CRYSOUND
Measure Better Sound

CRY2623 Industrial Acoustic Imager User Manual V2.8

Measure Better Sound

Warranty and Calibration

Within two years from the date of purchase, we provide free warranty service for abnormal and malfunction caused by product quality. Free warranty service does not include the non-product quality problems caused by improper use, accidental drop, etc.

In case of equipment failure caused by improper use or accidental drop, we promise to provide maintenance service at cost price.

The equipment has been calibrated when delivered to the user. However, in the long term use process, we suggest that you send the equipment to our office every two years for equipment calibration, testing and maintenance.

Contact us

Global Headquarter

Tel: +86-571-88225198 +86-571-88225128

E-mail: cry@crysound.com

Add: #10, Xianqiao Rd, Zhongtai Street, Yuhang District, Hangzhou, Zhejiang Province,China

Web: www.crysound.com

Dongguan Branch

Tel: +86-769-21688120

Fax: +86-769-21688120

Add: 7F,B1 Bldg,Songhu Lake,Intelligent Valley,Liaobu Town,Minfu Rd.Donguan City,Guangdong Province,China

Overview

CRY2623 are hand-held industrial acoustic imager that support audible and ultrasonic frequencies.

The instrument uses the microphone array beamforming technology to acquire the sound source distribution data, and collects the video images in real time with the high-definition camera. By integrating the sound source distribution data with the video image, the changing sound source is dynamically presented on the display screen.

CRY2623 Industrial acoustic imager helps you quickly detect potential pressurized gas leaks and vacuum leaks in noisy industrial environments. Used in power systems, it can help you quickly identify potential partial discharge fault points.

The industrial acoustic imager is made of aluminum alloy shell, which is strong and durable and can adapt to the complex and changeable working environment.

The equipment is simple and convenient to operate, and can be used easily. It only needs to adjust two parameters, the test frequency range and test dynamic range to meet the vast majority of test requirements. Support camera mode, video mode, and the data recording on the test site is flexible. Large capacity TF data memory card can be expanded, and test results can be exported and reported quickly.

Safety instruction

To prevent possible fire or personal injury,please note:

- Please read this safety instruction carefully before using the product.
- Use the product only for the specified usage.
- Do not disassemble the equipment without authorization.
- In case of equipment malfunction or abnormal heat,please stop using.
- Please contact the manufacturer for maintenance requirement.
- Do not place the device near heat source, flame or high temperature environment.
- Please do not charge the device in a high temperature environment (over 45℃).
- If internal lithiumbattery leakage occurs, please stop using the device.
- In the event of leakage from a battery or device getting on the eyes, wash with water immediately and seek medical attention.
- In case of leakage from battery or device getting on the skin, wash with water immediately and seek medical attention.
- If stored time is over 1 month, please keep the product in an environment where the ambient temperature is below 40 ° C. Otherwise, battery leakage may cause damage to the device.

Terminology

USB Power Delivery (USB PD)

A power delivery protocol based on USB3.1,which is often used to transmit more power in USB interface.

Sound Pressure Level (SPL)

A physical quantity used to express the magnitude of sound waves,the unit is decibels (dB). It is also used as dBSPL.

Audible domain

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

Ultrasonic

Generally refers to the frequency of more than 20kHz sound, the human ear cannot perceive.

Sound image

It refers to the two-dimensional data table representing the intensity distribution of sound sources in the space plane after the signal collected by microphone array is calculated by the sound source location algorithm.

Palette

The color data used in the color mapping of an Sound cloud chart.

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, and then it is fused with the visible image to form an 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 spectrum，it denotes a strong sound energy distribution at this particular frequency.

Dynamic range

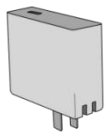
The scale of the intensity of the sound source that can be shown on the sound cloud image.

Field of view

For camera, it is an angle formed by camera and the two diagonal points of the rectangular picture which is captured by the camera.

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

Device and accessories

Apperance	Name	Description
	CRY2623	The industrial acoustic imager
	Hand straps	Straps accessories, help to improve the grip feeling
	Shoulder strap	shoulder strap accessories
	Charge connector	Power adapter for equipment charging
	Charge cable	Cable used to charge the device
	Power bank	Used as backup power supply for device *(Optional)*
	headphone	Connecting equipment is used to monitor ultrasonic wave, etc
	Protective box	A storage protection box for the device and its accessories

Battery and charging

Battery information

Built-in lithium battery nominal capacity 6600mAh@7.2V.

Charging information:

Please charge the device through the USB Type-C port marked with the charging logo “  ”.The device supports USB PD quick charging protocol. It is recommended to use a power adapter or power bank that supports 12V to 20V voltage output and the minimum output power is not less than 15W to charge the device.

Charging and endurance instructions:

a) After inserting the charger, the charging indicator is always on, indicating that it is charging; The charging indicator is off, indicating that it is fully charged; Keep device turn off on charging. Be sure to charge the device when the device is turned off.

b) When the battery is fully charged, the device displays 4 grids of electricity and can be used for about 4 hours; 3 grids can be used for about 2.5 to 3 hours; 2 grids can be used for about 1.5 to 2 hours; 1 grid can be used for about half an hour to 1 hour.

c) When the battery's charge gets low, you'll see the low battery warning on the screen.Please charge in time.

Once again, please pay attention to the following contents for safe use

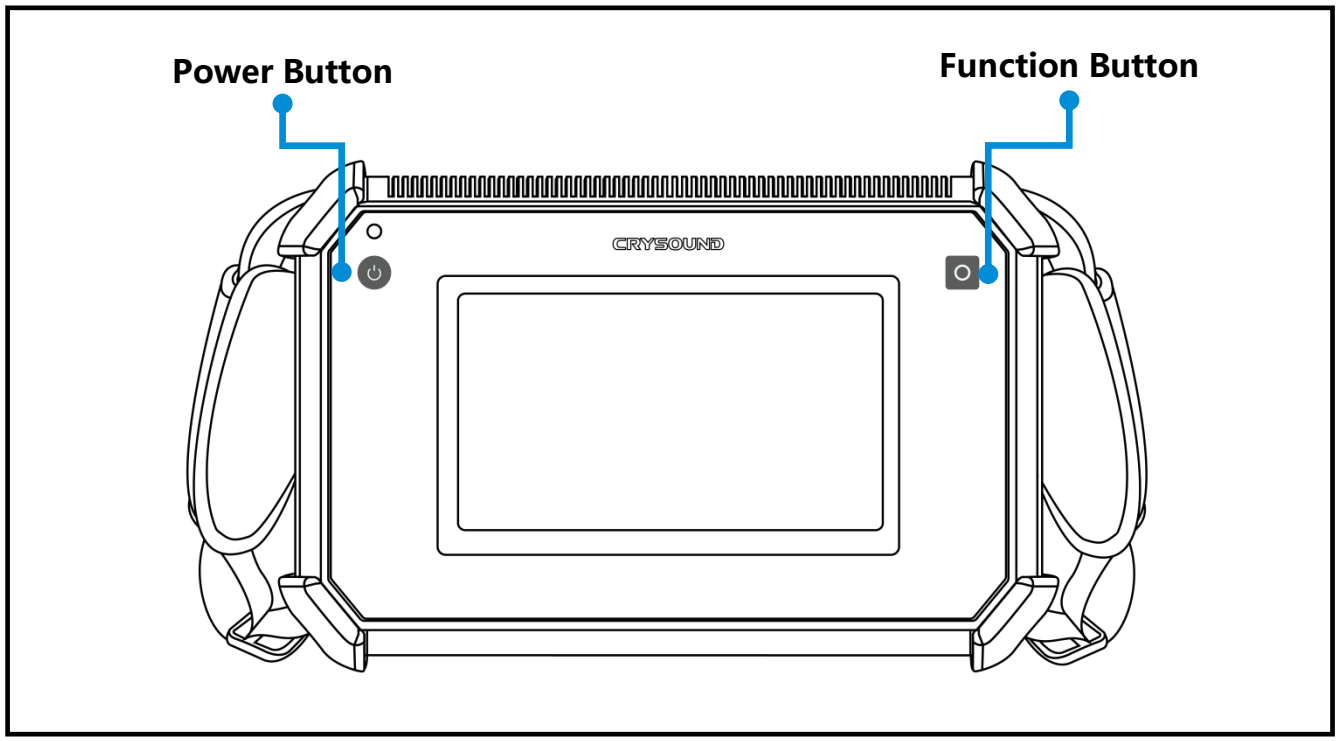
- Do not place the device near heat source, flame or high temperature environment
- Do not expose to the sun for a long time or use the equipment in the sun for a long time
- Do not disassemble the equipment without authorization
- Please do not charge the device in a high temperature environment (over 45℃)
- If the equipment fails or is abnormal, please stop using it
- Please contact the manufacturer for maintenance requirement

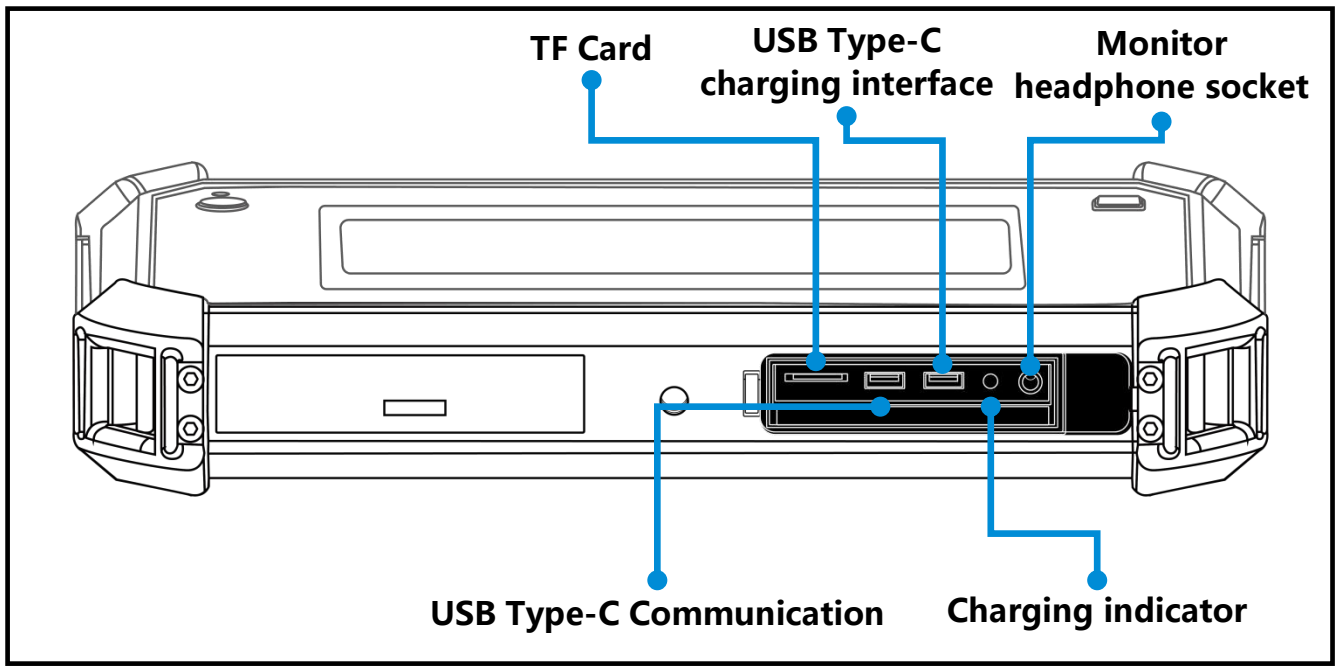
In order to extend the battery life, we suggest

- Please do not charge the device for more than 24 hours.
- If it is not used for a long time, please charge the battery regularly.
- It is recommended to store at -20℃ to +40℃

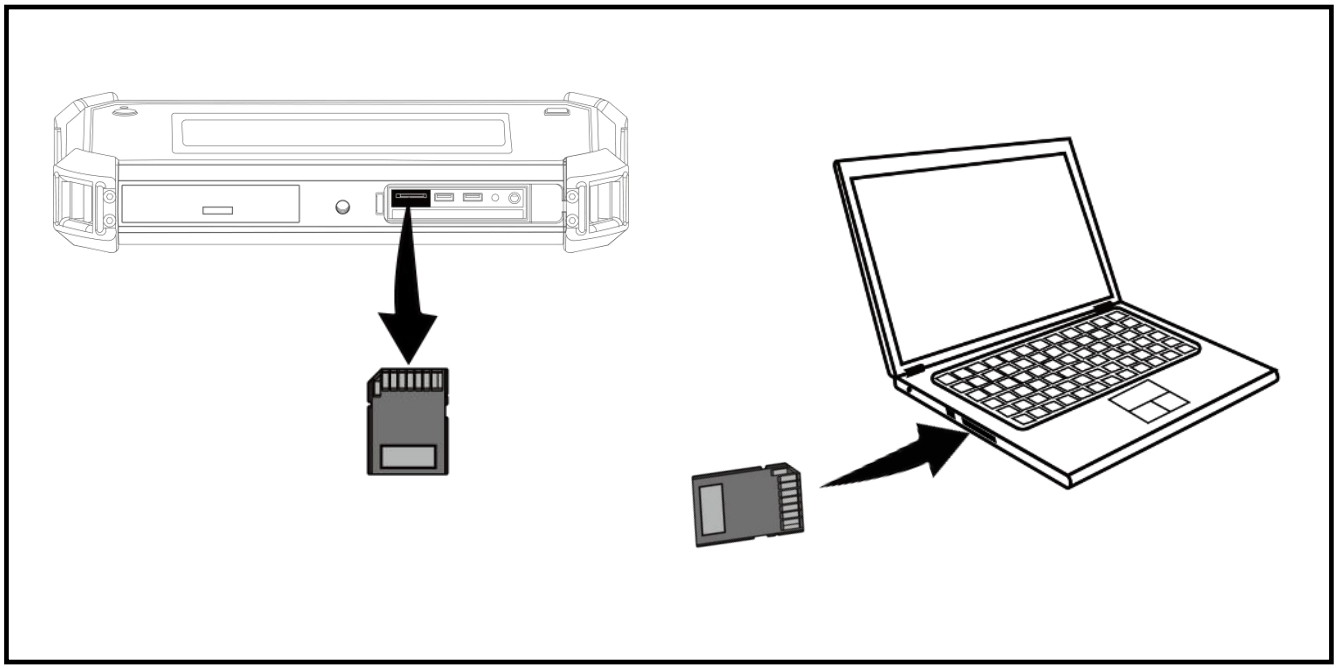
Note: When the battery capacity is low, please contact the manufacturer to replace the battery. Do not disassemble the device without permission.

Function


Power Button
Function Button
CRYSOUND


TF Card
USB Type-C
charging interface
Monitor
headphone socket
USB Type-C Communication
Charging indicator

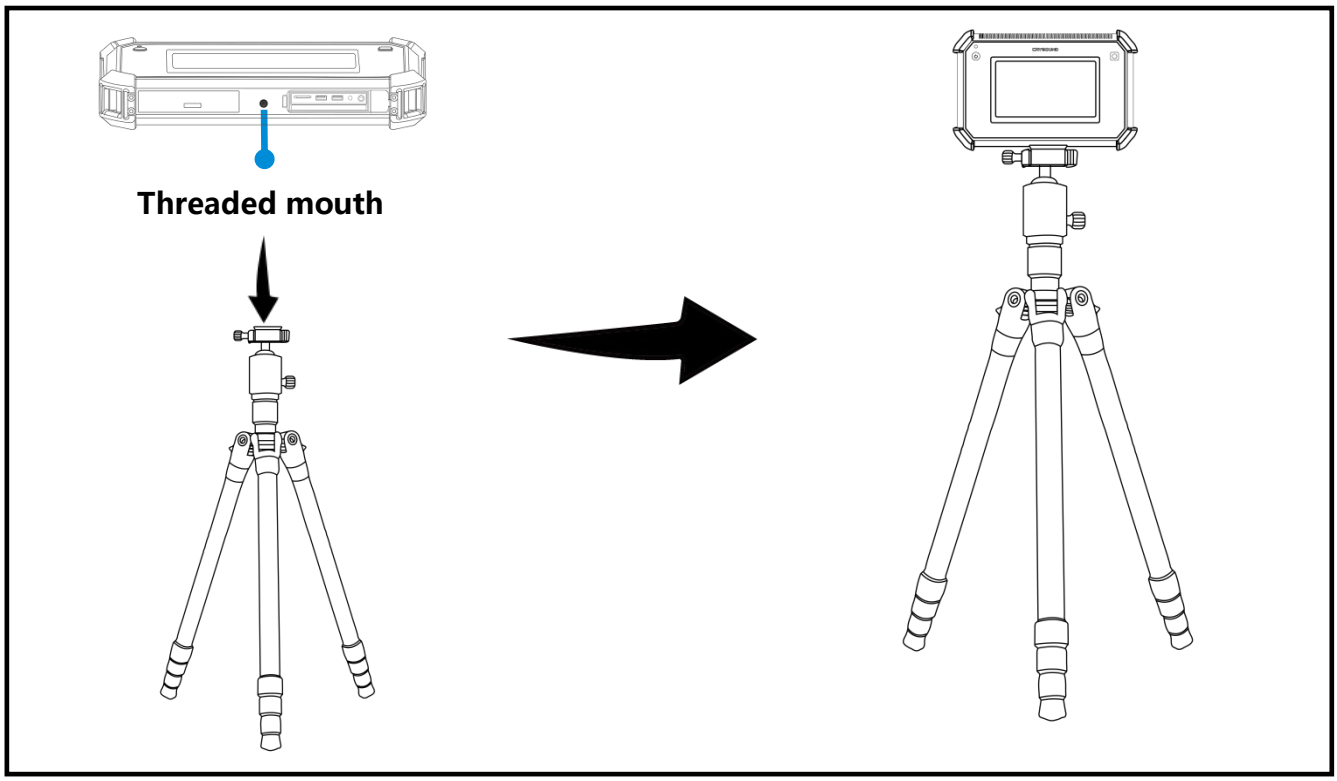
Expand TF card



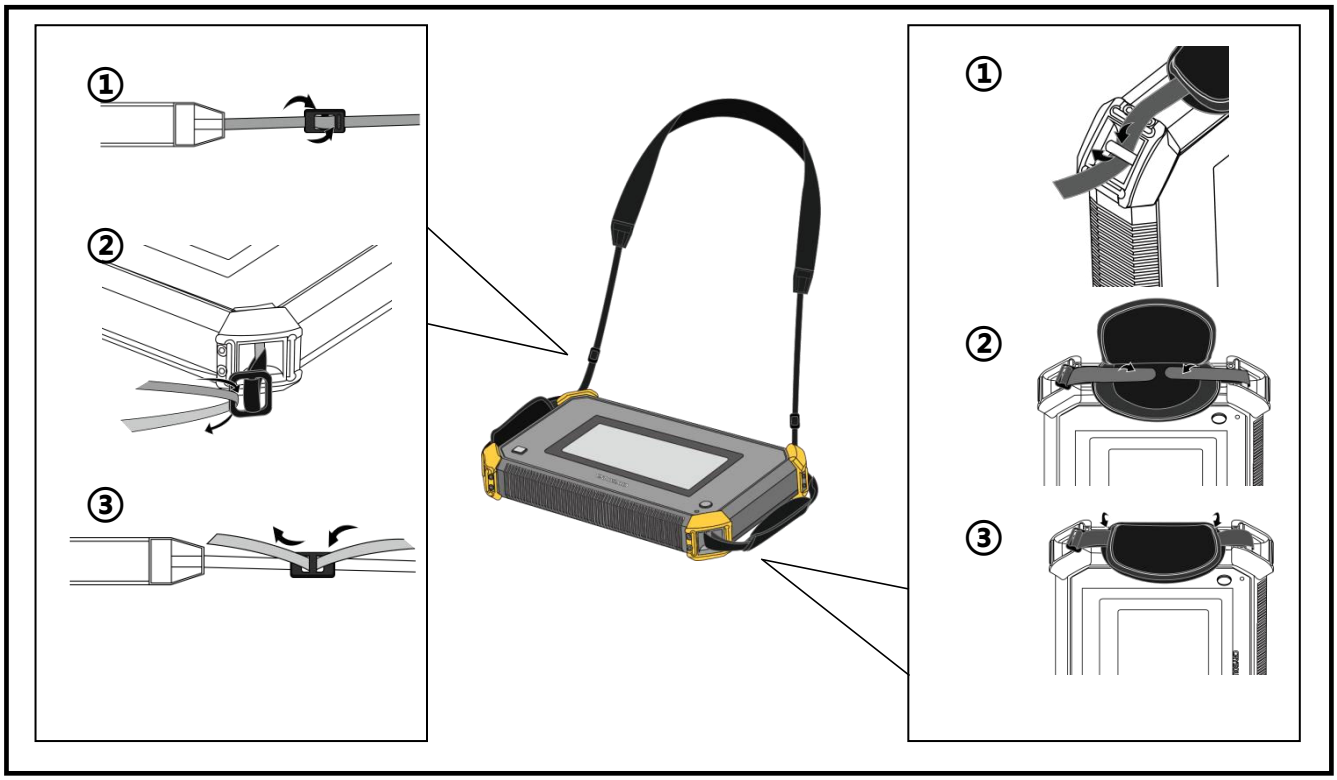
Notes for the use of TF Card

- Do not remove or insert the TF card when video recording.
- After taking photos and recording videos, please wait until the data is saved successfully before inserting and removing the TF card.
- Do not remove or insert the TF card when browsing and marking data under the playback menu.
- When reading TF card data on the PC, do not change the names of files and folders in the TF card, otherwise, test data may not be correctly identified and displayed in the playback menu.

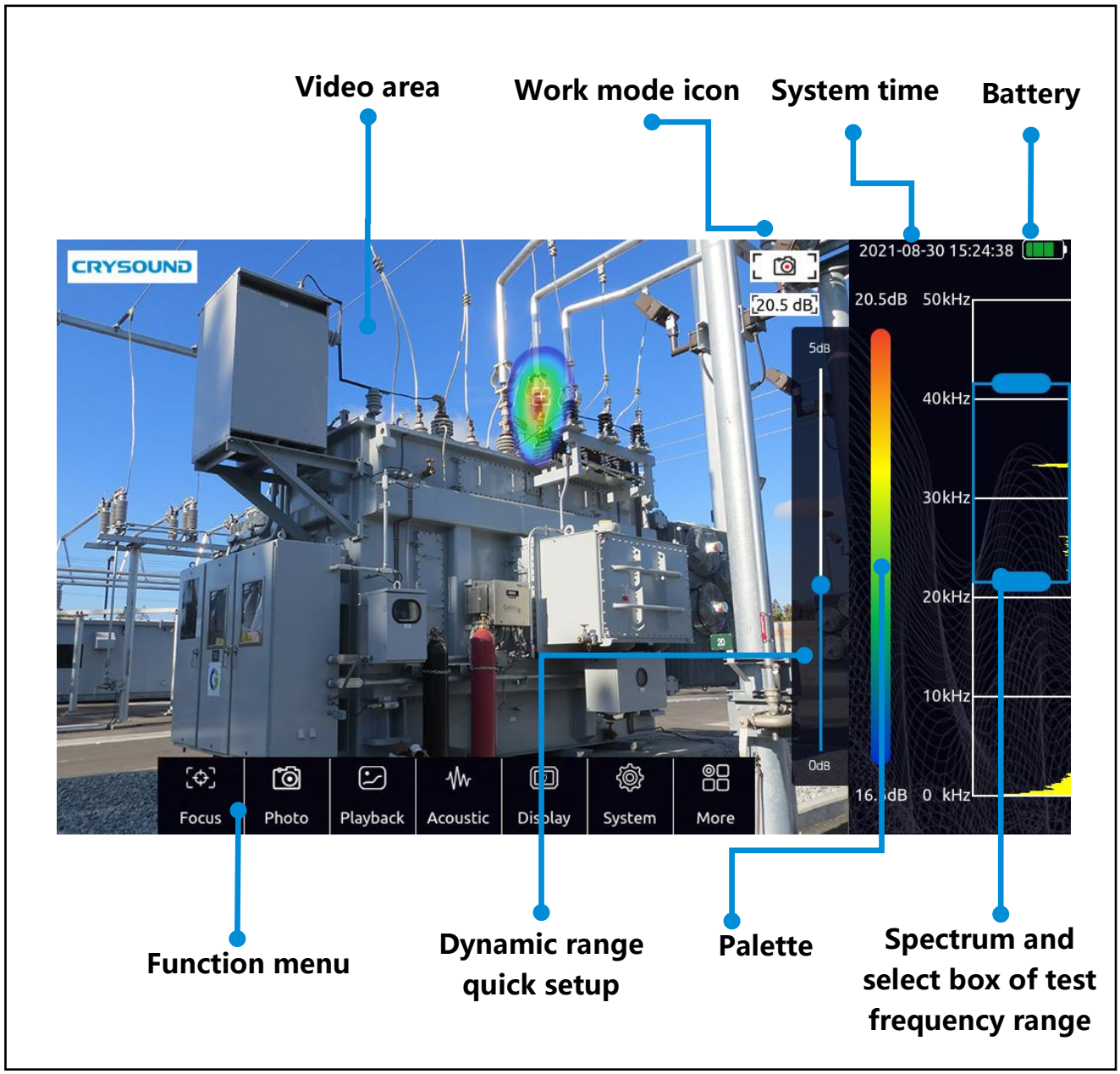
Tripod



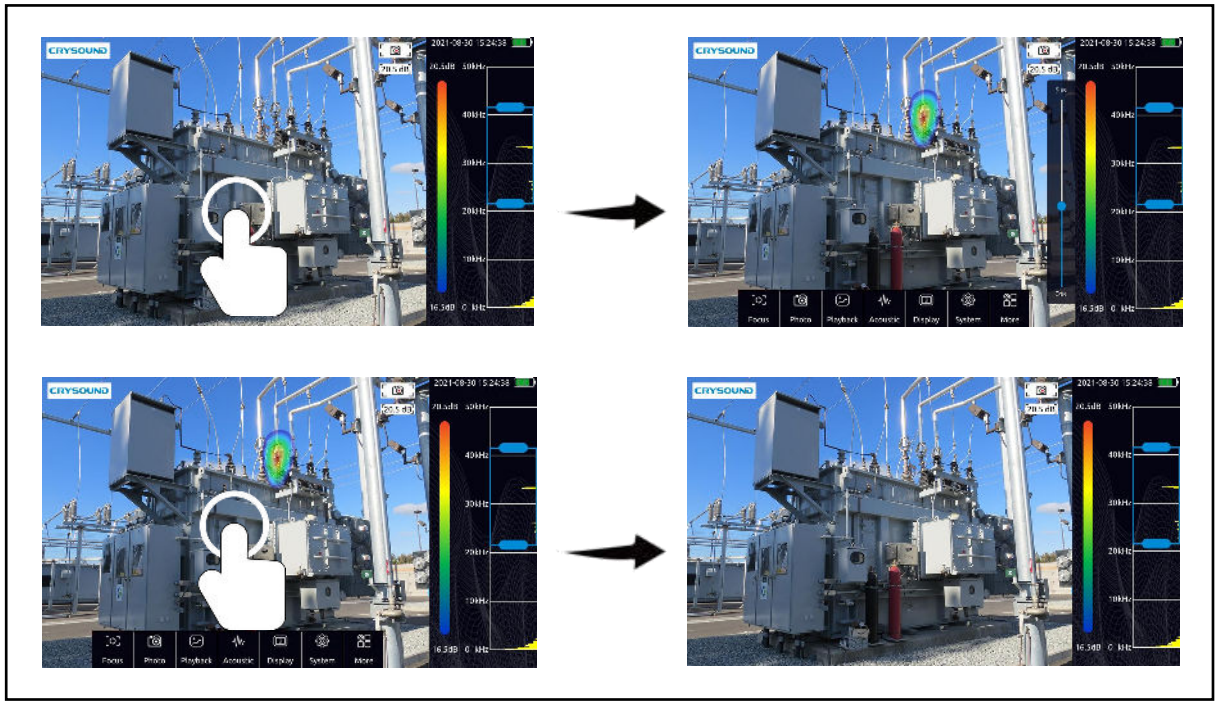
Hand straps and shoulder strap



Software interface

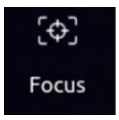


Function menu

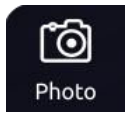


- Click in the video area of the screen to call out the menu bar
- Click again or do nothing for seconds, the menu will hidden automatically

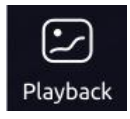
The Function menu include



Focus

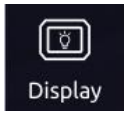


Work mode switch button



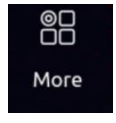
Playback

Acoustic



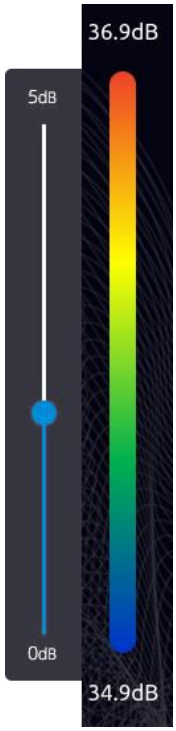
Display

System



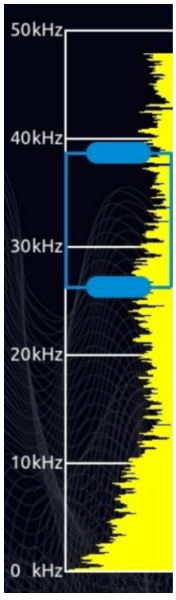
More

Palette and dynamic range



- Click the palette on the main interface to call out the dynamic range dialog
- Click the area outside the dynamic range dialog to hide
- Dynamic range parameter can be adjusted into this dialog

Test frequency range



- Press on select box to move it
- Press on a single side of select box to adjust up limit or down limit

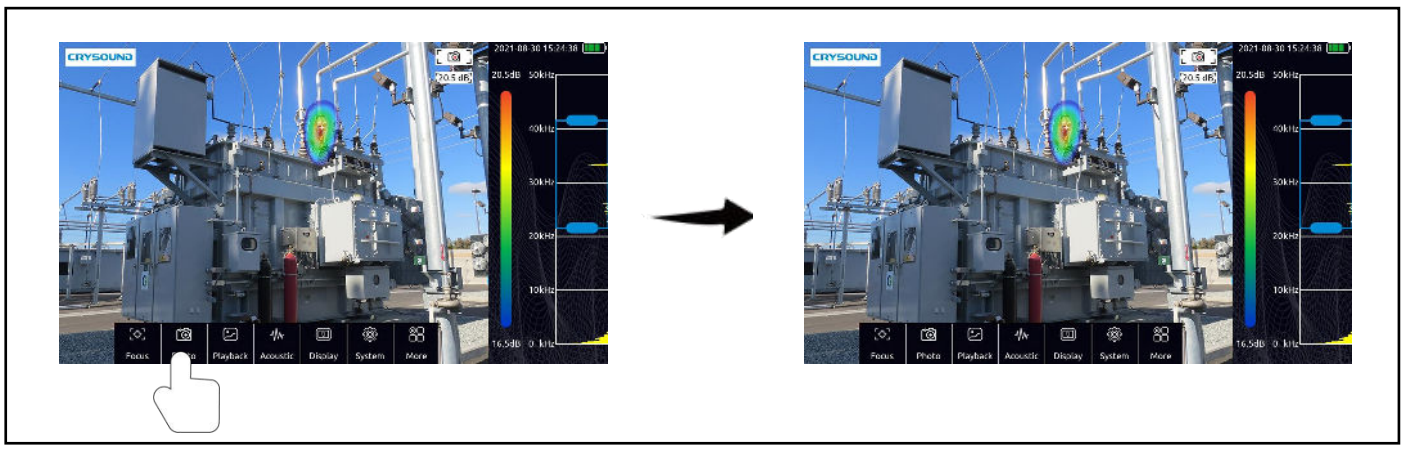
Transient and steady state modes

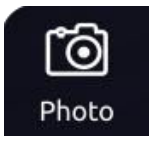
Click the transient / steady state mode button to switch the working mode of the equipment.

In the transient mode, the equipment has a very fast response speed to the transient signal and can quickly respond to the change of sound source. It is suitable for locating rapidly changing sound source models, such as partial discharge sound source.

In the steady-state mode, the equipment will reduce the response speed to the signal, and the cloud image will be relatively stable. It is suitable for the observation of stable signals.

Video and photo





Click the button on the left of the menu bar to switch between camera mode and video mode.

The icon in the upper right corner of the video area will remind you of the work mode which the device is currently in.

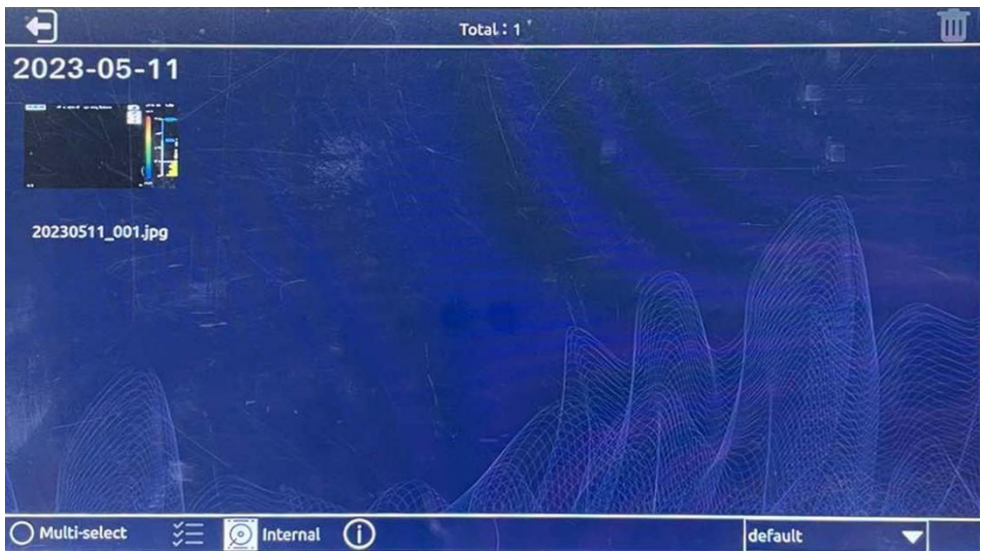
a. In camera mode, press the function button to take a picture.

b. In video mode, press the function button to start recording,press again to stop or it will automatically stop when video exceeds 5 minutes.

During video recording, you can know the duration of current recording through the icon in the upper right corner of the video area.

Playback

Pictures and recorded video data can be viewed in the playback window.



a. 

Click a picture or video to check full size image or play a video.

b. 

Click Multiple Selection to select multiple videos or photos for deletion.

c.  Click the select all button to select all.

d. After selecting a video or photo, click the upper right corner " " to delete the data.

e. Press button " " to check usage information of current storage space.

Picture Playback

Double click the picture to enlarge and play back the picture. After enlarging the picture, you can drag the picture with your finger, and double-click the picture again to restore the original size.

Press the " " and " " or touch and sliding left and right to view the next or before.

Video playback

Click the video thumbnail to zoom in and play the video.

Press on " ▷ " to playback a video.

Press the video to stop.

Press the " < " and " > " or touch and sliding left and right to view the next or before.

Drag the progress bar below the video to adjust the playback progress.

Picture,audio, text Tags

In "Playback," click a video or an image and six white flag ICONS appear at the bottom of the screen. You can click the icon to mark a video or picture. The video or picture can be tagged with image, audio, and text. A total of six tag contents can be added for the three tag types.

Picture tag can take a picture as the tag content, the picture content can be nameplate, character tag, etc. Click the icon to select image markers, press the function button on the right to take a photo with the camera, click the save icon in the upper right corner to save the marked content, click the button on the right to cancel the picture taken, click the lower right corner to select the photo resolution, the marked picture supports 1920*1080, 1280*720 and 640*480 resolutions.

Audio tag can record a piece of audio as the tag content, the audio can be a human voice or other live voice. Click the icon to select the audio mark, and press the function button on the right to record an audio with the microphone in the microphone array. The audio is single channel. To improve sound recording, microphone arrays can be placed close to the source or speaker. After recording, press the function button on the right to stop recording. Click the save button to save the recording.

Text tag can input a paragraph of text as the markup content, it also supports keyboard input and two-dimensional code scanning. Click the mark icon to select the text mark and then click the keyboard icon. Click in the pop-up input box and the input keyboard will pop up. You can use the keyboard to input words, symbols, English and so on. After typing, click Save to save the text markup.

Click the icon to select the text mark and then click the two-dimensional code icon. The device will start the camera to scan the two-dimensional code automatically. Identify to the two-dimensional code will display its contained text information, press the save button to save the text information, press "re-identify" to re-identify the code again.

Acoustic

Dynamic range

Sliding the slide to adjust dynamic range.

Or click the palette bar on the right of the software interface to call out the dynamic dialog and quickly adjust it.

Cursor sound pressure level

The cursor function can be turned on or off.

When the cursor sound pressure level function is enabled, the cursor will be displayed on the video screen, and the cursor number will be displayed below the cursor. And the image energy of the position indicated by the cursor will be displayed below the photo and frequency recording status indicator in the upper right. If three cursors are set, the sound pressure level shown by the cursor 1, 2 and 3 will be displayed from top to bottom. The number of cursors can be set in System Settings > Tools > Number of cursors. A maximum of three cursors can be set.

Record sound while recording video

Press button to enable record sound while recording video.

When it is enabled, if you record video, the sound will be recorded as well.

Ultrasonic monitoring

The equipment can modulate the signal in the ultrasonic frequency band to the audible frequency band, and can monitor the signal with headphones.

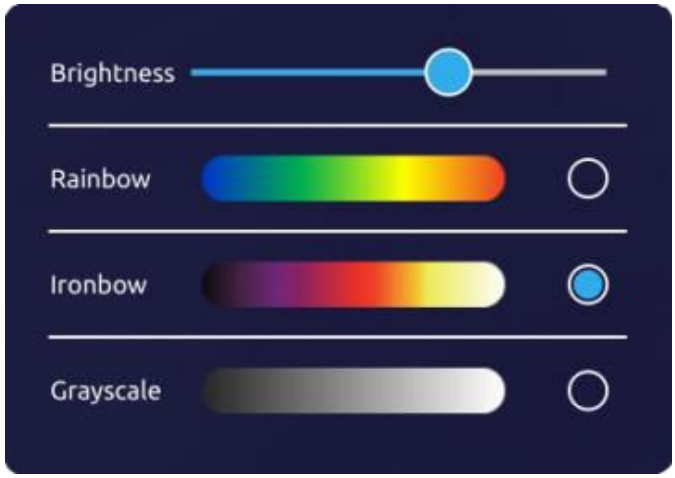
Ultrasonic modulation is realized by superheterodyne. The reference frequency of modulation can be set. It is recommended to use a frequency band of about 38.6khz for near modulation and monitoring.

Focusing

The focusing function is mainly used to eliminate environmental interference noise, reflection noise, multi-source interference, etc. when the test environment is noisy and the cloud image is more than single one, scattered and chaotic, the focusing function can be turned on to focus the presentation of the audio-visual cloud image within a circle and eliminate other interference sources.

Double click the circle in the center of the main interface to switch the size of the test range. Double click again to restore the initial size.

Display



Brightness: the brightness is adjustable.When used outdoors, it is recommended to increase brightness for better visual clarity. When used indoors, it is recommended to reduce the brightness for a longer battery life.

Rainbow: set palette to use rainbow

Ironbow: set palette to use ironbow

Grayscale: set palette to use grayscale

System

Language

English, French, Chinese, German, Japanese, Korean, Russian, Spanish, Portuguese, Italian is supported, After selecting the language, the software will switch the language.

Time

Adjust system time.

When system time is changed, press" update time" to take effect.

Lock

The device can implement a low power strategy. You can turn on the auto sleep function of the device.

After selecting the sleep time, the device will automatically enter the sleep mode if it does not perform any operation during the time. When the device sleeps, the power indicator will flash. By pressing the power button, the device can quickly wake up and be ready for testing.

Only when the auto sleep function is set can the device set auto shutdown. After selecting the shutdown time, the device will automatically shutdown if it does not be awakened during the time.

Tool

log export function: click and confirm to export the equipment operation log to the TF card. The equipment operation log is generally used by the manufacturer to diagnose the equipment status, and users generally do not need to use it.

The number of cursors is used to adjust the number of dynamic cursor displays, which can support up to 3 dynamic cursor displays.

Sensitivity is used to set the minimum sensitivity of cloud image imaging, which can limit the imaging when the cloud image energy is higher than the sensitivity value. This function can be enabled when the button is turned on, and the sensitivity threshold can be set by sliding the slider.

About

Display device model， serial number, software version and manufacturer information.

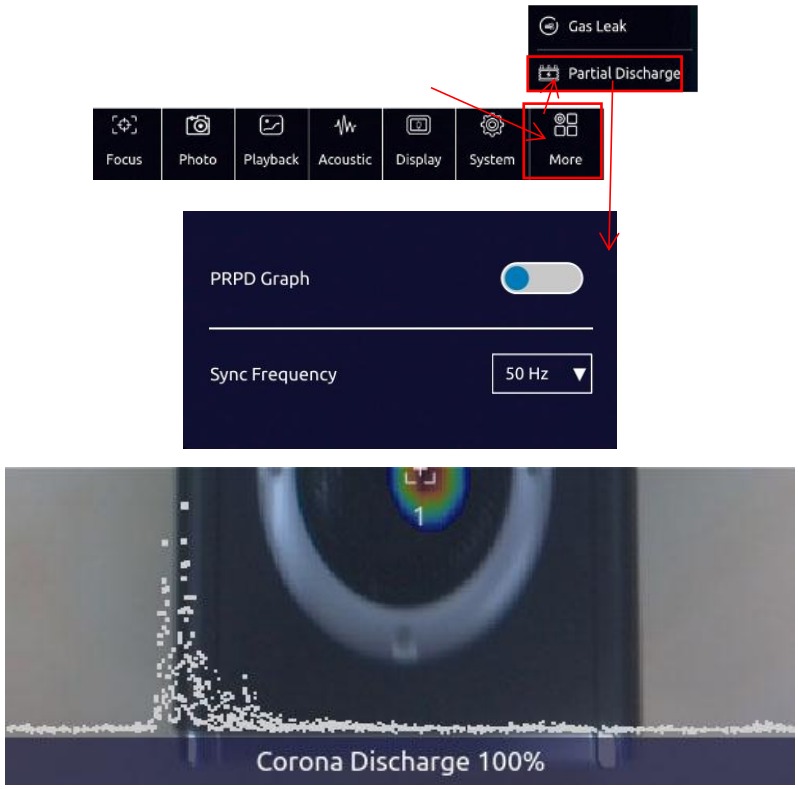
Press”check for update”to install a new version of software. Press “check for update”,it will check for available packages from external storage(TF card). You can upgrade the software version by selecting the package you want to install.

Partial discharge spectrum

Click "partial discharge spectrum" to open the partial discharge spectrum setting menu.

Click "switch" to open and display the partial discharge spectrum. The AC frequency can be selected as 50Hz or 60Hz.

The partial discharge spectrum is as follows . Observing the characteristics of the spectrum can help users identify the discharge type.

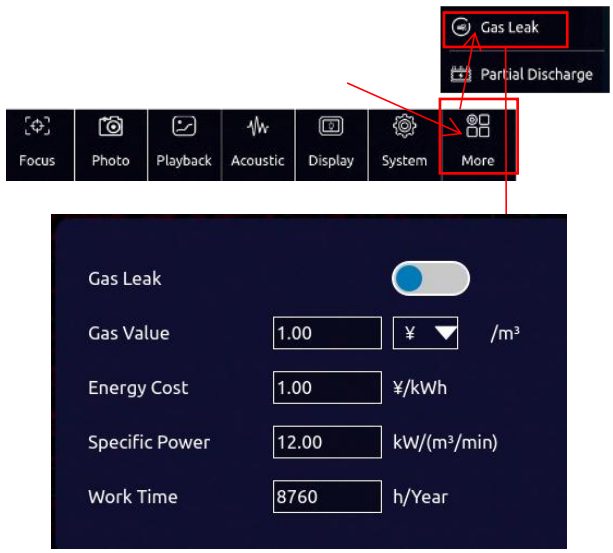


Estimation of gas leakage

Turn on the function of gas leakage level calculation in the equipment. After opening, the software will turn on the focusing function by default to avoid interference.

There are options of air pressure and distance on the left side of the software. The user needs to input the air pressure (unit: kPa) and distance (unit: m) of the leaked gas according to the actual situation of the site. The software will calculate the leakage level and the approximate range of gas leakage according to the gas pressure, distance and calculated leakage energy (for reference). The gas leakage level is divided into levels, and the corresponding leakage direction is shown in the table below:

Leakage Level	Leakage Range (Unit: ml / min, for reference)
0	< 10ml/min
1	> 10ml/min， < 200ml/min
2	> 200ml/min， < 500ml/min
3	> 500ml/min， < 1000ml/min
4	> 1000ml/min， < 1500ml/min
5	> 1500ml/min， < 2000ml/min
6	> 2000ml/min



Equipment use skills

Capture sound source

a) Observe whether there are prominent spectral signals or spectral spikes in the spectrum diagram. If there is, move the select box include the frequency range where the prominent spectral signal or frequency spike is, and then observe if any sound source appears.

b) Try to adjust the dynamic range to a larger value, may simultaneously capture more than one sound sources in the screen. When the SPL of multiple sound sources in the picture is very different, a small dynamic range may cause the larger sound source to drown the small sound source.

Exclude fake sound source cause of reflection

When you are unable to determine if the sound source is an actual sound source or a reflection one. Try to capture the sound source in different test position. If the sound source is steady, then it supposes to be an actual sound

source. A reflection one will drift or disappear when be captured in different test position.

Exclude interfering noise

a) It is easy to be disturbed by environmental noise in low frequency band. According to the actual situation of sound source, it is recommended to use middle or high frequency to capture the position of sound source.

b) A relatively narrow frequency band range is suggested to be chosen to locate the sound source, which can eliminate interference noise in other bands.

Equipment maintenance

a) Keep acoustic sensor holes clean, prevent of dust accumulation. When the hole has dust, please gently blow air to clean, do not use a wet cloth to clean.

b) When not in use for a long time, put it into the attached package after charging, and store in a room temperature.

c) Regular inspect and charge battery can effectively increase service life of the battery.

Technical specification

Microphone array

Microphone array：128 channels MEMS microphone
Effective test bandwidth：2kHz-48kHz
Sound image FOV：62°
Sound image frame rate：at least 25 FPS
Test sound pressure level range：28dB-132dB
Leak detection rate: 10m 5bar 0.92ml/s
0.5m 5bar 0.55ml/s
0.5m 0.15bar 1.6ml/s
Test Distance：0.3m-120m

Camera

Camera FOV：62°
Camera focal length：3.04mm fixed focal length
Camera pixel：8 million pixel

Display

Resolution：1024*600
Size：7 inch
Touch screen：capacitive touch screen
Brightness：adjustable

Storage

Internal storage：about 8G
External storage：expand TF memory card，at least 64G
Data storage format：.jpg（picture）and .MP4（video）

Battery

Battery capacity：6600mAH@7.2V
Battery life：about 4 h under full load state
Charge：USB Type-C port，USB PD protocol supported
Power consumption：15W for battery charge；29W for maximum power consumption

Interface

USB 3.0 Type-C USB host port
3.5mm headphone socket

Operating environment

Operating environment：-20℃- +50℃，10%-95% no condensation
Storage temperature：-20℃ – +60℃
Charging temperature：10℃ – +45℃

Mechanical

Size：272mmx174mmx42mm
Weight：1.7kg

Attention：Operating time of equipment in low temperature environment may be reduced.

CRYSOUND

Declaration of «CE» Conformity

Table of Contents

(Signature) July 13, Jason Cao, President

CRYSOUND

Manufacturer's EU Declaration of Conformity (conform to ISO/IEC 17050-1)
Manufacturer: HANGZHOU CRYSOUND ELECTRONICS CO.,LTD.
Address: No.10, Xianqiao Road, Zhongtai Street, Yuhang District, Hangzhou, Zhejiang, China

Declares, under its own responsibility that the CRYSOUND products:

CRY2620	Industrial Acoustic Imager
CRY2623	Industrial Acoustic Imager

are built in conformity with the following European Directives:

Directive	Title
2011/65/EU	Restriction of Hazardous Substances (RoHS)
2014/30/EU	Electromagnetic Compatibility Directive/Annex II (EMC)

Standards applied:

Norm	Title
IEC 62321-1:2013	Determination of certain substances in electrotechnical products - Part 1: Introduction and overview
IEC 62321-2:2013	Determination of certain substances in electrotechnical products - Part 2: Disassembly, disjunction and mechanical sample preparation
IEC 62321-3-1:2013	Determination of certain substances in electrotechnical products - Part 3-1: Screening - Lead, mercury, cadmium, total chromium and total bromine using X-ray fluorescence spectrometry
IEC 62321-3-2:2013	Determination of certain substances in electrotechnical products - 3-2: Screening - Total bromine in polymers and electronics by Combustion - Ion Chromatography
IEC 62321-4:2013+AMD1:2017	CSV Determination of certain substances in electrotechnical products - Part 4: Mercury in polymers, metals and electronics by CV-AAS, CV-AFS, ICP-OES and ICP-MS
IEC 62321-5:2013	Determination of certain substances in electrotechnical products - Part 5: Cadmium, lead and chromium in polymers and electronics and cadmium and lead in metals by AAS, AFS, ICP-OES and ICP-MS
IEC 62321-6:2015	Determination of certain substances in electrotechnical products - Part 6: Polybrominated biphenyls and polybrominated diphenyl ethers in polymers by gas chromatograhy -mass spectometry (GC-MS)
IEC 62321-7-1:2015	Determination of certain substances in electrotechnical products - Part 7-1: Hexavalent chromium - Presence of hexavalent chromium (Cr(VI)) in colorless and colored corrosion-protected coatings on metals by the colorimetric method
IEC 62321-7-2:2017	Determination of certain substances in electrotechnical products - Part 7-2: Hexavalent chromium - Determination of hexavalent chromium (Cr(VI)) in polymers and electronics by the colorimetric method
IEC 62321-8:2017	Determination of certain substances in electrotechnical products - Part 8: Phthalates in polymers by gas chromatography-mass spectrometry (GC-MS), gas chromatography-mass spectrometry using a pyrolyzer/thermal desorption accessory (Py-TD-GC-MS)
EN 61326-1-2021	Electrical equipment for measurement, control and laboratory use –EMC

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	requirements –Part 1: General requirements
EN 61000-4-2:2009	Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test
EN 61000-4-3:2006 + A1:2008 + A2:2010	Electromagnetic compatibility (EMC) Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test

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CRYSOUND

Manufacturer's EU Declaration of Conformity (conform to ISO/IEC 17050-1)
Manufacturer: HANGZHOU CRYSOUND ELECTRONICS CO.,LTD.
Address: No.10, Xianqiao Road, Zhongtai Street, Yuhang District, Hangzhou, Zhejiang, China

Declares, under its own responsibility that the CRYSOUND products:

CRY2624	Industrial Acoustic Imager

are built in conformity with the following European Directives:

Directive	Title
2011/65/EU	Restriction of Hazardous Substances (RoHS)
2014/30/EU	Electromagnetic Compatibility Directive/Annex II (EMC)
2014/34/EU	ATEX directive "EC type examination certificate N° TI22ATEX 570 X delivered by Technická inšpekcia, a. s., as Notify Body No. 1354

Standards applied:

Norm	Title
IEC 62321-1:2013	Determination of certain substances in electrotechnical products - Part 1: Introduction and overview
IEC 62321-2:2013	Determination of certain substances in electrotechnical products - Part 2: Disassembly, disjunction and mechanical sample preparation
IEC 62321-3-1:2013	Determination of certain substances in electrotechnical products - Part 3-1: Screening - Lead, mercury, cadmium, total chromium and total bromine using X-ray fluorescence spectrometry
IEC 62321-3-2:2013	Determination of certain substances in electrotechnical products - 3-2: Screening - Total bromine in polymers and electronics by Combustion - Ion Chromatography
IEC 62321-4:2013+AMD1:2017	CSV Determination of certain substances in electrotechnical products - Part 4: Mercury in polymers, metals and electronics by CV-AAS, CV-AFS, ICP-OES and ICP-MS
IEC 62321-5:2013	Determination of certain substances in electrotechnical products - Part 5: Cadmium, lead and chromium in polymers and electronics and cadmium and lead in metals by AAS, AFS, ICP-OES and ICP-MS
IEC 62321-6:2015	Determination of certain substances in electrotechnical products - Part 6: Polybrominated biphenyls and polybrominated diphenyl ethers in polymers by gas chromatograhy -mass spectometry (GC-MS)
IEC 62321-7-1:2015	Determination of certain substances in electrotechnical products - Part 7-1: Hexavalent chromium - Presence of hexavalent chromium (Cr(VI)) in colorless and colored corrosion-protected coatings on metals by the colorimetric method
IEC 62321-7-2:2017	Determination of certain substances in electrotechnical products - Part 7-2: Hexavalent chromium - Determination of hexavalent chromium (Cr(VI)) in polymers and electronics by the colorimetric method
IEC 62321-8:2017	Determination of certain substances in electrotechnical products - Part 8: Phthalates in polymers by gas chromatography-mass spectrometry (GC-MS), gas chromatography-mass spectrometry using a pyrolyzer/thermal desorption

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	accessory (Py-TD-GC-MS)
EN 61326-1-2021	Electrical equipment for measurement, control and laboratory use –EMC requirements –Part 1: General requirements
EN 61000-4-2:2009	Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test
EN 61000-4-3:2006 + A1:2008 + A2:2010	Electromagnetic compatibility (EMC) Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test
EN 60079-0: 2018/AC:2020-02	Explosive atmospheres Part 0: Equipment – General requirements (IEC 60079-0:2017)
EN 60079-11: 2012	Explosive atmospheres –Part 11: Equipment protection by intrinsic safety "i"

(Signature) July 13, Jason Cao, President

Manufacturer's EU Declaration of Conformity (conform to ISO/IEC 17050-1)
Manufacturer: HANGZHOU CRYSOUND ELECTRONICS CO.,LTD.
Address: No.10, Xianqiao Road, Zhongtai Street, Yuhang District, Hangzhou, Zhejiang, China

Declares, under its own responsibility that the CRYSOUND products:

CRY2623M	Fixed Acoustic Imager

are built in conformity with the following European Directives:

Directive	Title
2011/65/EU	Restriction of Hazardous Substances (RoHS)
2014/30/EU	Electromagnetic Compatibility Directive/Annex II (EMC)

Standards applied:

Norm	Title
IEC 62321-1:2013	Determination of certain substances in electrotechnical products - Part 1: Introduction and overview
IEC 62321-2:2013	Determination of certain substances in electrotechnical products - Part 2: Disassembly, disjunction and mechanical sample preparation
IEC 62321-3-1:2013	Determination of certain substances in electrotechnical products - Part 3-1: Screening - Lead, mercury, cadmium, total chromium and total bromine using X-ray fluorescence spectrometry
IEC 62321-3-2:2013	Determination of certain substances in electrotechnical products - 3-2: Screening - Total bromine in polymers and electronics by Combustion - Ion Chromatography
IEC 62321-4:2013+AMD1:2017	CSV Determination of certain substances in electrotechnical products - Part 4: Mercury in polymers, metals and electronics by CV-AAS, CV-AFS, ICP-OES and ICP-MS
IEC 62321-5:2013	Determination of certain substances in electrotechnical products - Part 5: Cadmium, lead and chromium in polymers and electronics and cadmium and lead in metals by AAS, AFS, ICP-OES and ICP-MS
IEC 62321-6:2015	Determination of certain substances in electrotechnical products - Part 6: Polybrominated biphenyls and polybrominated diphenyl ethers in polymers by gas chromatograhy -mass spectometry (GC-MS)
IEC 62321-7-1:2015	Determination of certain substances in electrotechnical products - Part 7-1: Hexavalent chromium - Presence of hexavalent chromium (Cr(VI)) in colorless and colored corrosion-protected coatings on metals by the colorimetric method
IEC 62321-7-2:2017	Determination of certain substances in electrotechnical products - Part 7-2: Hexavalent chromium - Determination of hexavalent chromium (Cr(VI)) in polymers and electronics by the colorimetric method
IEC 62321-8:2017	Determination of certain substances in electrotechnical products - Part 8: Phthalates in polymers by gas chromatography-mass spectrometry (GC-MS), gas chromatography-mass spectrometry using a pyrolyzer/thermal desorption accessory (Py-TD-GC-MS)
EN 61326-1-2021	Electrical equipment for measurement, control and laboratory use –EMC requirements –Part 1: General requirements

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EN 61000-4-2:2009	Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test
EN 61000-4-3:2006 + A1:2008 + A2:2010	Electromagnetic compatibility (EMC) Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test

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Manufacturer's EU Declaration of Conformity (conform to ISO/IEC 17050-1)
Manufacturer: HANGZHOU CRYSOUND ELECTRONICS CO.,LTD.
Address: No.10, Xianqiao Road, Zhongtai Street, Yuhang District, Hangzhou, Zhejiang, China

Declares, under its own responsibility that the CRYSOUND products:

UES60LCP-200300SPC	Switching Power Adaptor

are built in conformity with the following European Directives:

Directive	Title
2014/30/EU	Electromagnetic Compatibility Directive/Annex II (EMC)
2014/35/EU	Low Voltage Directive (LVD)

Standards applied:

Norm	Title
EN 55032:2015	Electromagnetic compatibility of multimedia equipment - Emission Requirements
EN 55035:2017	Electromagnetic compatibility of multimedia equipment - Immunity requirements
EN 61000-3-2:2019	Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)
EN 61000-3-3:2013	Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltEN 55024:2010age fluctuations and flicker in public low-voltage supply systems, for equipment with rated current <= 16 A per phase and not subject to conditional connection
EN 55024:2010	Information technology equipment - Immunity characteristics - Limits and methods of measurement
EN 62368-1:2014	Audio/video, information and communication technology equipment - Part 1: Safety requirements (IEC 62368-1:2014, modified)

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CRYSOUND

Manufacturer's EU Declaration of Conformity (conform to ISO/IEC 17050-1)
Manufacturer: HANGZHOU CRYSOUND ELECTRONICS CO.,LTD.
Address: No.10, Xianqiao Road, Zhongtai Street, Yuhang District, Hangzhou, Zhejiang, China

Declares, under its own responsibility that the CRYSOUND products:

GSB2S243	Battery

are built in conformity with the following European Directives:

Directive	Title
2011/65/EU	Restriction of Hazardous Substances (RoHS)

Standards applied:

Norm	Title
IEC 62321-1:2013	Determination of certain substances in electrotechnical products - Part 1: Introduction and overview
IEC 62321-2:2013	Determination of certain substances in electrotechnical products - Part 2: Disassembly, disjunction and mechanical sample preparation
IEC 62321-3-1:2013	Determination of certain substances in electrotechnical products - Part 3-1: Screening - Lead, mercury, cadmium, total chromium and total bromine using X-ray fluorescence spectrometry
IEC 62321-3-2:2013	Determination of certain substances in electrotechnical products - 3-2: Screening - Total bromine in polymers and electronics by Combustion - Ion Chromatography
IEC 62321-4:2013+AMD1:2017	CSV Determination of certain substances in electrotechnical products - Part 4: Mercury in polymers, metals and electronics by CV-AAS, CV-AFS, ICP-OES and ICP-MS
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IEC 62321-7-2:2017	Determination of certain substances in electrotechnical products - Part 7-2: Hexavalent chromium - Determination of hexavalent chromium (Cr(VI)) in polymers and electronics by the colorimetric method
IEC 62321-8:2017	Determination of certain substances in electrotechnical products - Part 8: Phthalates in polymers by gas chromatography-mass spectrometry (GC-MS), gas chromatography-mass spectrometry using a pyrolyzer/thermal desorption accessory (Py-TD-GC-MS)

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