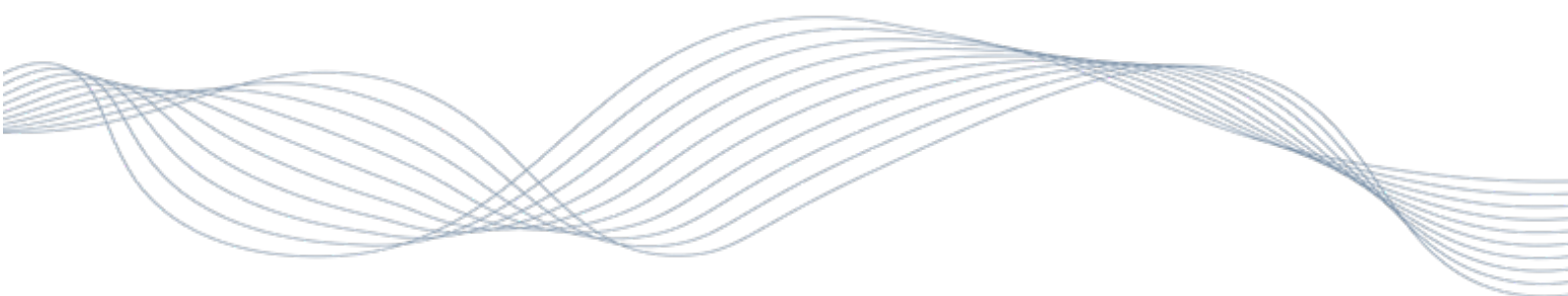


# Sorama CAM iV64Ex

User Manual



October 2025 v.2.20.0

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## 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:

<b>Product name</b>	Acoustic Camera
<b>Model number</b>	Sorama CAM iV64Ex
<b>Ex Marking</b>	II 3 G Ex ic IIC T4 Gc
<b>Temperature Range</b>	-10°C to 50°C

Technical Compliance Data held by:

Sorama B.V.  
Achtseweg Zuid 153H  
5651 GW Eindhoven, NL

<https://www.sorama.eu/>  
[info@sorama.eu](mailto:info@sorama.eu)

**Signed for and on behalf of Sorama B.V.**

Address: Achtseweg Zuid 153H, 5651 GW, Eindhoven

## WARRANTY INFORMATION

The Sorama CAM iV64Ex is covered by a one-year warranty from the date of purchase. This warranty covers repair services for malfunctions or abnormalities caused by product quality issues. The warranty does not cover damage resulting from improper use, accidental impacts, or unauthorized disassembly. Disassembling the product without authorization voids the warranty. Sorama offers repair services for damage outside warranty conditions.

The device is factory-calibrated. Sorama accepts no liability for injuries, accidents, or damage resulting from improper use or operation in unsafe conditions. Non-compliance with safety guidelines, including tampering with the casing, will invalidate the warranty.

## SAFETY INFORMATION

For safe operation of the Sorama iV64Ex within hazardous areas, please consult the accompanying safety manual provided with the device. **IMPORTANT:** the safety instruction should be read before each use in the hazardous environment, see '20240508PS1 CAMiV64Ex Acoustic Camera Instruction'. There is a hardcopy of the safety instruction in the flight case.

## DESCRIPTION

The Sorama CAM iV64Ex is a high-performance acoustic camera that visualizes sound intensity and localizes sources in real-time. It features a 7-inch touchscreen display and is optimized for portability, enabling precise in-field measurements.

### Features

- Real-time spectrum analysis
- Far-field sound source localization and visualization
- Report generation via the Sorama Portal
- Leak Inspection
- Partial Discharge Inspection
- Mechanical Inspection

### Technical data

#### 1.1. Physical properties

<b>Size</b>	170 x 350 x 157 mm 6.7 x 13.8 x 6.2 inch	L x W x D
<b>Weight</b>	2.6 kg 5.7 lb	Including battery
<b>Connectivity</b>	USB-C and Wireless	USB 3.0 and dual-band 2x2 802.11ac WLAN (Only available in some regions)
<b>Battery</b>	Rechargeable battery	Battery life $\pm$ 4 hours
<b>Hardware connections</b>	1/4" screw connection	Tripod mountable (Only outside the hazardous zone)

#### 1.2. Storage

<b>Internal</b>	500 GB
<b>Storage formats</b>	The Sorama File Format (.sorX file) is compatible with Sorama Portal for report generation.

#### 1.3. Display camera

<b>Touch display</b>	7-inch LCD capacitive touchscreen
<b>Display resolution</b>	720p
<b>Camera Resolution</b>	720p



#### 1.4. Acoustics

<b>SNR (A-weighted, at 1 kHz)</b>	66 dB per channel	At 1 kHz, 94dB SPL
<b>Sensitivity</b>	-37 dB FS +/- 1 dB FS	At 1 kHz, 94 dB SPL
<b>Acoustic overload point</b>	132.5 dB SPL	At 1 kHz, <10% THD
<b>Auto min/max</b>	Auto or manual, user-selectable	

#### 1.5. Measurement features

<b>Sampling rate</b>	240 kHz (max)	
<b>Frequency resolution</b>	29 Hz	
<b>Operating distance</b>	0.3m to 120m	
<b>Spectrum analysis</b>	29 Hz — 120 kHz	
<b>Beamforming (far-field)</b>	500 Hz — 120 kHz	Streaming + recording

#### Protection

##### **Warning**

The microphones have an Acoustic Overload Point (AOP) of 132 dB. Exposing them to levels above this may result in permanent damage.

##### **Warning**

The USB-C port is for data transfer only. It cannot be used for charging.

Avoid water entering the MEMS microphones. If exposed to moisture, orient the sensor head to allow drainage and let it dry before reuse.

# GETTING STARTED

## List of items



The following items are included with the product:

Number	Description	Quantity
1	External Battery Charger	1
2	Rechargeable Lithium-ion Battery Pack	2
3	Country-Specific Adapters for Battery Charger	1
4	USB-C to USB-A Cable (1.5m)	1
5	Air puffer	1
6	USB cover	5
7	Sorama CAM iV64Ex Acoustic Camera	1
8	Protective Case	1

9	Accessory Bag	1
10	Shoulder Strap	1
11	Hand Strap	1
12	Battery sleeve	2
13	Safety instruction '20240508PS1 CamiV64Ex Acoustic Camera Instruction'	1

### Hardware features and configuration



Number	Description
1	LED Indicator (covered by USB bracket)
2	USB-C Connector with USB Cover
3	Touchscreen Display
4	Shoulder Strap Anchor
5	Battery Compartment / Tripod Connector
6	Acoustic Sensor / Webcam
7	Power on / Measurement Trigger Button / Force Shut Down
8	Hand Strap Anchor and Screw Point

**⚠️ ⚠️ Warning**

The USB-C port is only for data communication. It does not support charging.

### Power up and LED indicator

The LED indicator is positioned underneath the USB bracket that secures the USB cover. In the hazardous area the USB bracket and cover should always be in place, see safety instruction. To power on the device, press the trigger button located on the grip. The LED near the USB-C connector indicates the device status:

LED Color	Description
Red	The device is booting
Green	The device is fully booted, and the default user interface is running
Blue	The device is still switched ON, but the application is not running anymore





### Power off

To shut down the device, press and hold the trigger button for 2 seconds.

To perform a hard reset, press and hold the trigger button for 5 seconds.

### Home screen

When the device is booted, the home screen displays several icons with the following meanings:

Symbol	Description
	Battery level
	Storage space is less than 1 GB
	Recording disabled, memory full
	Wi-Fi connection

## Good to know / background info

- **Sound Pressure Level**

Sound is defined as pressure variations in the air. Sound pressure level (SPL) quantifies these variations and is expressed in decibels (dB SPL). It is a weighted sum of the frequency components of the acoustic signal.
- **SoundSurface**

A SoundSurface visualizes SPL values across the area under investigation. It identifies the origin of sound sources, often overlaid on the camera feed to match sound with visual locations.
- **Frequency Spectrum**

The frequency spectrum shows the distribution of sound signal amplitudes (in dB SPL) across frequencies (in Hz). It highlights the contributing frequency components of a sound.
- **Field of View (FOV)**

The webcam's observation angles are:

  - Horizontal FOV: 53°
  - Vertical FOV: 36°
- **Beamforming**

Beamforming is a signal processing technique that uses a microphone array to localize sound. It calculates the location based on the time delay of sound arrival at each microphone.
- **Frequency band selection**

This feature lets users isolate and display only selected frequency ranges by filtering out all others.
- **Partial discharge**

Partial discharge is an electrical discharge that does not bridge the gap between two conductors. It often indicates insulation defects and occurs in high-voltage components.
- **External Discharge**

Occurs when electrical current flows outside its intended path, usually due to insulation failure. It can lead to sparking or arcing.
- **Internal Discharge**

Usually results from defects inside solid insulation (e.g., cables, bushings). These discharges are destructive and can cause complete insulation failure over time.
- **Surface Tracking**

Surface discharge, also known as surface tracking, occurs when electrical discharge travels along an insulation surface.
- **PRPD Plot (Phase Resolved Partial Discharge)**

This plot shows discharge amplitude versus phase angle. It helps identify and classify partial discharge events.
- **Gas Leaks**

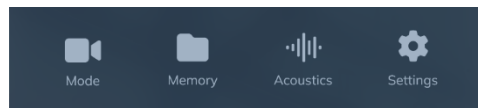
Uncontrolled release of gas from pipelines or containment systems.
- **Hose Leakage**

Holes or cuts in flexible hoses, common in pneumatic connections.

- **Open-End Leakage**  
Occurs when tubing or piping is unintentionally left open.
- **Quick-Connect Leakage**  
Leaks from damaged or improperly sealed quick-connect fittings.
- **Threaded Coupling Leakage**  
Results from loose or deformed threaded end caps or connectors.
- **PF Curve**  
The PF curve plots the interval between an asset's potential failure (P) and functional failure (F). It is used to determine optimal times for preventive maintenance.
- **Cavitation**  
Cavitation refers to the formation and collapse of vapor bubbles in a liquid, typically due to rapid pressure changes. It can damage equipment like pumps and valves.





## MENU

Swipe down from the top of the screen to open the main menu.



The menu provides access to key features and settings. Tap an icon to select a feature. Selected icons appear highlighted.

### Menu items:

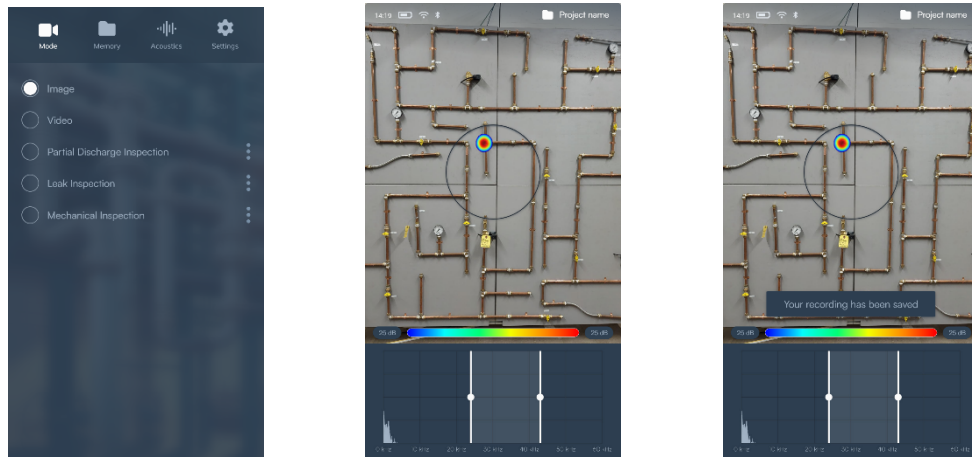
	<b>Mode</b>	Access measurement modes such as Image, Video, Partial Discharge Inspection, Leak Inspection, and Mechanical Inspection.
	<b>Memory</b>	Manage saved measurements: rename, transfer, or delete files.
	<b>Acoustics</b>	Adjust sound-related settings like dB scale and sample rate.
	<b>Settings</b>	In this menu, the general settings of the device can be viewed and/or adjusted.

### Mode

Tap the 'Mode' icon in the navigation menu to access available modes. The list of modes depends on the licenses installed on the device. Basic modes include Image and Video. Additional modes such as Partial Discharge Inspection, Leak Inspection, and Mechanical Inspection require specific licenses. **For licensing information, see Section "Feature Licensing".**

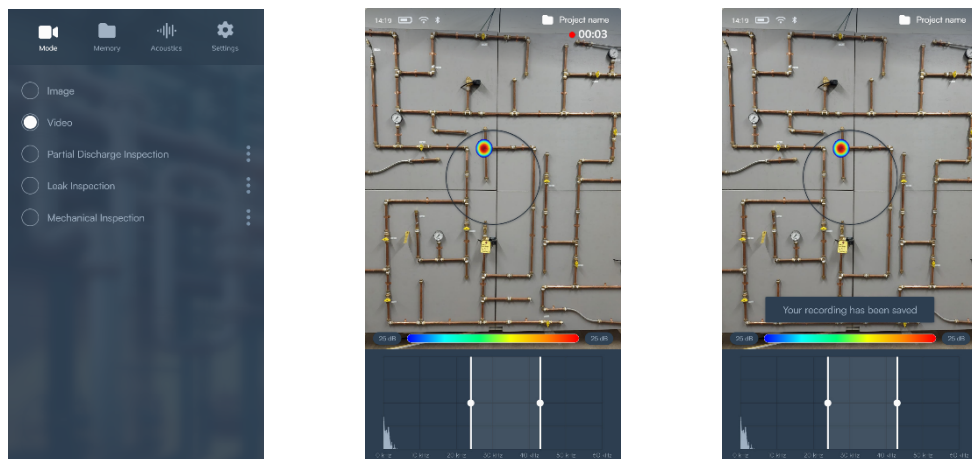
### 1.7. Image

Use this mode to capture still images. Press the trigger button once to take a screenshot. The device will confirm with the message: "Your recording has been saved." Images are saved in .jpeg format.



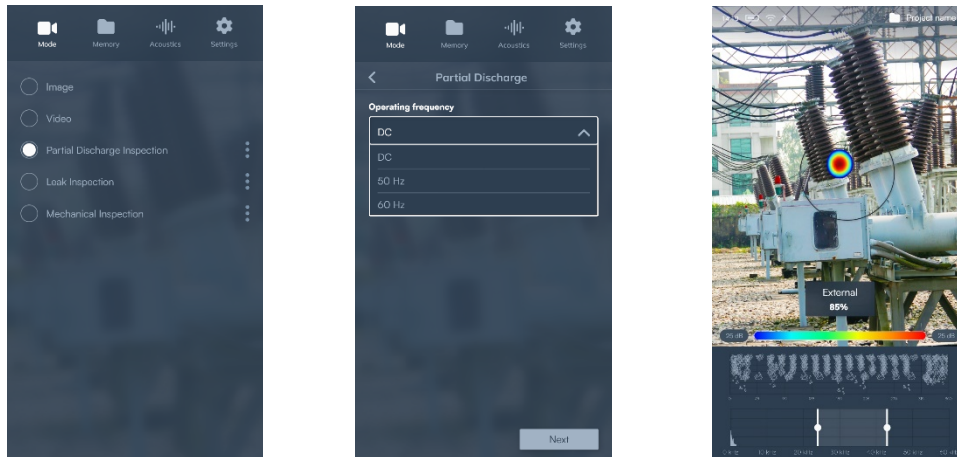
### 1.8. Video

Use this mode to record video. Press the trigger button once to begin recording, and press it again to stop. The device will confirm with the message: "Your recording has been saved." Videos are saved in .mp4 format. Video recordings have a maximum duration of 10 minutes.



### 1.9. Partial Discharge Inspection

This mode identifies partial discharge in high-voltage (HV) assets, such as voids, gaps, sharp points, or air discharges. Use the three-dot menu to select the operating frequency: DC, 50Hz, or 60Hz.



Point the camera toward the suspected source, keeping it within the on-screen circle. Select a spectrum band between 35kHz and 40kHz and press the trigger. The progress bar shows measurement status. After completion, the PRPD plot and spectrum will appear with discharge type classification: External, Internal, or Tracking.

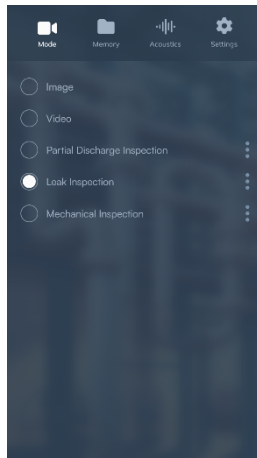
### 1.10. Leak Inspection

This mode detects and estimates the size of compressed air or gas leaks. Accuracy depends on environmental conditions such as distance and noise. Estimated minimum detectable flow:

<b>Quiet environment</b>	0.3m to 5m	0.02l/min to 0.1l/min
	5m to 10m	0.1l/min to 0.2l/min
<b>Noisy environment</b>	0.3m to 5m	0.05l/min to 0.15l/min
	5m to 10m	0.15l/min to 0.3l/min

Use the three-dot menu  to configure:

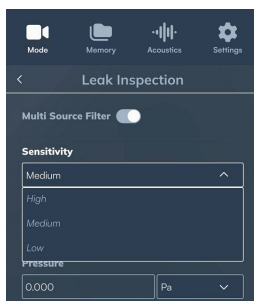
- Unit system: Metric or Imperial
- Pressure: System pressure input
- Gas cost: Enter or leave at zero for air
- Electricity cost: kWh rate
- Power ratio: Specific compressor value
- Operating hours: Annual runtime in hours



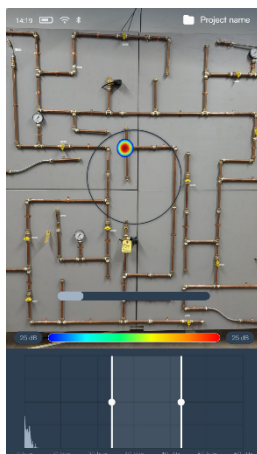
These values will be used to estimate the cost of the leak.

The Multi Source Filter option makes visualizing multiple sources easier. If no sources are present, no SoundSurface will be visible. Up to four simultaneous sources can be visualized, but only the loudest source will be used for the Leak size estimation.

When the Multi Source Filter is enabled, a Sensitivity setting becomes available. High sensitivity will show more sources but is more susceptible to background noise or interference. Low sensitivity will show less false positives but requires the leaks to be significantly louder than your background noise. Small leaks might get missed when this option is selected.

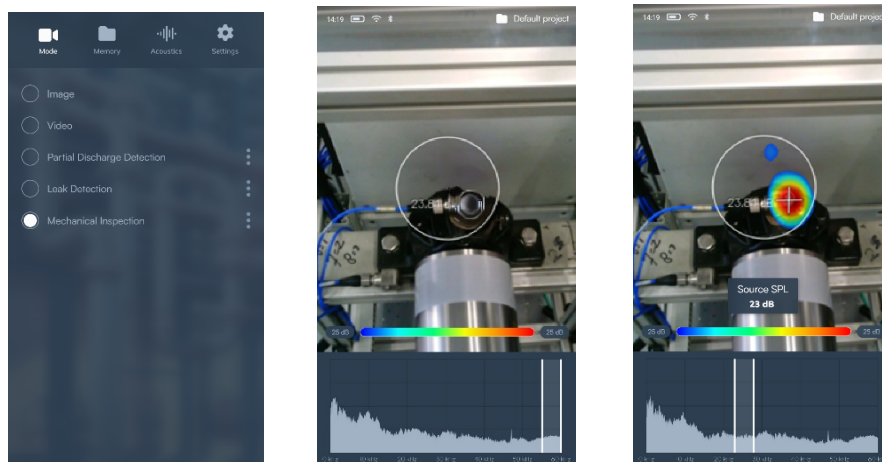


To measure, aim the camera towards the leak source and position it within the on-screen circle. Select a spectrum band between 30kHz and 40kHz and press the trigger. Estimated distance and leak rate will appear after processing.



### 1.11. Mechanical Inspection

Used to inspect the condition of rotating mechanical assets.

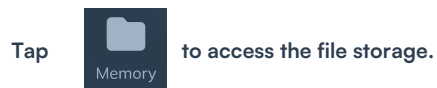


Point the on-screen circle at the part you want to analyze.

Move the frequency block across the spectrum from high to low frequencies. Watch for a visible sound blob to appear on the component. This may signal an early-stage fault, based on the PF (potential failure) curve. The screen displays the sound pressure level (SPL) at the source during this process.

### Memory

Tap the memory icon in the menu to manage saved measurement files. Files are organized in folders and can be renamed, transferred, or deleted.



All measurements are saved in the 'default' folder unless a different folder is activated.

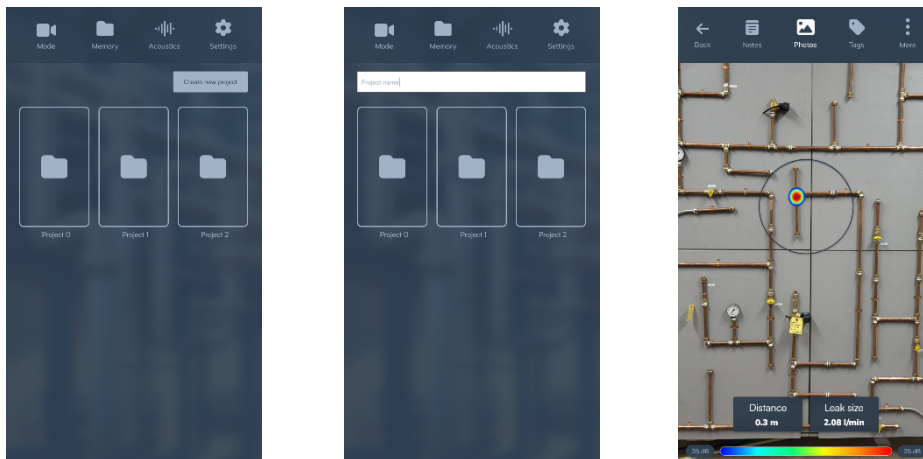
### Folders

To create a new folder:

- Tap 'New Project'
- Enter a folder name
- Tap to confirm creation

To activate a folder for saving new measurements:

- Tap and hold the folder name
- Tap 'Activate'. The active folder icon turns white

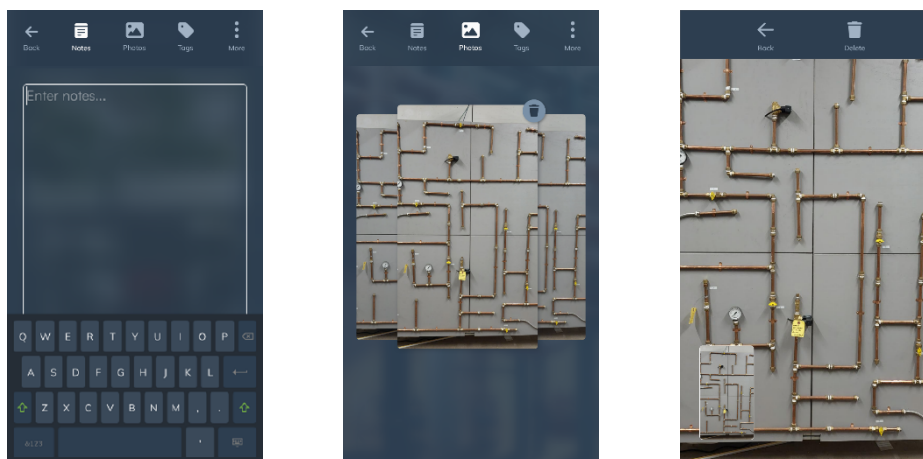


### Access to Measurements

Open a folder to view its contents. Tap a file to access additional options:

- Notes — Add comments or relevant information about the measurement.
- Photos — Add supporting images such as asset positioning or conditions. Tap '+' to upload. These images will be added to the report.
- Tags — Input metadata like asset name, ID, type, and inspection status (Undetermined, As Found, As Left).

Specific measurement types may display additional analysis results.

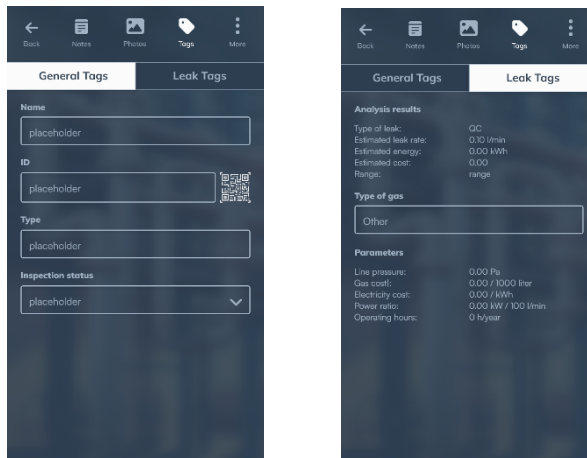


“Tags” might also contain measurement-specific tags.

For Leak Inspection results include:

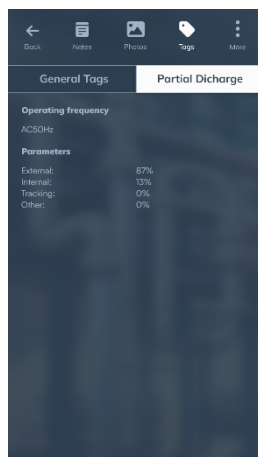
- Leak type
- Estimated leak rate
- Estimated energy consumption
- Estimated cost

For more information on types of leaks, please refer to Section “Good to know / background info”.



Partial Discharge Inspection results include:


- Operating frequency selected during measurement
- Discharge type classification



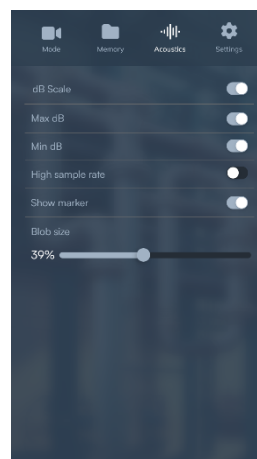
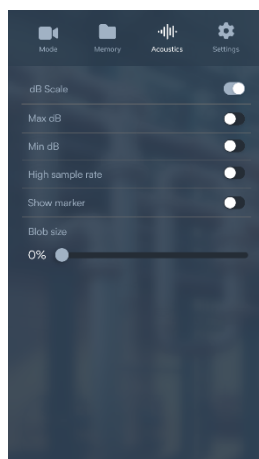
Tap **'More'** on a file to:

- Send Report — Email a report to a specified address. The device must be connected to the internet for this function to work.
- Delete — Permanently remove the file from device storage.

## Acoustics

Tap  to adjust the acoustic settings:

- **dB Scale:** Toggles the display of the SPL (sound pressure level) scale on the main screen for all modes.
- **Max dB:** Sets the upper limit of the displayed dB scale. Can be set manually (if enabled) or automatically (if disabled).
- **Min dB:** Sets the lower limit of the dB scale. Also configurable manually or automatically.
- **High sample rate:** Enables a sampling rate of 240 kHz for high-frequency measurements. To apply this setting, toggle the switch, then tap 'Restart' on the confirmation screen. The device will reboot in the selected mode. Tap 'Cancel' to dismiss without rebooting.
- **Show Marker:** Displays a dB marker on-screen that shows the sound pressure level at the most dominant source. The marker appears at the center of the strongest signal within the selected frequency band.
- **Blob Size:** Adjusts the size of the visual sound indicators (blobs) for better clarity. Smaller sizes are recommended for low-frequency applications; larger sizes for high-frequency applications.

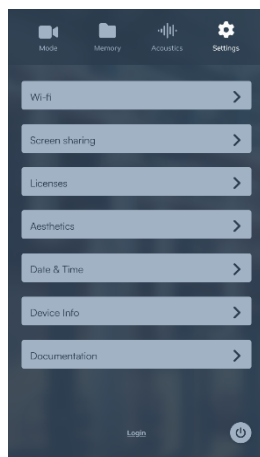


## Settings

Tap



to view the general device settings.



### 1.12. Wi-Fi

Enable Wi-Fi to connect the device to the internet. A list of available networks will appear.

Tap a network name to view its signal strength and security protocol. Tap 'Connect' to proceed or 'Cancel' to return.

**Note:** iPhone users should enable 'Maximize Compatibility' in hotspot settings.

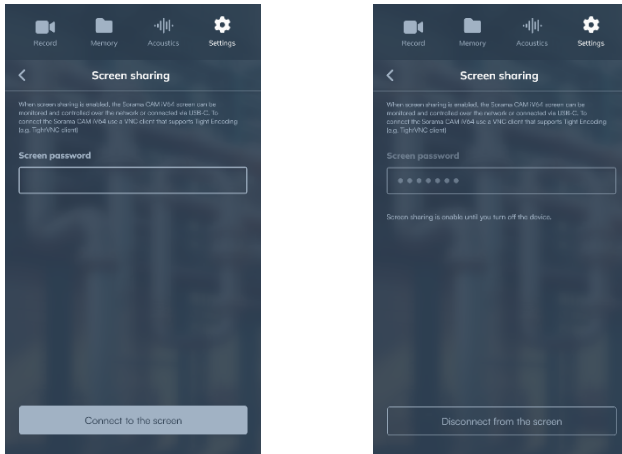


### 1.13. Screen Sharing

Ensure both the device and your computer are connected to the same Wi-Fi network.

Set a password in the Sorama CAM iV64Ex screen sharing menu. Use a VNC client (such as TightVNC Viewer or Remote Ripple) with Tight Encoding to access the screen remotely.

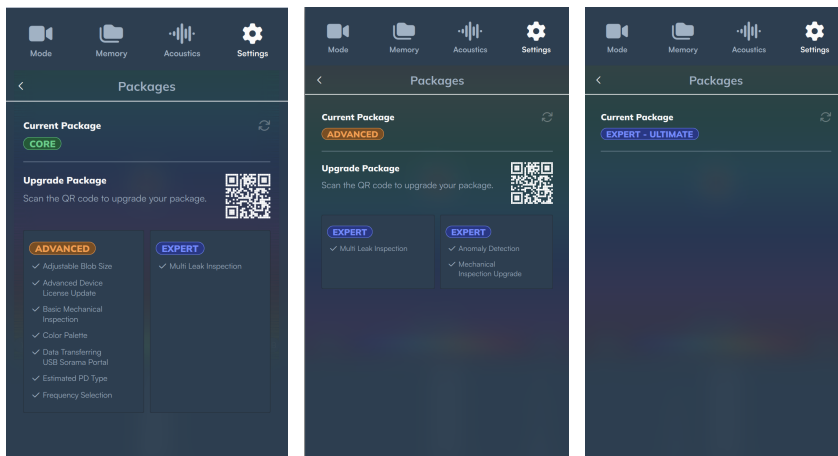
Press F1 on your keyboard to start a measurement while using the viewer.



Screen sharing is available only with a license.

### 1.14. Packages

Displays the currently installed packages. Scan the QR code to view all the available upgrade options. Once the package has been activated, log in to your Portal account on the Sorama CAM iV64Ex and press the refresh button located in the top-right corner to update the package status.



Note: Packages are issued to specific devices and are not transferable.

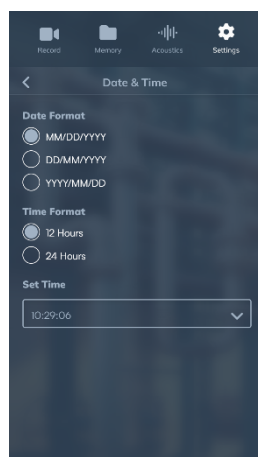
### 1.15. Aesthetics

Adjust the transparency of the SoundSurface overlay and select the color palette: Jet, Cool, Magma, or Grey.



### 1.16. Date & Time

Set your preferred date format and update the current date and time.



### 1.17. Device Info

Displays firmware version, installation date, device name, serial number, and language settings. This page also provides options for firmware updates and resetting user settings.



### 1.18. Documentation

Scan the QR code to access the online user manual at:

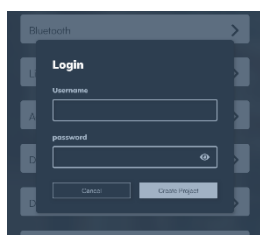
<https://sorama.eu/products/camiv64-ex/cam-iv64ex-documentation/>



### 1.19. Login

Log in to the Sorama Portal using credentials provided by Sorama. Ensure the device's date and time are current.

**Note:** If you have not received credentials, email to [helpdesk@sorama.eu](mailto:helpdesk@sorama.eu).



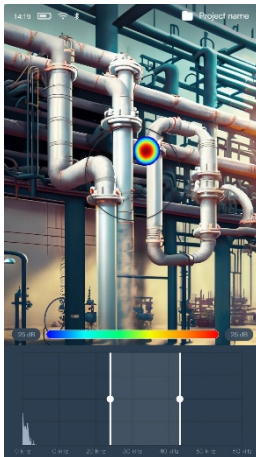
# OPERATIONS

## Basics

### Power

To power on, press the trigger button. The LED indicator above the USB-C port turns on. Boot time is approximately 30 seconds.

By default, the device starts in 'Image' mode. After first use, it reopens in the last-used mode. Swipe down to reveal the main menu.



To adjust frequency band selection, tap and drag the white dot on the spectrum display to set low and high bounds. You can also reposition the entire band by dragging its center.

### Zoom

Pinch within the field of view to zoom. The sound map and the video enlarge at the same rate. For best results, use the Blob Size setting to decrease the blob size when zooming in to inspect sources.

### Mount Sorama Sorama CAM iV64Ex on a Tripod

You can mount the Sorama CAM iV64Ex on an external tripod using the standard 1/4 inch UNC camera screw thread. The external tripod has to be explosion-proof.

Tripod requirements:

- The tripod must be stable and sturdy to safely support the weight of the device. The Sorama CAM iV64Ex is heavier than standard cameras.
- Make sure the tripod legs are fully extended and secured before mounting the device.

Mounting instructions:

1. Perform all mounting steps outside of any hazardous area.
2. Align the tripod's screw with the bottom insert of the Sorama CAM iV64Ex.
3. Secure the connection through the battery compartment's rubber part.
4. Ensure the device is balanced and steady before moving it into the working area.

**⚠ Caution:** Mounting the Sorama CAM iV64Ex on a tripod inside a hazardous area is not allowed. Sorama is not responsible for any damage or injury resulting from improper tripod use or unstable mounting.

## Data Transfer

The device continuously streams audio and video. To capture a measurement, press the trigger button. Video inspections are saved as .mp4; image measurements as .jpeg. Compatible inspections will also store a .pdf report.

To export data, connect the device to a computer using the supplied USB-C cable. Two folders will appear:

- Logs: Contains system logs useful for troubleshooting
- Recordings: Contains saved measurement files, including reports

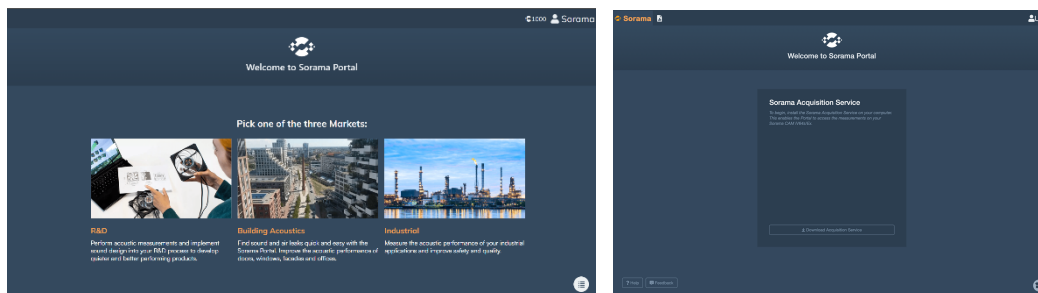
## Sorama Portal

The Sorama Portal allows you to manage your device, generate detailed reports from measurements performed with the Sorama CAM iV64Ex, and to combine multiple measurements into one report. Access the portal at: <https://portal.sorama.eu/>.

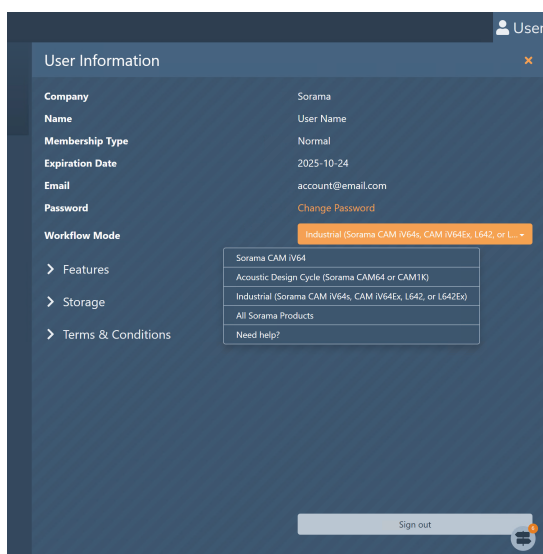
The Sorama Portal is currently only supported in Chromium browsers, on Microsoft Windows.

### Step 1: Sign in and select a market

1. Go to the portal and click “Sign in”.
2. Use the login details sent to you by Sorama.
3. After signing in, you’ll be prompted to choose a market (workflow mode). Select “Industrial” to connect your Sorama CAM iV64Ex.
4. On the confirmation screen, click “Let’s start” to initiate the device connection.

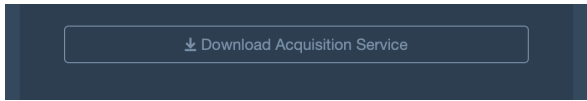


If a different Market was selected, you can return to the Industrial Market by clicking your username in the top-right corner of the page and selecting it from the available “Workflow Mode” options.



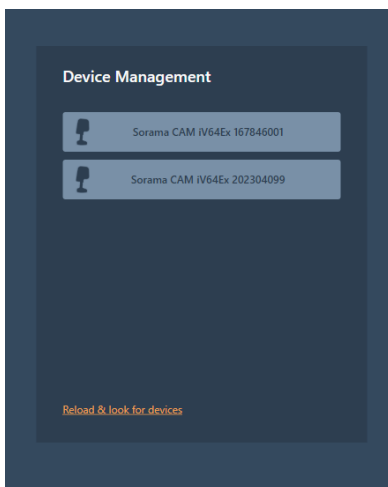
## Step 2: Download and install the Sorama Acquisition Client

1. Click on “Download Acquisition Service”
2. Click on downloaded file, and follow the installation instructions.



## Step 3: Connect your Sorama CAM iV64Ex

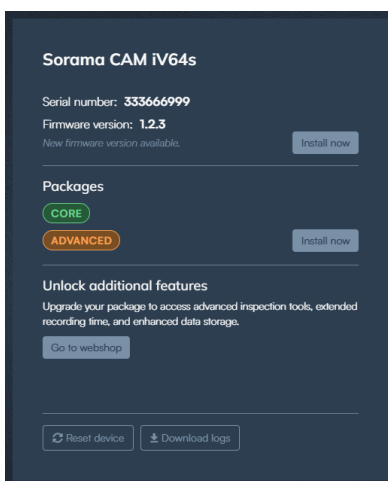
1. Make sure the Sorama Acquisition Service is started (a Sorama icon can be found in the system application tray).
2. Make sure your Sorama CAM iV64Ex is connected to the computer via the provided USB cable, or to the same Wi-Fi network, and the network allows devices to communicate to each other.
3. In the Sorama Portal home screen, under Device Management, choose your device from the list.



If your device doesn't appear, click the [“Reload & look for devices”](#) button

## Device Management

Once connected, the device management options will show up

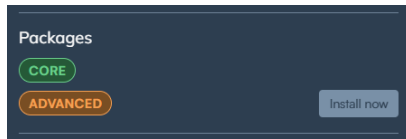


## Updating the device

If an update is available, the “Install now” button will show up. To update, press the button and follow the instructions on the screen. Do not power off or disconnect the device until the update completes successfully.

## License management

Packages can be purchased directly from the web shop or by contacting Sorama. Once purchased, these packages will show up under “Packages”.



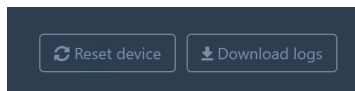
To install a license package, click on the “Install now” button.

Notes on licensing:

- Once installed, a package remains on that device until it expires—it cannot be transferred to another device.
- In the event of a factory reset, the packages can be restored via the Sorama Portal.

## Factory Reset and Device Logs

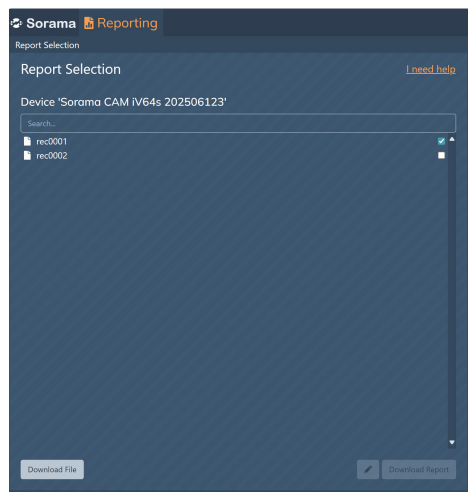
The device can be factory reset through the Sorama Portal by clicking on the “Reset device” button. Device logs can be downloaded by clicking on the “Download logs” button.



## Downloading Reports:

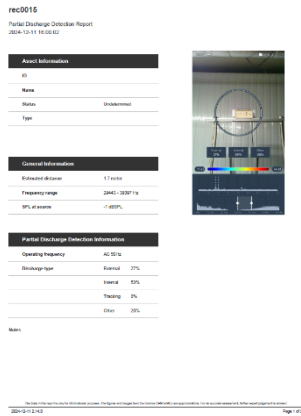
Reports are available for measurements such as Leak Inspection and Partial Discharge Inspection. These reports can also be downloaded over-the-air

1. In the Portal, navigate to the Reports tab  (found in the top left corner, next to the Sorama logo) .
2. Use the checkboxes to select the measurement files you want to download.



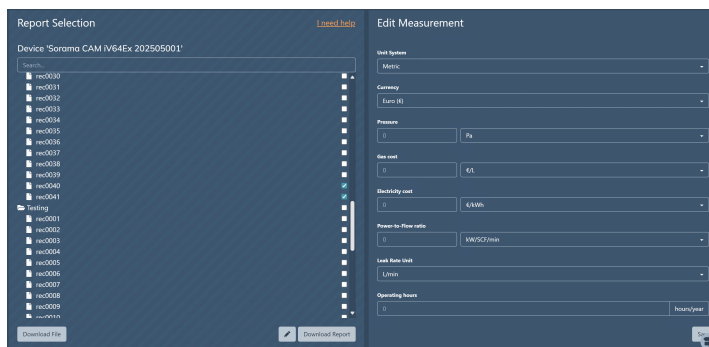
3. Click the “Download File” button in the bottom left corner.

You’ll receive a .zip archive containing the measurement files. These files summarize the measurement results collected from the Sorama CAM iv64Ex. For compatible inspection types, a measurement report will be included.



## Editing reports and generating combined reports

If report details need to be edited after the measurement (e.g. changing the electricity cost or gas type), the Sorama Portal report editing feature can be used.



1. Select one or multiple measurements of the same type (if measurement types are mismatched, report editing or the combined report feature get disabled)
2. Click on the edit icon on the bottom right, next to the "Download Report" button
3. Edit the measurement properties
4. Click the "Save" button in the bottom-right side of the screen.
5. Click on the "Download Report" button. A combined report of the selected measurements will be generated, including the edits

Note: Editing a measurement does not change the files on the camera. Using the "Download file" button will download the original report, excluding the new edits.

# Service

## The Imager

### ⚠ Caution

Avoid contact and protect it from dust or damage.

## The case

Clean with a damp cloth. Do not use abrasives, alcohol, or solvents.

## Acoustic Sensor Care

### ⚠ Caution

While the device is designed to meet IP54 protection against dust and water, clogging of the microphone openings by dust or debris can still degrade acoustic performance. Keeping the sensors free of contaminants helps maintain optimal function.

## Environmental

The product contains electronic components that must be disposed of properly. Contact Sorama for responsible disposal options at end-of-life.

## Service

For Maintenance inquiries, contact Sorama at [helpdesk@sorama.eu](mailto:helpdesk@sorama.eu).

## Specifications

Visit [www.sorama.eu](http://www.sorama.eu) for full technical specifications of the Sorama CAM iV64Ex.