Sorama L642V+ Industrial

User manual

Sorama

October 2025 v.2.20

CONTENT

CONFORMITY

Sorama B.V.
Achtseweg Zuid 153H
5651 GW Eindhoven
The Netherlands

This document is subject to change without notice.

Declare under our sole responsibility that the product:

Product name	Acoustic Monitor
Model number	Sorama L642V+

is in conformity with the requirements of the following EU Directive or other normative documents. This declaration is based on the products' full compliance with the following standards:

European Union (EU) Conformity

- General Safety
  - IEC 61010-1
- For Electromagnetic compatibility directive (EMC)
  - EN 301 489-17 V3.2.4 referring to EN 301 489-1 V2.2.3
  - EN 55032:2015 Class B
  - EN 61000-4-3:2006
  - EN 61000-4-2:2009
- RoHS3 Restriction of Hazardous Substances
  - EU2011/65/EU RoHS2
  - EU2015/863

Technical Compliance Data held by:
Sorama B.V.
Achtseweg Zuid 153H
5651 GW Eindhoven, NL
https://www.sorama.eu/
info@sorama.eu

Signed for and on behalf of Sorama B.V.
Address: Achtseweg Zuid 153H, 5651 GW, Eindhoven

WARRANTY INFORMATION

The Sorama L642V+ is covered by a one-year warranty from the date of purchase. This warranty includes repair services for issues caused by product defects. It does not cover damage from improper use, accidental impact, or unauthorized disassembly. Opening the device without approval voids the warranty. Repair services for damage outside warranty conditions are available.

The device is factory calibrated. Sorama disclaims liability for accidents, injuries, or property damage resulting from improper use or unsafe conditions. Tampering with the device casing also invalidates the warranty.

SAFETY INFORMATION

This section includes critical safety instructions that must remain accessible during the device's entire operational life. Refer to the most recent manual on the Sorama website, as updates are published regularly. Operate the device only according to these instructions and local safety regulations.

The product is intended for sound measurement and functions reliably under the conditions described in the manual. Follow all guidelines to ensure accurate and safe operation.

Physical Damage

If visible physical damage occurs to the device or power supply, stop use immediately and disconnect power. Contact Sorama with a description of the damage for further assessment.

Replacement Parts and Accessories

Use only original parts and accessories approved by the manufacturer. The use of other products can compromise the operational safety and functionality of the product.

To reduce the risk of electrical shock, fire, or personal injury, follow these guidelines:

Product-specific

- Read all safety instructions before use.
- Do not open or attempt repairs yourself.
- Use the product only as specified.
- Do not use the product around explosive gases, vapor, or in damp or wet environments.
- Do not operate a damaged or malfunctioning device.
- Send the unit to Sorama for any required maintenance.
- Only trained Sorama-authorized personnel may perform servicing.

DESCRIPTION

The Sorama L642V+ is a next-generation acoustic monitoring device. It integrates acoustic imaging, sound level detection, and precise localization into a single platform. The Sorama L642V+ supports edge computing, all powered and connected with one single network cable.

The Sorama L642V+ can be used in a variety of application fields ranging from: safety and security, mobility, environmental, and various industrial applications. The acoustic monitors can be connected to cover larger areas with secure and GDPR proof data handling.

Features

- All in one acoustic monitoring
- Visual light camera integrated
- Sound intensity mapping

Licensed Features

- Leak Inspection
- Partial Discharge Inspection
- Mechanical Inspection

Available models

From the Sorama L642 series, only the Sorama L642V+ is available for industrial applications.

TECHNICAL DATA

Physical Properties

Size (LxWxD)	170 x 170 x 65 mm	6.7 x 6.7 x 2.5 inch
Weight	0.85 kg	1.7Lb
Power	PoE+ port 100-240V AC, max 37W; IEEE 802.3	Status LED

System Integration

API	Open HTTP REST
Event Triggers	SoundSurfaces dB SPL Threshold
Event Actions	Acoustic SoundSurfaces Image, Video, Leak Inspection, Partial Discharge Inspection or Mechanical Inspection
Output Protocols	WebSocket, PLC and Modbus TCP/IP[1]

Camera

Integrated visible light	
Resolution video	1280x720 HD
Aspect ratio	16:9
Camera Resolution	720p at 30fps
Field of View	65°

Microphones

Type	MEMS	Digital Bottom Port
SNR (A-weighted, at 1 kHz)	64 dB for 94 dB SPL	@ 1kHz
Sensitivity	-26 dBFS +/- 1.5dB	At 1 kHz, 94 dB SPL
Acoustic Overload Point	120 dB SPL	At 1 kHz, <10% THD

General

Ingress Protection	IP54
Operating Temperatures	-20 °C to 50 °C (4 °F to 122 °F)
Warranty	1-year

[1] PLC and Modbus TCP/IP protocols are only available via the API and will be coming to the Dashboard in a future release

ENVIRONMENT

Ambient Temperature

The L642V+ operates reliably in ambient temperatures from -20°C to 50°C (4°F to 122°F). Avoid placing the device near heat sources. Cold water exposure may cause condensation, which can damage the device. Operating humidity must remain between 10% and 100% RH (non-condensing).

Protection

The L642V+ meets IP54 standards for splash protection. It includes a protective lens but is not watertight. For continued protection, regularly inspect the seals on all waterproof connectors.

INSTALLATION

The L642V+ is an IP-based device. A stable network connection and reliable power supply are required for proper operation. Refer to the installation guide for the minimum recommended infrastructure to ensure optimal performance.

System requirements:

- **Power:** The device is powered by Power over Ethernet (PoE) (IEEE 802.3af-2003). Only one Cat5e or Cat6 network cable is needed for connecting the device. Power can be provided either with a PoE Switch or a separate PoE injector. The L642V+ needs PoE+ (IEEE 802.3at-200) and uses up to 20 Watts of power.

- **Connection (Wired):** The L642V+ connects to the network using a single Cat5e or Cat6 cable. For fiber optic networks, use a fiber-to-copper converter to enable the connection.

- Throughput: The L642V+ uses up to 7 Mbit/sec of data. (Note: the value is subject to change in the future)

- **Internet:** The device does not need an active internet connection to function.

- Network requirements
    - Data usage: The L642V+ typically uses around 3 Mbit/sec for live SoundSurfaces. Up to 15 Mbit/sec may be needed when video streaming is enabled.
    - Broadcast/Multicast messages: The network must allow broadcast and multicast traffic. The device uses mDNS (Zeroconf) for discovery, which relies on IP (Internet Protocol) address 224.0.0.251. If needed, the device can be accessed using a static IP instead, mDNS is then not required.
    - Ports: For communication, to and from the device, traffic on the ports and protocols specified in the table below should be allowed.

Port Number	Protocol	Usage
80	TCP	HTTP
443	TCP	HTTPS
3478	TCP	WebRTC
8999	TCP	WebRTC
8189	UDP	WebRTC
9011	TCP	Sound Surface Detection API
9012	TCP	Web Socket Server
9013	TCP	Device Manager API
9014	TCP	License client API
9100	TCP	Authentication API

Connecting the L642V+

There are several modes in which you can connect the device:

- Mode 1: Connect to a Network using DHCP (Dynamic Host Configuration Protocol)
- Mode 2: Connect directly to a PC/Laptop using Auto IP
- Mode 3: Connect to a Network using Static IP
- Mode 4: Connect directly to a PC/Laptop using Static IP

The L642V+ is preconfigured for use in mode 1 and mode 2. No additional setup is required for these modes. To use mode 3 or mode 4, first connect to the device using mode 1 or 2. You can then update the configuration through the dashboard, as described in section Setting up the L642V+ in this document.

To power the device, you need a PoE injector or PoE capable switch. The PoE switch detects if a device needs PoE or not. The requirement for PoE+ for the device can be found in section technical data in this document

The MAC address of the L642V+ is **70:B3:D5:26:BX:XX** where the last 3 digits **X:XX** can be found on the back of the L642V+, in the bottom-left corner, specifically on the right side of the Serial Number.

Mode 1: Connect to a Network using DHCP

To connect in mode 1, connect the L642V+ to a network with a DHCP server. In most cases, the network router provides DHCP, but it may also run on another system. Contact your network administrator for more information about your network setup.

A connection can be made in two ways (note that the device requires PoE+ as stated in the technical data section):

- Connect the device directly to a suitable PoE capable switch that is connected to the network
- Connect the device via a suitable PoE injector to a non-PoE capable switch that is connected to the network

The DHCP server automatically assigns an IP address to the L642V+ within the network's configured range. To communicate with the device, other devices, such as a PC or laptop, must be on the same network, either through a wired connection or a wireless access point.

Mode 2: Connect directly to a PC/Laptop using Auto IP

To connect using mode 2, connect the device directly to a PC or Laptop with a Cat5e or Cat6 network cable.

Since ethernet ports on a PC/Laptop are (almost) never PoE capable, you will require a suitable PoE injector.

A connection can be made in two ways (note that the device requires PoE+ as stated in the Stechnical data section):

- Connect the device with a suitable PoE injector to a free ethernet port on your PC/Laptop
- Connect the device with a suitable PoE injector to an ethernet-to-USB dongle plugged into your PC/Laptop

The device will assign itself an IP address in the 169.254.0.0/16 range, also known as the Auto IP range.

Mode 3: Connect to a Network using Static IP

To connect using mode 3, connect the device to any network (with or without DHCP server).

A connection can be made in two ways (note that the device requires PoE+ as stated in the technical data section):

- Connect the device directly to a suitable PoE capable switch that is connected to the network
- Connect the device via a suitable PoE injector to a non-PoE capable switch that is connected to the network

A manually determined, fixed IP address can be assigned to the L642V+ via the Dashboard.

Be aware! Incorrectly setting a static IP address can make the device unreachable. Make sure you configure the device correctly or ask your network administrator for help.

Mode 4: Connect to a PC/Laptop using Static IP

To connect using mode 4, connect the device directly to a PC or Laptop.

Since ethernet ports on a PC/Laptop are (almost) never PoE capable, you will require a suitable PoE injector.

A connection can be made in two ways (note that the device requires PoE+ as stated in the technical data section):

- Connect the L642V+ via a suitable PoE injector to a free ethernet port on your PC/Laptop
- Connect the L642V+ via a suitable PoE injector to an ethernet-to-USB dongle plugged into your PC/Laptop

A manually determined, fixed IP address can be assigned to the device via the Dashboard.

Be aware! Incorrectly setting a static IP address can make the device unreachable. Make sure you configure the device correctly or ask your network administrator for help.

Setting up the L642V+

Before you start, make sure the device is connected to the network, PC or Laptop in either mode 1 or mode 2 as described in section Connecting the L642V+. Wait until the indicator light on the side of the device becomes solid green.

Step 1

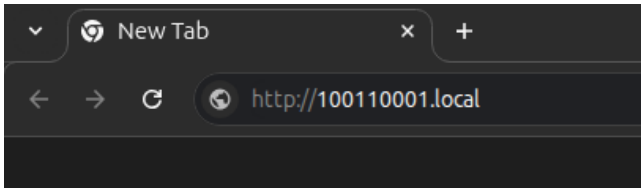
Keep the serial number of the device ready. It is located on the back of the device, in the bottom-left corner.

Step 2

Open Chrome browser (currently supported browser).

Step 3

Type http://<serial number>.local in your address bar. E.g., http://100110001.local

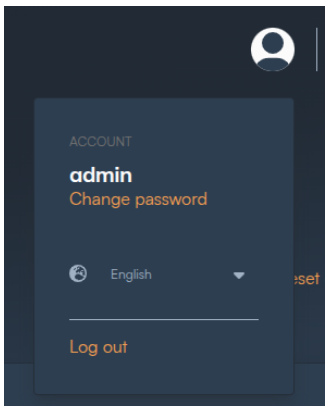


The suffix can differ depending on network setup. Contact your network administrator for more information about your network setup.

Step 4

Your browser will now show the device dashboard and prompt you to login. The default credentials are:
Username: admin
Password: admin

We strongly advise changing these default credentials due to security reasons. This can be done by clicking on the “account” icon and proceed to “change password”. Note that a device reset will reset the password back to default (admin).

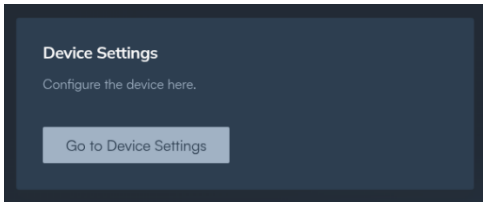


Step 5

On the device dashboard navigate to the “Settings” page by clicking the cog icon.

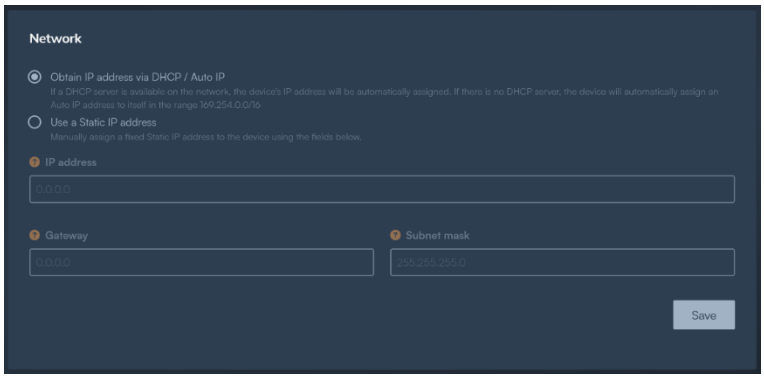
Step 6

Navigate to “Device Settings” by pressing the “Go to Device Settings” button.



Step 7

In the “Network” panel, set the preferred network settings according to your project.



Select “Obtain IP address via DHCP / Auto IP” (the default) if you want to run the device in either mode 1 or 2 as described in section Connecting the L642V+. No additional configuration is required. Select “Use a Static IP address” if you want to run the device in either mode 3 or 4 as described in section Connecting the L642V+. You will need to specify the following:

- IP address: The static IP address that the device will have
- Subnet mask: The subnet mask of the network the device is (going to be) connected to
- Gateway: The gateway address of the network the device is (going to be) connected to

After configuring the device, reload your browser window. This is necessary because the device's IP address has changed. Depending on your network setup and the values you entered, you may also need to update your network adapter settings to reach the device again. Contact your network administrator if you need assistance.

Be aware! Incorrectly setting a static IP address can make the device unreachable. Make sure you configure the device correctly or ask your network administrator for help.

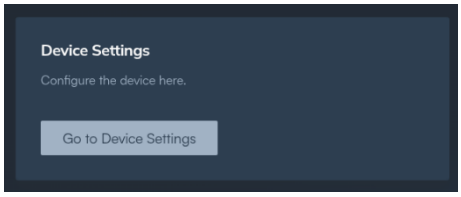
Performing a firmware update

The following steps assume you can access the device dashboard by completing the device setup as described in section Connecting the L642V+ and Setting up the L642V+.

Step 1

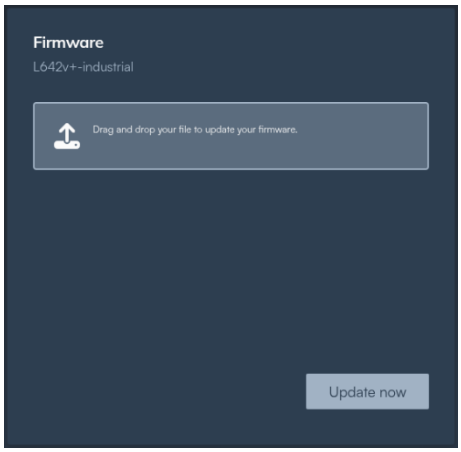
On the device dashboard navigate to the “Settings” page by clicking the cog icon.

Navigate to “Device Settings” by pressing the “Go to Device Settings” button.



Step 2

Drag and drop the desired firmware into the box. Click the “Update now” button to start the firmware update process.
Alternatively, the Drag and drop box can be clicked to select the desired firmware from the user's storage.



The file is first uploaded to the device. The device then installs the new firmware. This may take 2 to 15 minutes, depending on your network speed. After installation, the device will automatically reboot. Wait until the LED turns green again, then refresh the dashboard. The device is now ready to use with the updated firmware.

LED indicator

The LED indicator is a small semi-transparent dot on the side of the device when powered off. When powered on, this LED indicator shows the current state of the device

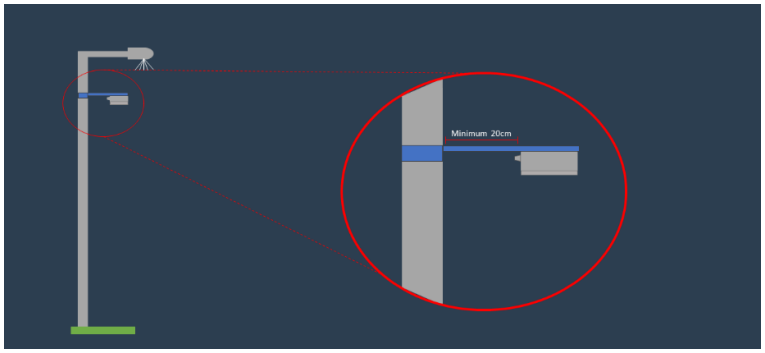
Color:	Condition:	State:
Red	Solid	Starting
Green	Solid	Ready
Blue	Solid	Error state
Purple	Solid	Manual factory reset window

GENERAL MOUNTING SOLUTION

The device can be positioned in three main ways, depending on the environment. For all mounting methods, we recommend using the Vesa (10) standard.

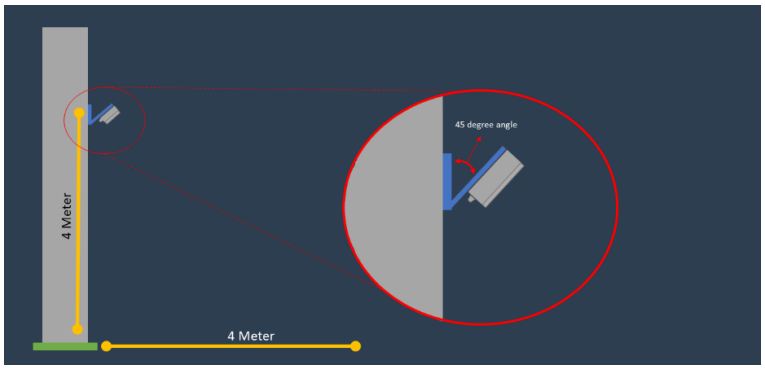
Pole mounted

A pole mounting bracket is available from Sorama as a separate accessory. It can be connected to a pole mount adapter. The orientation should be such that the RJ45 (network) connector of the device is facing the pole.



Wall mounted

A 45-degree wall mounting bracket is available from Sorama as a separate accessory. The orientation should be so that the RJ45 connector points to the wall.



Tripod mounted

A tripod mount solution is also available via the ¼ inch thread mount located at the bottom of the device.

Mounting height

The mounting height depends on your situation and differs from area to area. In general, the distance to the area being measured should be:

- Minimum of 4 meters.
- Maximum of 15 meters.
- Outside these bounds, the system cannot properly monitor the whole area.
- Inside these bounds, the area that can be monitored equals approximately twice the mounting height. Example:
    - The device, mounted 4 meters high, can cover an approximate area of 8x8 meters.
    - The device, mounted 8 meters high, can cover an approximate area of 16x16 meters.
    - The device, mounted 15 meters high, can cover an approximate area of 30x30 meters.

Be aware! Do not drill additional holes in the device housing. This will compromise its water resistance and may damage internal components.

INDUSTRIAL DASHBOARD

Home

The home page displays the camera feed with a SoundSurface overlay and spectral visualization.

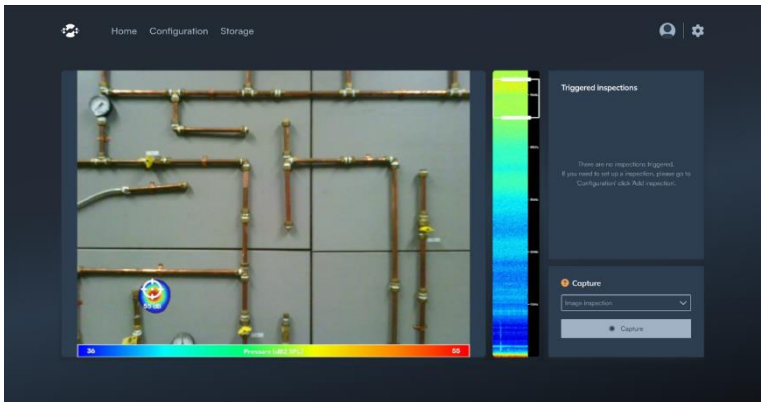
- You can switch between spectrum and spectrogram views in the Configuration page.
- The SoundSurface overlay highlights the location of the loudest sound within the selected frequency range.
- This frequency range is marked by a white outline in the spectral visualization.

View details

- Spectrum view shows real-time detected frequencies.
- Spectrogram view shows frequency data over time.
- Color scale: Red indicates high intensity, blue represents the lowest sound pressure level as shown in the color bar.
- A color bar below the feed shows the minimum and maximum sound pressures (dB(Z)) for the selected range.

Frequency selection

- Drag and resize the white box to choose a frequency band.
- The maximum selectable frequency window size is 8000 Hz.



Triggered inspection

This section provides an overview of event inspections. You can configure inspections on the Configuration page. Once an inspection is set up and an event is triggered, it will be displayed in this table.

Captures

To perform a capture, select the capture mode and click the "Capture" or "Record" button. The capture will be displayed on the Storage page. Different types of captures include:

- Image inspection: Captures an image of the current SoundSurface, including min/max values and spectral visualization.
- Video inspection: Captures a 5-second video of the SoundSurface, including min/max values and spectral visualization.

Configuration

The Configuration page allows you to set up event inspections and areas of interest and adjust visual settings, such as spectral visualization.

Add area of interest

An area of interest allows inspections to trigger only when an event occurs within it.

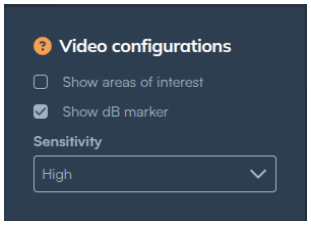
Drawing an Area of Interest:

- Click on one of the two shapes.
- Once the shape is selected, click and drag the mouse over the camera feed.
- Release the mouse button to save the area of interest, which will then be visible on the camera feed.

Deleting an Area of Interest:

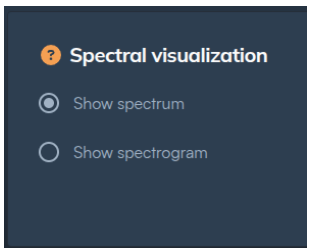
- Click on the area of interest.
- Click on the trash can icon to delete the area.

Video configurations



Show area of interest: Click to show or hide the area of interest in the camera feed.
Show dB marker: Click to show or hide the dB marker in the camera feed. The dB marker will appear on the most dominant source.
Control the sensitivity with “Low”, “Medium” or “High” values. A higher sensitivity will increase the likelihood of visualizing a sound source.

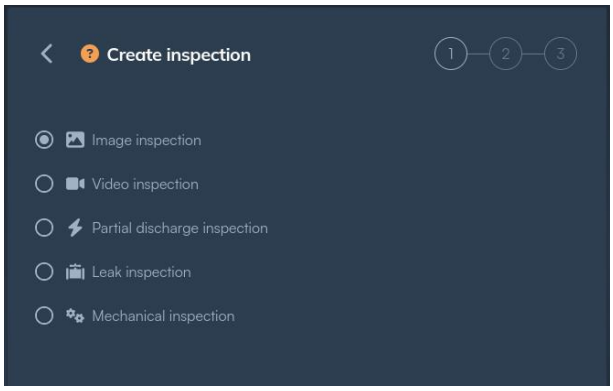
Spectral visualization



Show spectrum: click to display the spectrum.
Show spectrogram: click to display the spectrogram.

Create inspections

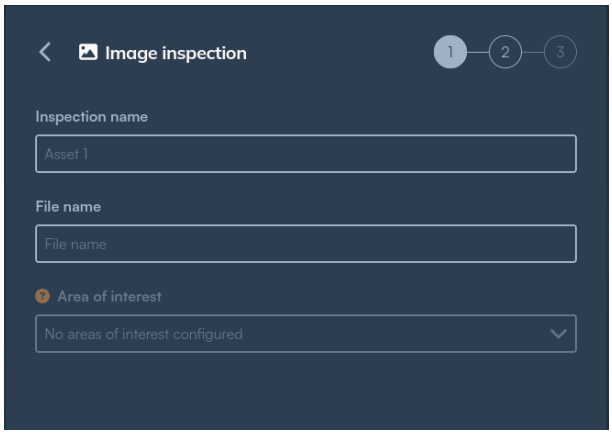
To configure a new inspection, click the "Add inspection" button. An inspection will trigger a new measurement when a specific event occurs. Depending on the purchased licenses, there are up to five types of measurements available.



Each measurement type has specific settings, as well as some common settings.

Mode settings

Image inspection

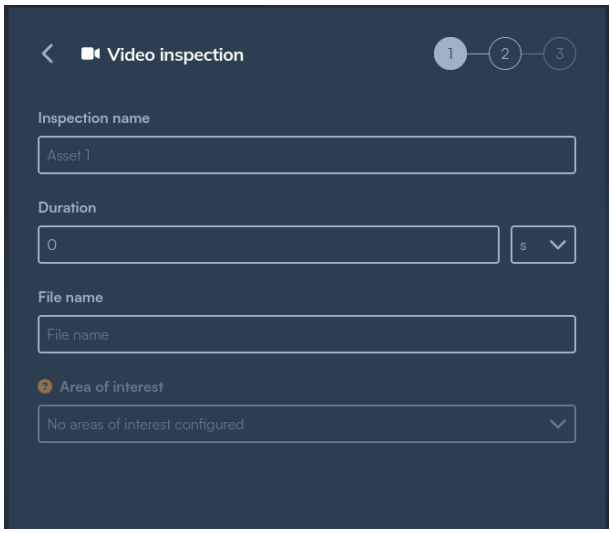


Inspection name: Enter the name for the inspection.

File name: Specify the name of the image file that will be generated when an event is triggered.

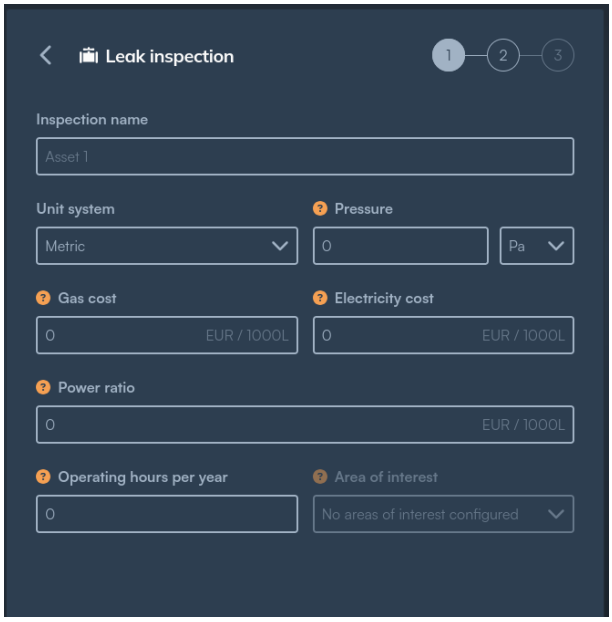
Area of interest: If an area of interest is configured, select it to ensure the inspection is triggered only if the event occurs within the selected area.

Video Inspection



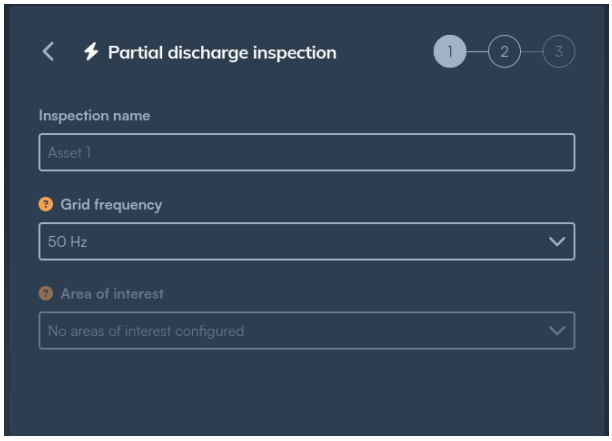
Inspection name: Enter the name for the inspection.
Duration: Value for the length of video.
File name: Specify the name of the video file that will be generated when an event is triggered.
Area of interest: If an area of interest is configured, select it to ensure the inspection is triggered only if the event occurs within the selected area.

Leak inspection



Inspection name: Enter the name for the inspection.
Unit system: Specify the unit system.
Currency: Select the currency.
Gas cost: Enter the cost of gas. If it is air, this can be set to zero.
Electricity cost: Enter the cost of electricity per kilowatt-hour (kWh).
Power ratio: Specify the system-specific power ratio. This is typically indicated on compressor data sheets.
Operating hours per year: Enter the number of hours the system operates per year (e.g., 8760 for plants operating 24/7 all year long).
Area of interest: If an area of interest has been configured, select it to trigger the inspection only when the event occurs within that area.

Partial discharge inspection

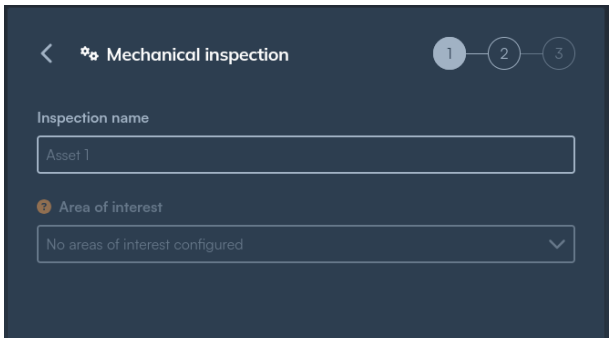


Inspection name: Enter the name for the inspection.

Grid frequency: Specify the grid frequency of the source where the partial discharge is occurring.

Area of interest: If an area of interest is configured, select it to ensure the inspection is triggered only if the event occurs within the selected area.

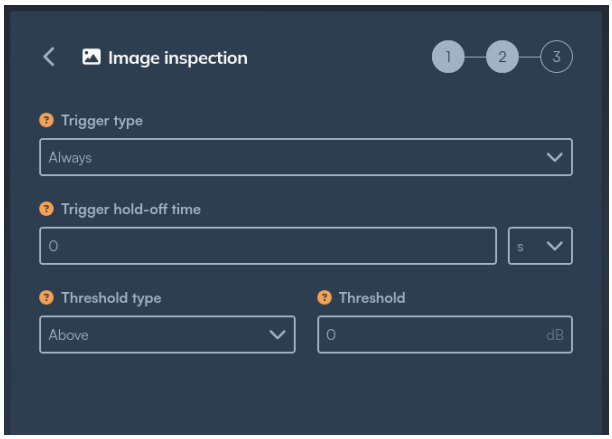
Mechanical inspection



Inspection name: Enter the name for the inspection.

Area of interest: If an area of interest has been configured, select it to trigger the inspection only when the event occurs within that area.

Common settings



Event trigger

Trigger type: Select the edge of the signal to trigger the event.

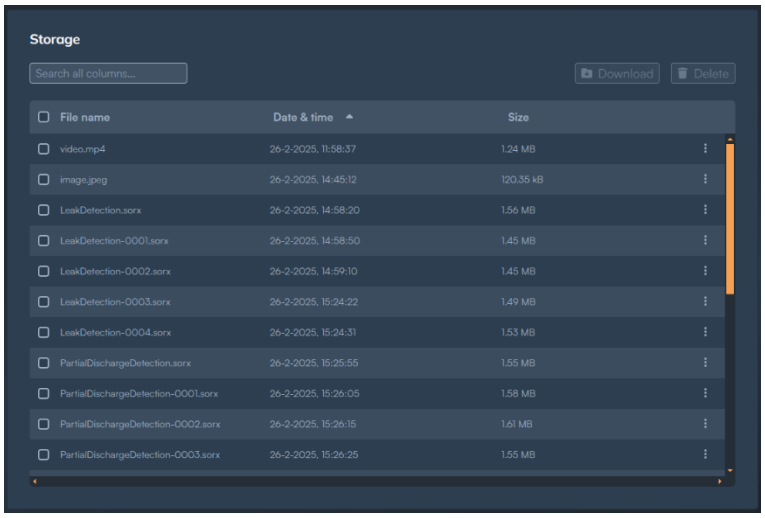
Trigger hold-off time: Set the minimum time between event triggers to limit how often events are generated. If a new trigger occurs before the hold-off time has passed, it will be ignored. To allow events without delay, set the hold-off time to 0.

Threshold type: Choose whether the measurement will be triggered above or below the threshold.

Threshold: Set the SoundSurface threshold value in decibels (dB).

Storage

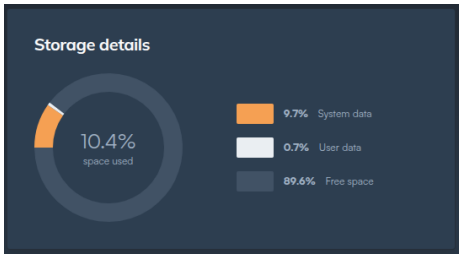
The Storage page consists of two main sections: Storage and Storage Details.



This section allows you to view all the measurements stored on the device. You can manage these measurements using the following features:

- Manage Individual Measurements: Click the three dots on the right of each measurement to delete or download the single measurement.
- Bulk Actions: Select multiple measurements by marking the checkbox on the left of each measurement. Download or delete them by clicking the "Download" or “Delete” button at the top right.
- Sort Measurements: Click on any column header (File Name, Date & Time, Size) to sort the files in ascending or descending order.
- Search: Use the search function to look for terms across all three columns.

Storage details



This section displays the storage usage on the device, including:

- System Data: The percentage of storage used by system data, which is essential for the operation of the device and cannot be deleted.
- User Data: The percentage of storage used by user data, such as measurements, which can be deleted.
- Free Space: The percentage of available free space on the device.

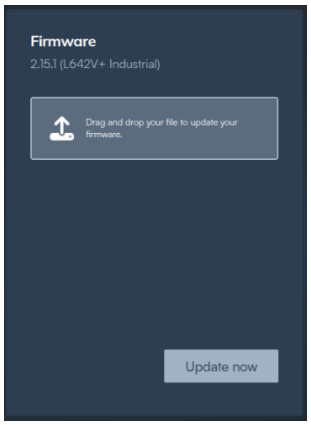
Settings

Device settings

The Device Settings page lets you manage device configurations and actions.

- Top left: View the serial number and device name. Use the Download logs button to export all log files.
- Top right: Use the Restart button to reboot the device or the Factory reset button to restore default settings.

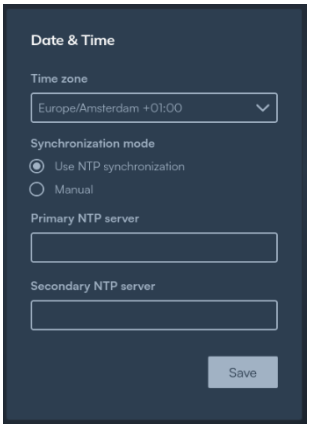
Firmware



This section lets you update the device firmware.

- The current firmware version is shown at the top.
- To upload a new file, drag and drop it into the upload area or click the button to browse your file system.
- Click Update now to begin the update process.

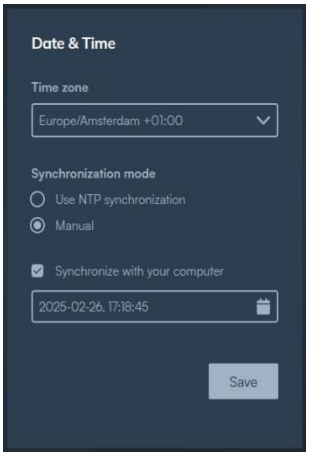
Date & Time



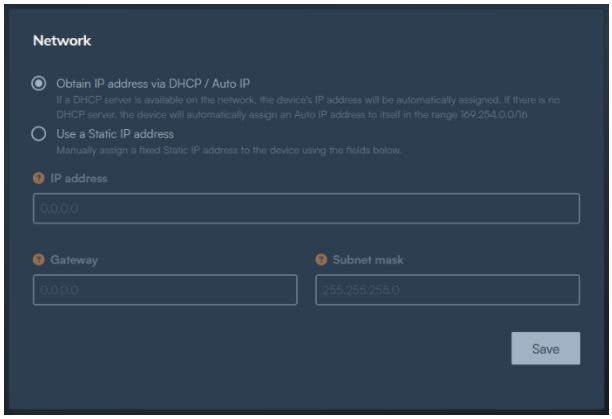
This section allows you to configure the date and time settings for your device.

- Time Zone: Set the time zone in which the device is currently located.
- Use NTP Synchronization: Enable this option to synchronize the device's time with an NTP server. When selected, two fields will appear for entering the primary and secondary NTP server addresses.

- Manual: Alternatively, you can set the time manually. Use the "Sync with Computer Time" option to automatically synchronize the device's time with your computer's current time or manually enter the desired time by clicking on the calendar icon.



Network



You can configure the network settings by selecting either Automatic (DHCP) or Static IP.

- Automatic (DHCP): In a DHCP network, the L642V+ will automatically obtain an available IP address from the network router.
- Static IP: When using a static IP, you can manually assign an IP address to the L642V+. Ensure that the chosen IP address does not conflict with any existing IP addresses within the network to avoid connectivity issues.

Packages

The "Packages" page shows which licenses or packages are activated and when they are going to expire. There are three licenses available:

- Leak inspection
- Partial discharge inspection
- Mechanical inspection

Installing a single license

1. Click Settings.
2. Click Go to Packages.
3. Click Click to upload your license file.
4. Select and upload the .lic file.

After installation, the expiration date will appear under each license as:
License expires on YYYY-MM-DD

It is recommended to reboot the device after the licenses are updated.

Documentation and API

This section provides detailed documentation for the various APIs available for the device, intended for advanced development and integration with third-party systems or software. The Sorama API is based on an HTTP REST API, with all communications conducted via HTTP(S) or WebSocket.

The device includes documentation for the following APIs:

- Authentication API
- Device Manager API
- Sound Source Detection API
- Integration API

Additionally, the following documents are available:

- User Manual (PDF)
- Quick Start Guide (PDF)

For more information, please visit our website: www.sorama.eu/dev

TROUBLESHOOTING

The first thing to try if anything does not work on the dashboard is to refresh the page by pressing Ctrl + F5.

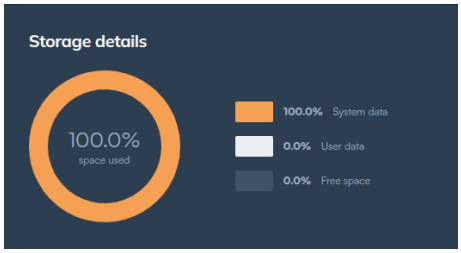
How do I restart my device without removing power?

For Dashboard users, the easiest way is to go to the "Settings" page

And press “Go to Device Settings” and press “Restart device”. This will reboot the device. The device can also be rebooted with an API call. To get more details about this API call please refer to the device manager API documentation.

I tried to update the firmware, but I got an error.

There can be multiple reasons why errors occur during firmware updates. First, check if you uploaded the correct firmware (plus or non-plus firmware). Second, check if the device has enough storage. If the storage is full, backup all the measurements from the storage and delete them from the storage. Try updating the firmware again. If it still does not work or there was no measurement saved in the storage (with 100% space used), please contact Sorama for further support.



How do I factory reset my devices without the dashboard?

The device can be reset to factory settings without using the dashboard. Use this method only if the dashboard is not accessible.

Follow these steps to perform a manual reset:

1. Power cycle the device
2. Wait for the LED to turn purple.
3. Repeat steps one and two 5 times.
4. The fifth time the LED should become orange after briefly turning purple.
5. Wait for the device to reboot.

After rebooting, the LED should become green again.