

CRY2624M

Ex Fixed Acoustic Imager

User Manual



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Revision History

Revision Number	Description	Revision Date
1.0	● Initial version	2026/08/11



01 User Notice

Legal Disclaimer

Copyright © 2024 Hangzhou CRY SOUND Electronic Co., Ltd. All rights reserved. This manual, including its text, images, graphics, and other content, is the property of Hangzhou CRY SOUND Electronic Co., Ltd. or other authorized companies. Without written permission, no entity or individual may excerpt, reproduce, translate, or modify this manual in any way. Hangzhou CRY SOUND Electronic Co., Ltd. does not provide any express or implied statements or warranties.

Warranty and Calibration

This product is covered by a free warranty repair service for abnormalities or malfunctions within two years from the date of purchase. The free warranty repair service does not cover issues caused by improper use or accidental damage such as drops. Unauthorized disassembly of the product will void warranty.

In case of malfunctions caused by improper use or accidental damage, we offer repair services at cost price. The device is calibrated during the manufacturing process. We recommend sending the device back to the manufacturer for calibration, testing, and maintenance every two years to ensure optimal performance during prolonged use.

Safety Usage Reminder

To prevent potential fire or personal injury, please note:

1. Please read these safety instructions carefully before using the product.
2. Use the product only for its intended purpose.
3. Do not disassemble the equipment without authorization.
4. If the equipment malfunctions or overheats, stop using it immediately.
5. Please contact the manufacturer for maintenance requirement.
6. Do not place the device near heat sources or open flames, or in high-temperature environments.
7. When installing on a wall or ceiling, make sure the product is securely fastened.
8. Avoid installing the product in a vibration or shock environment, and keep the product away from electromagnetic interference. (Ignoring this may damage the product)
9. Do not directly touch the heat dissipation parts of the product to avoid burns.

10. Please be careful not to bump the explosion-proof surface of the product, so as not to affect the explosion-proof performance.
11. Do not use the product in extremely hot, cold, dusty or high-humidity environments. For specific temperature and humidity requirements, please refer to the product parameter table.
12. The equipment must be stored in a dry environment free of corrosive gases and kept away from direct sunlight.
13. Avoid aiming the lens at strong light (such as lighting, sunlight, or laser beams, etc.), otherwise the image sensor will be damaged.
14. Avoid heat buildup and keep the area around the product well ventilated..
15. Do not touch the image sensor directly, and if cleaning is necessary, to prevent static buildup, wipe the surface with a damp cloth or other substitutes that are soft enough to gently remove dust.
16. Do not use corrosive solvents or strong abrasive cleaners; otherwise, they may damage the product surface or impair its performance.
17. Equipment connected to the Internet may be exposed to cybersecurity risks. Please strengthen the protection of personal information and data security. When you find that the device may have network security risks, please contact us in time.

Explosion-proof Installation and Safety Requirements

To ensure safe operation of the explosion-proof product in hazardous areas, please strictly follow the requirements below:

1. This product is certified according to ATEX and IECEx explosion-proof requirements, with ATEX certificate No. TÜV 24 ATEX 9198 X and IECEx certificate No. IECEx TUR 24.0078X, and the explosion-proof markings are II 3 G Ex ec ic IIC T4 Gc and II 3 D Ex tc IIIC T95°C Dc for ATEX, and Ex ec ic IIC T4 Gc and Ex tc IIIC T95°C Dc for IECEx.
2. The equipment is intended for use in hazardous areas including Zone 2 environments with Gas Group IIC and Zone 22 environments with Dust Group IIIC, and the permitted ambient temperature range is from -20°C to +60°C.
3. The equipment shall be powered by a DC power supply within the rated voltage range of 12VDC to 20VDC, and the rated power consumption of the equipment is 7W.
4. The external cable connections of the equipment shall be protected by an appropriate Ex-certified protection method, and the installation shall comply with the requirements of IEC 60079-14 and EN 60079-14.

5. The equipment is equipped with an external cable with a diameter of 5.5mm, and an Ex-certified cable gland suitable for 5.5mm diameter cables shall be used to maintain the IP66 protection level.
6. Under explosive dust conditions, the enclosure of the equipment may generate an ignition-capable level of electrostatic charge, therefore the equipment shall not be installed in locations where external conditions may cause electrostatic charge accumulation on the enclosure surface.
7. The equipment shall only be cleaned with a damp cloth, and cleaning methods or materials that may generate electrostatic charges shall not be used.
8. The equipment shall only be installed and used in environments with at least Pollution Degree 2 as defined in IEC 60664-1.
9. Appropriate transient voltage protection shall be provided for the equipment, and the transient protection level shall not exceed 140% of the peak rated voltage value at the equipment supply terminals.
10. The power supply shall be disconnected before performing installation, maintenance, wiring operations, or replacement of external connections to ensure that the equipment is in a safe condition.
11. Unauthorized modification, disassembly, or replacement of internal components may affect the explosion-proof performance of the equipment and is strictly prohibited.

02 Introduction

The CRY2624M Ex Fixed Acoustic Imager is a network-enabled fixed monitoring system designed for 24/7 acoustic surveillance in hazardous industrial environments. It employs a 128-channel MEMS microphone array and acoustic beamforming technology to capture acoustic signals across a frequency range of 2 kHz to 48 kHz and visualize sound-source distribution in real time.

An integrated 8-megapixel camera with a 62° field of view overlays acoustic imaging results on live video, enabling intuitive localization of gas and vacuum leaks as well as partial discharge (PD) sources. The system also supports PD type recognition and real-time fault alerts, providing useful information for evaluating the insulation condition in high-voltage equipment and monitoring critical assets. Its sound pressure level test range is 28 to 120 dBA, with a specified test distance of 0.5 to 50 m.

The device is ATEX- and IECEx-certified and carries the Ex markings II 3 G Ex ec ic IIC T4 Gc and II 3 D Ex tc IIIC T95°C Dc. With an IP66 rating and an operating range of -20°C to +60°C at 10% to 95% relative humidity, non-condensing, the CRY2624M is suitable for petrochemical facilities, power plants, coal-to-chemicals facilities, natural gas pipelines, and other demanding industrial sites. RJ45 connectivity, 8 GB of internal storage, a web-based platform, and support for RESTful, WebSocket, RPC, RTSP, RTMP, and WebRTC enable remote monitoring, live video transmission, and integration with industrial monitoring systems, robotic dogs, and wheeled robots.

03 Glossary

Sound Pressure Level (SPL)

The device measures the amplitude of the sound source using sound pressure level (SPL), which is a physical quantity that represents the magnitude of a sound wave. SPL is expressed in decibels (dB) and is referenced to a standard sound pressure level in air. It is commonly denoted as dB SPL when used for representation.

Audible Domain

The frequency range of sound that can be perceived by human ears generally refers to the sound in the frequency band of 20Hz-20KHz.

Ultrasonic

Ultrasound generally refers to frequencies above 20 kHz, which are beyond the range of human hearing.

Sound Image

It refers to the two-dimensional data table representing the intensity distribution of sound sources in space, after the signals collected by the microphone array are processed by the algorithm.

Palette

The color data used in the color mapping of a sound image.

Sound Cloud Image

The sound pressure level data of each resolution point on the sound image is mapped to a certain color number on the palette, according to a certain conversion formula to form a color image. Then it is fused with the visible image to form a sound cloud image.

Test Frequency Range

When a frequency range is selected within the full frequency range supported by the device, the device will only measure and display a sound cloud image that is within this frequency range. Sound outside this frequency range will not be displayed.

Frequency Peak

A peak in the spectrum denotes a strong sound energy distribution at this frequency.

Dynamic Range

The scale of the intensity of the sound source that can be shown on the sound cloud image.

Field of View

An angle formed by the camera and the two diagonal points of the rectangular picture captured by it.

For a sound cloud image, it is an angle formed by the microphone array and the two diagonal points of the rectangular sound image.

ADS

Acoustic Data Server——Acoustic Imaging Intelligent Data Server

ACS

Acoustic Compute Server —— Acoustic imaging intelligent computing Server.

04 Product and Accessories

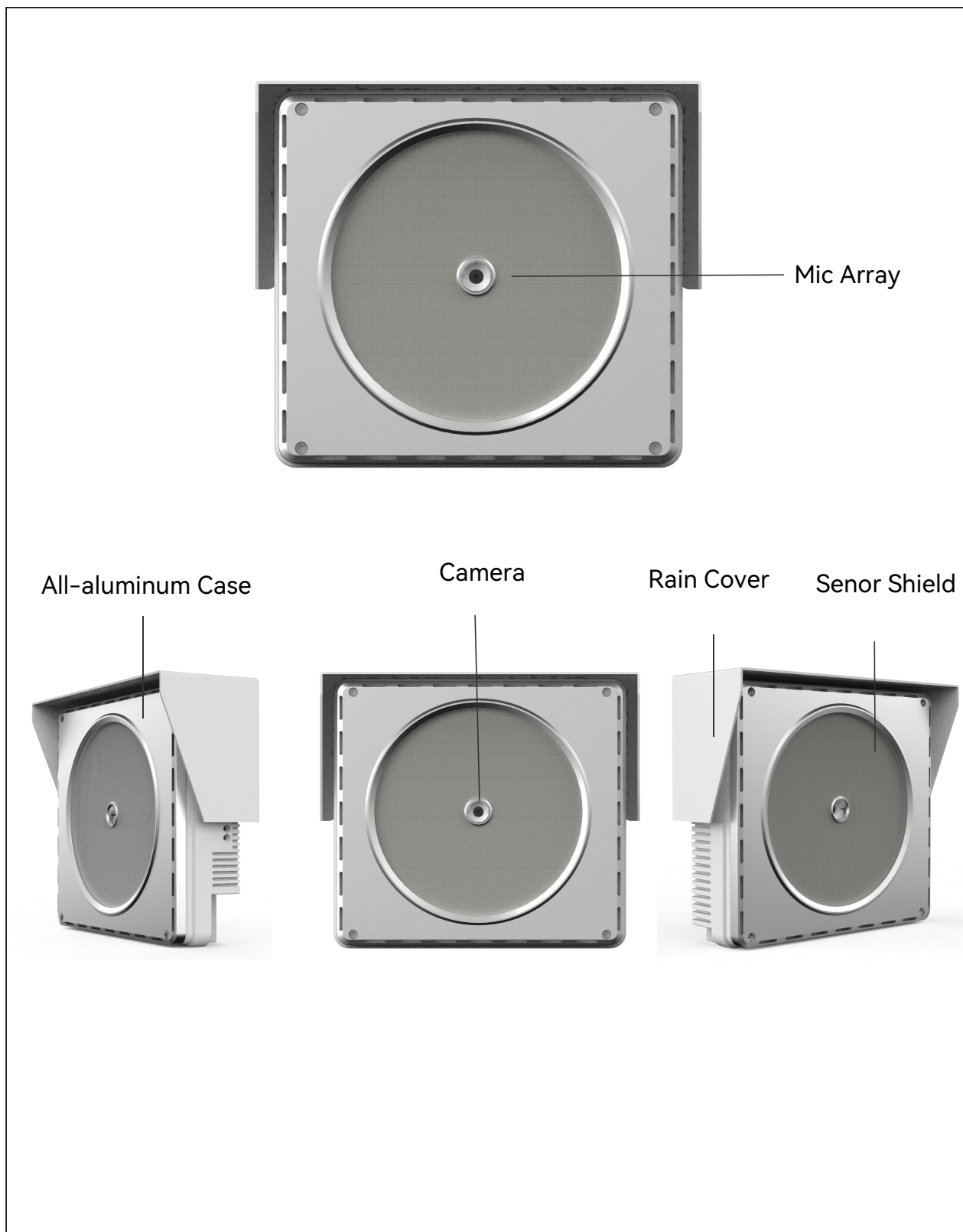
4.1 Product Accessory List

Item Numbers	Name	Model
1	Ex Fixed Acoustic Imager	CRY2624M

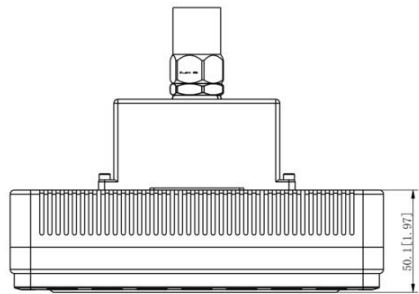
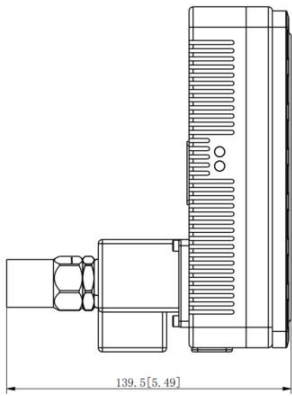
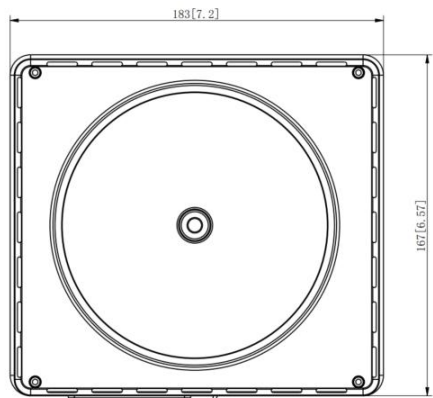


05 Product Instruction

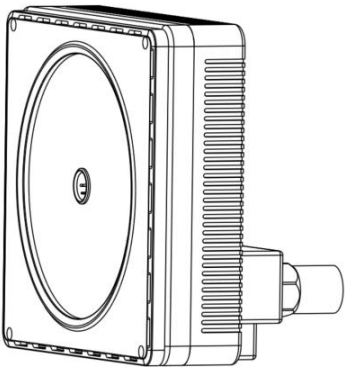
5.1 Appearance



5.2 Dimension



mm[inch]



06 Monitoring Platform Software

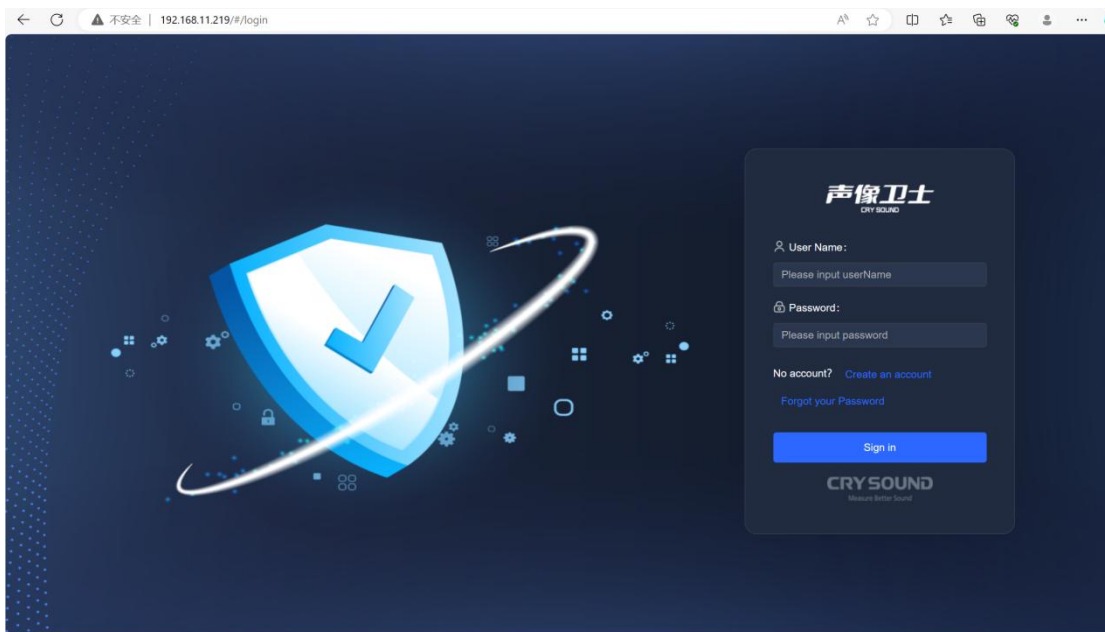
6.1 Monitor Platform Access

It is recommended to use the Google Chrome (kernel version ≥ 72.0) browser, while supporting other major browsers such as Firefox and Edge.

6.2 Network Configuration Instructions

First-time setup

-Step 1: Make sure your PC and device are on the same network. Open a browser and type in the address bar: `http://ip/` or `http://ip:80`, where IP is the IP address of the device, open the following interface:



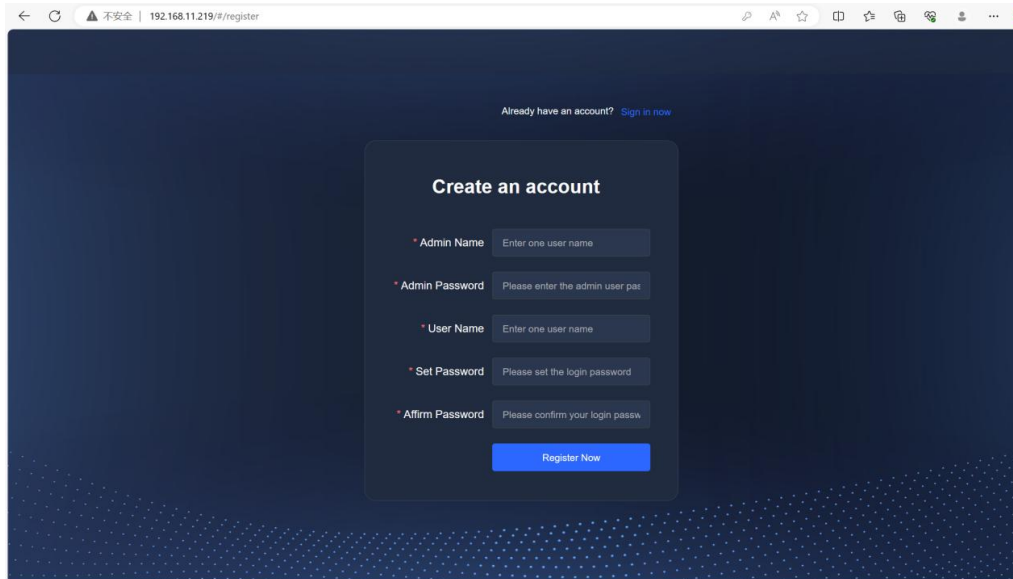
-Step 2: Log in to your account. Enter the username and password (default user admin, password crysound) to access the Fixed Acoustic imager device.

The web interface of this device uses HTTP communication for local network access. To ensure secure operation, access the device only through a trusted and isolated local network, and do not expose the web interface directly to the public Internet or untrusted networks.

For improved security, users are recommended to change the default password after the first login and configure appropriate network protection measures according to the application environment.

Create a new user

-Step 1: Click Create Account to open the following interface.



Already have an account? [Sign in now](#)

Create an account

* Admin Name

* Admin Password

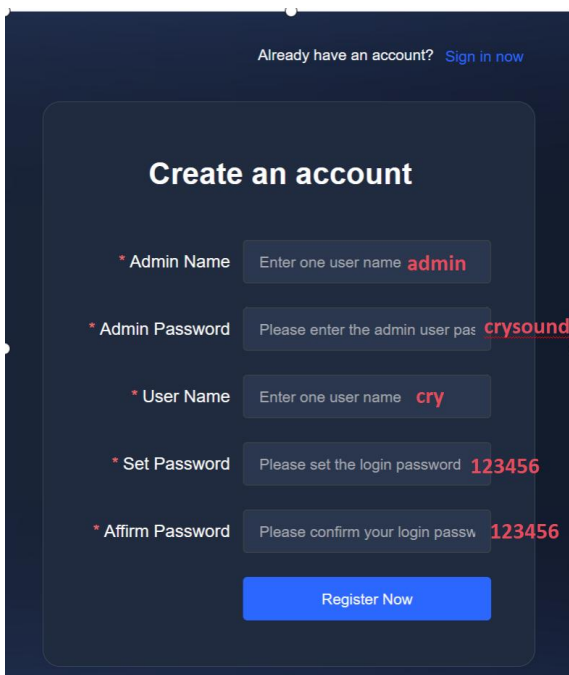
* User Name

* Set Password

* Affirm Password

[Register Now](#)

Note: To create a new user, you need to use the admin user for authentication, as shown in the figure below:



Already have an account? [Sign in now](#)

Create an account

* Admin Name

* Admin Password

* User Name

* Set Password

* Affirm Password

[Register Now](#)

Reset or change password

Note: To change the password, you need to use the admin user to authenticate. It is recommended not to change the password of the admin user. The relevant interface is shown below::

Change Password

Please enter the admin username **admin**

Please enter the admin user password **crysound**

Enter one user name **cry**

Please enter a new password **cry123456**

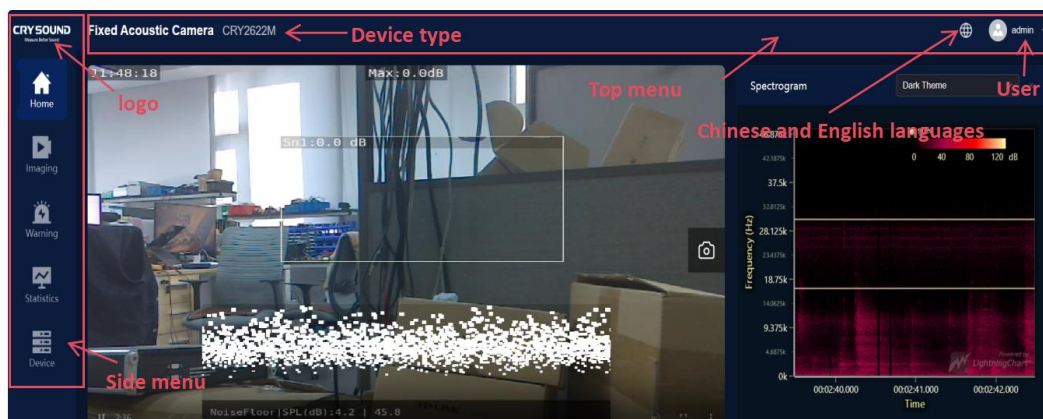
Please confirm the new password **cry123456**

Cancel

Modify Now

6.3 Detailed Function Description

Menu bar



-Side menu bar: The side menu bar allows users to navigate between pages, and the top is the company logo icon. There are five main interfaces: Home, Imaging Configuration, Alarm Configuration, Statistics Playback, and Device Configuration.

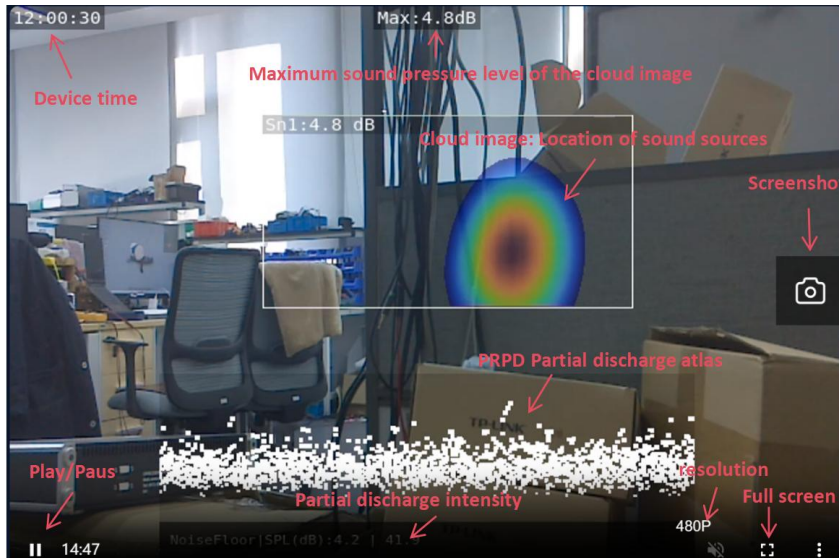
-Top menu bar:

The top menu bar displays the current device type;

Language switching: Support Chinese and English;

User: Displays the currently logged in user, click to opt out of login.

Video Preview



The video playback window is shown above:

Screenshot: The browser takes a screenshot of the current screen and saves it as an image;

Resolution: Read-only image size that displays the current video frame;

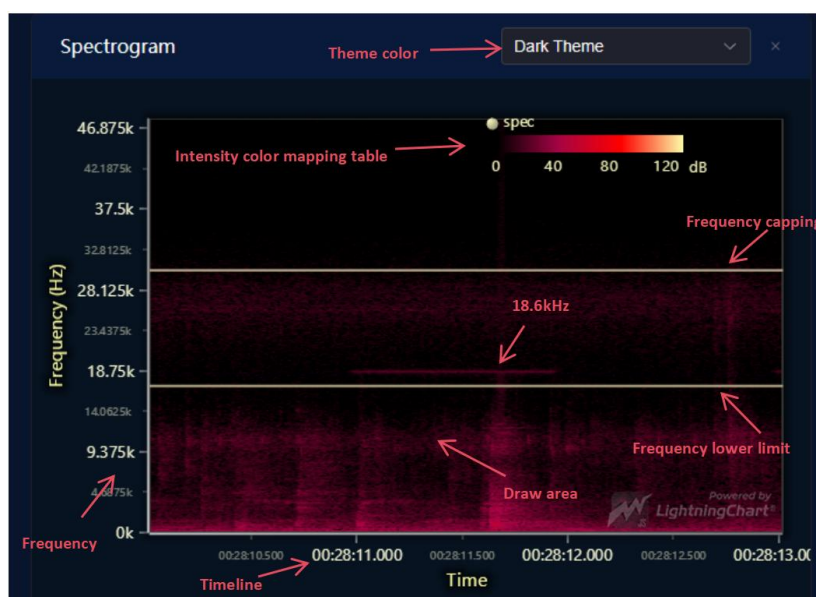
Full screen: The browser plays the video in full screen;

Start/Pause: Start or pause the video playback; Device time, Sound Image, Maximum

Sound Pressure Level of Sound Image and PRPD Graph: The image is fused for the video cloud image, which cannot be separated from the original video picture;

Floating window: When the video window is blocked by sliding up or down on the page, a floating window of live video is automatically generated at the bottom right of the interface.

Spectrogram



The spectral chart shows the effect above:

Spectrogram: The abscissa is the time, the ordinate is the frequency, and the coordinate point value is the acoustic signal energy. The use of two-dimensional planes to express three-dimensional information is to reflect the magnitude of energy values through color;

Theme Color: Toggles the spectrum map display color;

Intensity Color Mapping bar: Indicates the relationship between energy intensity and drawing color;

Upper/Lower Frequency Limit: Indicates the frequency range of the sound monitored by the sound and Image Defender device, with units of Hz;

18.6kHz: Indicates that the currently monitored sound source frequency is 18.6kHz;

Plotting Area: Plotting a two-dimensional plane of sound energy data for a certain period of time;

Frequency Axis: The vertical axis, which indicates the frequency, ranges from 0-48kHz;

Time Axis: Horizontal axis, indicating the time, in s.

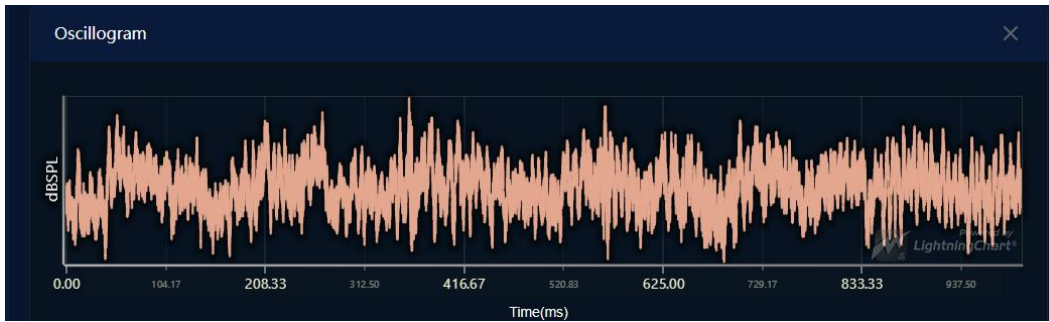
Waveform graph



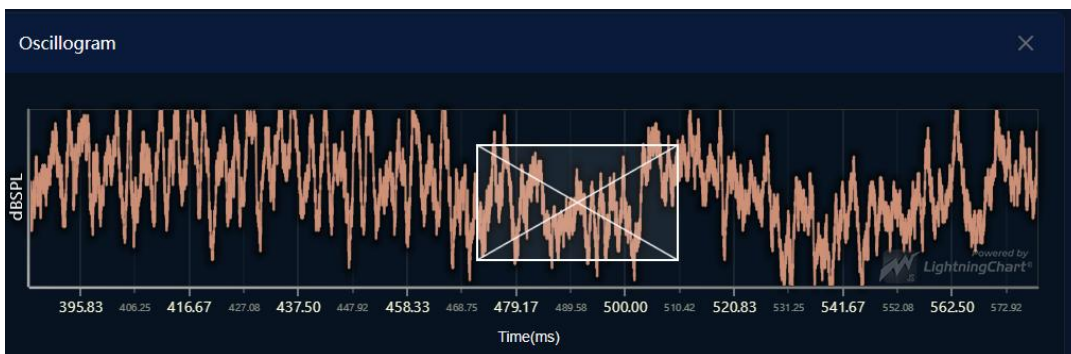
The waveform chart operation is as follows:

Specific data display: Hover the pointer over the waveform to display the value at that position;

Zooming: Place the mouse over the horizontal or vertical axis, slide the scroll wheel to zoom, or use the left mouse button to zoom in on the selected rectangular area (from left to right), as shown in the following figure:



Restore: Draw a rectangular area (right-to-left) with the left mouse button to restore the original display effect, as shown in the following figure:



FFT



FFT: The frequency-amplitude curve calculated from short-time Fourier transform of the raw audio data;

Intensity: The vertical axis, which represents the intensity, in dB SPL;

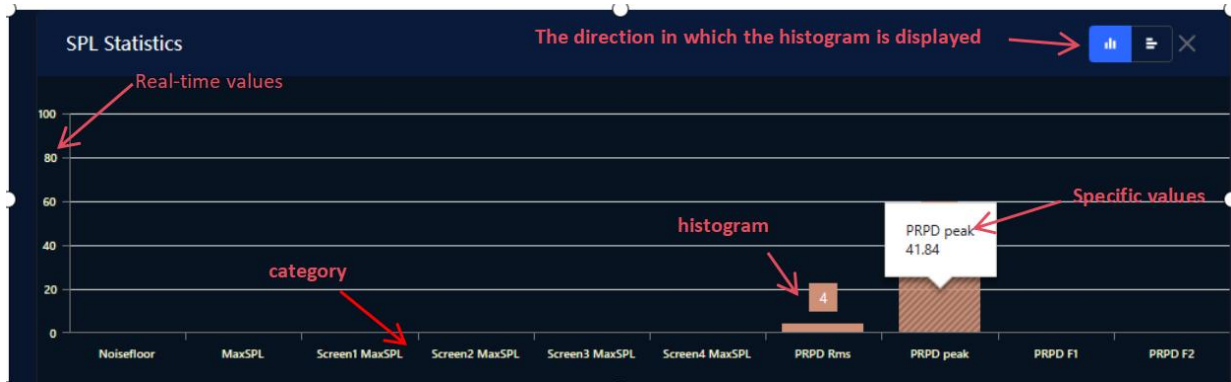
Frequency: Horizontal axis, range 0-48kHz;

Axis type: Divided into linear axis and logarithmic axis, click to switch;

18.6kHz: The currently detected source frequency spike;

Zooming in/out, resetting the view, and numerical value display are the same operations as in the waveform graph.

SPL Histogram



Category: Horizontal axis, column chart showing item categories;

Real-time value: Vertical axis;

Specific value: The mouse is placed on the bar and the corresponding bar value is displayed;

Orientation of histogram bars: The orientation of the histogram bars can be switched between vertical and horizontal.

Alarm Statistics Chart



Event name: The horizontal axis represents the name of the counted event, corresponding to the alarm policy name;

Statistics value: The vertical axis, which represents the number of events that have occurred;

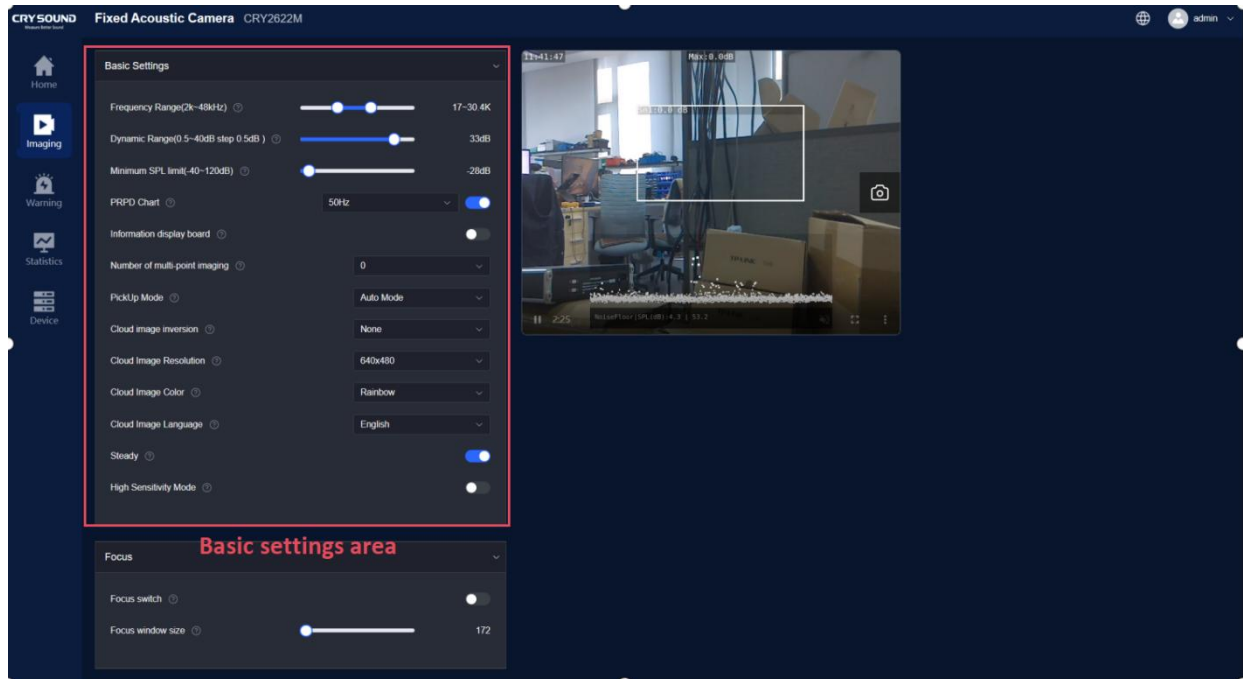
Orientation of histogram bars: You can switch the column chart in landscape and portrait orientation;

Event scope: Query the number of events within the specified time range, and if no date is specified, the default query is the current day;

Specific value: Displays the specific statistics of the event when the mouse is placed.

6.4 Imaging Configuration

Basic settings



Frequency Range: Set the frequency range of the sound in the environment picked up by the microphone array. The selectable frequency range is 2-48 kHz. The minimum bandwidth between the lower and upper frequency limits is 2 kHz.

Dynamic Range: Set the dynamic range of the energy cloud display, ranging from 0.5-12dB.

Minimum Sound Pressure Level Limit: Set the minimum sound pressure level limit of the device, which can be set to a value between -40-120dB.

PRPD Spectrum: The power version allows you to choose a power frequency of 50Hz or 60Hz. The toggle button indicates whether to enable the PRPD spectrum and PRPD data transmission.

Information Display Board: When enabled, the information display board is shown in the upper right corner of the video image.

Cloud Map Flip: Set the video image flip state: none, horizontal flip, vertical flip, or 180°flip.

Cloud Map Resolution: Display the current resolution setting. The device supports three resolutions: 480P(640x480), 720P (1280x720), and 1080P (1920x1080). To set a new resolution, the device needs to be restarted to take effect.

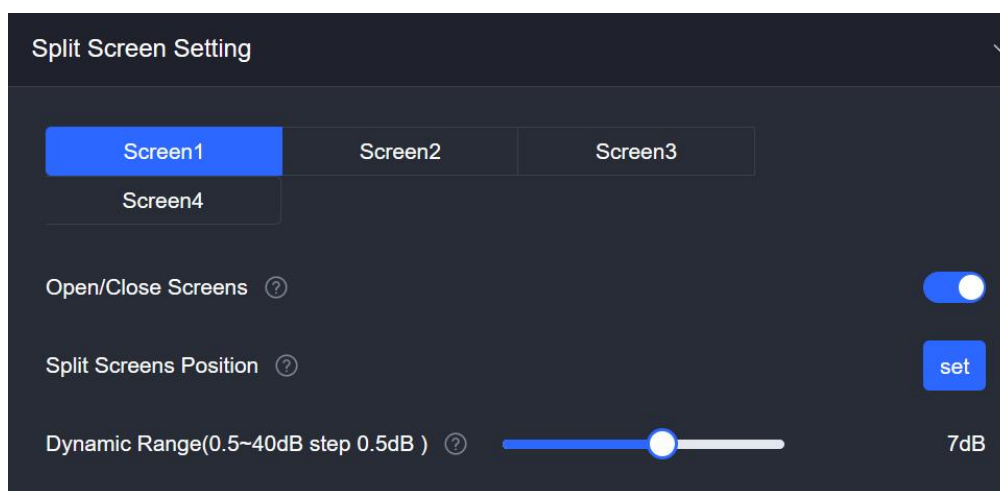
Cloud Map Language: The language of the font displayed in the video image, supporting both Chinese and English.

Cloud Map Color: Set the color of the cloud map. There are three colors to choose from: rainbow, iron red, and grayscale.

Steady State Mode: Enable/disable the energy cloud map steady state mode.

High Sensitivity Mode: Enables or disables high-sensitivity mode.

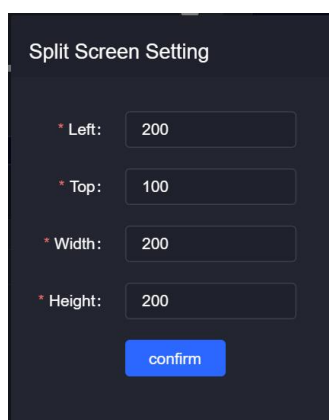
Split Screen Settings



Select a split-screen region. In the example shown, Split Screen 1 is selected.

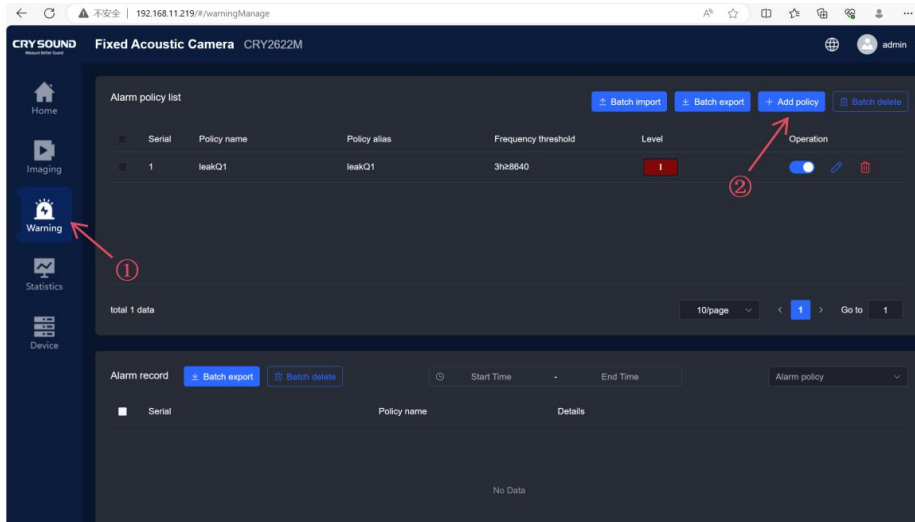
Enable/disable Split Screen: Toggle the Split Screen on/off.

Split Screen Position: Left - the distance from the left side of the image, Top - the distance from the top of the image, Width - the width of the Split Screen rectangle, Height - the height of the Split Screen rectangle. The following is an example input:

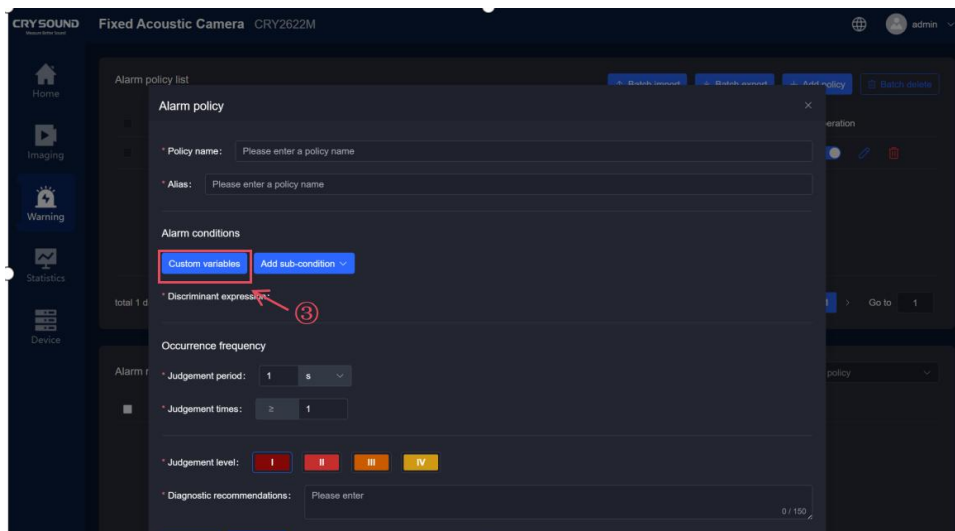


6.5 Alarm Configuration

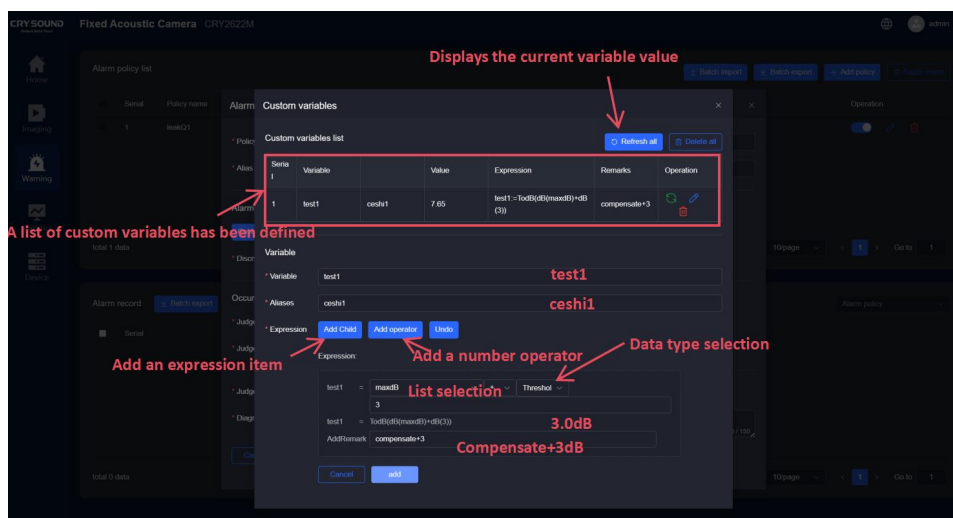
Custom Variable Settings



Click 1 and 2 in sequence to open the "Add Policy" interface.



Click on 3 to open the "Custom Variables" interface, as shown below:



The upper section of the page displays the list of custom variables.

Custom variable list: Displays the custom variables that have already been added.

Refresh button: Refreshes the real-time value of the current variable.

Edit button: Edits the current variable.

Delete button: Deletes the current variable.

Refresh all: Refreshes the real-time values of all custom variables in the list.

Delete all: Deletes all variables in the list. The upper part of the page is the custom variable list display area;

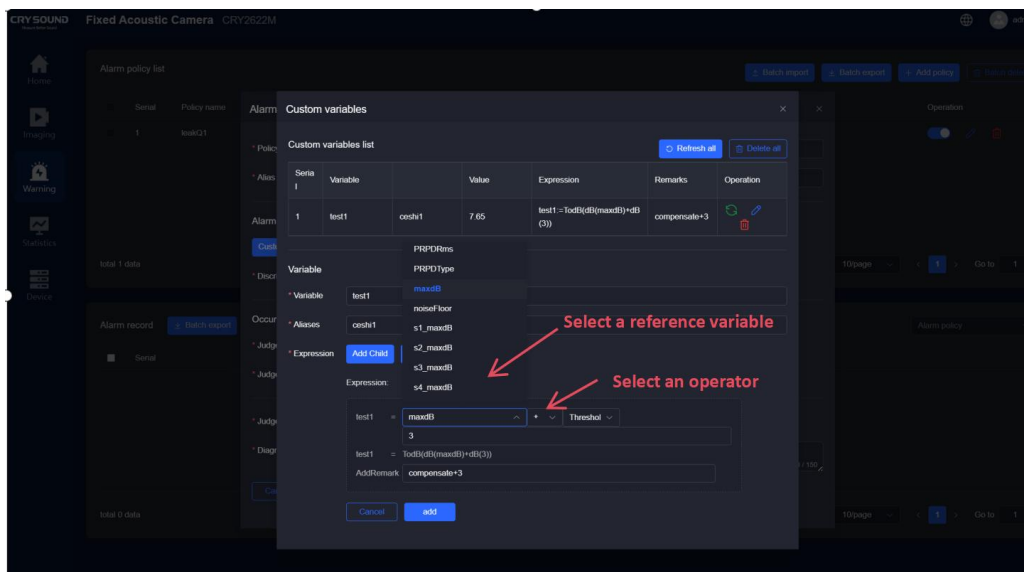
Below is the area for editing custom variables. To add or edit a custom variable, follow these steps:

1. Enter a variable name

2. Enter the display alias

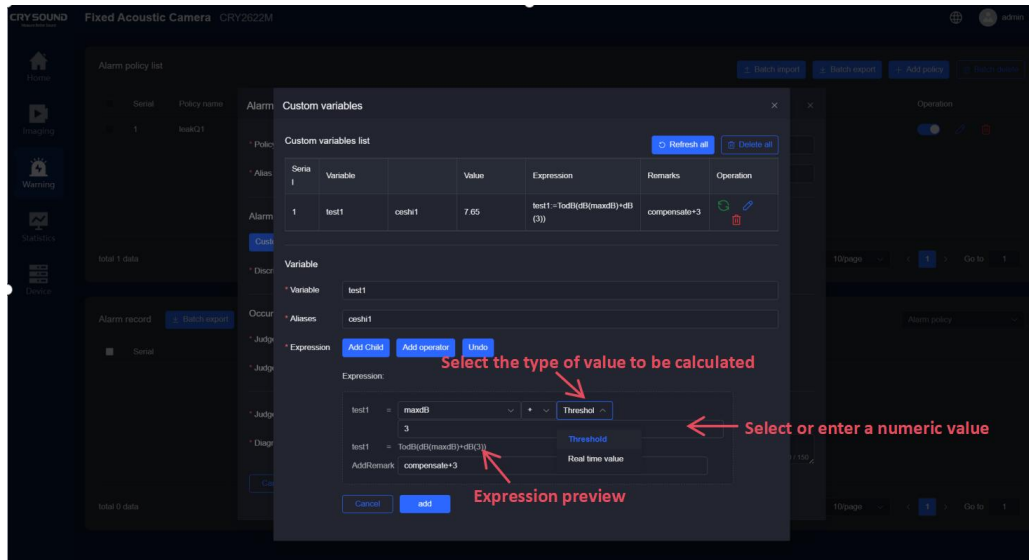
3. Create an expression

3.1. Select the reference variable and operator symbol, as shown in the following figure:



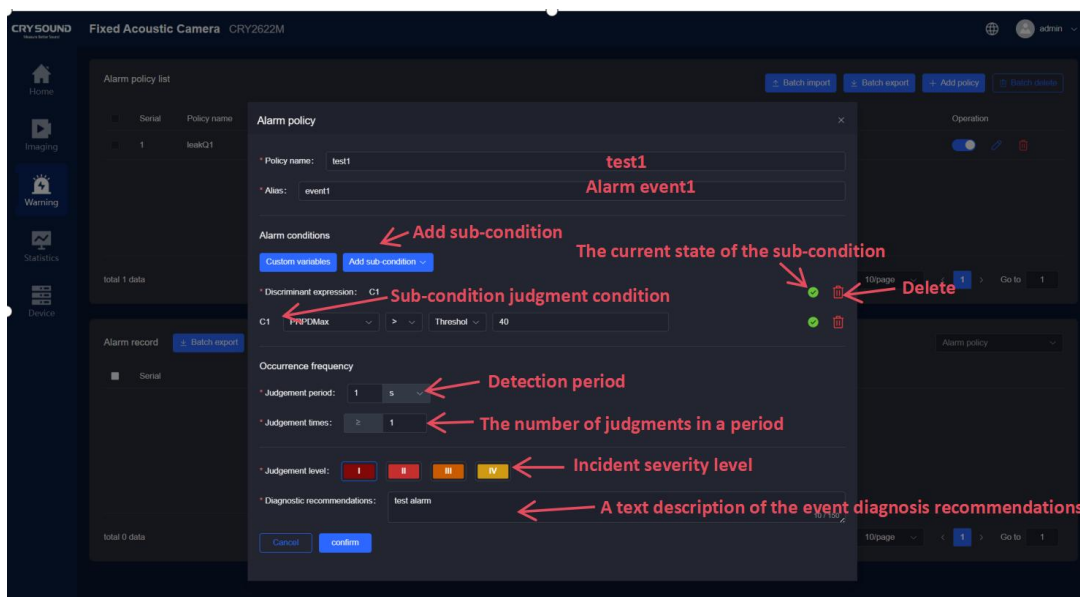
3.2. Select the type of value to be calculated, which is divided into two types:

real-time value and threshold, where the real-time value is the reference variable in 3.1 above, and the threshold value is the manually entered value, as shown in the following figure:



3.3. Preview the expression of the custom variable, where dB(x) means that the unit of the current variable x is dB, and TodB(y) means that the output value of the current variable y is in dB.

Custom Event Configuration



To add or edit an alert policy, perform the following steps:

1. Enter a policy name and policy display alias;
2. Set the alarm condition, that is, the judgment expression;
 - 2.1. Click Add subcondition to add a subcondition: named C1, C2, C3...;
 - 2.2. There are two types of subconditions, as follows C1 is the relative value comparison condition, C2 is the absolute value comparison condition, and the logical relationship between C1 and C2 is determined, and the current is and:

* Discriminant expression: C1 AND C2

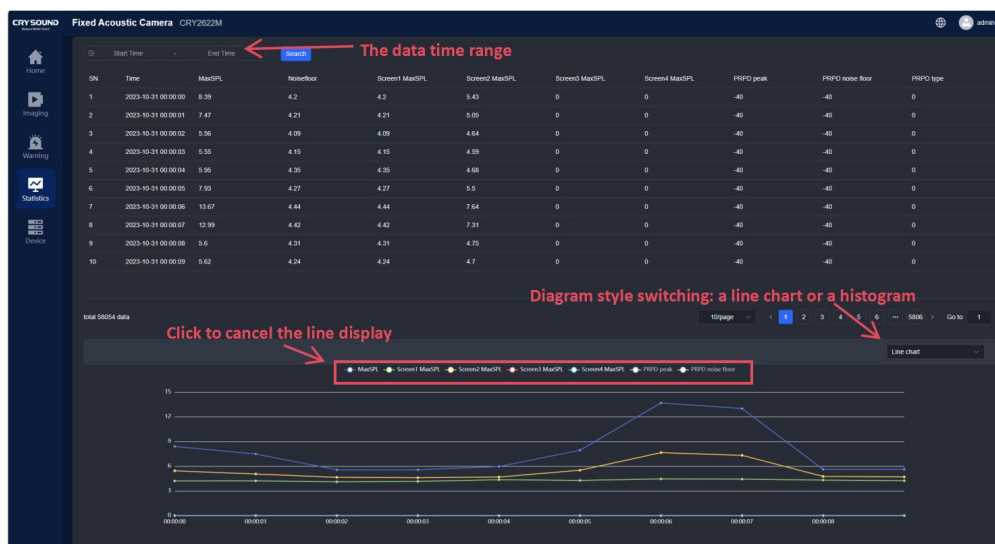
C1 PRPDMax > Threshold 40

C2 Select + Real time Select > 2 Select

- 2.3. Fill in the C1 and C2 contents, select and fill in in the order;
- 2.4. The current status of the subcondition determines whether the current setting determines whether the rule is established, and this step is only indicative;
3. Set the frequency, if it exceeds 1 time within 1 minute, the event will be triggered;
4. The preset severity level of the alarm is I., II., III., and IV. from high to low;
5. Enter diagnostic recommendations;
6. Click Confirm to finish adding or modifying the policy.

6.6 Statistical Playback

Overall Preview

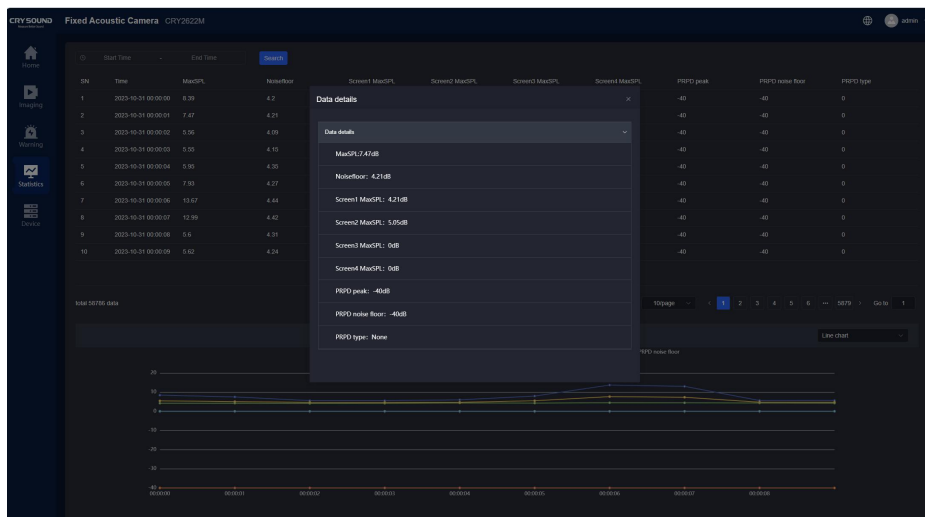


The statistics playback page mainly queries the historical monitoring data of the device, and queries the data of the current day when the time period is not specified.

The figure below can be switched to a line chart or a column chart by clicking on the chart style.

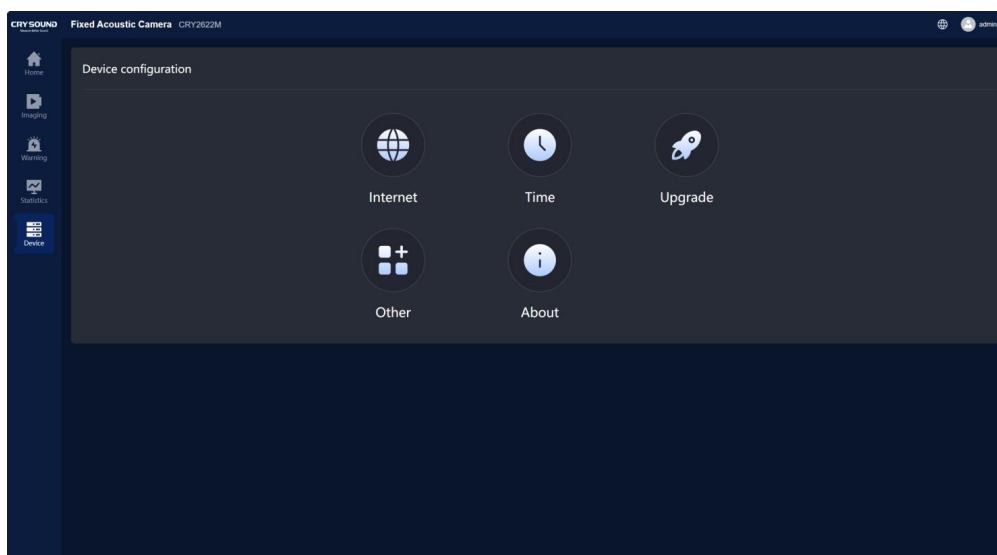
The plot displays all curves by default, and you can click the legend to cancel the display, as shown above: only the three polylines of the maximum sound pressure level of the cloud map, the screen1 maxSPL, and the screen2 maxSPL are displayed.

Data details



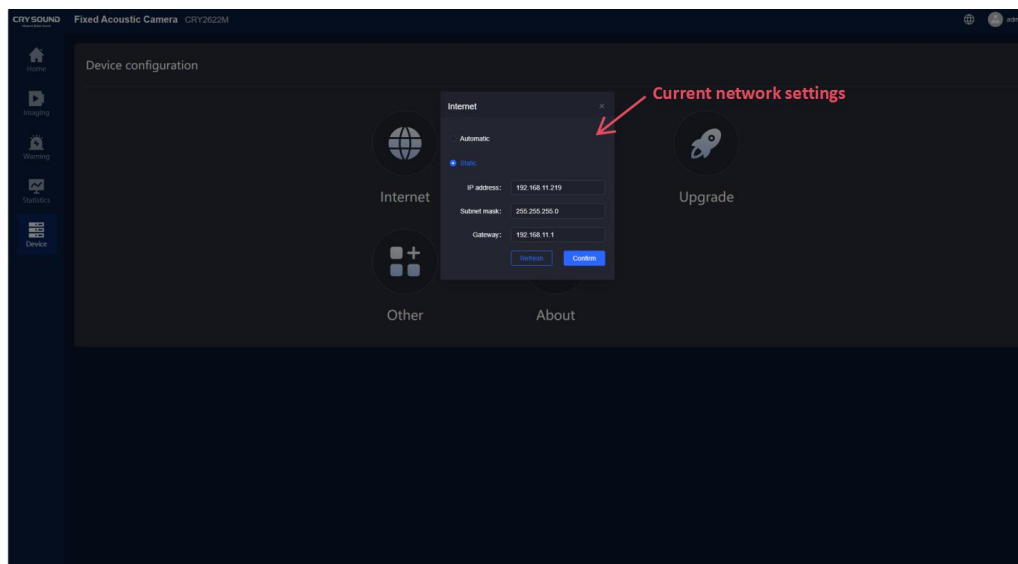
Click each piece of data to view the details of the corresponding entry.

6.7 Device Configuration



The device configuration is mainly divided into the following five parts: Network, Time, Firmware Upgrade, Other, About.

Network Settings

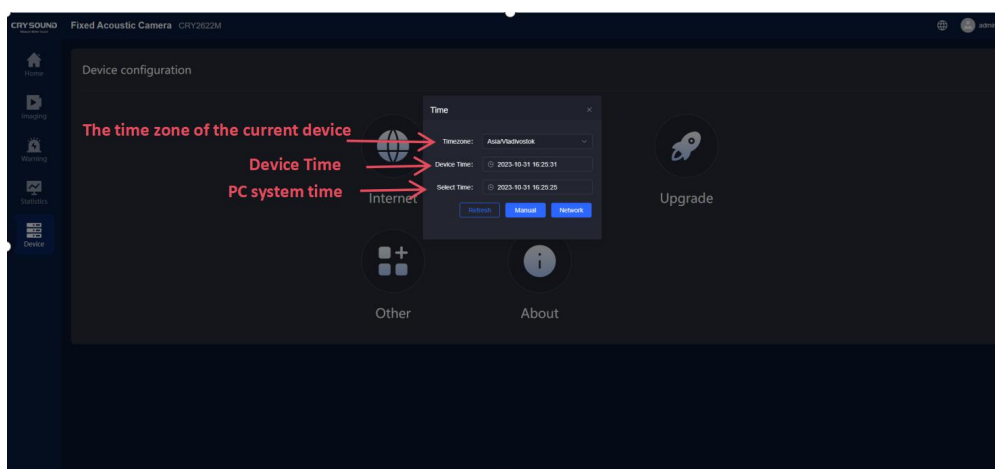


The network can be set to automatically obtain IP address mode (O) or use the following IP address pattern (P). As shown in the figure P static address mode, the current network configuration is displayed by default when the window is opened.

To modify the network settings, click or enter the corresponding network settings parameters and click the Confirm Modification button.

Note: It is recommended that you restart the device after modifying the network configuration to avoid the network settings not taking effect.

Time settings



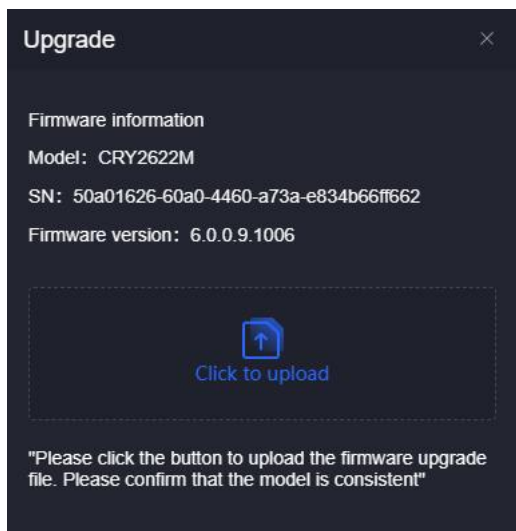
On the time setting interface, the three display boxes are: Current device time zone, current device time, PC system time.

Manual Calibration Time: Set the time manually. Select the time zone, set the target time in the "Select Time" column, and click "Manual Calibration Time" to apply the currently selected time zone and time to the device.

Network timekeeping: Click directly to calibrate the network time, and when the device is connected to the Internet, the network timing can be successfully performed.

Note: When the device is connected to the Internet, the device will automatically calibrate, and the manual calibration time will not take effect.

Firmware Upgrade



Click the "Click to upload" icon to select the firmware update file and upload it.

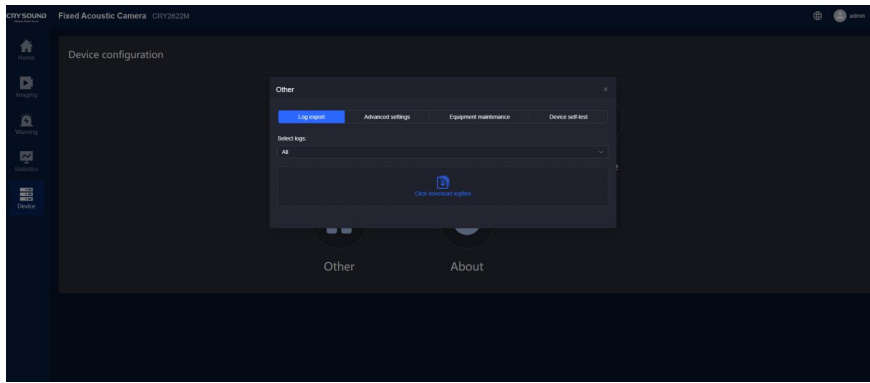
After the upload is complete, the Confirm Upgrade dialog box appears.

Confirmation: The device is upgraded and automatically restarts after 3 seconds.

Cancel: Delete the uploaded upgrade package and abandon the upgrade process.

Other settings

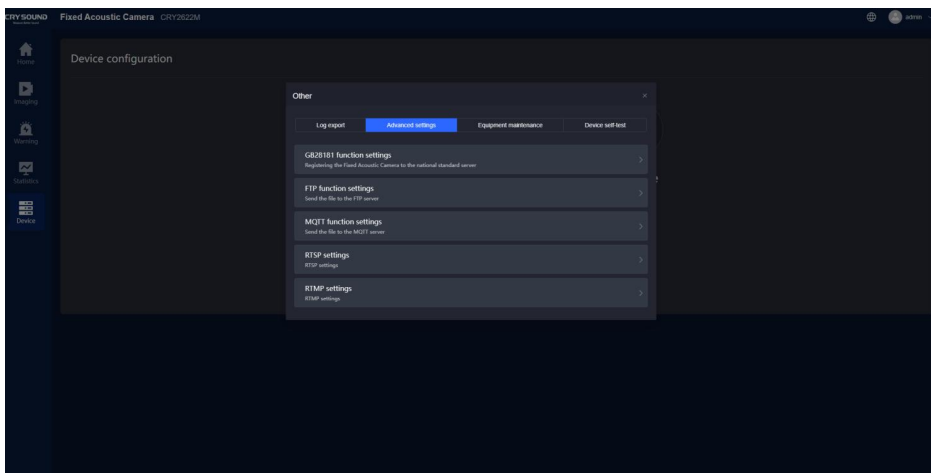
Log Export



Log export process:

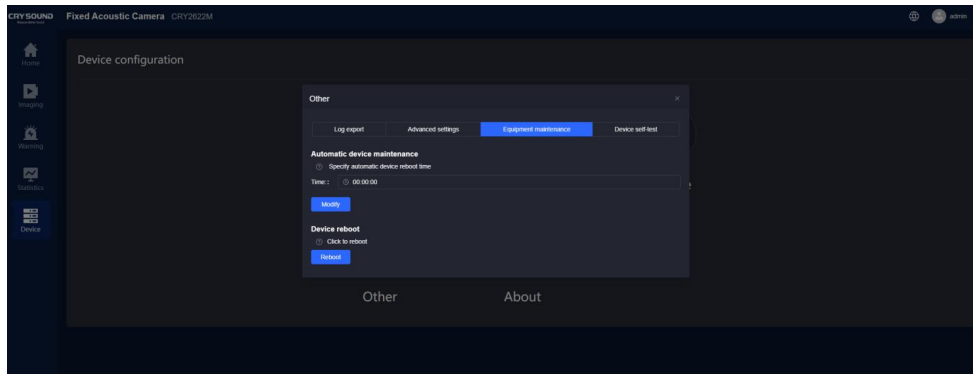
- 1.1. Click Select Log to select All Logs or Today's Logs;
- 1.2. Click the "Click to download log file" icon, the current log can be directly opened and previewed in the browser; All logs are compressed into a zip archive for download.

Advanced Settings



Advanced settings are mainly other uncommon functions supported by the device, including: GB28181 settings, FTP settings, MQTT settings, RTSP settings, and RTMP settings.

Equipment Maintenance

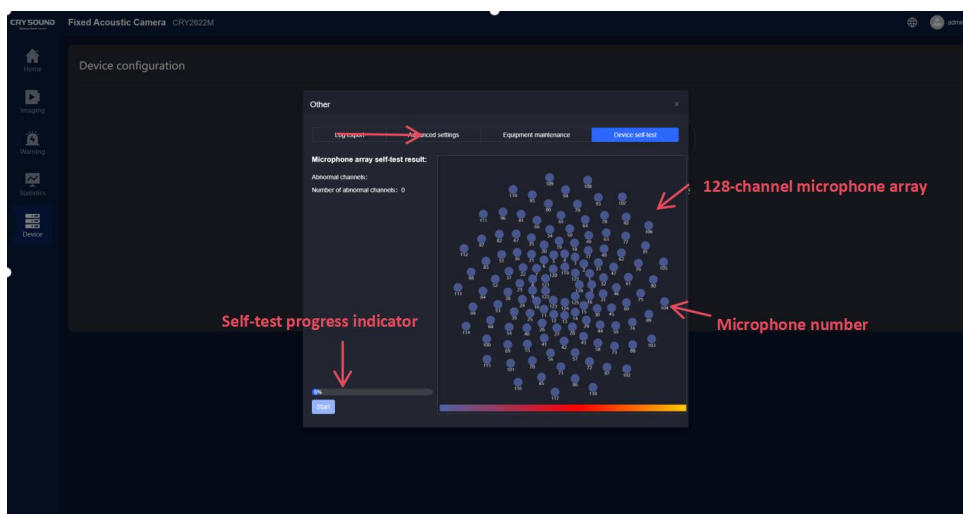


Set the daily scheduled restart time of the current device to 00:00:00 as shown in the figure.

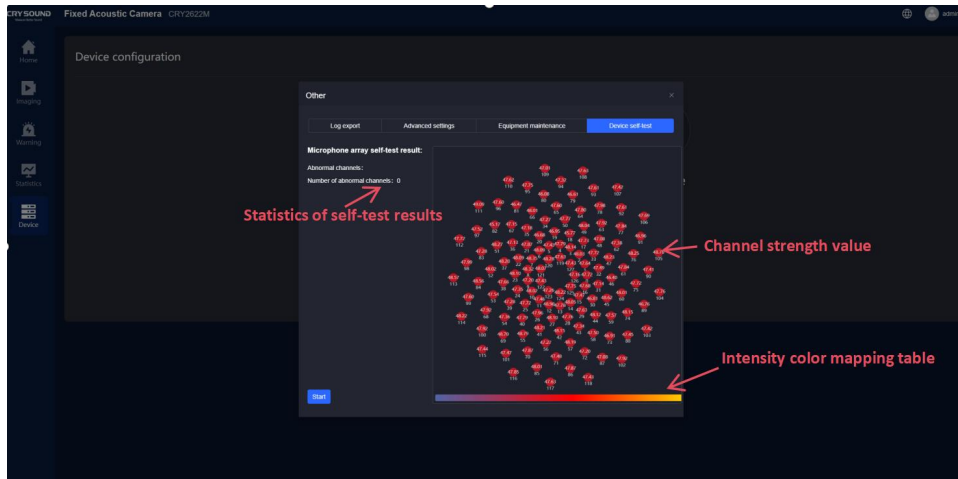
Click the Restart button to confirm the completion of the device restart.

Device Self-test

The figure below shows the AVS self-test page, with a schematic diagram of the relative position of the device's microphone array to each channel in the middle of the page, and the number of each microphone channel below:



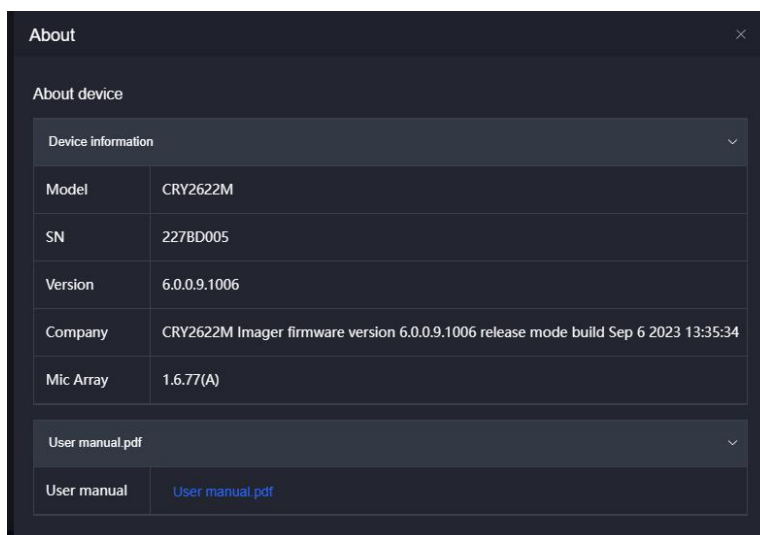
Click the Start Self-Test button to display a self-test process progress bar above the Start Self-Test button. The self-test process takes 90-120s.



After the self-test is completed, each channel displays its sound intensity value in dBSpl, and the channel color corresponds to the color map bar below. The color bar is 0–120dB from left to right.

The left side of the page shows the statistical self-test results, as shown in the figure above, the current 128-channel self-test has all passed.

About



This page displays basic information about the device and provides access to the Fixed acoustic imager user manual.

6.8 Important Note

1. It is recommended to restart the device after setting up the network.

2. After the device restarts, you need to manually refresh the page.
3. The video on the Home and Imaging Configuration pages may take 5-6 s to load.
4. If the device behaves abnormally, we recommend that you restart the device and wait 2 minutes to refresh the webpage.
5. The same device can be accessed simultaneously through multiple browser sessions, and there is currently no limit on the number of concurrent sessions

07 Usage Tips

7.1 Capturing Sound Source

Observe the frequency spectrum graph for any prominent signals or peaks. If such signals exist, adjust the frequency band to encompass the frequency range where the prominent signal or peak is located. Then, observe if any sound sources appear in the display.

Try adjusting the dynamic range to relatively larger values. This allows the device to capture multiple sound sources with similar sound pressure levels simultaneously. In scenarios where there are significant differences in sound pressure levels among multiple sound sources in the display, smaller dynamic range parameters may result in larger sound sources overshadowing smaller ones.

7.2 Eliminating Reflection Interference

If you are not unsure whether the sound cloud image in the display is the actual source or a reflected virtual image, you can try capturing the sound source from different angles. If the sound source is captured from multiple angles, it is likely the actual source location. Reflected sound sources may exhibit position shifts or even disappear at different angles.

7.3 Eliminating Interference Noise

Low-frequency ranges are susceptible to environmental noise interference.

Depending on the characteristics of the sound source, it's advisable to use the mid to high-frequency ranges to pinpoint the location of the sound source effectively.

Select a relatively narrow frequency band for locating the sound source. This helps to eliminate interference noise from other frequency bands.

08 Contact Us

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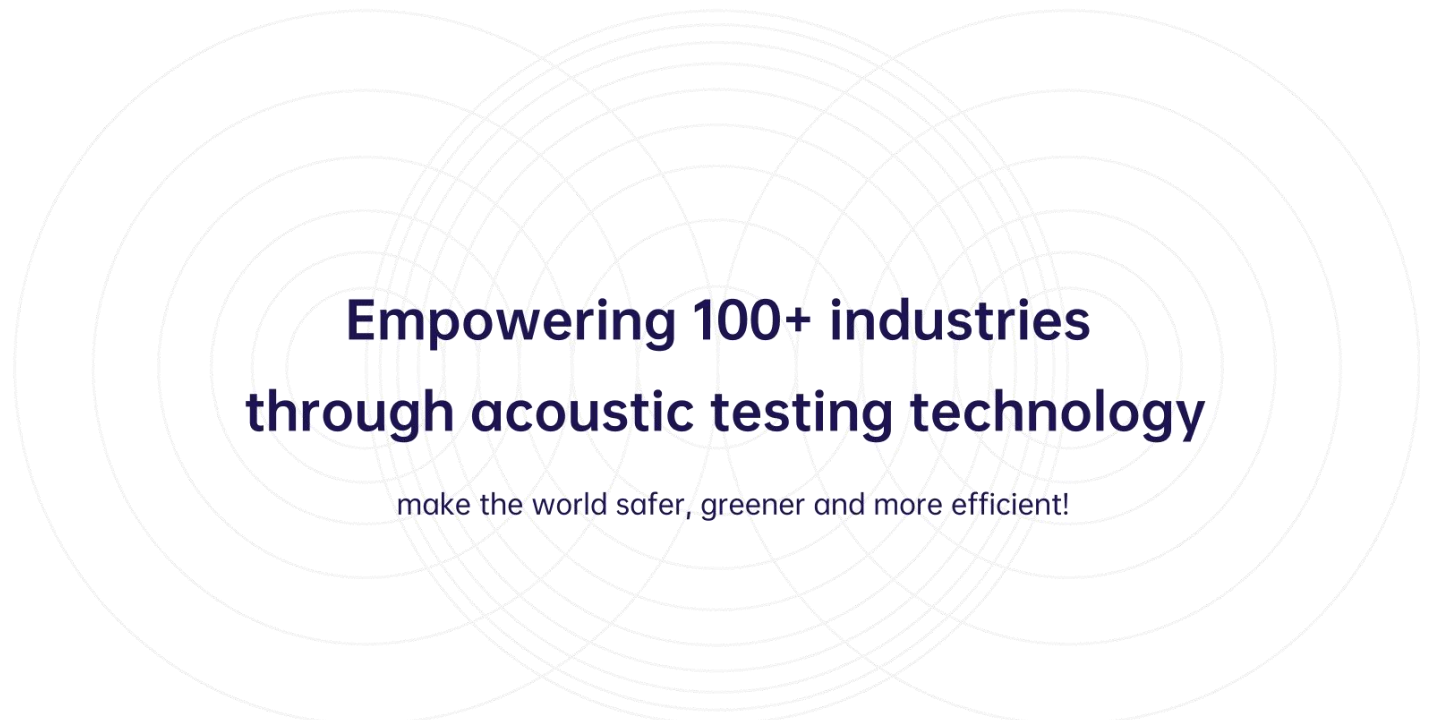
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