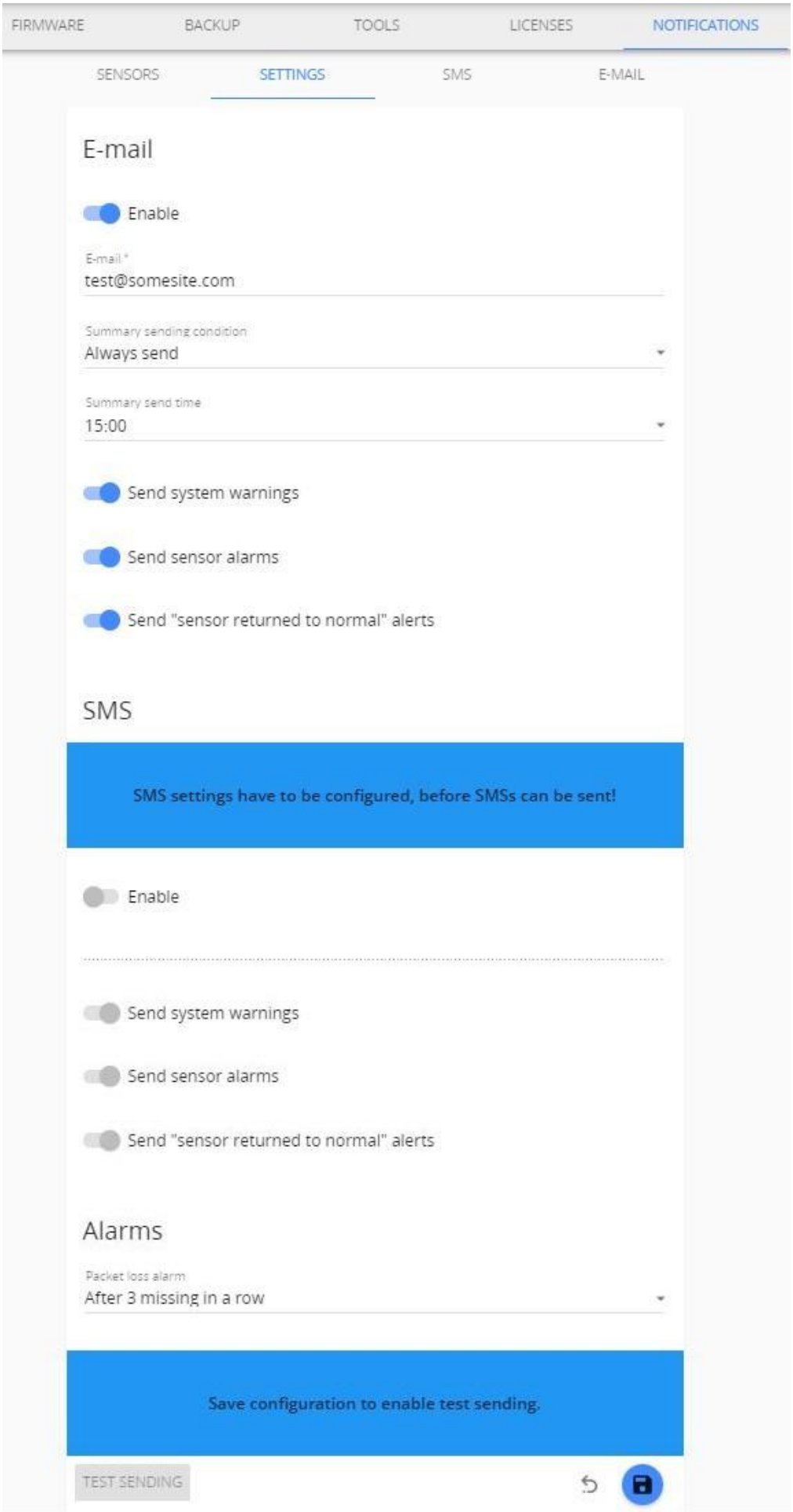
!NOTE! To set up an *e-mail notification*, please start with configuring the **E-MAIL** from which the notifications will be sent. Then proceed back to **SETTINGS** to specify the email address where notifications will be sent to.



(1) Input your email address and phone number to receive the notifications.

(2) **Save** changes once you have completed all tasks.

(3) It is suggested to perform a test of notifications by using the **TEST SENDING** button located at the bottom of Settings screen. If the correct email and/or phone number is entered, the notification message should be delivered. Allow for some time to let the notifications be delivered. Check any spam folder in case of missing test email notifications.


FIRMWARE
BACKUP
TOOLS
LICENSES
NOTIFICATIONS
SENSORS
SETTINGS
SMS
E-MAIL
E-mail
Enable
E-mail *
test@somesite.com
Summary sending condition
Always send
Summary send time
15:00
Send system warnings
Send sensor alarms
Send "sensor returned to normal" alerts
SMS
SMS settings have to be configured, before SMSs can be sent!
Enable
Send system warnings
Send sensor alarms
Send "sensor returned to normal" alerts
Alarms
Packet loss alarm
After 3 missing in a row
Save configuration to enable test sending.
TEST SENDING

Send system warnings – enables the notifications related to Aranet PRO/PRO Plus system events (like reboot, shutdown, upgrade, main power failure, etc.)

Send sensor alarm – enables notifications related to sensor alarms (like threshold crossed, battery low or battery empty)

Send "sensor returned to normal" alerts – enables notifications related to the sensor when its state has returned to normal (for instance, measurement returned below threshold).

Alarms – set communication alarm creation rule: how many sensor's measurements in a row are lost before communication alarm is generated.

To send an e-mail and/or SMS notification to several recipients, please create additional user accounts and configure their respective e-mail address and phone number.

3.6.9.2.1 Summary report

A summary report, if enabled and configured, will be sent once per day at a time (HH:00) specified by setting "summary send time".

The report will be sent in an email containing the following information:

- Minimum, average, and maximum Temperature, Humidity, CO2, Pressure, Voltage, Current measurments. Packet loss in percentage (with missing packet count and the maximum number of packets lost in a row).
- Temperature, Humidity, CO_2, Pressure, Voltage and Current alarms when a threshold was crossed (above or below) and its duration.
- Name of the sensor and name of the group it belongs to.
- Battery warnings.
- Channel warnings (in case a sensor is using a different radio channel than the Aranet PRO base station).
- Warnings about the number of faulty data packets received.
- Sensor restart warnings including the number of restarts.
- Sensor error warnings.
- System information such as: how many days, hours, minutes the system has been running, number of device reboots, number and duration of main power loss, number of factory and network resets, current Firmware version and memory usage in %.

(1) summary information in the e-mail, as shown in the example below.

System information:

Temperature			Humidity			CO2			Pressure			Voltage			Current			Packet loss	Name	Group
Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max			
21.2°C	24.4°C	25.7°C	28%	30%	34%	-	-	-	-	-	-	-	-	-	-	-	-	0%	Sens 1	Group 1
																		• Humidity: 1 alarm (under), duration 24h 0min (under)		
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00 mA	0.00 mA	0.00 mA	1%	Sens 3	Group 2
																		• 1 packets missing (max 1 in a row)!		

Running for 24 h 00 min
Device rebooted 0 times
Power lost 0 times (0 h 0 min)
Number of factory resets: 0
Number of network resets: 0
Firmware version: v1.4
Memory usage: 1% (40.7M/6.2G)

(2) Excel summary file as an attachment to the notification e-mail, containing the above-stated information as shown in the example below.

Temperature			Humidity			CO2			Pressure			Voltage			Current			Packet loss	Name	Group
Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max			
21.2°C	24.4°C	25.7°C	28%	30%	34%													0%	Sens 1	Group 1
															0.00 mA	0.00 mA	0.00 mA	1%	Sens 3	Group 2

Temperature alarms				Humidity alarms				CO2 alarms				Pressure alarms				Voltage alarms				Current alarms			
Over	Duration	Under	Duration	Over	Duration	Under	Duration	Over	Duration	Under	Duration	Over	Duration	Under	Duration	Over	Duration	Under	Duration	Over	Duration	Under	Duration
						1	24:00:00																

Warnings				
RSSI	Battery	Channel	Faulty/misordered data packets	Sensor restart
1 packets missing (max 1 in a row)!				

3.6.9.3 SMS screen

The **SMS** screen is where you can set up SMS alarm functionality.

Aranet PRO Plus TDSBOB03, TDSBOBU3, TDSBOBC3: SMS functionality can be enabled if a SIM-card with a valid Mobile Internet contract is inserted in the Aranet PRO Plus LTE modem. Refer to Chapter LTE menu of this document for configuration.

Aranet PRO: SMS functionality is enabled if you have a USB GSM modem with an active SIM card connected to Aranet PRO. Please find actual information about the supported (tested) GSM modems here: https://forum.aranet.com/aranet-solutions/what-cellular-usb-modems-are-compatible-with-aranet-pro-base-station/
Please note that other modems, not listed here, might be used as well. To determine if your modem functions properly, the user can perform a simple test using "**TEST SENDING**" button described in the previous chapter.

In some cases, a modem requires a PIN to be entered even if PIN security is disabled on the SIM card. When inserting modem for the first time, allow up to 3 minutes for the modem to stabilize. Status "OK" indicates that the modem is ready. During initializing the status might change several times. The following messages will indicate the status of the modem:

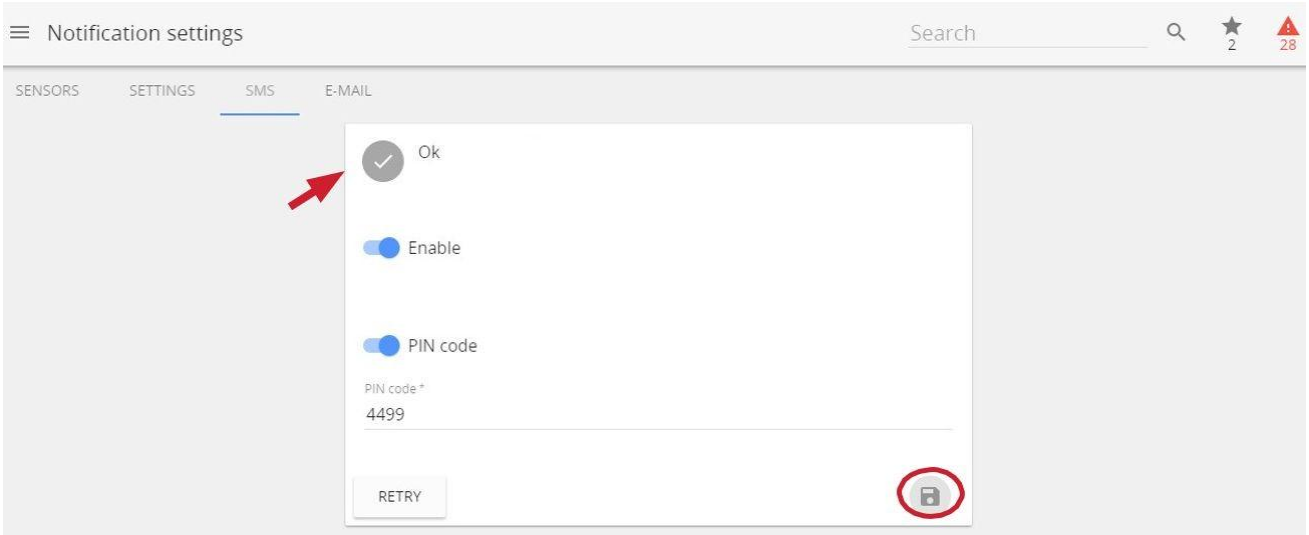
GSM modem not connected – GSM modem is not connected or is not recognized. Re-insert the modem and allow it to stabilize.

Modem did not accept this PIN – indicates that the entered PIN code is incorrect. Enter the correct PIN code.

Fault description – indicated additional information about the fault the modem is experiencing. Ok – modem is ready.

Your SIM card is locked. Unlock it by entering the PUK code and a new PIN - To unlock the SIM card the user must enter the PUK code, the new PIN code (indeed, the old one can be used too) and press the "SEND PUK CODE" button.

Using the **RETRY button** can help the modem to initialize again in case of a fault.



!NOTE! The SIM card cannot be activated through an Aranet PRO/PRO Plus software, the card can only be unlocked with the PIN code, so it must be pre-activated.

Aranet PRO: Keep in mind the maximal current of 500mA the base can supply over a USB-connection. In case of current draw exceeding 500mA (i.e., due to low cellular reception levels) the base station may be unable to supply sufficient current to the modem thus causing unstable behavior. This can be remedied using an external power supply and a "Y-type" USB cable with DATA+POWER and POWER jacks to supplement the power. Make sure to connect the cable correctly!

3.6.9.4 E-mail screen

The **e-mail** screen is where you set up the e-mail from which the notifications will be sent.

There is support for *Gmail*, *Outlook,* and *Yahoo* accounts, however, a Custom SMTP provider can also be set up.

For e-mail notifications to work, the Aranet PRO should have connectivity to a mail server (internet or other data network). Please refer to Chapter Network menu for details.

Successful connectivity is indicated by the globe symbol that is not crossed over. Indication examples:

- - indicates proper connectivity to the Internet via Ethernet cable
- - indicates no connectivity to Wi-Fi and no connectivity to internet via Wi-Fi

Some email service providers like ***Gmail*** require enabled "*2-step verification*".

Using Customer's SMTP as E-mail service provider, consult with the provider for the appropriate SMTP settings.

It is advised to check whether notification e-mails do not end up in the spam folder.

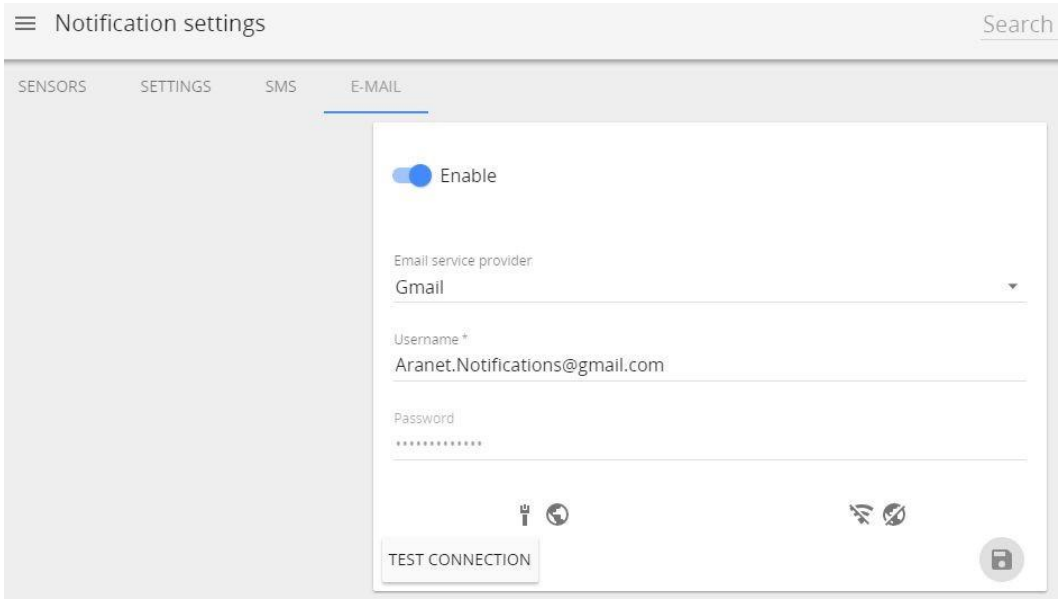
Other typical messages about connectivity:

E-mail server reached successfully! – connectivity with SMTP server is ok.

Connect error – no connectivity with SMTP server. Check the internet connection or consult the email service provider for further assistance.

AUTH error – incorrect **username** or **password**. For some e-mail service providers, you might need to enable "*allow apps that use less secure sign in*".

Once all the required information is filled out, saved and the connection is tested successfully you can start receiving E-Mail alarms and summaries.



3.6.10 Radio menu

The **Radio** menu allows to perform a channel radio availability scan for each of the available channels.

If the area has a dense coverage of sensors from other base stations this can become important.

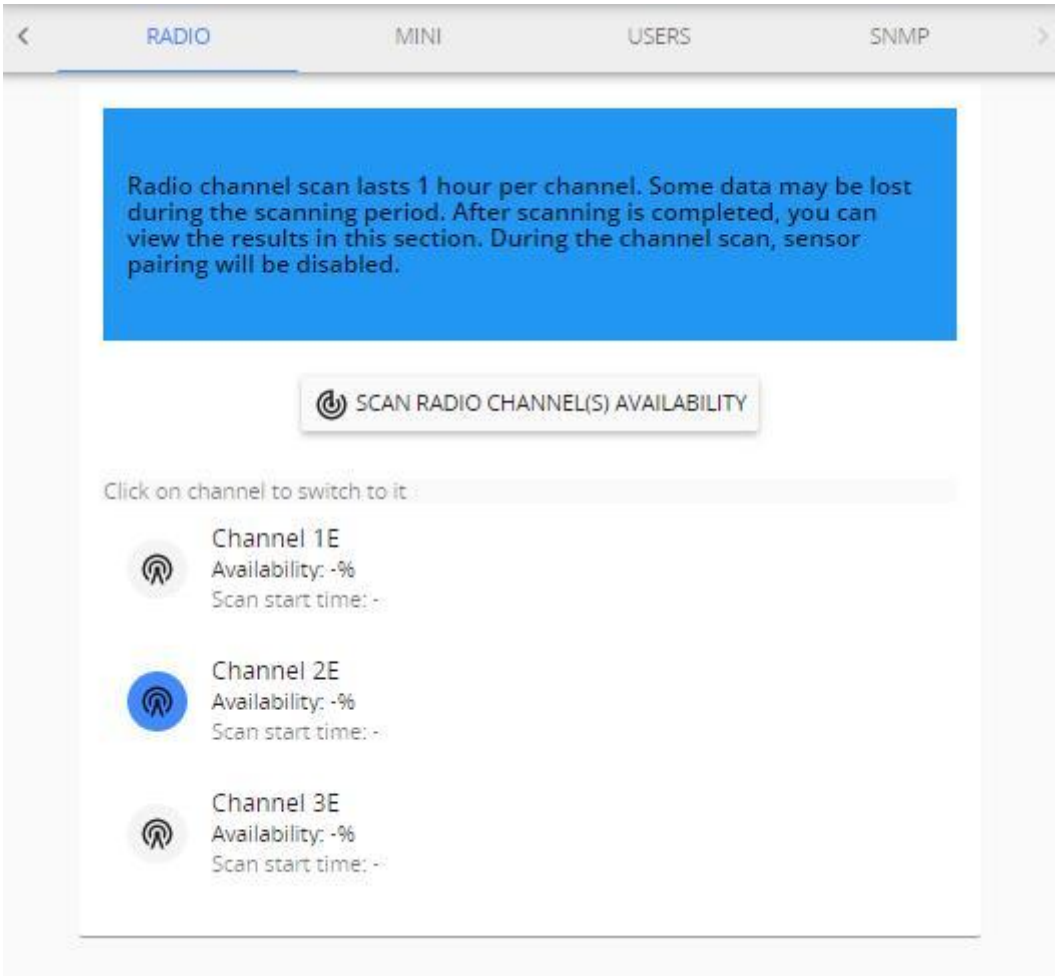
!NOTE! If sensors are already paired to the Aranet PRO/PRO Plus they will also show up as interference in the radio scan of the channel currently in use.

A channel scan can be activated for a selected channel or all channels at the same time. A scan takes 60 minutes per channel during which it is not possible to pair new sensors to the base station or change the time of the device. Channel switching is disabled during the scan. Some data may be lost during the scanning period.

You can abort the scan process by selecting **STOP SCAN**. The statistics of the scanned channel in this case will be lost.

After the scan, we recommend choosing the channel with the highest availability to ensure that you receive a reliable data stream from the sensors and avoid data loss.

!NOTE! When changing the channel, already paired sensors require re-pairing.



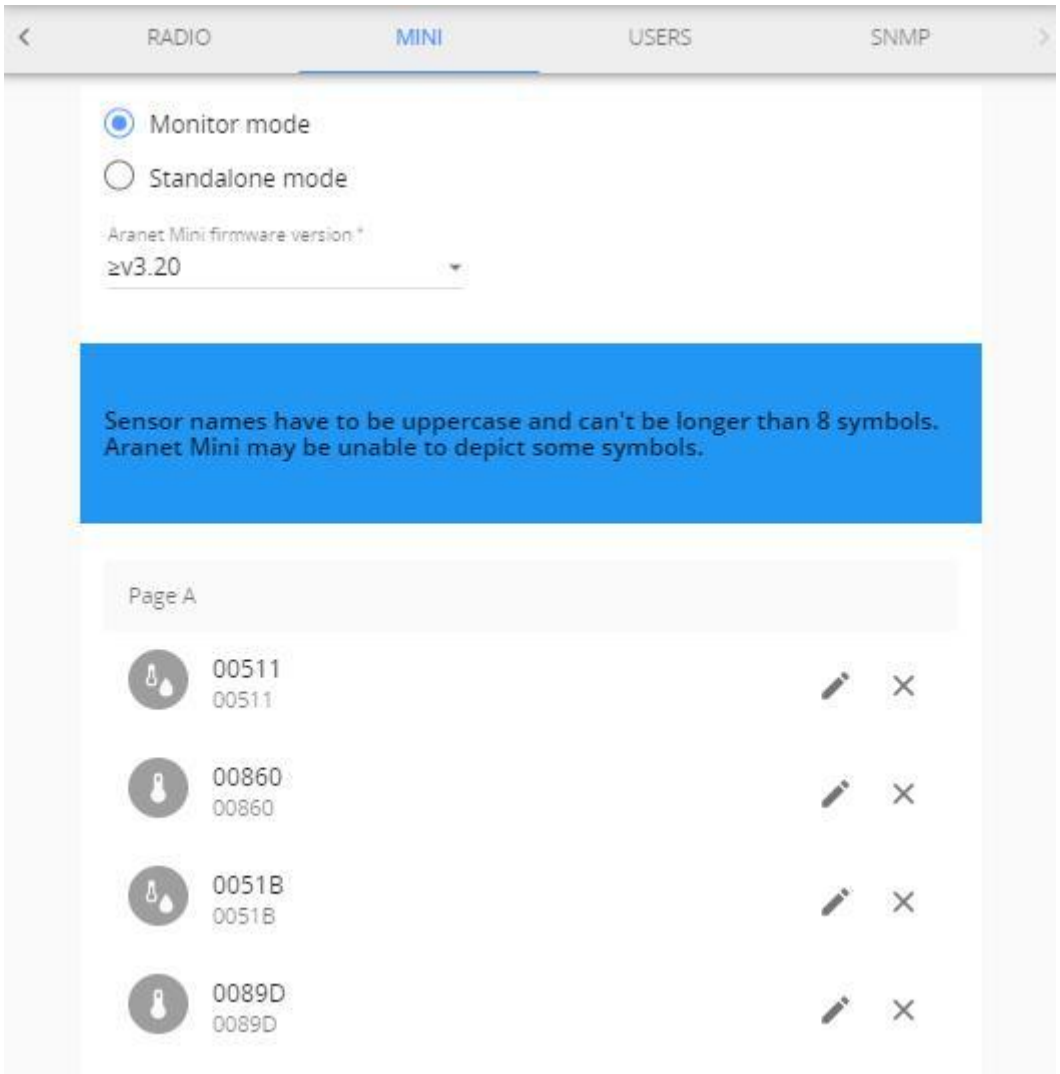
3.6.11 Aranet MINI monitor mode

!NOTE! Aranet MINI is discontinued product.

Aranet MINI monitor mode serves as a screen function displaying up to 12 sensor data. It can be used if constant display of the data readings is required from the sensors paired to Aranet PRO/PRO Plus. User can set as many Aranet MINI to **Monitor** mode, as necessary.

Aranet MINI only supports *Aranet T/RH sensor, Aranet PT100 sensor and Transmitter, Aranet T Probe sensor and Aranet CO2 sensor.*

!NOTE! Configuring the Aranet MINI into monitor mode, previous configuration of the Aranet MINI will be overwritten. Follow the instructions below on how Aranet MINI can be reconfigured to its default standalone mode.



There are two ways to configure Aranet MINI to work in **monitor** mode:

3.6.11.1 Using a computer

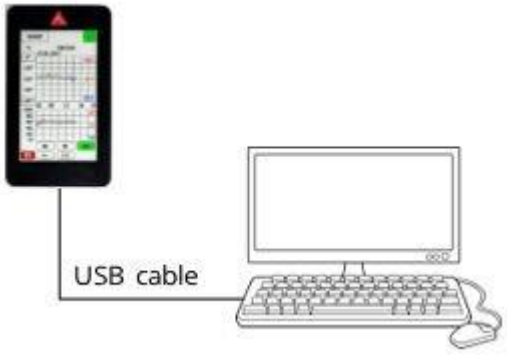
(1) To configure Aranet MINI into **monitor** mode you need to log in Aranet PRO using a desktop PC and choose the **Monitor** mode in **System** settings menu, submenu Aranet Mini.

(2) Select the firmware version of Aranet MINI you will be using as Monitor.

(3) Choose the sensors you wish to display on Aranet MINI (up to 12 sensors) by selecting the (+) buttons. Here you can change name of the sensors and rearrange the position by drag and drop.

(4) Press the "**Download Configuration**" button. Configuration file is then saved on your computer and needs to be transferred on Aranet Mini to enable the monitor functionality.

(5) Aranet Mini should be connected to a free USB port on the computer using for instance the included USB cable. It will automatically recognize Aranet Mini as a storage device. The downloaded file needs to be transferred to the Aranet Mini main file directory. New settings from configuration file will automatically be applied to Aranet MINI.



(6) Disconnect the USB cable.

(7) To return full Aranet MINI functionality select the Standalone mode in the same Aranet PRO menu and repeat steps 3 - 5.

3.6.11.2 Directly from Aranet PRO to Aranet MINI



!NOTE! This functionality is possible only using Aranet PRO base station with Aranet MINI by interconnection via USB port.

(1) To configure Aranet MINI into monitor mode you need to log in Aranet PRO/PRO Plus using a desktop PC or a smart device and choose the Monitor mode in System settings menu, submenu Aranet Mini.

(2) The firmware version of the Aranet MINI will be detected automatically once it is connected to Aranet PRO/PRO Plus. You do not need to select the version manually.

(3) Choose the sensors you wish to display on Aranet MINI (up to 12 sensors) by selecting the (+) buttons. Here you can change name of the sensors and rearrange the position by drag and drop.

(4) Aranet Mini should be connected to the USB port on the Aranet PRO/PRO Plus using the included USB cable. The "Upload via USB" button will become available, by pressing on it the settings will automatically be loaded on Aranet Mini.



(5) Disconnect the USB cable.

(6) To return full Aranet MINI functionality select the **Standalone** mode in the same Aranet PRO/PRO Plus menu and repeat steps 3 - 5.

3.6.12 Users menu

The **Users menu** is where you can create new users, delete, and edit data about existing ones. There are two types of account groups - **User** and **Administrator**.

The **User** group account has limited access to many of the settings' features, however, full access to data and sensors is granted. By default, user *Guest* in User group is provided.

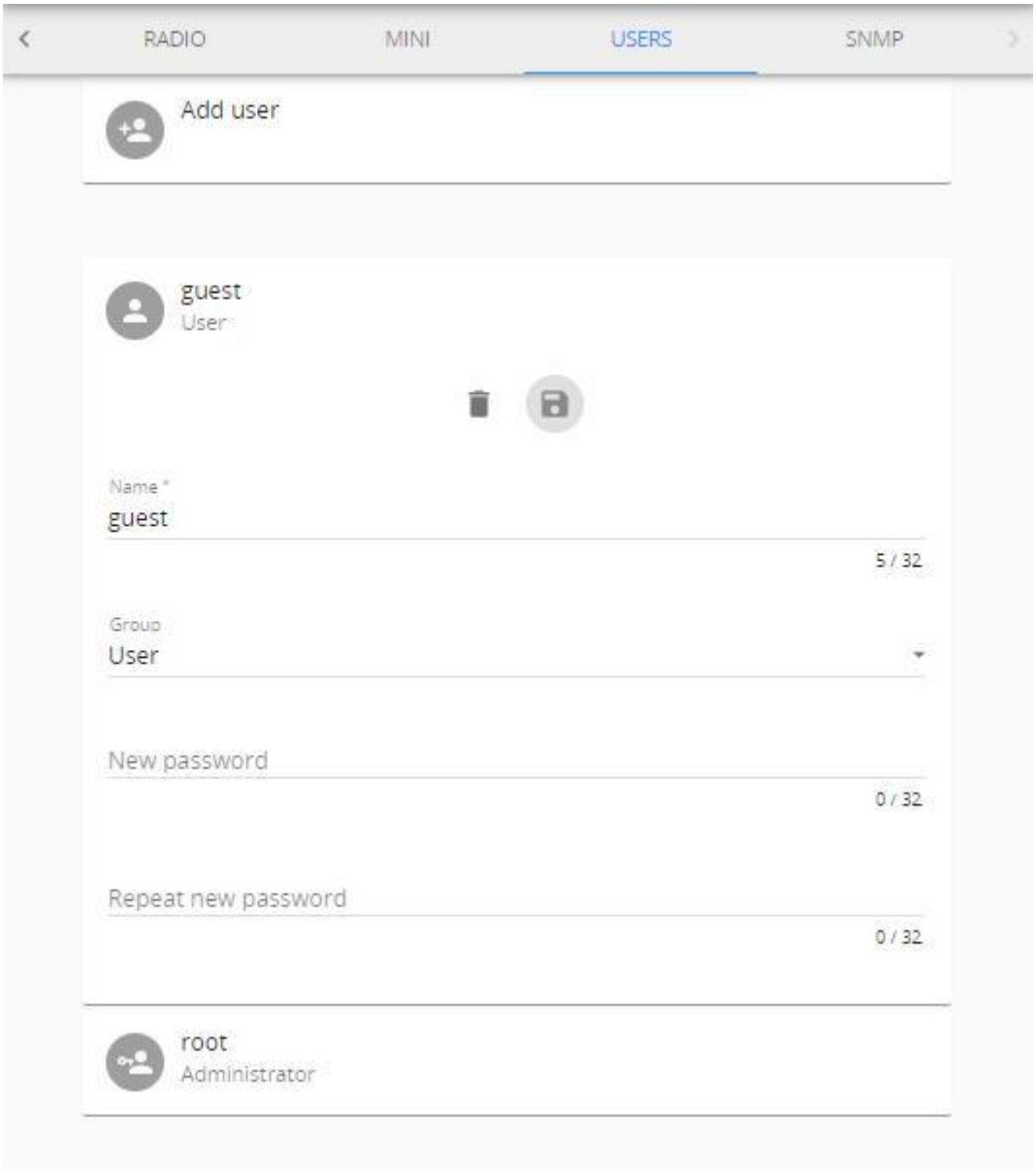
The **Administrator** group account should only be given to those who need features, such as software update, network reset, threshold settings, etc. By default, the **root** account in the Administrator group is provided. The root account cannot be deleted, nor its name be changed. The **Root** account can modify other user accounts belonging to Administrator and User groups.

Up to 20 accounts can be created (including root).



!NOTE! Change the root user password! The default password is a placeholder that is well known and should only be used for initial setup or after resetting to factory defaults.

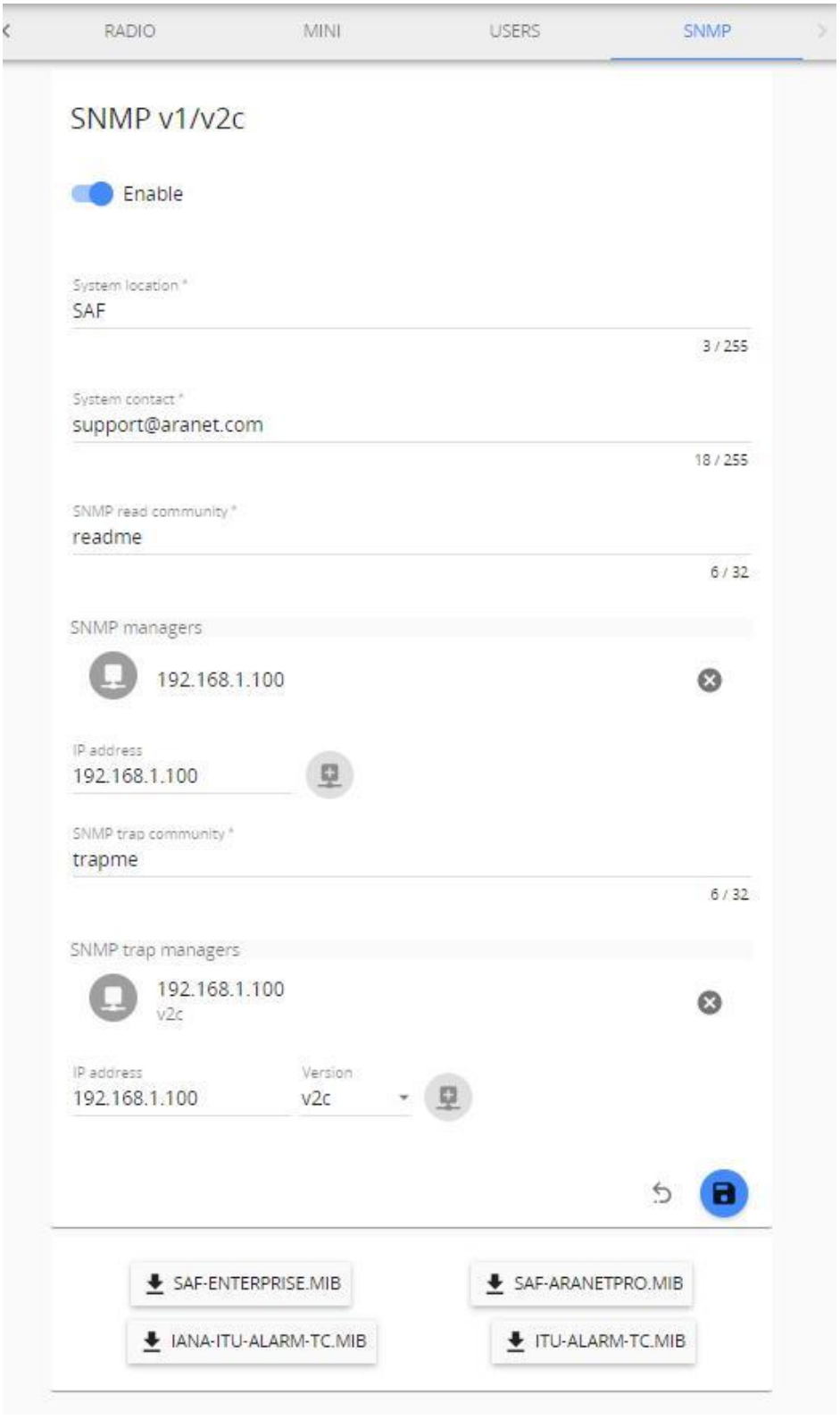
Refer to chapter Tools menu: FULL FACTORY RESET on options for resetting the root password.



3.6.13 SNMP menu

SNMP menu is where you set up Simple Network Management Protocol parameters for the Aranet PRO/PRO Plus health monitoring. Necessary enterprise-specific (*SAF-ENTERPRISE.MIB, SAF-ARANET-PRO.MIB*) and additional trap event type and severity level definitions related *(ITU-ALARM-TC.MIB, IANA-ITU-ALARM-TC.MIB*) MIB files can be downloaded here.

Current Aranet PRO/PRO Plus SNMP agent implementation supports read-only mode on OID request processing. Max 5 SNMP managers' IP v4 addresses and max 5 trap managers' IP v4 addresses can be added.


RADIO
MINI
USERS
SNMP
SNMP v1/v2c
Enable
System location *
SAF
3 / 255
System contact *
support@aranet.com
18 / 255
SNMP read community *
readme
6 / 32
SNMP managers
192.168.1.100
IP address
192.168.1.100
SNMP trap community *
trapme
6 / 32
SNMP trap managers
192.168.1.100
v2c
IP address
192.168.1.100
Version
v2c
SAF-ENTERPRISE.MIB
SAF-ARANETPRO.MIB
IANA-ITU-ALARM-TC.MIB
ITU-ALARM-TC.MIB

3.7 Aranet Cloud

The **Aranet Cloud** menu is where you set up the connection to Aranet Cloud.

Aranet Cloud is a Plug & Play Cloud solution for the Aranet IoT ecosystem. Aranet Cloud is an enterprise-grade solution for centralized access and management of Aranet data, automated data monitoring, and the possibility to set up customized notifications for sensor measurements.

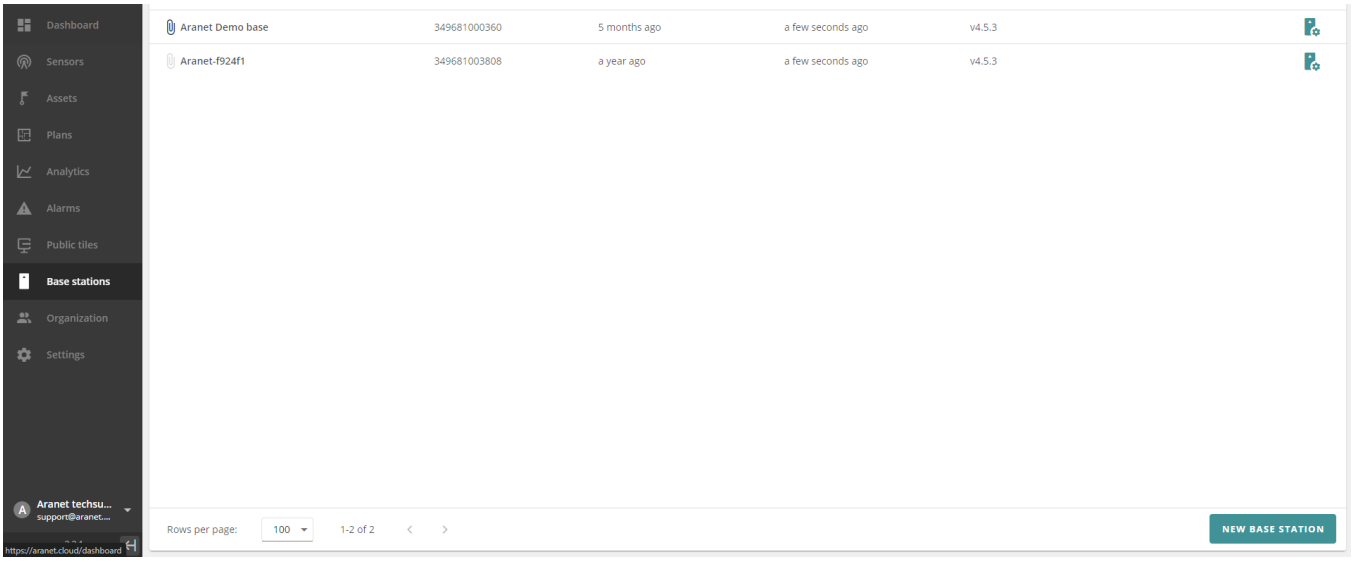
Aranet Cloud usage does not require integrator involvement or third-party solutions to enable centralized and remote data access for any number of sensors and bases. All sensors are available in one place – no need to switch between base stations or build solutions on how to access remote locations.

Every organization can set up a trial Aranet Cloud account with access for a period of 30 days.

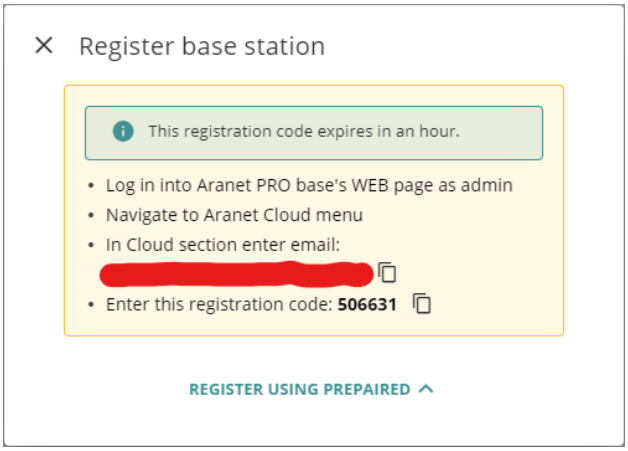
Before setting up an Aranet PRO/PRO Plus base station on the Aranet Cloud platform a couple of things should be verified and provided:

- The user has any type of device with a working Internet connection and a WEB browser installed on it.
- The user has access to an e-mail account that can be used for new account registration in the Aranet Cloud platform.
- The Aranet PRO/PRO Plus base station is properly connected to the Internet and has at least firmware version 2.4.6. Aranet Cloud receives data from base stations using HTTPS protocol on TCP port 443.

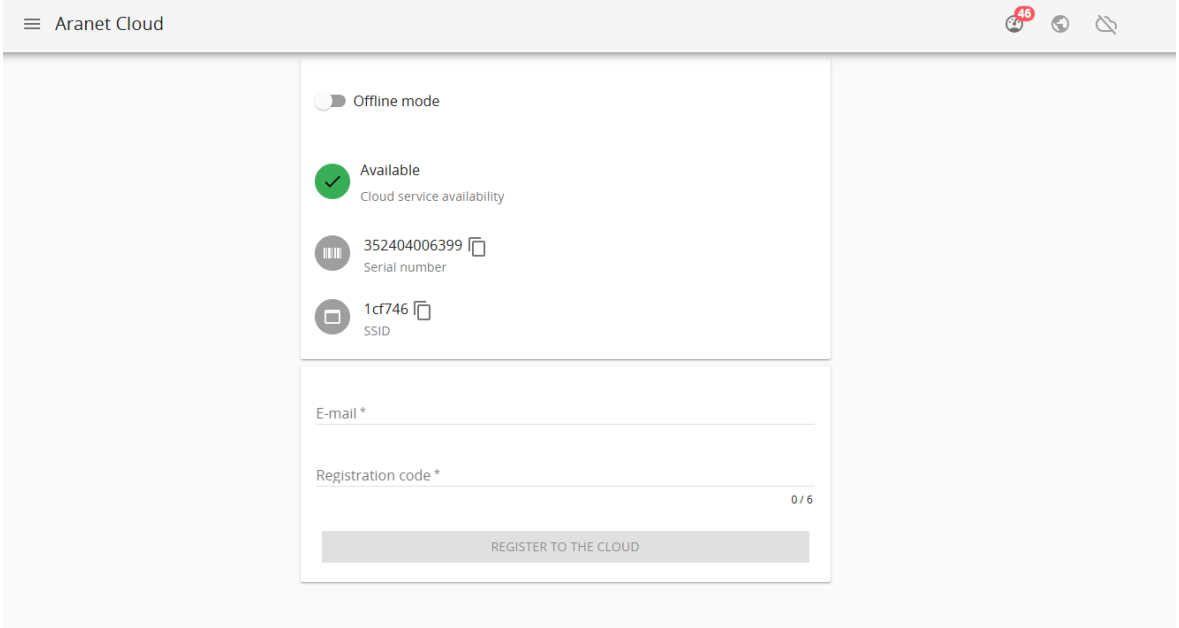
1) Open aranet.cloud in a new browser tab or window and log in with your credentials; If you do not have a user account, please register a new user account.
2) Go to **Base stations** and click the **NEW BASE** button to register a new Aranet Pro base;



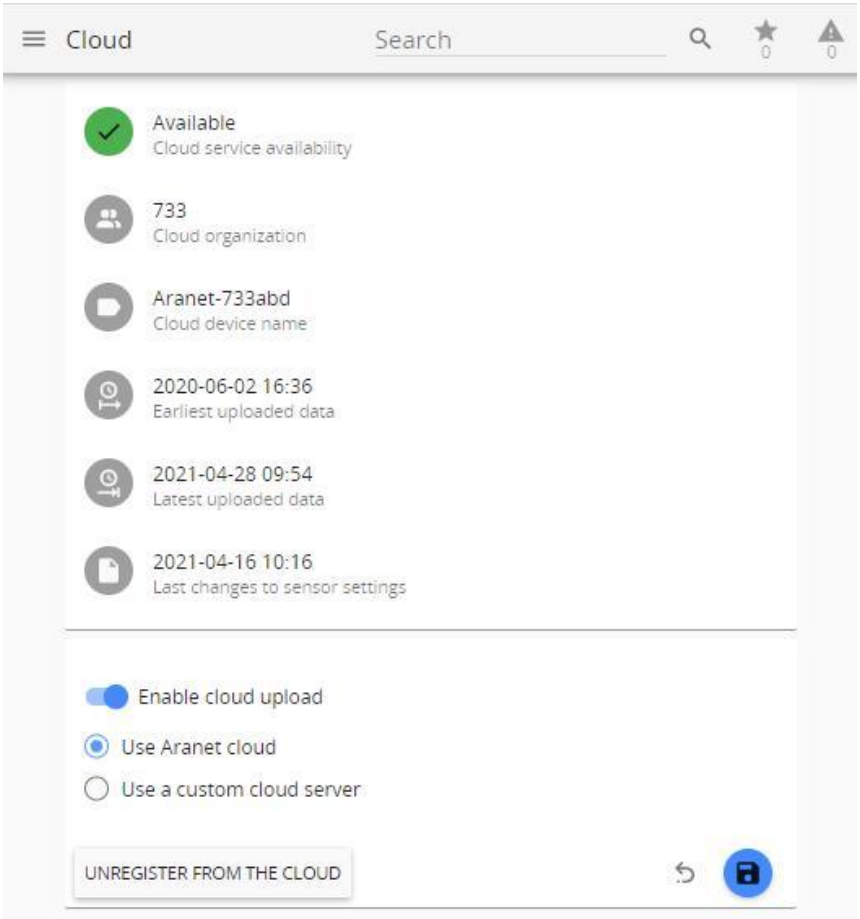
3) Remember or copy to the clipboard the generated registration code;



4) Switch back to the Aranet PRO/PRO Plus webpage, make sure the *Cloud service availability* is green*, and type in, or paste from the clipboard, the e-mail address you are registered with in **Aranet. Cloud**, and the generated registration code;



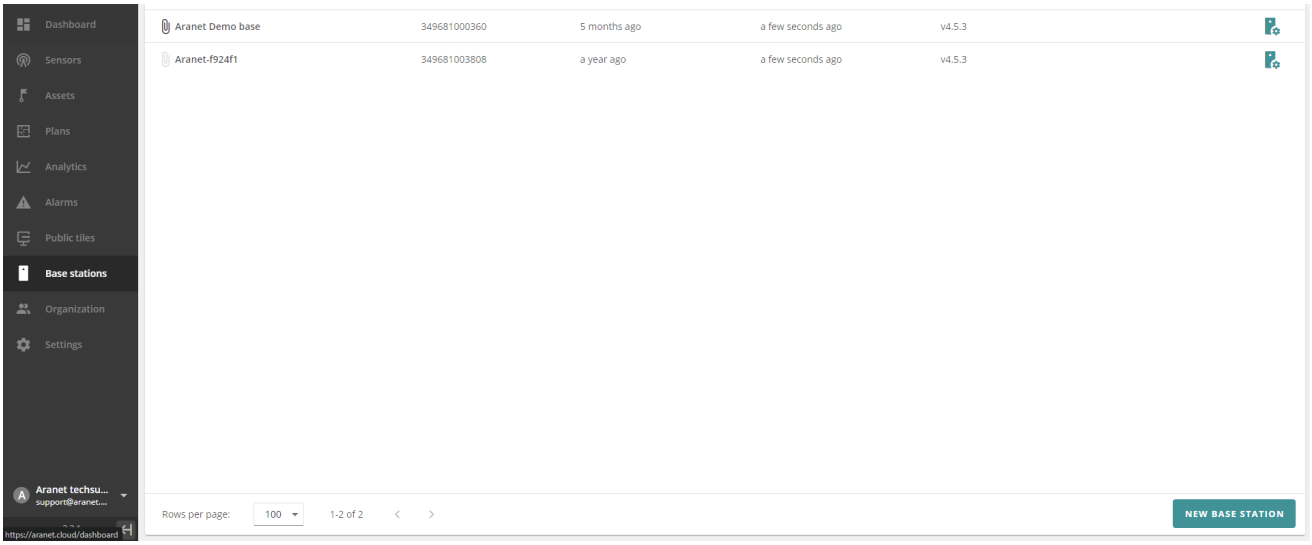
5) Click **REGISTER TO THE CLOUD**.
A new webpage will open, about the registration result. Reload the page to see information about the cloud connection state.
* If Cloud service is unavailable and the icon is red, then check the bases Internet connection.



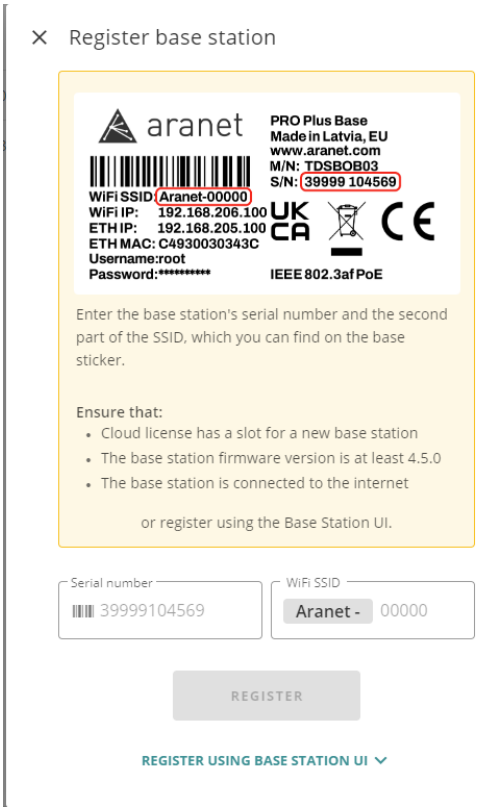
Starting from base station firmware v4.5.0 there is another way to connect the base station to the Cloud. By adding the base station to the Cloud without going into the base settings.

1. Login with your credentials to Aranet Cloud and select **ORGANIZATION** you want to add a new Aranet PRO base to (you should have *Administrator* or *Owner* rights).
2. Navigate to the **Base stations** tab.

3. Click on the **NEW BASE STATION** button.



This screen should now show up:



From here you have to enter the base's serial number and the default WiFi SSID. If you have the PRO+ line of base stations (white), it will have a sticker on the front, behind the glass of the info.
If you have the regular PRO model (black) base station, the sticker with the serial number is on the back. But the WiFi SSID is only visible if the base station is plugged in and you have a device, that can see WiFi signals. You should use the default Wi-Fi SSID, if it is changed, it will not work.
Afterwards, the base station will show up as pending and can take up to 2 hours after it has an internet connection to connect to the Cloud.

Aranet PRO/PRO Plus base will start its' paired sensor measurement data upload to the Aranet Cloud platform. The sensor data upload process, depending on sensor data amount and data connection speeds between the Aranet PRO/PRO Plus base station and the Aranet Cloud system, can take up to 20 – 30 minutes. During this process sensor data will gradually appear in the Aranet Cloud organization.

You can pause uploading sensor data and backup files by switching off "**Enable cloud upload**'. If you wish to unregister the Aranet PRO/PRO Plus base from the cloud, click the **UNREGISTER FROM THE CLOUD** button.
For more information about the Aranet Cloud refer to Aranet Cloud User guide.
For Aranet Cloud usage guidelines please refer to Aranet Cloud forum.

3.8 Integrations

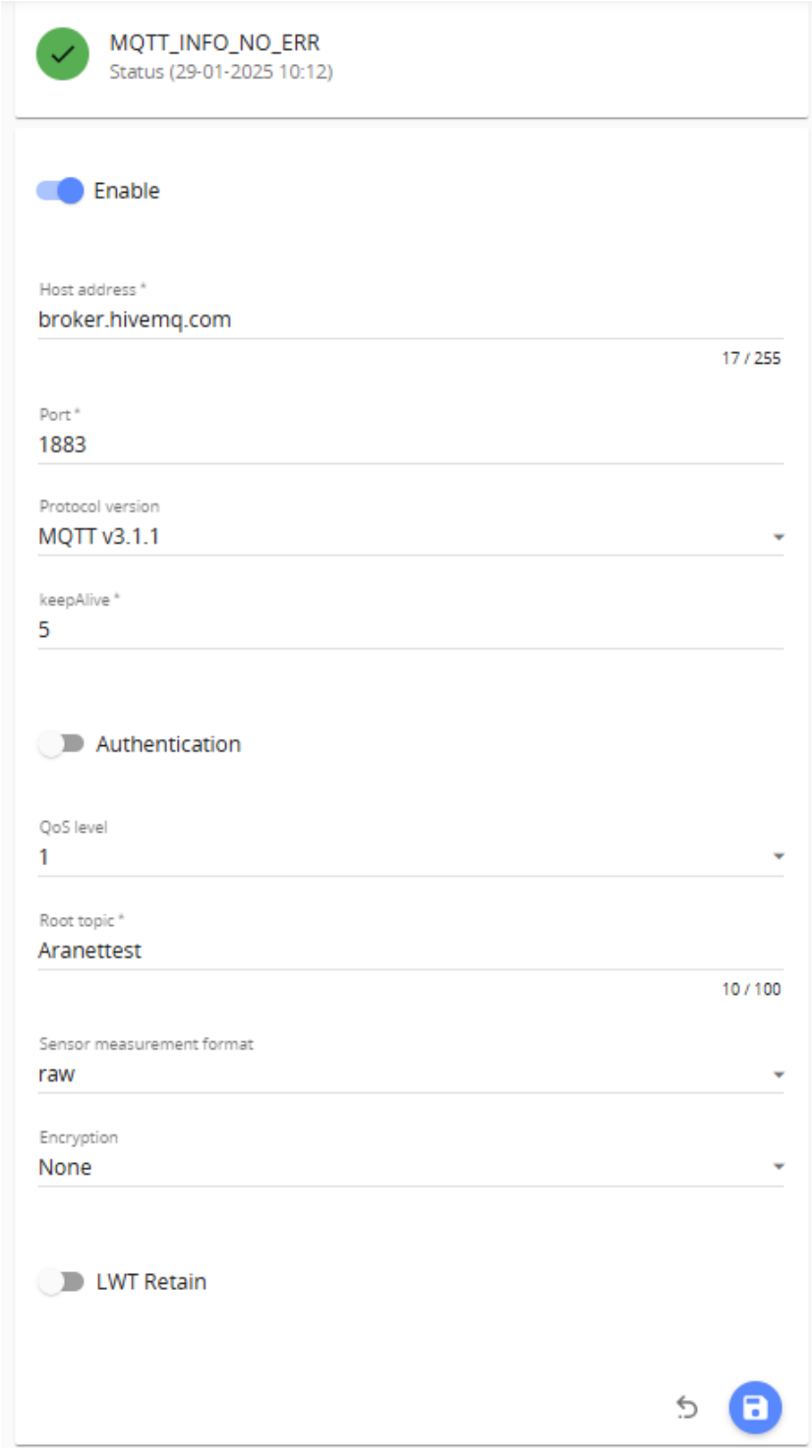
Aranet PRO/PRO Plus integration possibilities are license-based. Each integration's license is purchased separately. Aranet integration with 3rd party systems is possible using MQTT, Modbus, and BACnet functionality on the Aranet PRO/PRO Plus base station.

3.8.1 MQTT

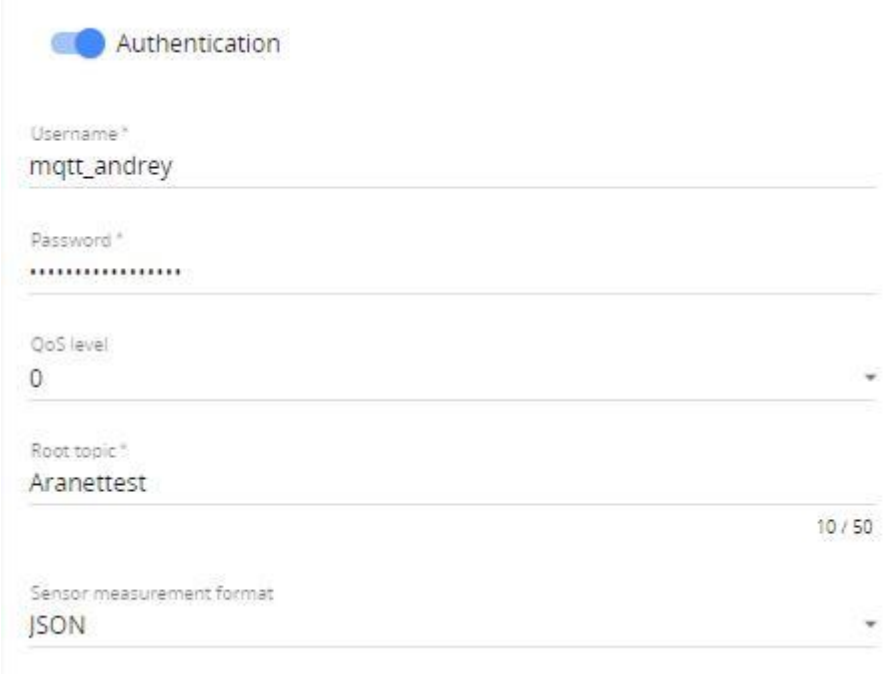
To use Aranet PRO/PRO Plus as an MQTT publisher it is necessary to have:

- A software/application that can make data requests and receive data in MQTT format (subscribe to MQTT data reception), for example, an account on *Amazon AWS* or *Microsoft Azure* cloud computing platforms.
- Access to some MQTT broker that is necessary to obtain data from Aranet PRO/PRO Plus base station and then send it to the user software.
- A valid MQTT license file was uploaded to the Aranet PRO/PRO Plus base station.

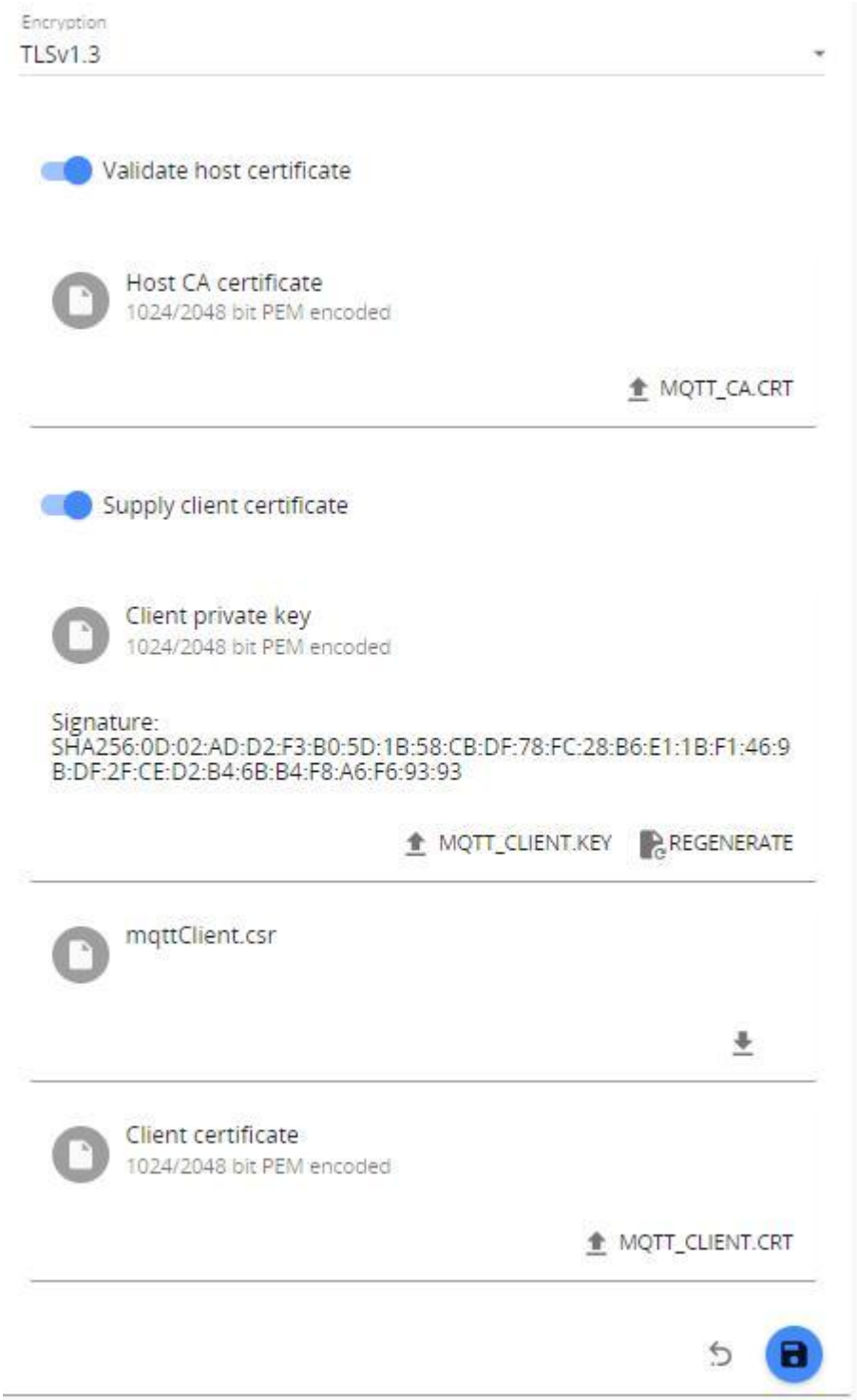
MQTT menu is where you set up a connection to your MQTT broker.



1) **Enable** – allows enabling/disabling of the MQTT data transmission from an Aranet PRO/PRO Plus base station;
2) **Host address** – allows configuring the IP address or hostname for the MQTT broker;
3) **Port** – allows selecting the TCP port used for the connection to the MQTT broker. The most common ports are 1883 or 8883;
4) **Protocol version** – allows selecting the MQTT protocol version used for the connection to the MQTT broker. The broker should support the selected version;
5) **keepAlive** – the number of seconds after which the broker should send a PING message to the client if no other messages have been exchanged in that time. Can be set from 5 to 65535 (default 30 sec);
6) **Authentication** - upon necessity allows enabling additional authentication for the connection to the MQTT broker and type in:
    a. Username and
    b. Password for connection authentication;



7) **QoS level** (*0, 1, or 2*) for MQTT message delivery on the MQTT broker, can be selected as necessary;
8) **Root topic** – allows selecting the root topic name with what MQTT messages will be published from Aranet PRO/PRO Plus base station on the MQTT broker. In our example, we will use the name **Aranet**;
9) **Sensor measurement format** – allows selecting the format (*raw, JSON, or Azure*) in which MQTT messages from an Aranet PRO/PRO Plus base station will be published on the MQTT broker;
10) **Encryption** - upon necessity allows configuration of additional encrypted certificates (*TLS version 1.1, 1.2, or 1.3*) to be used for a more secure connection to the MQTT broker;
    a. Validate host certificate – enable to upload of the necessary secure connection certificates;
    b. click **MQTT_CA.CRT** to upload root CA certificate in PEM format for MQTT broker;
    c. Supply client certificate - enable to upload of the device's public certificate and private key for a secure connection to the MQTT broker;
    d. click **MQTT_CLIENT.KEY** to upload the Aranet PRO/PRO Plus base station private key for a secure connection to the MQTT broker;
    e. click **MQTT_CLIENT.CRT** to upload the Aranet PRO/PRO Plus base station public key for a secure connection to the MQTT broker;



11) When all the necessary configuration parameters are entered, they should be saved by pressing the blue **Save** icon.
12) Starting from v4.7.16 a toggle switch "LWT Retain" has been included in MQTT web GUI which allows to enable/disable LWT message retain option. It was noticed that using this option as enabled does not allow the publisher to connect to the Azure Event Grid MQTT broker.

If the configured MQTT connection is successful, then a **Connection successful** message will be shown on the top of the page also showing the precise time when the connection was established.

For more MQTT connection settings examples refer to: https://aranet.com/software/

3.8.2 Modbus

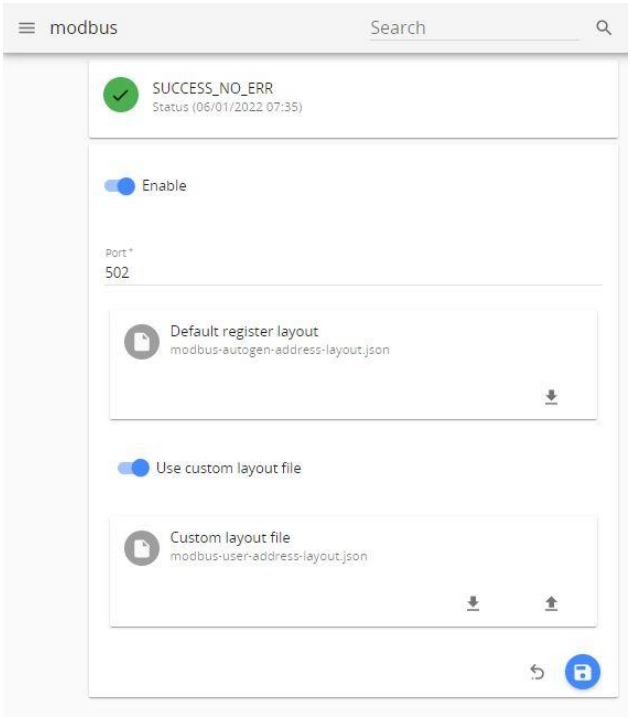
The Aranet PRO/PRO Plus Modbus TCP/IP feature currently supports "*Input register*" object types. All other types can be defined in the configuration file, but they will be ignored. It also refers to function codes. Only function code 4 is supported (read "*Input register*").

Aranet PRO/PRO Plus appears in the Modbus networks as a **server (slave)** having its own *server(slave) ID*. By default, Aranet PRO/PRO Plus *server (slave) ID* is "1".

Notes for the client side:

- Register size: 16 bits;
- Endianness - big-endian with high word first:
  - high byte first;
  - high word first (for 2 register/32-bit values).
- Supports only:
  - Modbus function: read input registers (code: 4)
  - Modbus data type: input registers (any address can be used in the supported range: 0-65535)
- Used Modbus TCP exceptions
  - In case, if an unsupported function is requested, a reply message with "ILLEGAL_FUNCTION" code will be received.
  - In case, if unavailable registry address is requested, a reply message with "ILLEGAL_DATA_ADDRESS" code will be received. This exception is also sent in case if the address is conflicting with any other registry address.
  - In case, if uninitialized registry address is being requested, a reply message with "ILLEGAL_DATA_VALUE" code will be received. The address of the registry exists, but valid data of measurement has not been assigned yet.

Modbus menu is where you set up the connection to the Aranet PRO/PRO Plus.



1) **Enable** – allows enabling/disabling of Modbus TCP/IP on an Aranet PRO/PRO Plus base station;
2) **Port** – allows selecting the TCP port used for the connection to the Modbus *client (master)*. The most common port is 502.
3) **Default register layout** – autogenerated Aranet PRO/PRO Plus Modbus addresses layout file in *json* format can be downloaded here. (See layout file example below).
4) **Use custom layout file** – when enabled, custom Modbus addresses *json* file can be uploaded to the Aranet PRO/PRO Plus base here as well as downloaded back from the base station.
5) **Save** or **Cancel** changes.

Autogenerated Aranet PRO/PRO Plus Modbus addresses layout file example.

Most important explanations about addresses are given in downloaded *json* file as //comments:

```
////////////////////////////////////////////////////////////////////////////////
// Aranet PRO Modbus mapping configuration description.
// The configuration supports the inputRegisters and the discreteInputs protocol object type.
// Each type has its own address offset value (e.g., 30000).
// Each offset value is expected to be in a range: 0-65535// Sensors can be mapped for each
object type.
// Each sensor has:
//     - offset value (e.g., 0);
//     - set of measurements (e.g., temperature, humidity, battery, rssi).
// Each measurement has:
//     - offset value (which must be unique in between particular sensor's measurement offset
values, e.g., temperature - 1, humidity - 3, rssi - 5, battery - 6, etc.);
//       Registry address of specific measurement is the sum of offsets, .e.g, protocol
object type inputRegisters (30000) + sensor X offset (0) + measurement Y offset (1) which
makes Input register's address value 30001 for the sensor's X measurement Y.
//     - sum of offsets (e.g., registry address) must be in a range: 0-65535
//     - data type (int16, int32, uint16, uint32, int64).
//       This data type determines how particular measurement must be interpreted on Client
side.
//       Data type also determines the registry size needed to encode the value into bytes.
Size of two bytes is used for a single Modbus registry.
//       The selected data type also affects an offset value for the next  measurement
address, e.g., if temperature's (1) data type is float then next measurement offset value
must be 3 as temperature measurement offset is 1 and it's data type length is 2.
//     - multiplier value (e.g., 1, 10, 100, 1000, etc.) used to convert a decimal double
value to an integer. The client must divide by this multiplier to correctly convert the value
back.
// Address collision will be marked with a WARNING label in this configuration file. Both
registry addresses on Client side will be reported as illegal.
////////////////////////////////////////////////////////////////////////////////
{
  "version": "1.0.0",
  "inputRegisters": {
    "offset": 0,
////////////////////////////////////////////////////////////////////////////
    "6291711": {      // Sensor 6000FF; Name: Soil VWC, EC and T sensor; Group name:
Horticulture\/Greenhouse; Address: 10000
      "sensorName": "Soil VWC, EC and T sensor",     // read-only
      "groupName": "Horticulture\/Greenhouse",       // read-only
      "offset": 0,
      "batteryAlarm": {       // Address 10003: measurement batteryAlarm
        "offset": 3,
        "dataType": "bit",
        "address": 10003      // read-only
      },
      "rssiAlarm": {   // Address 10004: measurement rssiAlarm
        "offset": 4,
        "dataType": "bit",
        "address": 10004      // read-only
      },
      "MinPecAlarm": { // Address 10050: measurement MinPecAlarm
        "offset": 50,
        "dataType": "bit",
        "address": 10050      // read-only
      },
      "MaxPecAlarm": { // Address 10051: measurement MaxPecAlarm
        "offset": 51,
        "dataType": "bit",
        "address": 10051      // read-only
      },
      "MinTemperatureAlarm": {       // Address 10008: measurement MinTemperatureAlarm
        "offset": 8,
        "dataType": "bit",
        "address": 10008      // read-only
      },
      "MaxTemperatureAlarm": {       // Address 10009: measurement MaxTemperatureAlarm
        "offset": 9,
        "dataType": "bit",
        "address": 10009      // read-only
      },
      "MinVwcAlarm": { // Address 10054: measurement MinVwcAlarm
        "offset": 54,
        "dataType": "bit",
        "address": 10054      // read-only
```

```
      },
      "MaxVwcAlarm": { // Address 10055: measurement MaxVwcAlarm
        "offset": 55,
        "dataType": "bit",
        "address": 10055      // read-only
      }
    },
////////////////////////////////////////////////////////////////////////////
    "4194749": {      // Sensor 4001BD; Name: 4001BD; Address: 37800
      "sensorName": "4001BD", // read-only
      "groupName": "", // read-only
      "offset": 7800,
      "sensorType": {  // Address 37800: measurement sensorType
        "offset": 0,
        "dataType": "uint16",
        "address": 37800      // read-only
      },
      "uid": { // Address 37801: measurement uid
        "offset": 1,
        "dataType": "uint32",
        "address": 37801      // read-only
      },
      "battery": {     // Address 37803: divide by 100 to get battery in fraction
        "offset": 3,
        "dataType": "uint16",
        "multiplier": 100,
        "address": 37803      // read-only
      },
      "rssi": {        // Address 37804: measurement rssi in dBm
        "offset": 4,
        "dataType": "int32",
        "multiplier": 1,
        "address": 37804      // read-only
      },
      "time": {        // Address 37806: measurement time in seconds
        "offset": 6,
        "dataType": "uint32",
        "multiplier": 1,
        "address": 37806      // read-only
      },
      "atmosphericpressure": {        // Address 37812: measurement atmosphericpressure in Pa
        "offset": 12,
        "dataType": "int32",
        "multiplier": 1,
        "address": 37812      // read-only
      },
      "co2": { // Address 37816: measurement co2 in ppm
        "offset": 16,
        "dataType": "int32",
        "multiplier": 1,
        "address": 37816      // read-only
      },
      "humidity": {    // Address 37810: divide by 10 to get humidity in %
        "offset": 10,
        "dataType": "int32",
        "multiplier": 10,
        "address": 37810      // read-only
      },
      "temperature": { // Address 37808: divide by 1000 to get temperature in C
        "offset": 8,
        "dataType": "int32",
        "multiplier": 1000,
        "address": 37808      // read-only
      }
    },////////////////////////////////////////////////////////////////////////////
```

An autogenerated file can be used as a template for Custom layout file creation: you can edit it to read needed sensors and measurements only.

3.8.3 BACnet IP

Aranet BACnet IP functionality corresponds to BACnet Smart Sensor profile.
IMPORTANT:
The BACnet/IP service can only be accessed through an Ethernet (wired) network interface.
The full functionality of the BACnet/IP service requires an additional license to be uploaded.

Aranet supported BACnet services

- Subscribe CoV (execute)

- Read Property (execute)
- Write Property (execute)
- Who Has (execute)
- Who Is (execute)

Aranet used BACnet object types and properties

Object types used in Aranet PRO BACnet server implementation – **Device** object type, **Analog Input** object type, or **Analog Value** object type (depends on object type selection in "Compatibility options").

Device object properties

Property	Access rights
Active Change-of-Value (CoV) Subscriptions	Read-only
Apdu Timeout	Read-only
Application Software Version	Read-only
Daylight Saving Status*	Read-write
Database Revision	Read-only
Description	Read-only
Device Address Binding	Read-only
Firmware Revision	Read-only
Local Date	Read-only
Local Time	Read-only
Location	Read-only
Max Apdu Length Accepted	Read-only
Model Name	Read-only
Number Of Apdu Retries	Read-only
Object Identifier	Read-only
Object List	Read-only
Object Name	Read-write
Object Type	Read-only
Protocol Object Types Supported	Read-only
Protocol Revision	Read-only
Protocol Services Supported	Read-only
Protocol Version	Read-only
Segmentation Supported	Read-only
System Status	Read-only
Utc Offset**	Read-write
Vendor Identifier	Read-only
Vendor Name	Read-only

* - **Daylight Saving Status** must be updated from the BACnet Client system as it is not being auto-updated and cannot be set using Aranet PRO base web GUI (it uses UTC time throughout the back-end processes).
** - **UTC Offset** must be updated from the BACnet Client system as it is not being auto-updated and cannot be set using Aranet PRO base web GUI. BACnet UTC Offset is the inverse of common practice. If your UTC offset is -5 hours GMT, then BACnet UTC offset is +5 hours. BACnet UTC offset is expressed in minutes, therefore convert UTC offset from minutes to hours.

Analog Input/Analog Value (measurement) object properties

Property	Access rights
Cov Increment	Read-write
Description*	Read-only
Event State	Read-only
Object Identifier	Read-only

Object Name	Read-write
Object Type	Read-only
Out Of Service	Read-write
Present Value**	Read-only
Reliability	Read-only
Status Flags	Read-only
Units	Read-only
9997 (proprietary) – Time of Last Present Value update	Read-only
9998 (proprietary) – Date of Last Present Value update	Read-only

* - **Description** is a combination of sensor HEX UID, group name, sensor name, and measurement type and unit, e.g., "[500ACE] roomEnv Contact pulse meter pulses (pulses)" where:

- [500ACE] – HEX UID
- roomEnv – group name
- Contact pulse meter – sensor name
- pulses – measurement
- (pulses) – unit

** - **Present Value** can be changed in case if **Out Of Service** value is set to "*True*". It applies to both supported object types (**AI** and **AV**).

Object Name default assignment

By default, the **Device object name** has the same value as the System name. It is not being updated on the System name change. The device object name can be changed from BACnet Client side only.

Measurement object's default name is a combination of object type abbreviation and object instance ID, e.g., "AV – 2", where *AV* stands for "*Analog value*". Object name can be changed from the BACnet client side.

Indications of alarm presence for measurement objects

Depending on the alarm type the property **Reliability** is being updated for the measurement object to which it refers, or for all measurement objects of the corresponding sensor.

Alarm type	Alarm applies to	Reliability (integer value)
Threshold alarm	Measurement object	UNRELIABLE_OTHER (7)
Battery alarm	Battery object	UNRELIABLE_OTHER (7)
RSSI alarm	RSSI object	COMMUNICATION_FAILURE (12)
Wrong channel alarm	All sensor objects	CONFIGURATION_ERROR (10)
Error flag alarm	All sensor objects	UNRELIABLE_OTHER (7)

The reliability property value is set to "NO_FAULT_DETECTED" (integer value: 0) if there is no alarm detected.

Units for Measurement object present value

Units' property conversion table. All units that are not in this table do not have an appropriate BACnet unit integer.

Unit string value	BACnet enum integer value	Bacnet-stack variable name
C, °C	**62**	**DEGREES_CELSIUS**
F, °F	**64**	**DEGREES_FAHRENHEIT**
K, °K	**63**	**DEGREES_KELVIN**
% (RH)	**29**	**PERCENT_RELATIVE_HUMIDITY**
ppm	**96**	**PARTS_PER_MILLION**
A	**3**	**AMPERES**
V	**5**	**VOLTS**
s	**73**	**SECONDS**
Ω	**4**	**OHMS**
lx	**37**	**LUXES**
kg/m³, kg/m^3	**186**	**KILOGRAMS_PER_CUBIC_METER**
dBm	**200**	**DECIBELS_MILLIVOLT**

hPa	133	HECTOPASCALS
mmHg	59	MILLIMETERS_OF_MERCURY
bar	55	BARS
inHg	61	INCHES_OF_MERCURY
Pa	53	PASCALS
mmh2o	206	MILLIMETERS_OF_WATER
mbar	134	MILLIBARS
m	31	METERS
cm	118	CENTIMETERS
mm	30	MILLIMETERS
µm	194	MICROMETERS
ft	33	FEET
in	32	INCHES
kg	39	KILOGRAMS
lb	40	POUNDS_MASS
N	153	NEWTON
m/s	74	METERS_PER_SECOND
km/h	75	KILOMETERS_PER_HOUR
mi/h	78	MILES_PER_HOUR
ft/s	76	FEET_PER_SECOND
%	98	PERCENT
ppm	96	PARTS_PER_MILLION
Nm	160	NEWTON_METERS
m/s^2	166	METERS_PER_SECOND_PER_SECOND
J	16	JOULES
kJ	17	KILOJOULES
MJ	126	MEGAJOULES
BTU	20	BTUS
kWh, kWh/h	19	KILOWATT_HOURS
S/m	174	SIEMENS_PER_METER
W	47	WATTS
kW	48	KILOWATTS
MW	49	MEGAWATTS
hp	51	HORSEPOWER
m^3/h	135	CUBIC_METERS_PER_HOUR
l/h	136	LITERS_PER_HOUR
m^3/min	165	CUBIC_METERS_PER_MINUTE
l/min	88	LITERS_PER_MINUTE
m^3/s	85	CUBIC_METERS_PER_SECOND
l/s	87	LITERS_PER_SECOND
ft^3/s	142	CUBIC_FEET_PER_SECOND
m^3	80	CUBIC_METERS
l	82	LITERS

ft^3	**79**	**CUBIC_FEET**
gal	**83**	**US_GALLONS**
Bq	**222**	**BECQUERELS**

For those measurements which have a string representation of it's **unit** is included in the **Description** property.

Engineering Data Exchange file

The EDE file is used to integrate Aranet PRO BACnet service into 3rd party systems using offline import. The file defines the structure of BACnet project data of a device.

As EDE file contains information about available objects, in Aranet PRO base each time when changes in the object list are made, an irrelevant EDE file (with the old object list) is removed, and the user can request the base to generate a new EDE file.

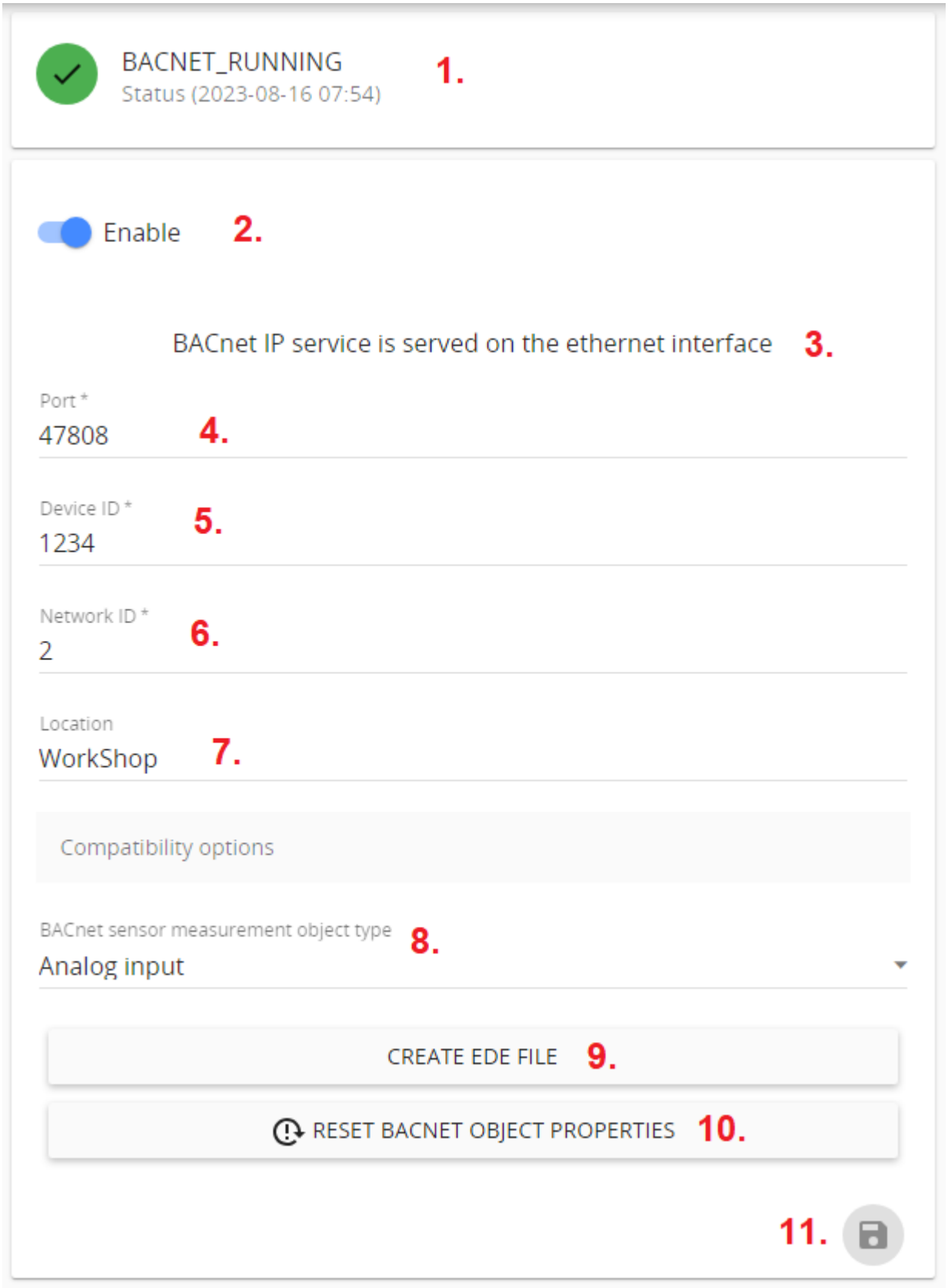
Aranet PRO EDE file structure description

The file is in CSV format. The first 6 rows contain descriptive information about the BACnet project which generated the EDE file.

Column name	Required information	Description
keyname	mandatory	BACnet-specific object type combined with object instance identifier
device-object-instance	mandatory	Device object instance ID which owns this object
object-name	mandatory	Name of the object
object-type	mandatory	BACnet-specific identifier used to identify the object type
object-instance	mandatory	Object instance identifier
description	optional	Object description auto-generated by BACnet project on object creation.
state-text-reference	optional	- Not used
present-value-default	optional	- Not used
supports COV	optional	Does the object support Change-Of-Value
commandable	optional	Is commandable (using priority array)
min-present-value	optional	- Not used
max-present-value	optional	- Not used
hi-limit	optional	- Not used
low-limit	optional	- Not used
unit-code	optional	BACnet-specific identifier used to identify measurement unit
vendor-specific-address	optional	- Not used
element	optional	An additional field that contains the object's description value

Configuration controls

1. Status of BACnet/IP server process;
2. Enable/Disable server process;
3. Information about BACnet service availability on Ethernet interface (wired) only;
4. Specify UDP port number (default 47808);
5. BACnet device object instance ID (default 1234);
6. Network number (default 1);
7. Set device object property Location;
8. Select BACnet object type to be used for sensor measurement objects;
9. Create/Download Engineering Data Exchange (EDE) file;
10. Reset values of writeable BACnet object (Device, AI, AV) properties to defaults;
11. Save BACnet/IP settings.

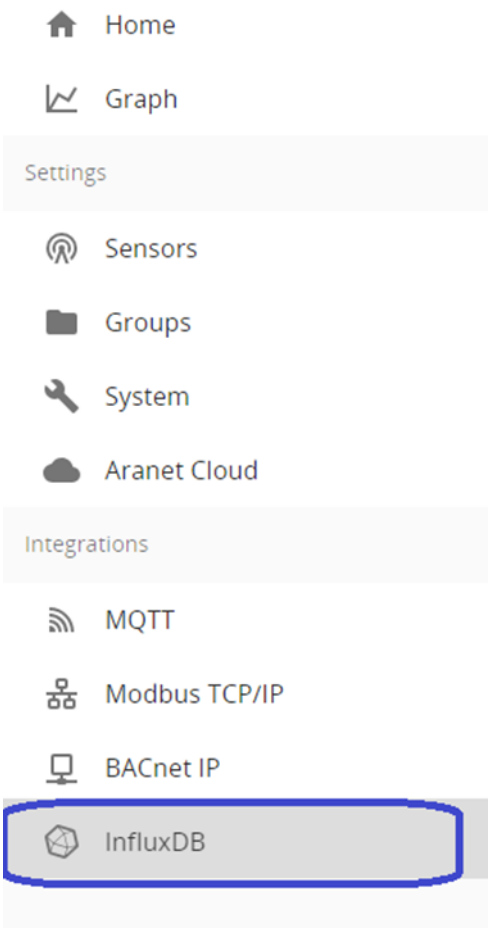


3.8.4 InfluxDB v2

InfluxDB v2 is a specialised database designed for efficiently storing, querying, and analysing time-series data.

InfluxDB v2 client is a functionality you can add to the Aranet Pro/Pro Plus/Pro Plus LTE base station to integrate it with third-party systems. The Aranet base station must have **4.7.19.** or newer firmware version.

In the web GUI main page InfluxDBv2 client configuration is available under “InfluxDB”

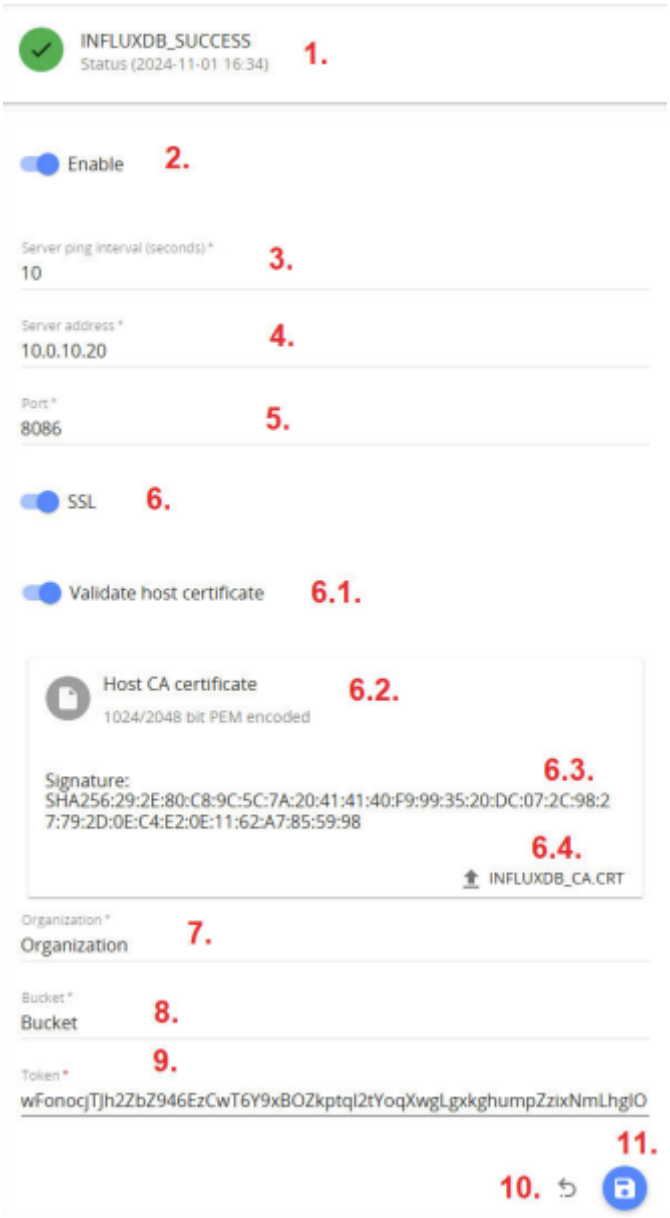


IMPORTANT: • Supports communication with InfluxDBv2 server only. • The full functionality of the InfluxDBv2 client requires an additional license to be uploaded.

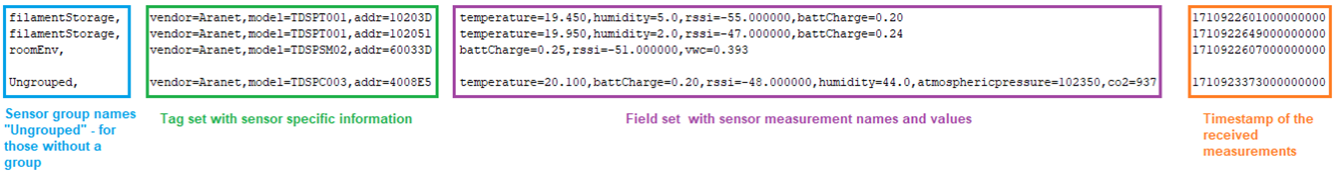
Configuration controls

1. Status of InfluxDBv2 client;
2. Enable/Disable InfluxDBv2 client;
3. InfluxDBv2 server ping interval (in seconds);
4. InfluxDBv2 server address or hostname;
5. Specify TCP port number (default: 8086);
6. Enable/Disable SSL (communication through HTTPS/HTTP accordingly);
   - 6.1. Enable to validate host (using uploaded CA certificate);
   - 6.2. Information about expected CA certificate file;
   - 6.3. Signature value of uploaded CA certificate;
   - 6.4. Press to upload a new CA certificate file;
7. InfluxDBv2 server instance Organization name;
8. InfluxDBv2 server instance Bucket name;
9. InfluxDBv2 server API instance;
10. Revert unsaved configuration changes;

11. Save changed configuration.



Aranet PRO InfluxDBv2 client data post string examples



filamentStorage,vendor=Aranet,model=TDSPT001,addr=10203D temperature=19.450,humidity=5.0,rssi=-55.000000,battCharge=0.20 1710922601000000000

filamentStorage,vendor=Aranet,model=TDSPT001,addr=102051 temperature=19.950,humidity=2.0,rssi=-47.000000,battCharge=0.24 1710922649000000000

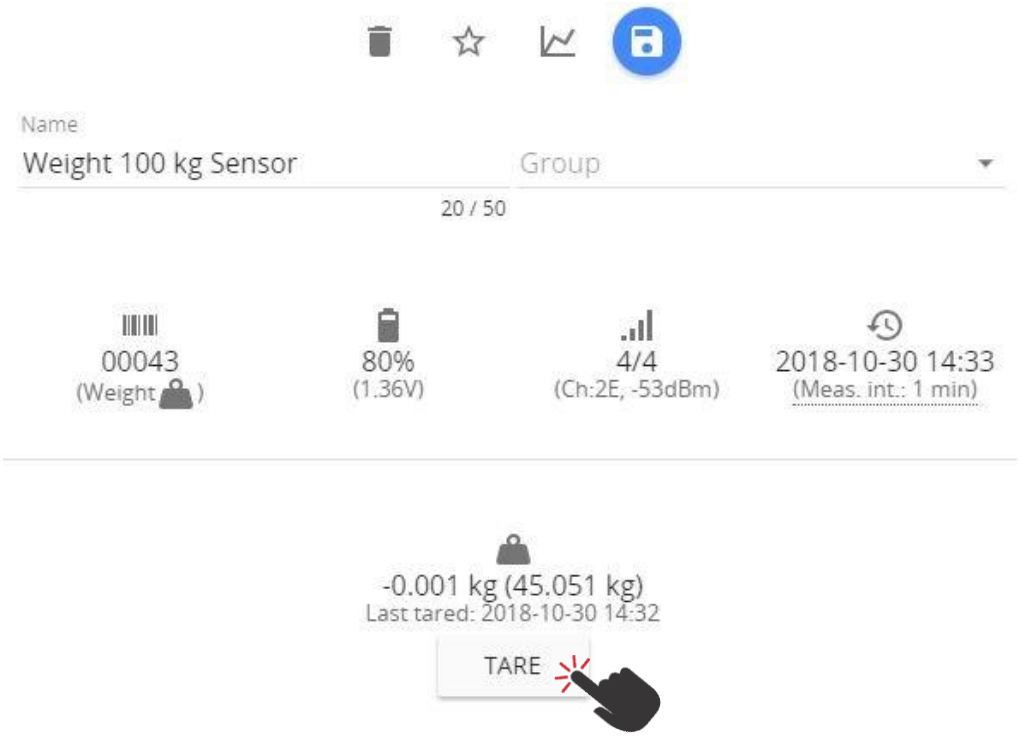
roomEnv,vendor=Aranet,model=TDSPSM02,addr=60033D battCharge=0.25,rssi=-51.000000,vwc=0.393 1710922607000000000

Ungrouped,vendor=Aranet,model=TDSPC003,addr=4008E5 temperature=20.100,battCharge=0.20,rssi=-48.000000,humidity=44.0,atmosphericpressure=102350,co2=937 1710923373000000000

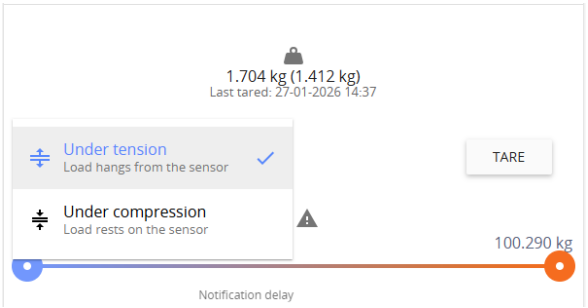
4 SENSORS' SPECIFIC NOTES

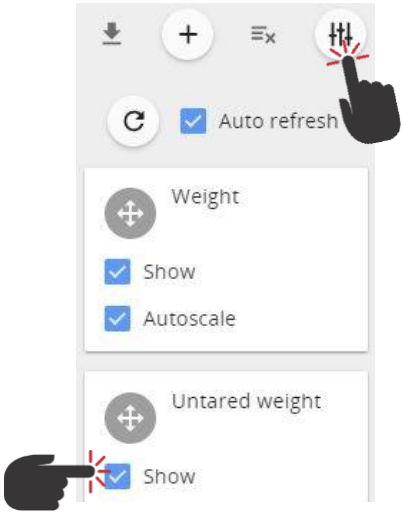
4.1.1 Weight Sensor

To reset the zero offset of weight (tare), click on the **TARE** button. The last measured tared and (untarred weight), as well as the date and time of the last tare event will be indicated.



By default, the graph of the **Weight Sensor** will display measurements of a tared weight. To display the untarred weight in the graph, click the **Tune** button and tick the "**Show**" box.





Depending on your weight sensor configuration you also might want to change the orientation of measurement. Under tension or under compression. If using the Slab system, then you need to change it to "Under compression" or the weight values will be negative.

4.1.2 Soil (Substrate) VWC, EC and T Sensor

The soil (substrate) VWC, EC and T Sensor displays the **Volumetric Water Content** and **Pore Water Electrical Conductivity** measurements values (**Temperature** is displayed on **Graph**).



Under the "**Sensors**" menu it is possible to select the calibration of the VWC and EC (pore water) calculation method, by selecting *Topp G.C., Mineral Soil, Rockwool Ecover, or Rockwool Grodan*.

VWC is defined as 6th order polynomial of *Epsilon:*

$$\mathbf{VWC = a + b*\varepsilon + c*\varepsilon^2 + d*\varepsilon^3 + e*\varepsilon^4 + f*\varepsilon^5 + g*\varepsilon^6,}$$

where ε is the apparent dielectric permittivity calculated from RAW by

$$\mathbf{\varepsilon = (2.887e\text{-}09 * RAW^3 - 2.080e\text{-}05 * RAW^2 + 5.276e\text{-}02 * RAW - 43.39)^2.}$$

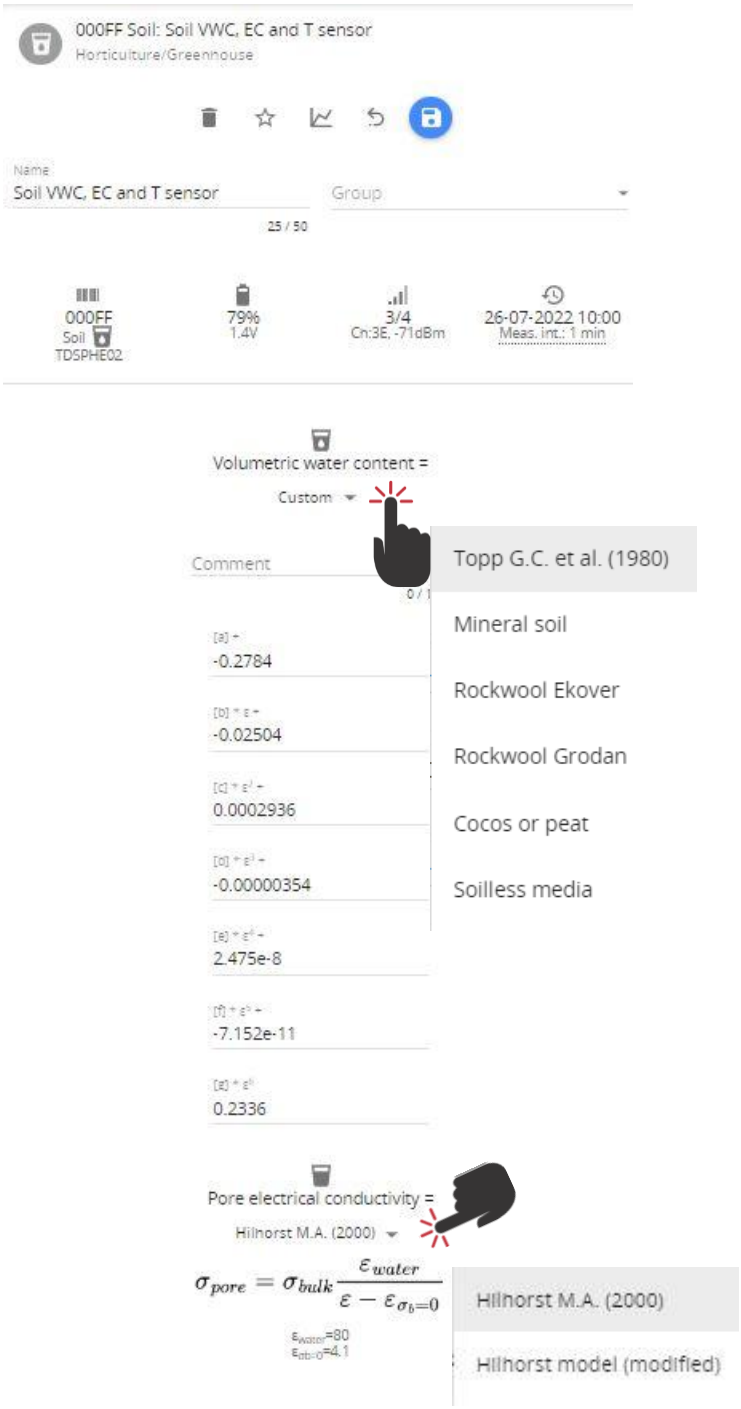
Presets are available and based on calibration results provided by **MeterGroup:**

#	Manufacturer	Product	Calibration date	EC (dS/m)	T (°C)	Slab size	Teros-12 placement
1	Grodan	GT Master	2021 May	4.00 (0.02)	22 (2)	H10 x 15 x 17 cm	2x, inserted horizontally, 4 cm from bottom of slab
2	Grodan	Prestige	2021 May	4.00 (0.02)	22 (2)	H7.5 x 17 x 15 cm	2x, inserted horizontally, 4 cm from bottom of slab
3	Ekover	Grunt Tomato	2021 May	4.00 (0.02)	22 (2)	H7 x 20 x 14.5 cm	2x, inserted horizontally, 4 cm from bottom of slab
4	Ekover	Grunt Green 1.0	2021 May	4.00 (0.02)	22 (2)	H7.5x17x20 cm	2x, inserted horizontally, 4 cm from bottom of slab
5	Ekover	Grunt Green 2.0	2021 May	4.00 (0.02)	22 (2)	H7.5x17x20 cm	2x, inserted horizontally, 4 cm from bottom of slab
6	Ozo Golf Club		2021 May	0.25	22 (2)	NA	2x
7	Grodan	DM32 40/40 HUGO	2021 October	2.1	NA	H14.5x14.5x13.75 cm	2x, inserted horizontally, 7 cm from bottom of slab
8	Charcoir	3 Liter BioPot	2022 April	1.3	NA	16x16x16 cm	2x, inserted horizontally, 1.25 inches from bottom of slab
9	Kekkila	Natural Control	2022 July	4.5	NA	24x12x19 cm	2x, inserted horizontally, 4 cm from bottom of slab

Coefficient values (4 significant figures) used in Pre-sets:

#	VWC preset name	6 (g)	5 (f)	4 (e)	3 (d)	2 (c)	1 (b)	0 (a)	
1 (default)	Topp G.C. et al. (1980)	0	0	0	4.300e-06	-5.500e-04	2.920e-02	-5.300e-02	doi:10.1029/WR016i003p00574
2	mineral soil	0	0	-2.925e-08	7.293e-06	-6.845e-04	3.129e-02	-3.612e-02	recommendation by MeterGroup; 0-8 dS/m, 0-60% VWC
3	rockwool Ekover	0	2.070e-09	-5.405e-07	5.443e-05	-2.649e-03	6.858e-02	-4.324e-02	T=22 °C; EC=4 dS/m; Tomato/Green 1.0/Green 2.0; 4 cm from bottom
4	rockwool Grodan	0	0	-7.785e-08	1.756e-05	-1.395e-03	5.224e-02	-5.440e-02	T=22 °C; Prestige/GT Master/DM32 40/40 HUGO
5	coco or peat	0	0	0	0	0	6.276e-03	2.420e-01	30-60% VWC; Charcoir/Kekkila
6	soiless media	-1.655e-10	4.353e-08	-4.473e-06	2.261e-04	-5.812e-03	7.991e-02	-6.141e-02	recommendation by MeterGroup;
	custom	0	0	0	0	0	0	0	write calibration conditions here

Should you be required to modify the calibration curve, change the required calibration values. If any of the preset calibration values are changed, the method type will be changed to "*Custom*".



Pore electrical conductivity is calculated using the Hilhorst M.A. formula:

$$\sigma_{pore} = \frac{\varepsilon_{water}}{\varepsilon - \varepsilon_{\sigma_b=0}} \sigma_{bulk}$$

Where $\varepsilon_{water} = 80$ and $\varepsilon_{\sigma_b=0} = 4.1$

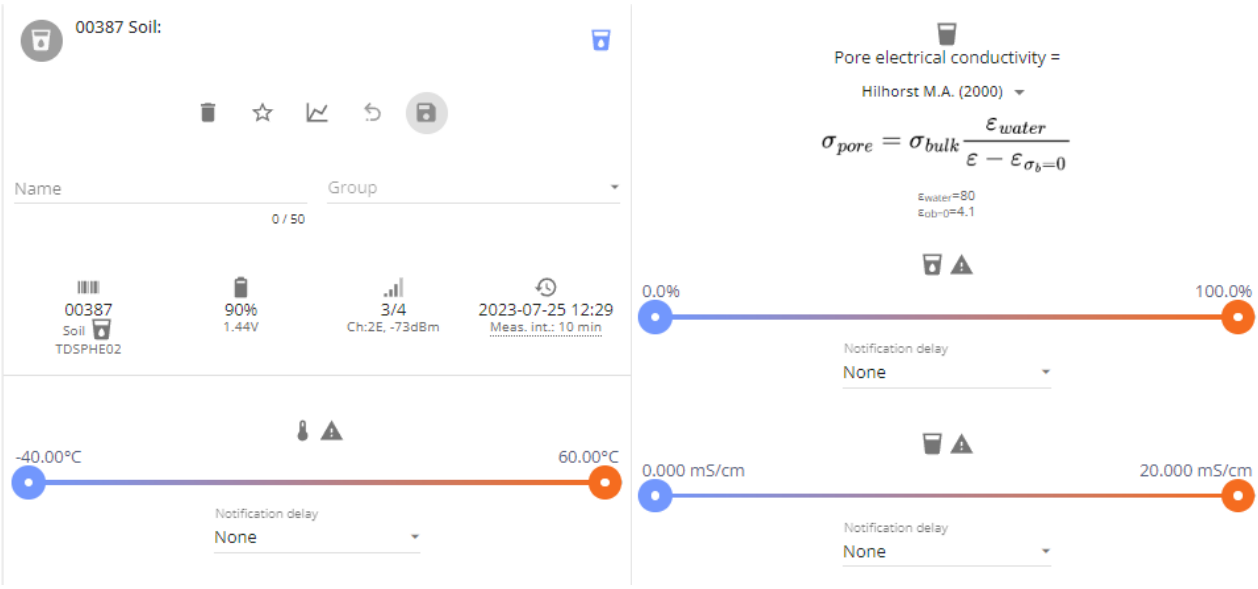
For better precision of smaller values modified a formula can be selected:

$$\sigma_{pore} = \frac{\varepsilon_{water} - \varepsilon_{\sigma_b=0}}{\varepsilon - \varepsilon_{\sigma_b=0}} \sigma_{bulk}$$

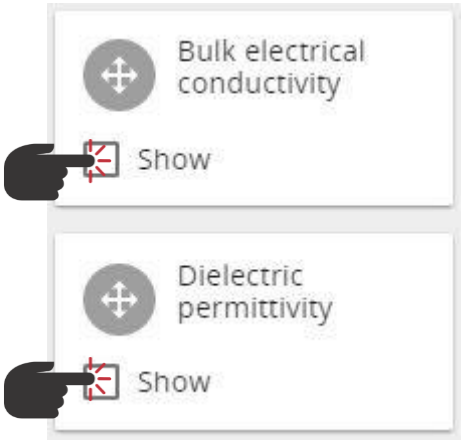
where $\varepsilon_{water} = 80$ and $\varepsilon_{\sigma_b=0} = 1$

The custom value of $\varepsilon_{\sigma_b=0}$ can be entered as well.

The graph of soil sensors by default displays Temperature, Volumetric Water Content, and Pore Electrical Conductivity. The thresholds can be set in the sensor's interface.



Use the **Tune** button (in the Graph section), to display the Bulk Electrical Conductivity and dielectric permittivity (ε).



!NOTE! It is possible to order sensor **calibration coefficients for your substrate** in SAF Tehnika. Please contact support@aranet.com for details.

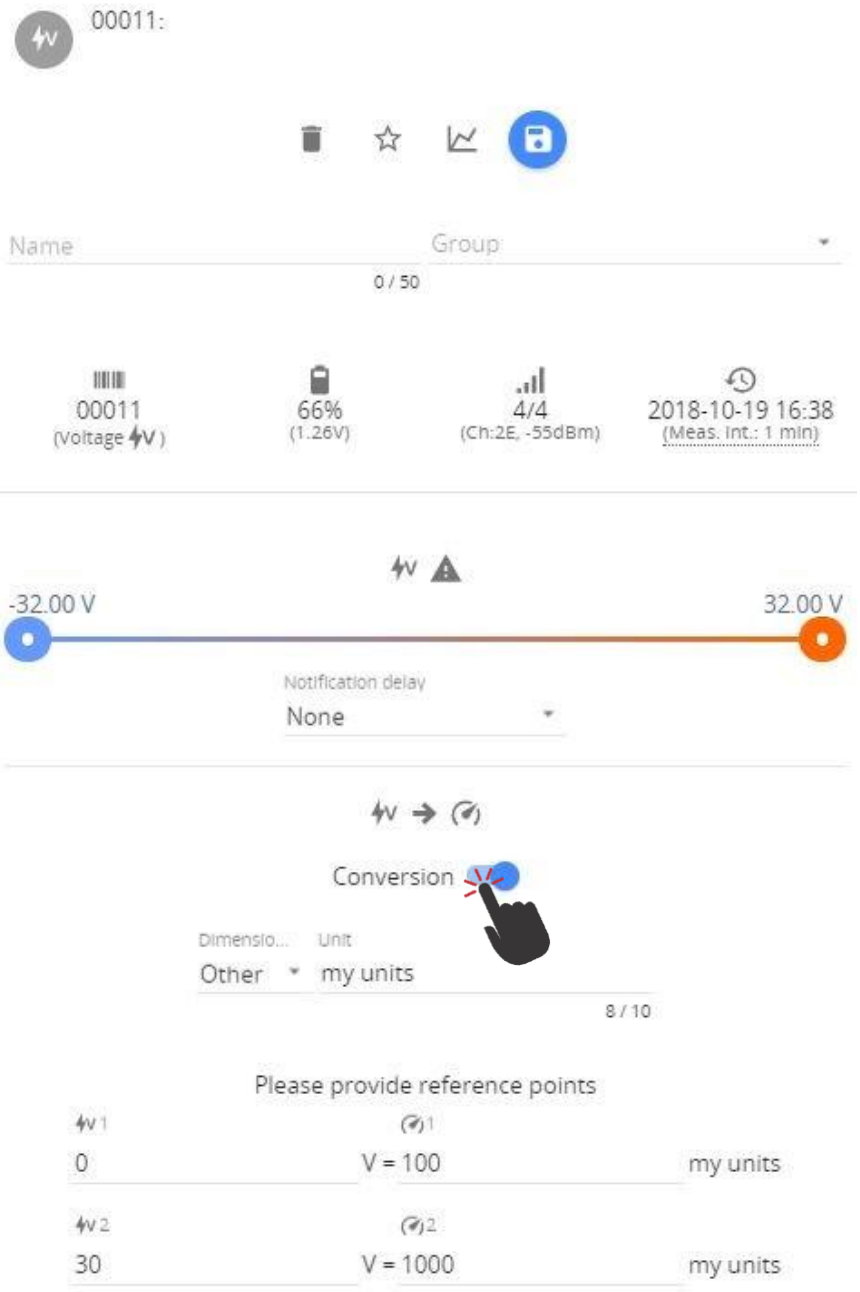
4.1.3 4-20 mA and Voltage Sensors

The **4-20mA Sensor** can be used for current measurements (within a range of 0 - 30 mA) and the **Voltage Sensor** - for voltage measurements (within a range of -32 to +32 VDC).

Under the "**Sensors**" menu, it is possible to enable conversion from *mA/V* to other values depending on the transducer type connected to mA/V Sensor.

If required, switch the **Conversion** on, and use the drop-down menu to choose a predefined *Dimension* and *Unit*. If the required *Dimension* or *Unit* is not in the list, choose "*Other*" as the Dimension and input your own measurement unit.

Define the reference values for two measurement points (i.e., sensor's min/max voltage). For example, set 0 V equal to 100 of your units and 32V equal to 1000 of your units. The values will then be linearly calculated according to these two reference points.



4.1.4 Stem Micro-Variation sensor

To show the correct stem diameter value with the Stem Micro-Variation sensor it is necessary to configure it upon installation. The process can be done in the following steps:

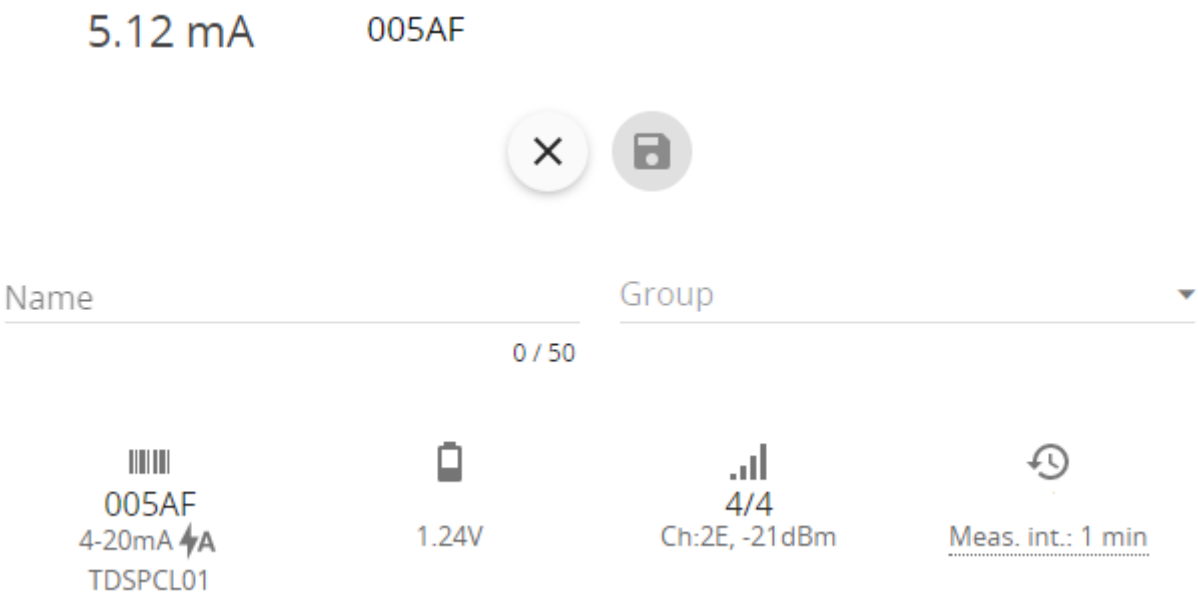
1. First existing stem diameter should be measured with a ruler or caliper (***in our example 8mm***):



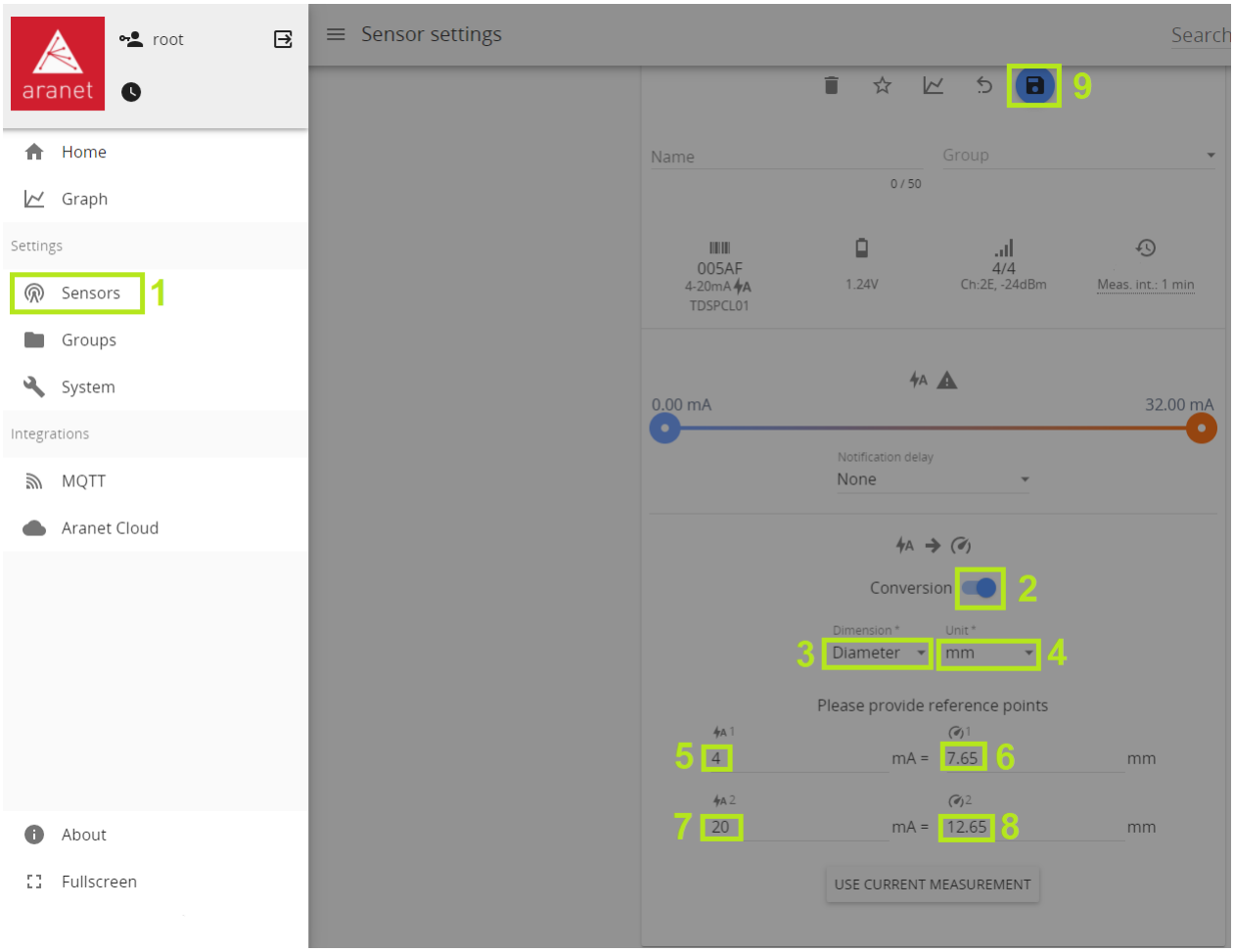
2. Then the sensor detecting element should be mounted on the stem:

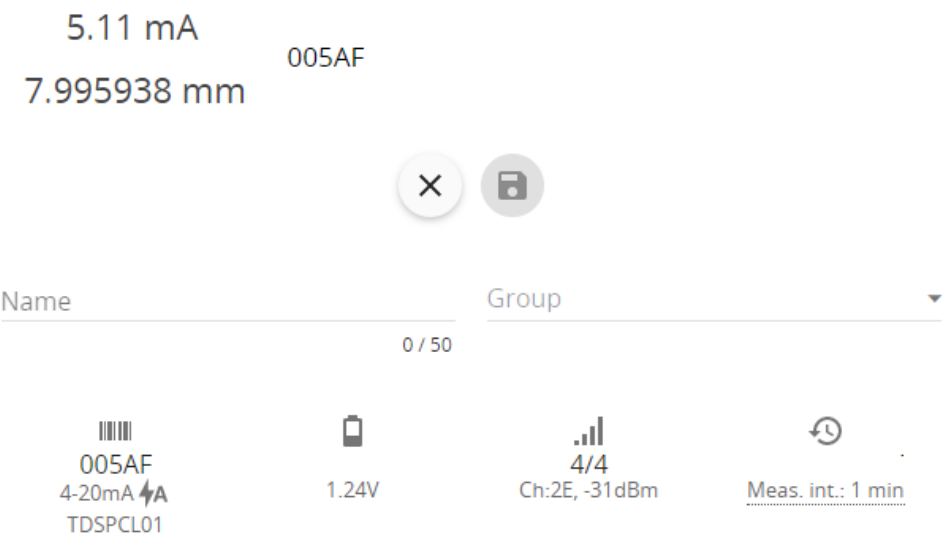


3. The sensor electric current reading on Aranet PRO base station graphical user interface should be checked and recorded (***in our example 5.12mA***)



4. Next, it is necessary to determine how much from the sensor measurement range (4–20 mA) is already used by the current measurement. Here, from the recorded current value, the minimal reading value = 4mA, should be subtracted (***in our example 5.12 mA – 4 mA = 1.12 mA***)
5. The subtraction value obtained in the previous point should be divided by 0.01mA, which is the resolution step of electric current measurements (***in our example 1.12mA/0.01mA = 112***). This is the measurement range in step units, that are already used by the sensor.
6. Next, the used electric current measurement step unit value should be multiplied by 0.003125mm, which is the value of one measurement step unit in millimeters (***in our example 112*0.003125mm=0.35mm***). The obtained value should be rounded to 2 digits after the comma, and it is the measurement range used by the sensor in millimeters (***in our example 0.35mm***);
7. Next, the used measurement range in millimeters should be subtracted from the stem diameter measured in step 1 (***in our example 8mm-0.35mm=7.65mm***), and here we obtain the stem diameter value that corresponds to 4mA electric current reading of the sensor
8. Then the measurement value in millimeters should be determined to correspond to max electric current measurement value of 20mA. Sensor measurement range in millimeters is 5mm, so this value should be added to the value obtained in step 7, to get the value corresponding to the 20mA electric current reading of the sensor (***in our example 7.65mm+5mm=12.65mm***)
9. Finally, previously obtained millimeter values for 4mA and 20mA should be entered in Stem Micro-variation sensor **Conversion** configuration in Aranet PRO base station graphical user interface section **Sensors → SENSORS,** after that, the user will be able to see sensor measurements in mm of the stem diameter:

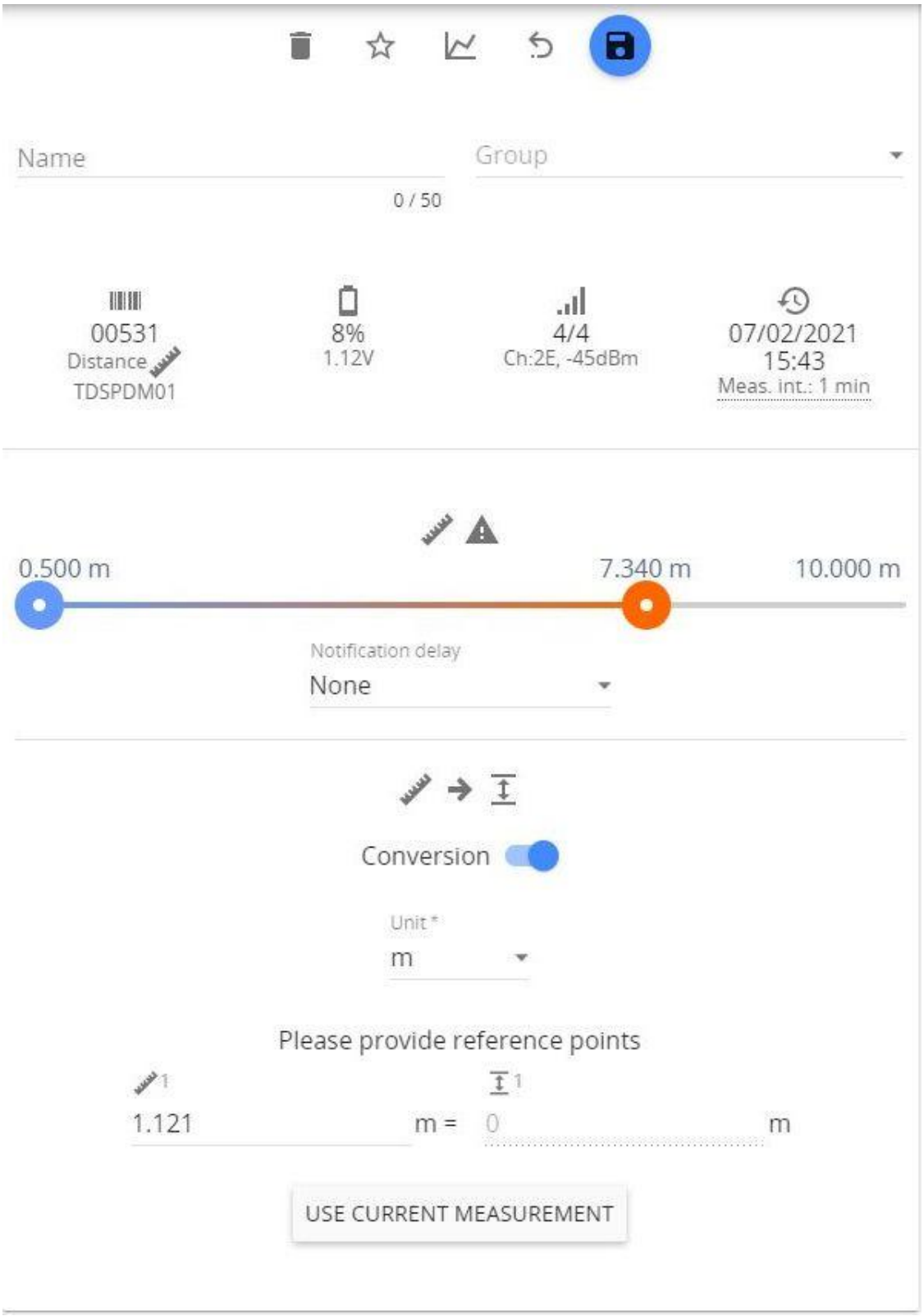

root
Sensor settings
Search
Home
Graph
Settings
Sensors
1
Groups
System
Integrations
MQTT
Aranet Cloud
About
Fullscreen
9
Name
Group
0 / 50
005AF
4-20mA
TDSPCL01
1.24V
4/4
Ch:2E, -24dBm
Meas. int.: 1 min
0.00 mA
32.00 mA
Notification delay
None
Conversion
2
Dimension *
Unit *
3
Diameter
mm
4
Please provide reference points
5
4
mA =
7.65
6
mm
7
20
mA =
12.65
8
mm
USE CURRENT MEASUREMENT


5.11 mA
7.995938 mm
005AF
Name
Group
0 / 50
005AF
4-20mA
TDSPCL01
1.24V
4/4
Ch:2E, -31dBm
Meas. int.: 1 min

4.1.5 Ultrasonic Distance sensor

Aranet Ultrasonic Distance sensor uses ultrasound to measure the distance to an object. A high-frequency sound wave is emitted by the device, measuring the time it takes for the wave to reach the object and then return to the sensor. Aranet Ultrasonic Distance sensor works with a wide range of liquid and non-liquid materials. Various practical applications of the sensor include measuring the grain level in a silo, or the level of a liquid in a container, as well as other uses.

When pairing the Ultrasonic Distance sensor, it is possible to set measurement thresholds and a reference point, if needed.

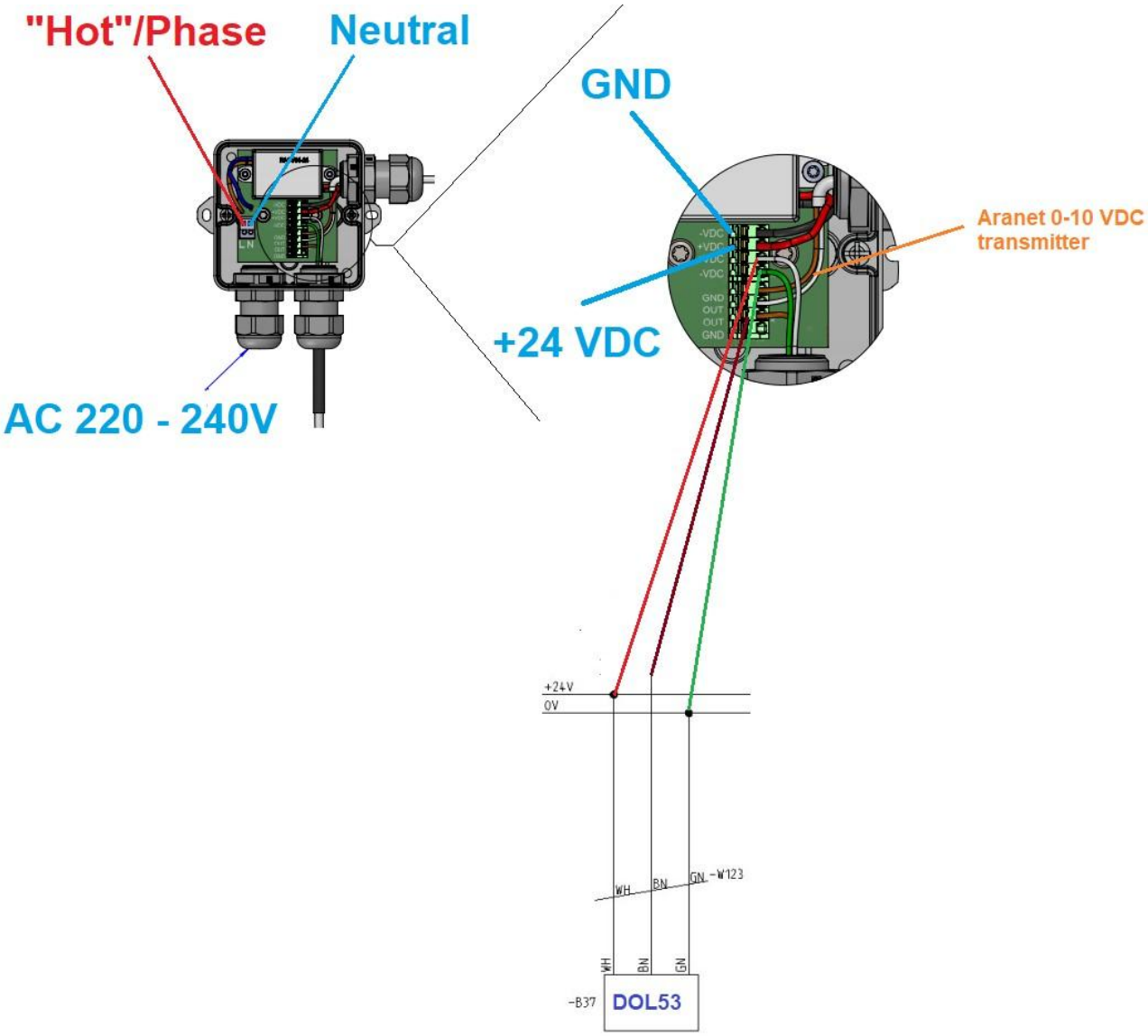


Enable the conversion switch and select Units from the drop-down list. Then enter the Zero reference point manually or press the “USE CURRENT MEASUREMENT” button to use the current measurement as Zero point.

4.1.6 NH3 Sensor kit

NH3 sensor kit for use in laboratories, livestock, poultry farms, and sewage treatment plants to monitor the leakage of ammonia gas and give an alarm to protect humans and animals.

The kit consists of a DOL53 sensor, a wire junction box TDADCA01, and an Aranet 0-10 VDC transmitter. The sensor and transmitter are connected to the junction box which is powered by 220-240 VAC. In addition, the Aranet 0-10V transmitter is powered by a single AA size battery. Connection scheme if following:



5 LEGAL INFORMATION

5.1 TERMS OF USE

Aranet PRO base station - The Customer is obliged to guarantee the usage, maintenance, and preservation of the Equipment at their own expense in a way that excludes the Equipment's theft, loss, destruction, harm and/or damage (including as a result of mechanical damage, moisture, liquid related damage, lightning and/or other similar events). Base stations may only be used indoors, it needs to be protected from environmental impact (snow, rain, direct sunlight).



!NOTE! For the full Terms and Conditions, please visit: https://aranet.com/terms-and-conditions/

5.2 WARRANTY

ARANET WARRANTY

SAF, which includes SAF Tehnika and SAF North America, LLC, has built a reputation for providing high-quality products to its customers and it stands behind each product it manufactures, including Aranet. Accordingly, SAF warrants the products it manufactures will be free from defects in material or workmanship and will function in accordance with their official written specifications for a minimum of two years, as long as they are used and stored in accordance with industry standards and any unique handling instructions provided by SAF. While SAF warrants all of its products will function in accordance with their official written specifications, SAF does not warrant all products will function uninterrupted or error free. Further, verbal, or informal specifications will not be covered by the Warranty. To be enforceable, a product specification must be stated in SAF official literature. No product shall be considered defective or otherwise in breach of the Warranty simply because it needs to be adapted to or otherwise does not comply with the laws and regulations (including frequency range) of the customer's home country or jurisdiction.

WARRANTY TERM

The Warranty shall apply to Aranet 24 months after it is shipped to the customer. An invoice itemizing a product's warranty period shall be included with the product when it is delivered to the customer. No verbal extensions or modifications of the Warranty shall be enforceable.

WARRANTY LIMITATIONS

The Warranty shall be voidable at SAF's discretion in any circumstance where a SAF manufactured product has been damaged by a customer's conduct or an act of God including, but not limited to: a.) damage caused by the customer's improper use of the product; b.) mechanical damage caused by a physical impact; c.) the accumulation of moisture or water in a product's housing; d.) damage caused by wind, hail, rain, animal, insect or other environmental events; and e.) electromagnetic damage caused by a power surge, overvoltage, or a strike of lighting. Finally, for the Warranty to be effective, all repairs and modifications to a product, including its software, must be performed by SAF and the Warranty shall be voidable at SAF's discretion in any circumstance where a customer or its agent opens a product's housing or otherwise attempts to modify or repair a product, including its software, without SAF's permission. There are currently no third parties authorized to repair SAF's products.

PRODUCT REPAIRS & LIABILITY LIMITATIONS

In the event a SAF manufactured product does not conform with the Warranty, SAF will fix or replace the non-functioning product in accordance with the return and repair policy below. These options shall be the customer's sole remedy.

IN NO EVENT SHALL SAF BE LIABLE FOR ANY INDIRECT, INCIDENTAL, SPECIAL OR CONSEQUENTIAL
DAMAGES ARISING OUT OF OR RELATING TO THE SALE OR USE OF ITS PRODUCTS, WHETHER OR NOT SAF HAS ADVANCE NOTICE OF THE POSSIBILITY OF SUCH DAMAGES. SAF'S SOLE AND EXCLUSIVE

MAXIMUM LIABILITY FOR ANY LEGAL CLAIM ASSOCIATED WITH A SALE COMPLETED PURSUANT TO
THESE TERMS OR THE WARRANTY, REGARDLESS OF WHETHER SUCH CLAIM SOUNDS IN CONTRACT OR TORT, LAW OR EQUITY, SHALL NOT EXCEED THE PRICE OF THE PRODUCT(S) SOLD TO A GIVEN
CUSTOMER. BY SUBMITTING THEIR PURCHASE ORDER, EACH CUSTOMER KNOWINGLY WAIVES ANY
AND ALL CLAIMS AND DAMAGES PRECLUDED BY THE FOREGOING LIMITATIONS INCLUDING, BUT NOT LIMITED TO, ALL CLAIMS ASSOCIATED WITH PERSONAL INJURIES (INCLUDING ANY CLAIMS
BASED IN PRODUCT OR STRICT LIABILITY), LOST REVENUE AND PROFITS, LOSS OF TECHNOLOGY, LOSS OF RIGHTS OF SERVICES, UNFAIR COMPETITION AND COMMERCIAL LOSSES OF ANY KIND.

ACCEPTANCE, RETURNS & REPAIRS

If the Customer has not received the goods, he can contact SAF to help solve the problem. The claim of non- received goods should be raised within 60 days from the date of payment. No assistance will be available after the term of 60 days has passed. Prior to raising a claim to SAF, the Customer should ascertain that a parcel is not received by any other person in the Customer's premises. Also, the Customer is asked to ascertain that a parcel is not left at any of the neighbors, etc.

SAF keeps the right to perform an investigation for a period of 20 days. In the case SAF has made a decision to compensate the Customer for the losses, either a new product may be sent to the customer or the price for the ordered product may be returned to the Customer.

If the Customer is not satisfied with a received product, they can proceed as described further. Restocking and Refund is not applicable for a legal entity.

A physical person who is a resident of US and Canada may require Restocking and Refund within 60 days from the date of payment. No Restocking and Refund will be available after the term of 60 days has passed.

If Restocking is accepted by SAF, the product(s) must be returned – unused, as brand new, without any defects, without dirt and scratches, containing all original labels, full completion as received, in the original package as received. The shipment back to SAF is on the Customer's account. If the Customer has failed to meet all of the Restocking rules mentioned above, SAF keeps the right to refuse the Refund, or reduce the amount of money returned.

If the Customer has not requested a Restocking, Refund or raised a claim within 60 days from the date of Invoice, the product (set) is considered to be accepted by Customer.

Shipping to SAF

If the failure is discovered to a SAF manufactured product, it will be given a Return Materials Authorization ("RMA") number and should be returned to SAF by completing the RMA form at https://aranet.com/rma/ and then shipping the non-functioning product in its original packaging (or packaging providing a similar level of protection) to one of the facilities below.

Standard shipping address is:

SAF Tehnika RMA Dep.

24a Ganibu Dambis Riga LV-1005 LATVIA

All North American customers should ship their products to:

SAF North America, LLC

3250 Quentin Street, Unit 128

Aurora, Colorado 80011 U.S.A.

(720) 502-0728

All returns shall be sent to SAF at the customer's expense and shall not be considered delivered until they arrive at SAF's facilities. SAF assumes no responsibility and shall not be liable for any products damaged while in transit to SAF's facilities. SAF strongly recommends the customer to purchase an appropriate amount of insurance from the carrier they use to return the product(s) to SAF.

Inspection & Repair

Non-functioning product(s) shall be evaluated and treated as follows:

DOA. Any product discovered as non-functioning within 30 days after it is shipped to the customer, for any reason other than a customer's misuse or mishandling, shall be deemed "Dead on Arrival" or "DOA" and replaced free of charge. Aranet products will be replaced no later than 20 business days after SAF verifies its non-functioning status.

Warranty Repair. All products subject to the Warranty shall, depending on the circumstances, be repaired or replaced free of charge within 20 business days of their arrival at SAF's facilities. Non-warranty Repairs. SAF will repair a product for a period of 5 years after it is delivered to the customer. All products repaired outside of the Warranty shall be repaired at the customer's sole expense. A quote for the repairs shall be provided to the customer via e-mail prior to the product being received by SAF or within a reasonable time after the product arrives at SAF's facilities. All repair and shipping costs must be paid by the customer in advance. SAF shall repair and ship the non-functioning product within 20 business days of receiving full payment for the repairs.

Post-repair Warranty

All repaired products shall be subject to the Warranty for a period of six months after they are repaired.

The additional warranty described herein may extend but shall in no way reduce any pre-existing warranty periods already applicable to the product.

Return Costs

If a given product is covered by the Warranty, SAF will pay the shipping costs associated with returning it to the customer. If a product is outside of the Warranty, the customer shall pay all costs associated with transmitting it to and from SAF. An estimated cost of return will be included in any repair invoice sent to the customer and must be paid before SAF will return a repaired product.

Shipping & Abandonment

Any non-functioning product remaining in SAF's possession for three months after a customer receives an invoice for repairs, because the customer has failed to pay the invoice in question, shall be considered abandoned. A customer's rights to all abandoned products shall be considered forfeit and SAF shall have the right to reprocess such products in any manner it sees fit.

Sole Warranty

UNLESS SAF AGREES TO ADDITIONAL OR ALTERNATE TERMS IN WRITING, THE WARRANTY DESCRIBED HEREIN IS THE SOLE AND EXCLUSIVE WARRANTY OFFERED TO SAF'S CUSTOMERS, AND
NO ADDITIONAL WARRANTIES ARE GIVEN OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, NON-INFRINGEMENT, TITLE, OR FITNESS FOR A PARTICULAR PURPOSE.

CHANGES TO THESE TERMS & CONDITIONS

We reserve the right to update or change our Terms and Conditions at any time and you should check these Terms and Conditions periodically. Your continued use of the Service after we post any modifications to the Terms and Conditions on this page will constitute your acknowledgment of the modifications and your consent to abide and be bound by the modified Terms and Conditions.

5.3 RMA (RETURN MERCHANDISE AUTHORIZATION) FORM

To file an RMA case, please fill out the form here: https:/rma.aranet.com/

5.4 INTELLECTUAL PROPERTY RIGHTS

All intellectual property rights in or related to the Products including, but not limited to, patents, trade secrets, know-how, copyright, trademarks, service marks, and mask rights, registered or unregistered, owned or otherwise used by SAF, as well as all goodwill related thereto, are and shall remain at all times the

exclusive property of SAF. None of the foregoing property rights may be exploited by SAF's customers except as provided in these Terms nor shall such rights be transferred to SAF's customers except as expressly provided in these Terms. Each customer shall take reasonable measures to protect SAF's intellectual property rights.

SAF's and Aranet name and logo are proprietary trademarks and shall not be used without SAF's explicit permission. The customer shall further not alter or remove any proprietary marks, logos, or labels on SAF's Products.



!NOTE! Read carefully!

It is the responsibility of the user to enforce the country's regulations and specific environmental regulations. Do not use this device if using the device is prohibited. Do not use the device if doing so causes danger or interference with other electronic devices.

Keep away from children, and do not allow children or pets to bite or suck the device or accessories. Doing so may result in damage or explosion. Observe local laws and regulations and respect the privacy and legal rights of others.

Do not disassemble the product; any mark of tampering will compromise the warranty validity. We recommend following the instructions of this user guide for the correct setup and use of the product.

5.5 DATA SECURITY

Aranet systems use encryption when the data is transmitted from the sensors to the base station. A unique encryption key is provided for each base station. The transmission protocol has built-in safeguards against malicious operations (for example replay attacks).

Aranet sensors are protected from unauthorized data collection, therefore even if sensors are accessed the software used and the configuration parameters cannot be compromised.

To connect new sensors the user needs to be in proximity to the base station, therefore it is not possible to connect new sensors without authorization in order to compromise the Aranet system by obtaining the encryption key.

5.6 CLEANING AND MAINTENANCE

Keep the device and accessories dry. Do not attempt to dry it with an external heat source, such as a microwave oven or hair dryer.



Do not expose your device and accessories to extreme cold or heat. These environments may interfere with proper function and may lead to fire or explosion.

Avoid collision, which may lead to device malfunctions, overheating, fire, or explosion.

Please handle the product with care, avoiding any dropping and contact with the internal circuit board as electrostatic discharges may damage the product itself.



CAUTION: ARANET PRO BASE STATION CONTAINS AN ENCLOSED BATTERY. RISK OF DAMAGE IF
THE BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.

The user is responsible for the disposal of the batteries according to the WEEE Directive Recast (Directive 2012/19/EU) and Battery Directive (Directive 2006/66/EC). Batteries should not be disposed of as household garbage. These items should not be disposed as of unsorted municipal waste and should be taken to a certified collection point for recycling or proper disposal.

5.7 ACCESSORIES

Use only power supplies that are provided by the manufacturer and in the original packaging of this product.

Using an unapproved or incompatible power adapter, charger or battery may cause fire, explosion, or other hazards.

Choose only accessories approved for use with this model by the device manufacturer. The use of any other types of accessories may void the warranty, may violate local regulations and laws, and may be dangerous. Please contact your retailer for information about the availability of approved accessories in your area.

5.8 DISCLAIMER

All contents of this manual are provided “as is”. Except as required by applicable laws, no warranties of any kind, either express or implied, including but not limited to, the implied warranties of merchantability and fitness for a particular purpose, are made in relation to the accuracy, reliability, or contents of this manual.

To the maximum extent permitted by applicable law, in no event shall SAF Tehnika JSC be liable for any special, incidental, indirect, or consequential damages, or loss of profits, business, revenue, data, goodwill savings, or anticipated savings regardless of whether such losses are foreseeable or not.

5.9 ADDITIONAL INFORMATION

For additional information, please contact support@aranet.com

SAF Tehnika JSC
24a, Ganibu Dambis Riga,
LV-1005, Latvia

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