HA3 SERIES
ACOUSTIC CAMERA
USER MANUAL

SHANGHAI HERTZINNO TECHNOLOGY CO., LTD

Notice

Important note

Before operating the device, you must read, understand, and follow all instructions, warnings, cautions, and legal disclaimers.

Důležitá poznámka

Před použitím zařízení si přečtěte veškeré pokyny, upozornění, varování a vyvázání se ze záruky, ujistěte se, že jim rozumíte, a řiďte se jimi.

Vigtig meddelelse

Før du betjener enheden, skal du du læse, forstå og følge alle anvisninger, advarsler, sikkerhedsforanstaltninger og ansvarsfraskrivelser.

Wichtiger Hinweis

Bevor Sie das Gerät in Betrieb nehmen, lesen, verstehen und befolgen Sie unbedingt alle Anweisungen, Warnungen, Vorsichtshinweise und Haftungsausschlüsse **Σημαντική σημείωση**

Πριν από τη λειτουργία της συσκευής, πρέπει να διαβάσετε, να κατανοήσετε και να ακολουθήσετε όλες τις οδηγίες, προειδοποιήσεις, προφυλάξεις και νομικές αποποιήσεις.

Nota importante

Antes de usar el dispositivo, debe leer, comprender y seguir toda la información sobre instrucciones, advertencias, precauciones y renuncias de responsabilidad.

Tärkeä huomautus

Ennen laitteen käyttämistä on luettava ja ymmärrettävä kaikki ohjeet, vakavat varoitukset, varoitukset ja lakitiedotteet sekä noudatettava niitä.

Remarque importante

Avant d'utiliser l'appareil, vous devez lire, comprendre et suivre l'ensemble des instructions, avertissements, mises en garde et clauses légales de non-responsabilité. **Fontos megjegyzés**

Az eszköz használata előtt figyelmesen olvassa el és tartsa be az összes utasítást, figyelmeztetést, óvintézkedést és jogi nyilatkozatot.

Nota importante

Prima di utilizzare il dispositivo, è importante leggere, capire e seguire tutte le

istruzioni, avvertenze, precauzioni ed esclusioni di responsabilità legali.

重要な注意

デバイスをご使用になる前に、あらゆる指示、警告、注意事項、および免責条項をお読み頂き、その内容を理解して従ってくだ さい。

중요한 참고 사항

장치를 작동하기 전에 반드시 다음의 사용 설명서와 경고, 주의사항, 법적 책임제한을 읽고 이해하며 따라야 합니다.

Viktig

Før du bruker enheten, må du lese, forstå og følge instruksjoner, advarsler og informasjon om ansvarsfraskrivelse.

Belangrijke opmerking

Zorg ervoor dat u, voordat u het apparaat gaat gebruiken, alle instructies, waarschuwingen en juridische informatie hebt doorgelezen en begrepen, en dat u deze opvolgt en in acht neemt.

Ważna uwaga

Przed rozpoczęciem korzystania z urządzenia należy koniecznie zapoznać się z wszystkimi instrukcjami, ostrzeżeniami, przestrogami i uwagami prawnymi. Należy zawsze postępować zgodnie z zaleceniami tam zawartymi.

Nota importante

Antes de utilizar o dispositivo, deverá proceder à leitura e compreensão de todos os avisos, precauções, instruções e isenções de responsabilidade legal e assegurar-se do seu cumprimento.

Важное примечание

До того, как пользоваться устройством, вам необходимо прочитать и понять все предупреждения, предостережения и юридические ограничения ответственности и следовать им.

Viktig information

Innan du använder enheten måste du läsa, förstå och följa alla anvisningar, varningar, försiktighetsåtgärder och ansvarsfriskrivningar. Önemli not Cihazı çalıştırmadan önce tüm talimatları, uyarıları, ikazları ve yasal açıklamaları okumalı, anlamalı ve bunlara uymalısı

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Documentation Information

A1 Online documentation

Our manuals are constantly updated and published online. To access the Hertzinno acoustic camera series user manual and other product documentation, visit http://hertzinno.com.

A2 About this manual

HERTZINNO publishes generic manuals that cover several models within a camera series. This means that this manual may contain descriptions and explanations that do not apply to your specific camera model. The English language is the authoritative version of this publication. In the event of any discrepancy due to translation errors, the English text shall prevail. Any subsequent changes will be implemented in the English language first.

Safety Information

B1 Radio

WARNING！ ！ ！
This device complies with Part 15 of the FCC Rules and with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: This device may not cause harmful interference. This device must accept any interference received, including interference that may cause undesired operation.
WARNING！ ！ ！
This device contains specified radio equipment that has been certified to the Technical Regulation Conformity Certification under the Japanese Radio Law.
WARNING！ ！ ！

This portable transmitter with its antenna has shown compliance with the FCC's SAR limits for the general population / uncontrolled exposure. The maximum listed SAR level is 1,5 W/kg (head) and 1,5 W/kg (body) at 0 mm. The antenna used for this device must not be co-located or operating in conjunction with any other antenna or transmitter

B2 Handling and operation

WARNING！！！
If you do not obey these Warnings, injury to persons can occur. Do not look directly into the laser beam. The laser beam can cause eye irritation. Do not look directly into the LED lights placed on the microphone panel.
CAUTION！！！
Do not point the infrared camera at strong energy sources, for example, devices that cause laser radiation, or the sun. This can have an unwanted effect on the accuracy of the camera. It can also cause damage to the detector in the camera.
WARNING！！！
Do not disassemble or make modifications to the battery. The battery contains safety and protection devices which, if damage occurs, can cause the battery to become hot, or cause an explosion or an ignition.
CAUTION！！！
Protect the camera and accessories from dirt, dust, impact, and liquids. Protect the microphone panel from physical contact. Do not touch the microphone holes. Protect the laser module and the optical camera module. Keep the USB port covered to prevent water ingress. Do not look directly at the laser module, as it may cause permanent eye damage or even blindness. Only use the accessories and spare parts that Hertzinno provides. Do not disassemble the camera. Do not use a damaged camera, battery or accessories.

Disclaimers

Legal Disclaimer

For warranty terms, please confirm with your local dealer.

Patents

This product is protected by patents, design patents, patents pending, or design patents pending.

Quality Assurance

The Quality Management System under which HERTZINNO products are developed and manufactured has been certified in accordance with the ISO 9001 standard.
HERTZINNO is committed to a policy of continuous development and reserves the right to make changes and improvements to any product without prior notice.

Third-Party Licenses

Information about third-party licenses is available in the product's user interface.

Usage Statistics

HERTZINNO reserves the right to gather anonymous usage statistics to help maintain and improve the quality of our software and services.

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1 Product Overview

1.1 Product Introduction

The Hertzinno Acoustic Camera (HA3 series) is a specialized device that utilizes microphone arrays to measure the sound field distribution within a specific range. It can be used to determine the location of objects and the state of radiation and displays an intuitive image in the form of an acoustic imager, i.e., acoustic imaging measurement.

HA3 cameras are advanced acoustic imaging devices that integrate sound collection, image acquisition, and precise sound source localization with visualization. By leveraging high-sensitivity microphone arrays and real-time beamforming algorithms, HA3 provides accurate detection and diagnostic capabilities for equipment failures, enabling efficient inspection and maintenance across various industrial scenarios.

HA3X cameras are advanced acoustic imaging devices designed for safe and efficient equipment diagnostics in hazardous environments. Equipped with high-sensitivity microphone arrays and real-time acoustic imaging algorithms, HA3 X provides precise sound collection, visualization, and fault localization. Certified with ATEX, the device ensures reliable operation in explosive atmospheres, making it ideal for inspections in oil, gas, and other high-risk industrial sectors.

HA3T cameras integrate acoustic sound collection, image acquisition, and sound source localization with visualization, and are additionally equipped with thermal imaging sensors to enable multi-dimensional detection and diagnosis of equipment failures.

HA3LX cameras are ATEX-certified and combine acoustic imaging functions—including sound collection, image acquisition, and sound source localization—with a methane concentration detector, allowing precise detection in specialized industrial scenarios.

The instruments support both audible and ultrasonic frequency ranges, making them suitable for sound source localization and abnormal sound analysis. Whether applied to steady-state or transient sound sources, and regardless of static or dynamic targets, Hertzinno Industrial Imagers deliver highly accurate and reliable detection results. They are widely deployed in critical applications such as high-pressure gas leak detection and partial discharge monitoring in power systems.

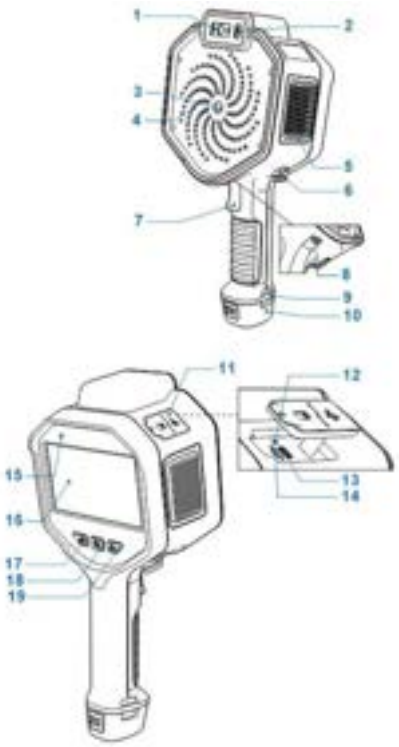
1.2 Product Features

- Acoustic Field Imaging
- 144 MEMS Microphones Module
- 2-130kHz Detection Band
- Partial Discharge Detection
- Air Leak Detection
- Mechanical Noise
- Parameter Adjustment
- Photo Taking and Video Recording
- Laser Rangefinder
- Explosion Proof (HA3X, HA3LX is ATEX certificated)
- System Self-Test
- System Setting
- File Management
- Cloud Management Functions
- On Device Report Generation
- Device Interface Streaming
- Bluetooth Headphone Real-Time Listening
- Thermal Imaging （HA3T equipped with a thermal lens）
- Methane Concentration Detection (HA3LX equipped with a methane laser module)
- E-Compass
- Ambient Temperature and Humidity Detection

1.3 Specifications

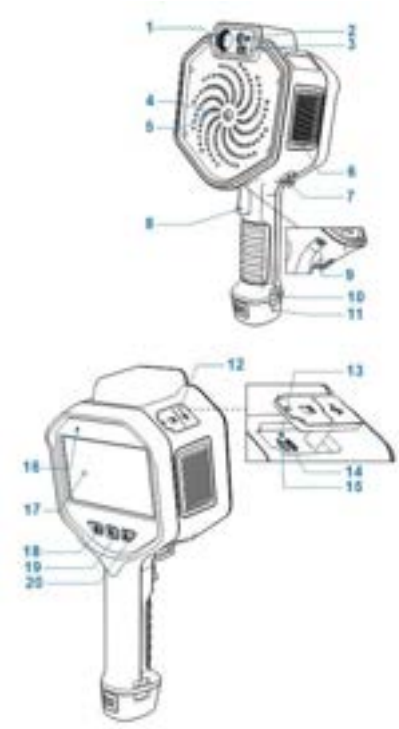
1.3.1 Appearance

HA3 / HA3X Structure



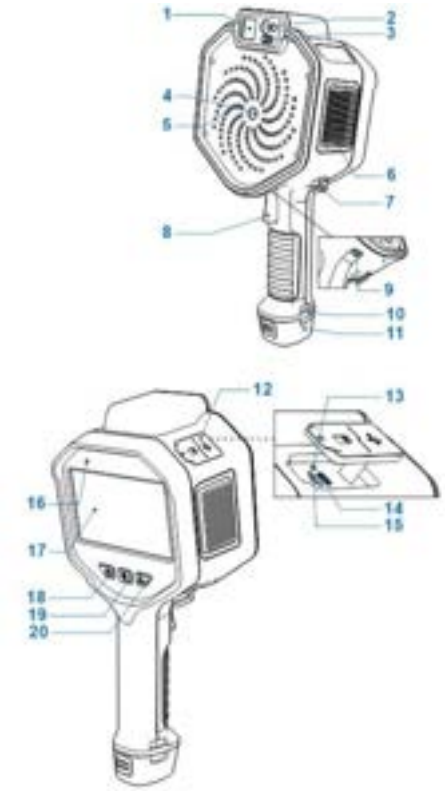
1. Laser Rangefinder
2. Fill Light
3. Visible Light Camera
4. Acoustic Sensor
5. Heat Sink
6. Band Strip
7. Trigger Button
8. 1/4 Inch Threaded Hole
9. Metal Ring
10. Battery
11. Silicone dust plug
12. Charge Indicator
13. USB Port
14. Micro SD Port
15. Photosensitive device
16. Display
17. Power Button
18. Laser Rangefinder Button
19. Customize Button

HA3T Structure



1. Infrared Imaging Module
2. Laser Rangefinder
3. Fill Light
4. Visible Light Camera
5. Acoustic Sensor
6. Heat Sink
7. Band Strip
8. Trigger Button
9. 1/4 Inch Threaded Hole
10. Metal Ring
11. Battery
12. Silicone dust plug
13. Charge Indicator
14. USB Port
15. Micro SD Port
16. Photosensitive device
17. Display
18. Power Button
19. Laser Rangefinder Button
20. Customize Button

HA3LX Structure



1. Laser Methane Concentration Module
2. Laser Rangefinder
3. Fill Light
4. Visible Light Camera
5. Acoustic Sensor
6. Heat Sink
7. Band Strip
8. Trigger Button
9. 1/4 Inch Threaded Hole
10. Metal Ring
11. Battery
12. Silicone dust plug
13. Charge Indicator
14. USB Port
15. Micro SD Port
16. Photosensitive device
17. Display
18. Power Button
19. Laser Rangefinder Button
20. Customize Button

Airline Case view from the front, and the right



1.3.2 Specifications

Model	HA3 Series
Microphones	144 Digital MEMS microphones
Frequency Bandwidth	2kHz ~ 130kHz
Dynamic Range of the Camera	-30dB ~ 120dB
Minimum Imaging Sensitivity*	10kHz：3dB SPL
Operating Distance	0.3m ~ 200m
Dynamic Range of Multiple Targets	0 ~ 18dB
Space Resolution	≤1cm@1m, 40kHz
Microphone Self-check	YES
General	
Optical Camera	13MP
Camera FOV	72°±3°
Lighting	LED lighting
Photo Image Resolution	4K (3840×2160), 1080P
Digital Zoom	1/2/4/8
Video Image Resolution	1920×1080@30fps, 1920×1080P@60fps
Storage	128GB
Annotation	Text, voice, photo, and tags
Display	5-inch, Touch Screen, 1920*1080
Wi-Fi & Bluetooth	IEEE 802.11a/b/g/n/ac 2.4G&5G & BT4.2
E-compass	Support
Laser Distance Measurement	0.1 - 20m (±1mm) (Laser Class II,620-690nm, ＜1mw)
Data Transmission	USB, Wi-Fi, Bluetooth
USB Port	TYPE-C
Battery	Li-Ion rechargeable battery, up to
Charging Time	2.5 h (from 10% to 90%) & PD Fast Charging
Protection Level	IP54
Tripod Mount	UNC 1/4-20
Weight	Less than 1.2kg
Dimension	333mm*152mm*115mm
Working Temperature Range	-20℃ ~ 55 ℃
Storage Temperature Range	-40℃ ~ 85 ℃
Humidity	10% -95% (non-condensing)
Explosion Proof	ATEX **(HA3X, HA3LX)**
Applications	

Work mode	Partial Discharge, Leaks Detection, Mechanical Noise
Analysis Software	On-device Analysis, PC software, Cloud software
Thermal Specifications	**HA3T Only**
Sensor	640*512（Uncooled Vanadium Oxide）
Pixel Pitch	12μm
Spectral Range	8 ~ 14μm (LWIR)
NETD	≤ 40mK(@25°C,F#=1.0)
Measurement Range & Accuracy	-20°C~150°C / 100°C~550°C (±2°C or ±2% reading)
IFOV	0.8mrad
FOV	29.3°(H)×23.4°(V), 37.5°(D)
Focal Length	15mm (fixed focus)
Frame Rate	30Hz
Laser Module Specifications	**HA3LX Only**
Sensor	CLASS IIIR LASER PRODUCT
Detecting Gas Type	Methane
Measuring Principle	TDLAS
Detecting Distance	30m (80% reflectance, gas concentration 3000 ppm*m）
Static Detection Limit	5ppm*m
Response Time	0.2s
Measuring Range	0 to 50,000 ppm*m
Anti-Explosion	Ex ib IIIC T130°C Db

1.4 Serial number

A label with the serial number is available at the top of the camera.
The serial number is also available in the camera system settings.

1.5 Package list

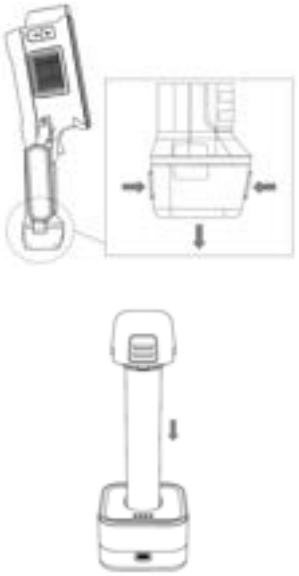
No.	Name	Description	Qty.
1	Acoustic Camera	Acoustic Camera Device	1
2	Power Adaptor	Type-C Adaptor	1
3	Charging Cable	Type-C Power Cable	1
4	Charging Dock	Accessory	1
5	Spare Battery	Accessory	1
6	USB Flash Drive	Accessory	1
7	SD Card Reader	Accessory	1
8	Factory Report	Documentation Set	1

2 Basic Operation

2.1 Charge

2.1.1 Charge through the charging port

You can loosen the lock on the cap and drag it out to place it on the charging port.



2.1.1-Charge through Charging Port

The charging port has 4 LED indicators. Each stand for 25% battery level.

After the battery is full, the LED indicators will be off.

2.1.2 Charge through the Type-C transmission Cable

You can open the dust-proof cap and connect the Type-C cable to the Type-C port.



2.1.2-Charing through Type-C Port

Red LED indicates the device is charging, and green light indicates the battery is full.

2.2 Adjust the Band Strap

You can adjust the band strap.



2.2.1-Band Strap

2.3 Device Power



2.3.1-Power Button

2.3.1 Power On

When the device is powered off, you can press the power button 2s to turn on the device.

2.3.2 Power Off

Hold the power button 2s, the device will pop up the confirming dialog, and you can power off the device.

Hold the power button for 10 seconds, and you can force the camera to power off.

2.3.3 Hibernation and Wake Up

Hold the power button 2s, the device will pop up the confirming dialog, and you can set the device to hibernation.

Press the power button, and you can set the device to hibernation, and the screen is turned off.

When the camera is hibernating, you can press the power button and turn on the screen.

2.4 Shoot Photo



2.4.1-Trigger Button

You can press the trigger button on the device to take a photo.

You can press the  on the screen to take a photo. For more information, and for more information, please review Chapter 5, Record Photo & Video.

3 Main Interface

3.1 Acoustic Imaging Main Interface

Hertzinno's Acoustic Camera supports Partial Discharge Mode, Gas Leakage Mode, and Mechanical Noise mode.

The process of acoustic camera start-up:

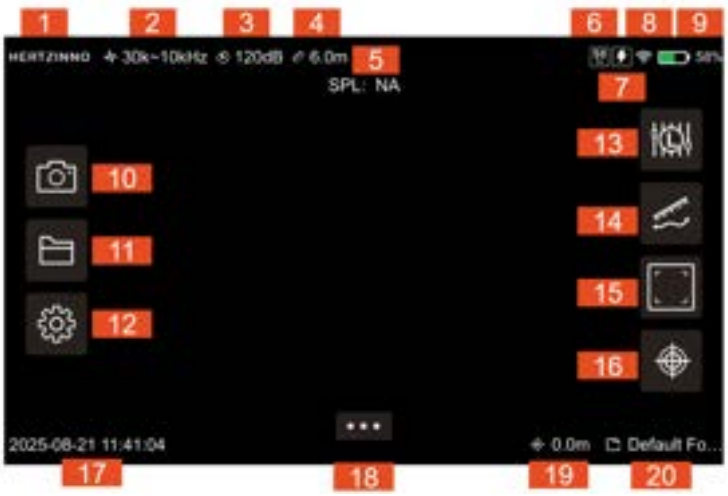
1. Press the power button on the camera.
2. Display Hertzinno's Brand LOGO.
3. Enter the main interface.



3.1-Default Main Interface

Different Mode has its own unique interface.

3.1.1 Partial Detection Mode Interface



3.1.1-Partial Discharge Detection Interface

1. Hertzinno's LOGO
2. Detection Band: Current Detection Band
3. Threshold Frequency
4. Distance for Annotation

5. Measured Sound Pressure Level
6. PRPD Power Frequency Circle
7. Partial Discharge Mode Icon
8. WLAN Connection Indicator
9. Battery Status
10. Photo / Video: Press to take a photo, hold to take a video. For Detailed Information, please check Chapter 5.
11. Album: For Detailed Information, please check Chapter 6.
12. Settings: For Detailed Information, please check Chapter 8.
13. Frequency Band Adjustment: For Detailed Information, please check Chapter 4.
14. Distance for Annotation Adjustment



3.1.1.15-Central Focus Interface

15. Central Focus Mode: Enable this function to set the detection range on the camera. The camera will ignore the signal outside the circle.
16. Single / Multiple-Target Mode: Please check Chapter for details.
17. Date and Time
18. Quick Operation Dock: Please check Chapter 3.1.6
19. Laser Rangefinder Result.
20. File in use.

3.1.2 Gas Leakage Detection Mode Interface

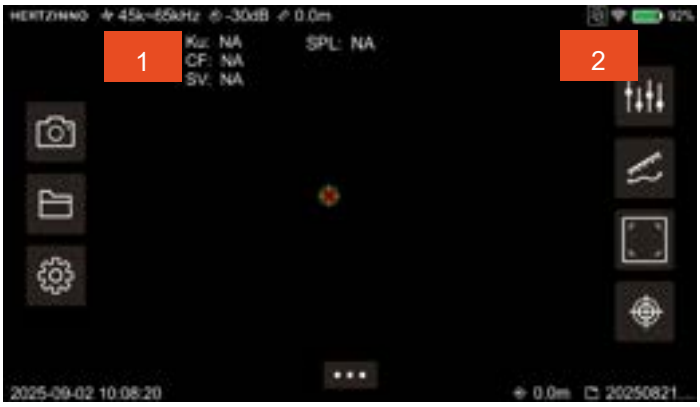
The following screenshot displays the interface of the **gas leakage detection mode.**



3.1.2-Gas Leakage Detection Interface

1. Leakage Calculation
2. Gas Leakage Mode Icon

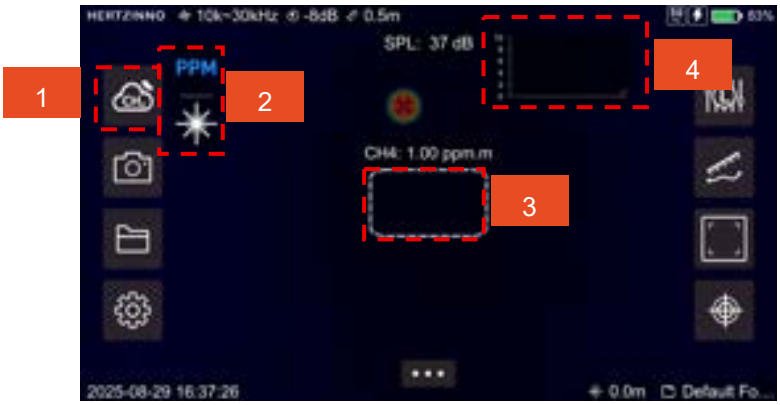
3.1.3 Mechanical Noise Detection Mode Interface



3.1.3-Abnormal Sound Detection Interface

1. Kurtosis, Crest Factor, Spectrum Variance Indicator
2. Mechanical Noise Detection Mode Icon

3.1.4 Methane Concentration Detection Mode Interface



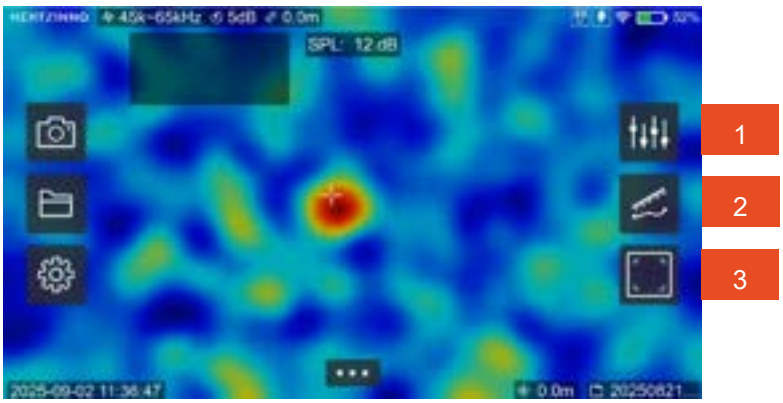
3.1.4-Methane Concentration Detection Interface

1. Methane Concentration Detection Mode: Press this button to switch mode between

methane concentration detection and acoustic imaging mode.

2. Methane Concentration Laser Measurement Indicator: Press the button to enable the laser to aim at the target. Press the PPH to display real-time methane concentration.
3. The Methane Concentration Indicator will indicate the methane concentration within the range.
4. Methane Concentration Spectrum: It will display the spectrum of the detected methane concentration.

3.1.5 Real Sound Field Interface



3.1.5-Real-Sound Field Imaging

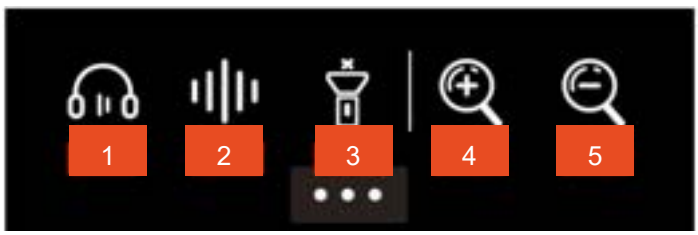
You can switch to the real sound field in Settings>Acoustic>Sound Source Type>Sound Source Type to revise it.

This mode can be applied to the partial discharge mode, the gas leakage detection mode, and the mechanical noise mode.

1. Frequency Band Adjustment. For details, please check chapter 4.1.1
2. Distance for Annotation
3. Central Focus

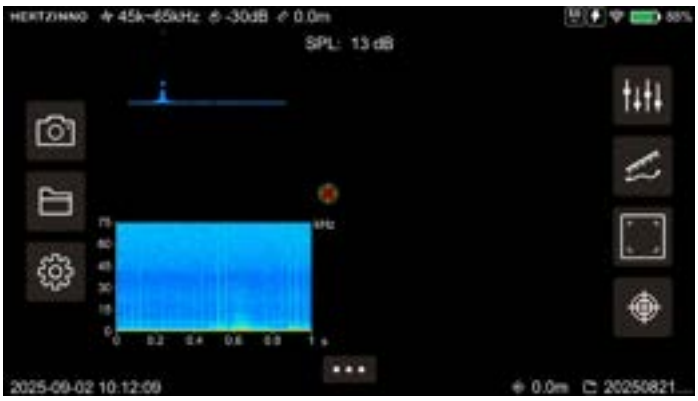
Note: In this mode, the single/multiple target button is hidden. Since the Real Sound Field Mode displays all sound fields targeted by the microphone array, if you need to distinguish sound sources with similar intensity levels, please adjust your threshold or modify the sound field cloud map in the Acoustic Analyzer.

3.1.6 Quick Operation Dock



3.1.6-Quick Operation Dock

1. Headphone Listening: You can connect the camera to Bluetooth headphones to listen the sound picked up by MEMS microphone array.

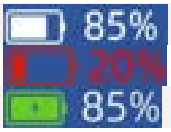


3.1.6.2-Time-Frequency Domain Chart

2. Time-Frequency Domain Chart Display
3. Fill Light
4. Electronic Magnification: 2x, 4x, 8x
5. Electronic Minification

3.1.7 Status Indicator

1. Remaining Battery Power

Icon	Status
	Power Enough
	Power Low
	Charging

2. Network Status

Icon	Status
	WIFI Signal Strong
	WIFI Signal of Medium Status
	WIFI Signal Weak
	WIFI Signal Very Weak

3. Bluetooth Status

Icon	Status
	No Bluetooth Connection
	Bluetooth Connected

4. Working Mode

Icon	Working Mode
	Partial Discharge Detection Mode
	Gas Leakage Detection Mode
	Mechanical Noise Mode

5. PRPD Frequency Cycle

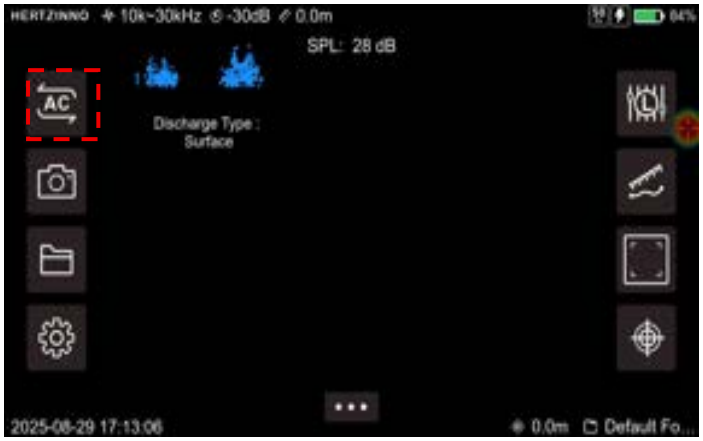
Icon	PRPD Frequency
	50 Hz
	60 Hz
	16.7Hz

3.2 Thermal Imaging Interface (HA3T only)

3.2.1 Thermal Imaging Main Interface



3.2.1-Infrared Imaging Interface



3.2.1-1-Acoustic-Infrared Switch Button

1. IR mode and acoustic mode switch. You can switch between the IR and acoustic imaging by pressing this button.



3.2.1-2-PIP Mode

You can display the photo-in-photo mode by pressing the button after you switch the mode. And you can press the button to prioritize the display of another image

2. Take a photo / Record a video
3. Album: For detailed Information, please check Chapter 6.
4. Settings: This will lead you to the system settings.
5. Auto Calibration: Press this button to enable infrared auto-calibration. When the device is calibration, the IR detector baffle will automatically close to modify the temperature detection.
6. Analysis target indicator: You can add temperature detection targets by pressing this button.
7. Pseudo-color: You can modify the pseudo-color band of the device.
8. Temperature measurement parameter adjustment: You can modify the parameter for calculation.
9. Quick Operation Dock: Please check Chapter 3.1.6.
10. Date and time. Emissivity and Set Distance. Ambient Temperature and Humidity Parameters. Laser Rangefinder Result. Selected Folder: You can revise the emissivity in thermal settings. For detailed information, you can check Chapter 4.2 for reference.

4 Imaging Parameter Adjustment

4.1 Acoustic Imaging

4.1.1 Frequency Band Adjustment

The frequency band adjustment function has two types: Fast Frequency Mode and Advanced Frequency Mode. The default mode is **Fast frequency** adjustment mode.



4.1.1-1-Automatic Frequency Adjustment

This button allows you to change the frequency band.

Frequency Band Name	Frequency Band Value	Application
Low Frequency Detection	10~30kHz	Little Background Noise
Medium Frequency Detection	20~40kHz	Long Detection Distance
High Frequency Detection	30~48kHz	Close Detection Distance
Ultrahigh Frequency Detection	45~60kHz	Very Close Detection Distance

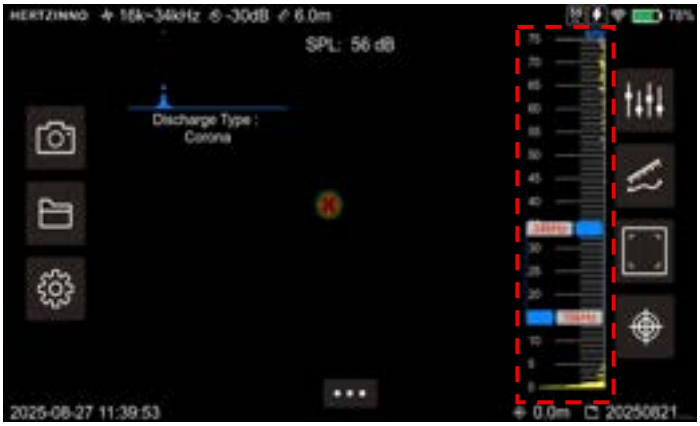
To use **Advanced frequency** adjustment mode, you can enable the **Spectrum Display** in Acoustic settings.

> Acoustic > Spectrum Display.



4.1.1-2-Acoustic Settings

After enabling this, the interface will change.



4.1.1-3-Frequency Band

Press the button to display the spectrum.

Note: You can see two indicators displayed on the spectrum. The device will detect the frequency within the interval.

You can drag the interval to adjust the frequency band and drag the blue indicator to adjust the bandwidth. The supported smallest interval is 1kHz, while the largest interval is 20kHz.

For the spectrum, the upper level is 75kHz, and the lower level is **2kHz.**

4.1.2 Threshold Adjustment

The threshold range is -30 ~ 120 dB. You can adjust it in acoustic settings.

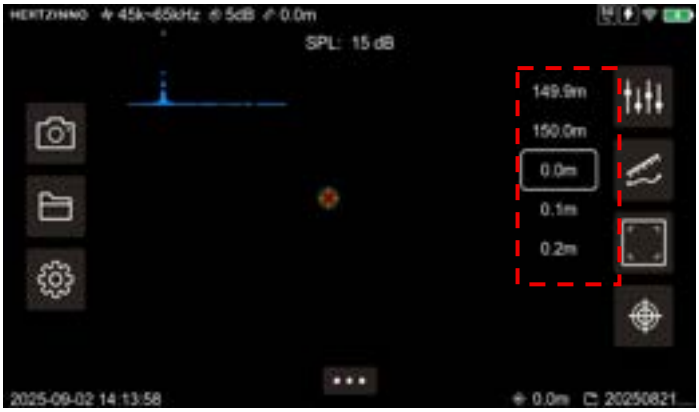
> Acoustic > Threshold



4.1.2-Threshold Settings

Default threshold is -30dB.

4.1.3 Distance for Annotation Adjustment



4.1.3-1-Distance Indicator

You can adjust the distance directly by scrolling the scrollbar.



4.1.3-2-Distance Scrollbar

You can adjust the distance in the Acoustic Settings.

Settings>Acoustic>PD Parameter or Leak Parameter to revise the distance.



4.1.3-3-Distance Settings

You can adjust the distance in the Album.

Note: Album>Pick one photo> Press button in the bar>>Distance

4.1.4 Detection Range Adjustment



4.1.4-1-Central Focus

You can enable this function in settings or press the button on the screen.



4.1.4-2-Central Focus Settings

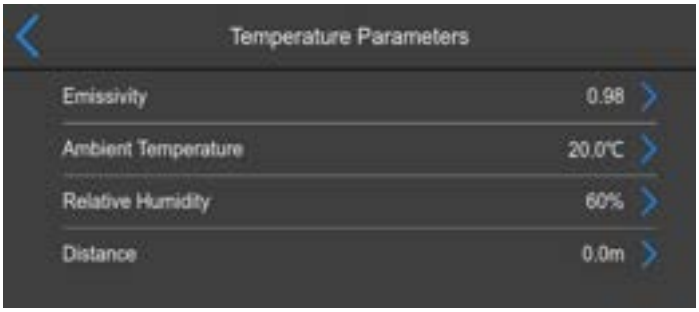
You can adjust the central focus range here. The camera now do not support customized focus range.

4.2 Infrared Imaging

4.2.1 Temperature Parameters Adjustment



4.2.1-1-Infrared Parameters Settings



4.2.1-2-Infrared Settings Interface

You can adjust the distance by pressing the button in the bottom-left corner.

Emissivity: It refers to the application of measuring how much infrared radiation a material reflects. It is widely used in fields like material identification, environmental monitoring, and remote sensing.

Ambient Temperature: You can revise the temperature to minimize the effect from device heat.

Relative Humidity: You can revise the humidity for higher precision.

Distance: You can revise the distance for severity which judged in the report.

4.2.2 Detection Object Configuration

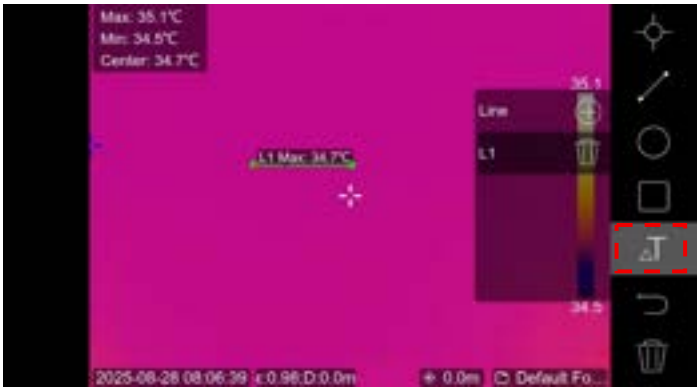


4.2.2-1-Detection Object Configuration

You can add detection objects on the screen. The temperature will be displayed on the object directly. Each object can add a maximum of 5.



4.2.2-2-Add a Point



4.2.2-3-Difference

You can calculate the temperature difference by pressing the ΔT button.

4.2.3 Auto-Calibration



4.2.3-Calibration

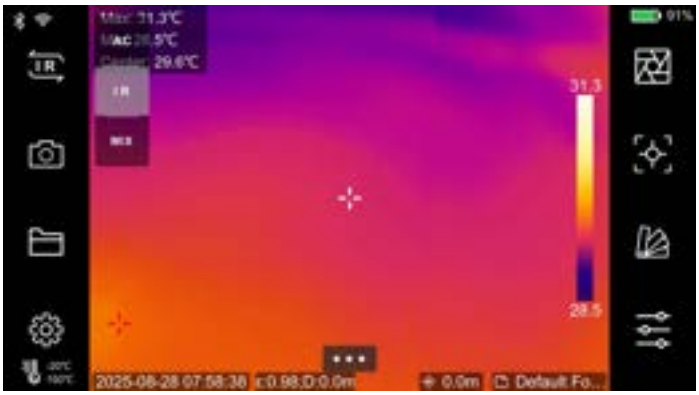
The thermal module will auto-calibration for a higher precision.

4.2.4 Pseudo Color Band Adjustment



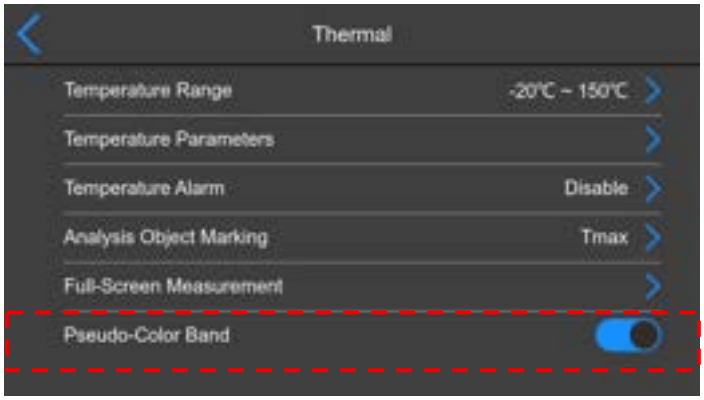
4.2.4-1-Color Band

You can adjust the color band for better review.



4.2.4-2-Revised Color Band

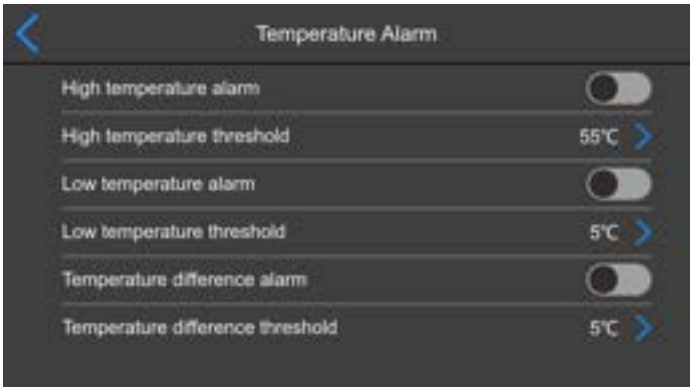
You can also decide whether to display color band or not in the settings.



4.2.4-3-Revised Color Band

4.2.5 Alarm Adjustment

You can set alarms on the camera. When the alarm is triggered, the temperature displayed on the screen will turn red.



4.2.5-1-Alarm Configuration

Note: Settings>Thermal>Temperature Alarm

You can adjust the alarm trigger conditions and temperature differences here.

4.2.6 Temperature Display Adjustment



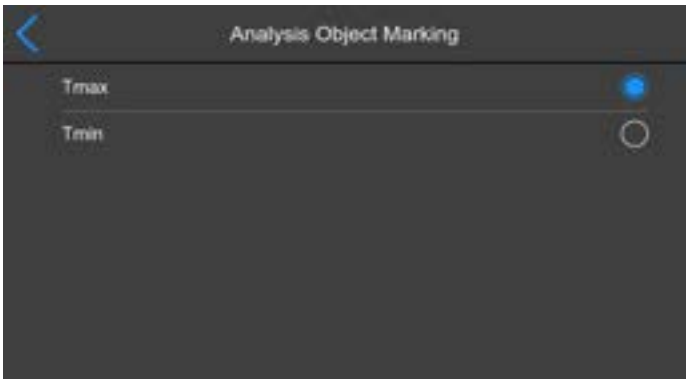
4.2.6-Temperature Displays

You can adjust the temperature displayed on the screen.



4.2.6.1-Temperature Displays

1. Note: Thermal Full-Screen Measurement.
   You can choose the statistics displayed.



4.2.6.2-Analysis Object Temperature Displays

2. You can choose the displayed value of object.

5 Photo & Video Record

5.1 Take Photo

5.1.1 Acoustic Photo



5.1.1-Trigger Button

You can press the trigger to take a photo.

Tap the camera icon to take a photo. Photos will be saved in JPG format, and you can view details of the saved photos in File Management.

5.1.2 Infrared Photo

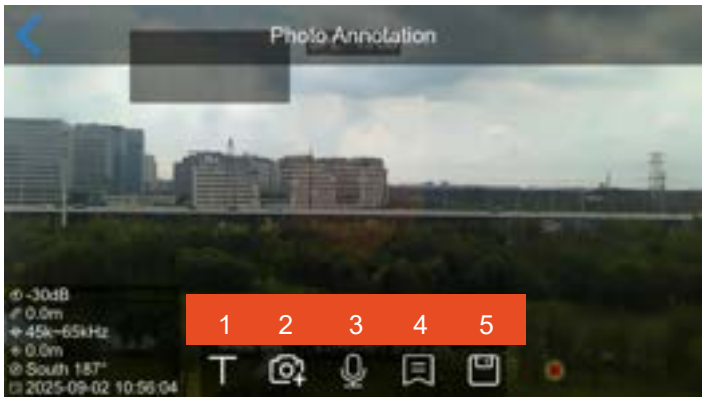


5.1.2-Infrared Interface

For infrared photos, you can also press the button on the screen to take photo or press the trigger.

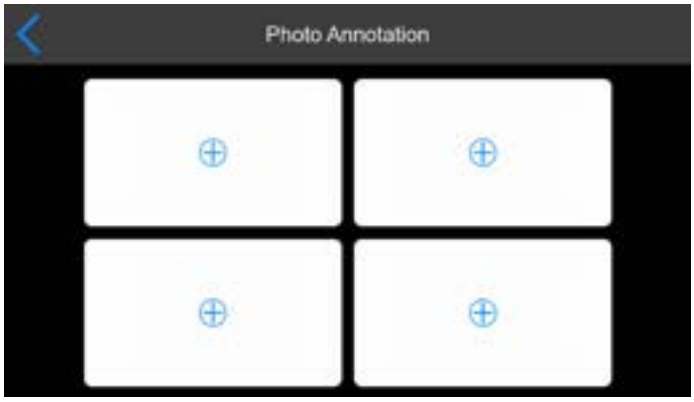
5.1.3 Photo Annotation

After taking a photo, the camera will automatically bring up the "Photo Annotation" feature. You can disable in the settings. Please check Chapter 6.1 for reference. Click the buttons below to add text notes, image annotations, tag labels, and perform file-saving operations.



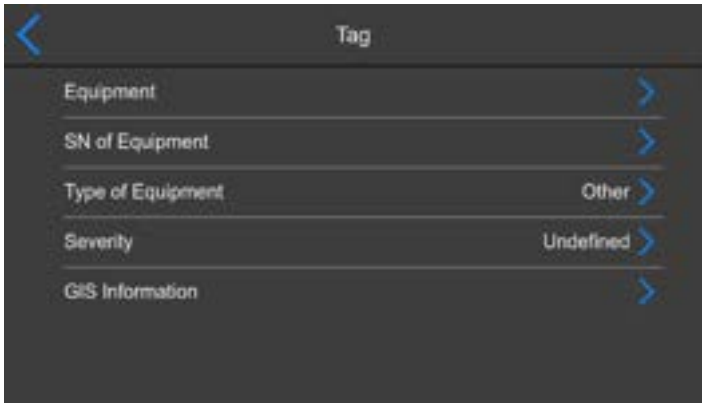
5.1.3.1-Quick Annotation Editing Interface

1. Text Annotation: Leave a text note. You can review it later in the album, and the note will be saved in the report.



5.1.3.2-Photo Annotation Interface

2. Photo Annotation: Leave photo notes. You can add a maximum of 4 photos for clarify.
3. Voice Annotation: You can leave a vocal annotation.

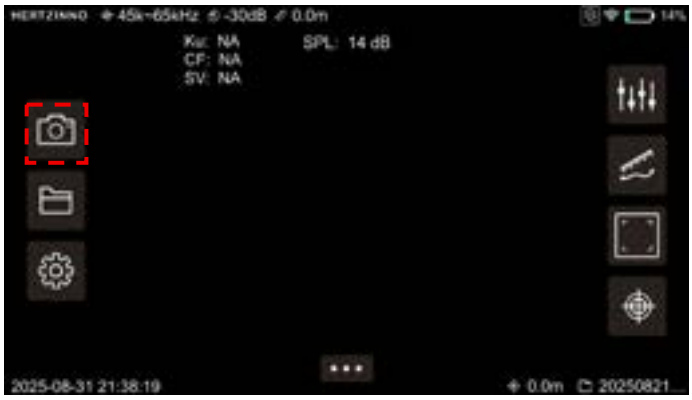


5.1.3.4-Tag of Photo

4. Tag: You can revise the tag of the photo
5. Save the Changes

5.2 Take Video

5.2.1 Take Acoustic Video



5.2.1-1-Hold the Button to take photo

Hold the button to take a video. Videos will be saved in MP4 Format. You can also view the details of the saved video in File Management.

You can also hold the trigger to take a video.



5.2.1-2-Record Video

The recorded video will be saved directly to the album.

5.2.2 Take Infrared Video



5.2.2-Infrared Video

Hold the button to take a video. Videos will be saved in MP4 Format. You can also view the details of the saved video in File Management. You can also hold the trigger to take a video.

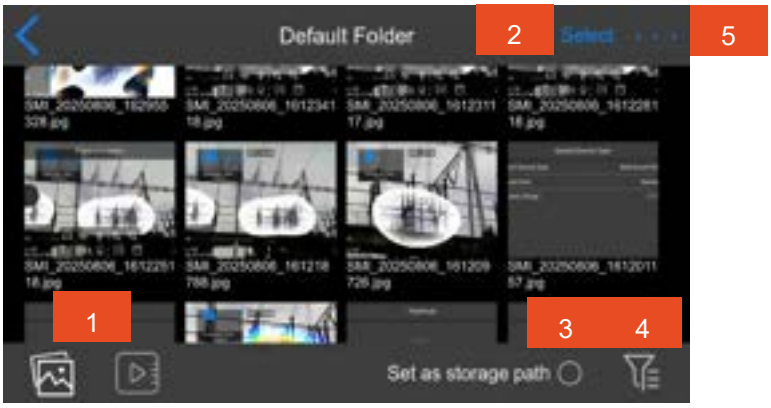
6 Album

6.1 Folder Management



6.1.1-Album Interface

You can add new folders to the album by pressing the button. The files are stored to the default folder.



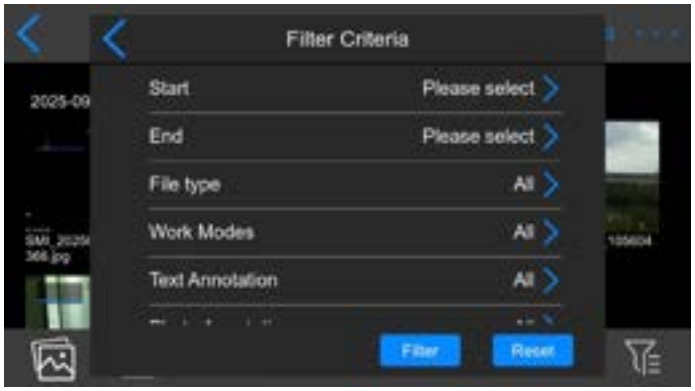
6.1.1.1-Folder Interface

1. You can switch between photo and video.

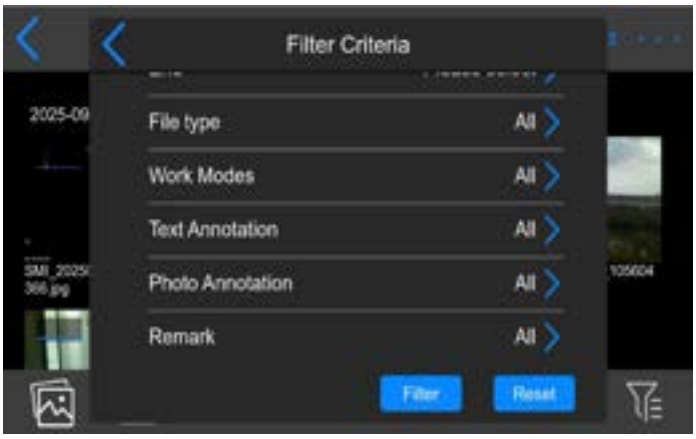


6.1.1.2-Select Folder

2. You can select multiple files by pressing this button. You can press this button to select all the files.
3. You can set the storage path to the folder.



6.1.1.4-1-Criteria



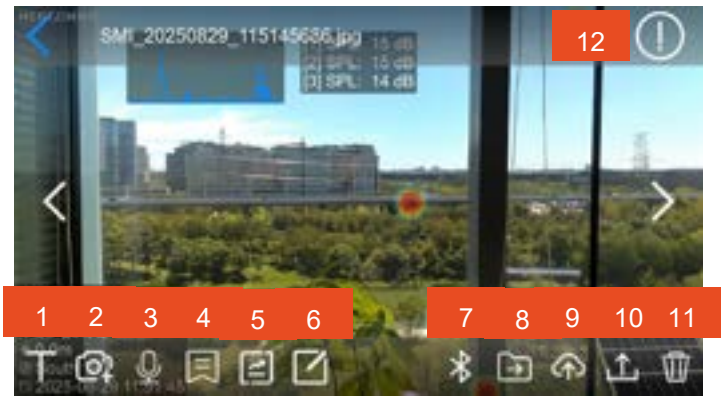
6.1.1.4-2-Criteria

4. Filter: You can set the filter criteria to find the file you want.
5. Folder Management: You can delete the folder or rename it here.

6.2 Photo management

6.2.1 Acoustic Photo Management

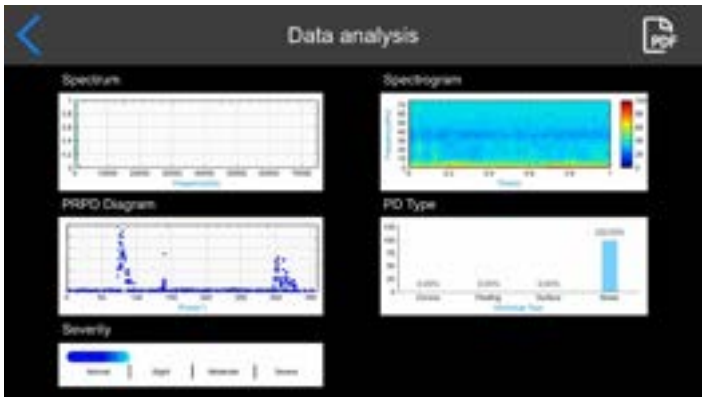
You can check the acoustic sound field file and thermal file in the album.



6.2.1-Annotation in Album

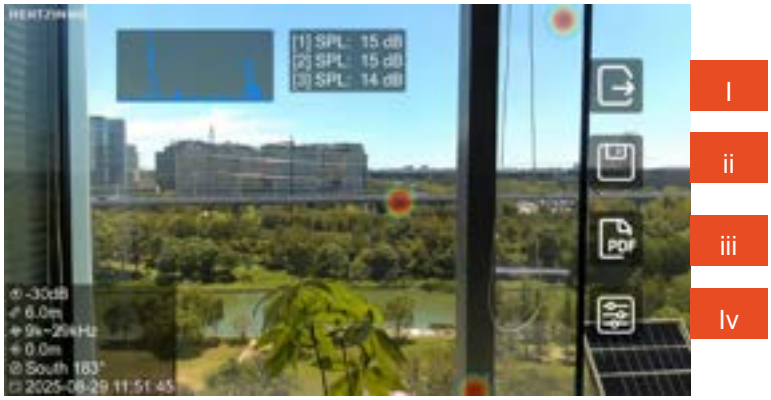
1. Text Annotation
2. Photo Annotation
3. Voice Annotation

4. Tags



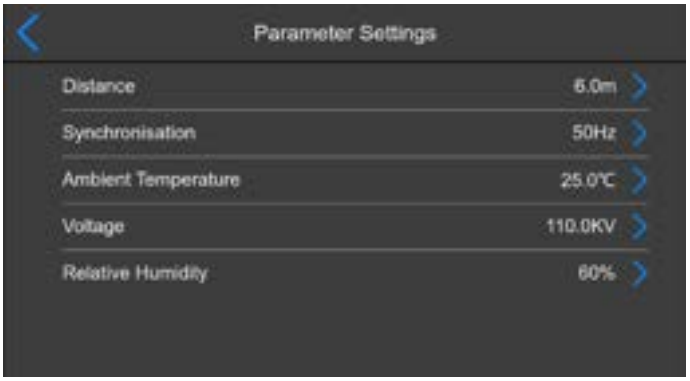
6.2.1.5-Diagram displayed in the report

5. Data Analysis Interface
6. Other Settings



6.2.1.6-Other settings interface

i. Quit this interface
ii. Save the Change
iii. Generate the Report PDF



6.2.1.6-iv-Ambient parameter settings

iv. On device measurement parameters adjustment

7. Bluetooth Transmission: You can transmit the file to another device when Bluetooth is connected.
8. Move the File
9. Upload to the Cloud
10. Upload to the USB

11.Delete the File



6.2.1.12-Photo Information

12. The Information of the File

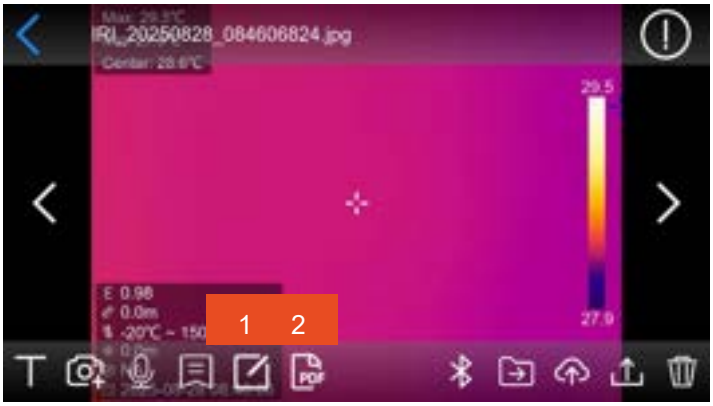
6.2.2 Video Review



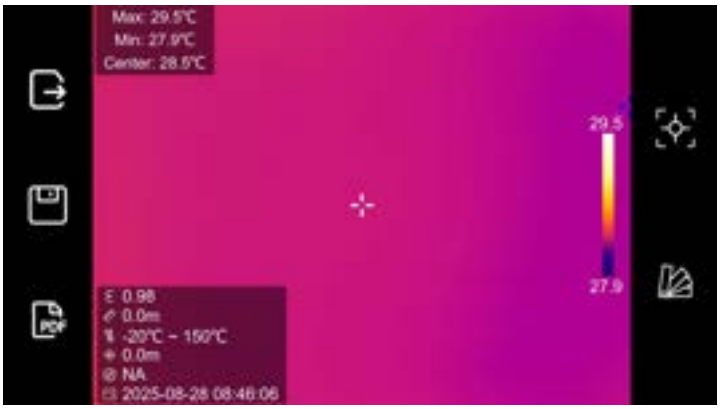
6.2.2-Video Review

1. Move the file to another folder
2. Upload to Cloud
3. Upload to USB
4. Delete the File
5. Information

6.2.3 Infrared Photo Review



6.2.3-Infrared Photo in Album



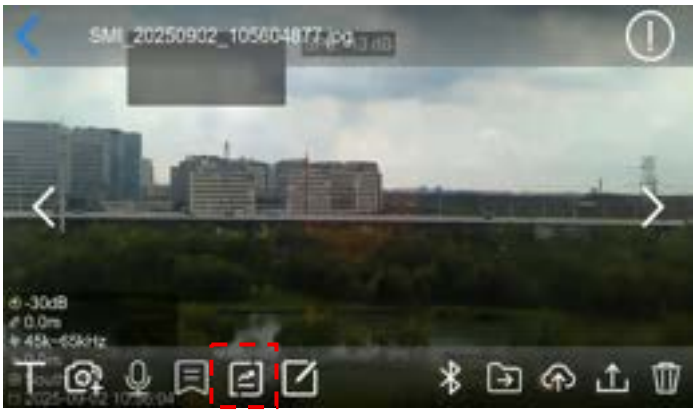
6.2.3.1-Infrared Parameters

1. Infrared Parameter Revise: You can revise the parameters for higher calculation precision.
2. Report Generation

7 Report

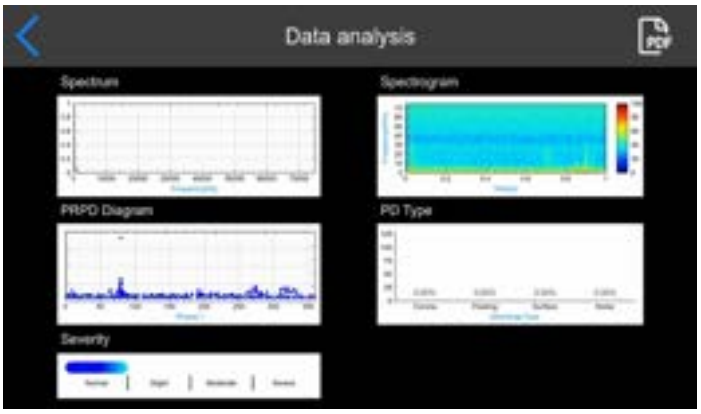
7.1 Generate a Report

7.1.1 Acoustic Photo



7.1.1-1-Photo Interface

Go to Album, press the data analysis button.



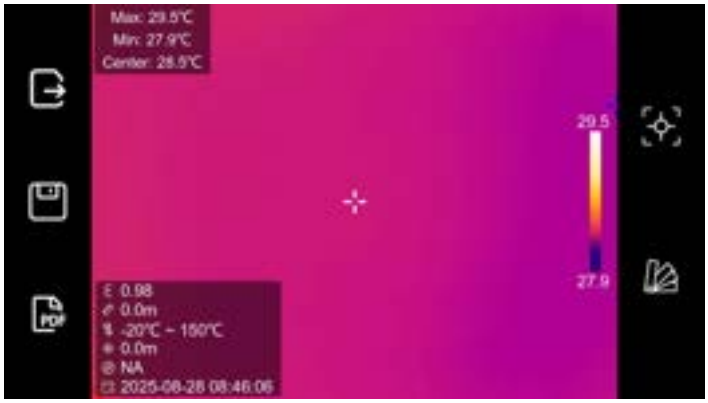
7.1.1-2-Data Analysis

In the photo interface, press the button to enter the data analysis interface, and press the button to generate a report.



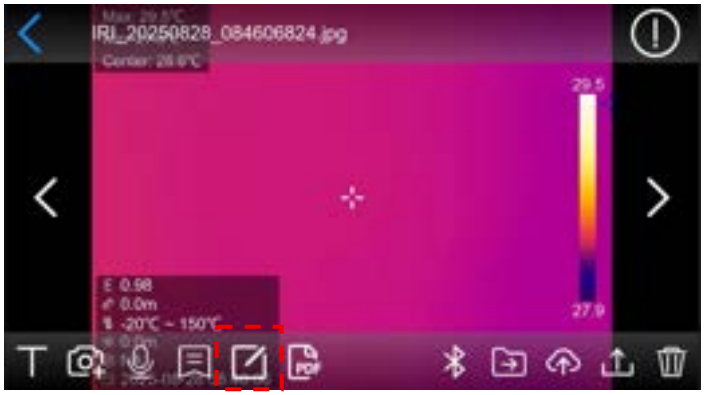
7.1.1-3-Photo Data Analysis Interface

7.1.2 Infrared Photo



7.1.2.1-Infrared Photo Parameter Settings

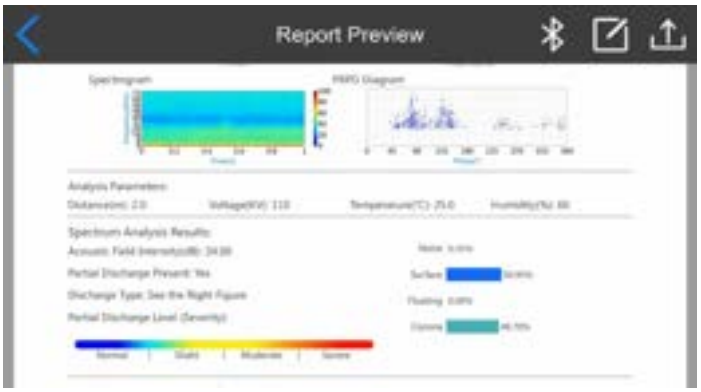
1. Press the button to revise the parameters, then generate the report.



7.1.2.2Infrared Photo Interface

2. Press the to generate a report. (Infrared Photo Only!)

7.2 Report Preview



7.2-Report Preview

The device will generate a report for preview.

7.2.1 Report Output

1. You can transmit the report to another device via Bluetooth.

2. You can upload the file to the USB drive.

7.2.2 Report Configuration



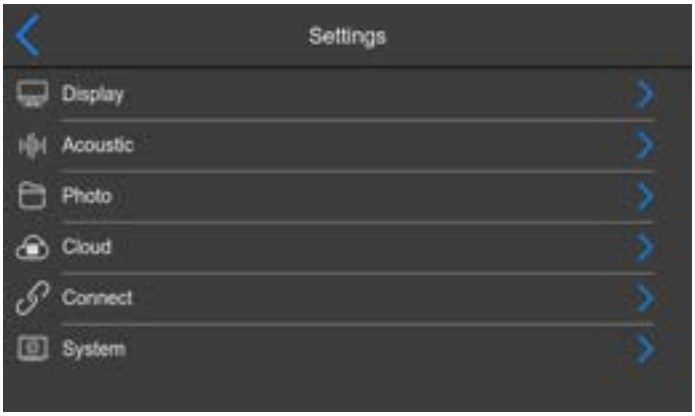
7.2.2-1-Report Configuration-1



7.2.2-2-Report Configuration-2

If you press this button , then you can edit the report format.

8 Settings

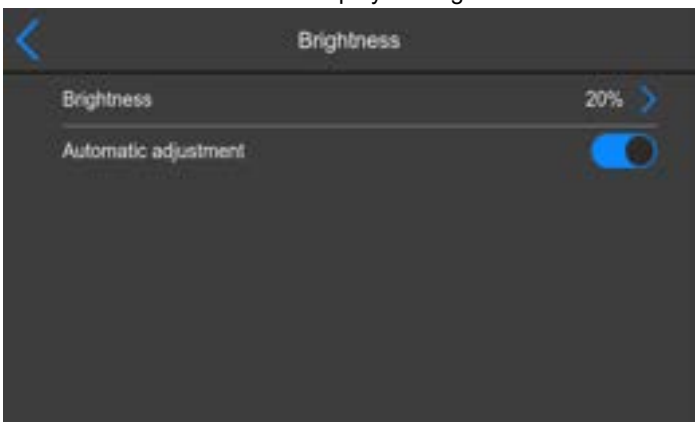


8-Settings Main Interface (HA3)

8.1 Display Settings



8.1.1-Display Settings



8.1.2-Brightness Settings

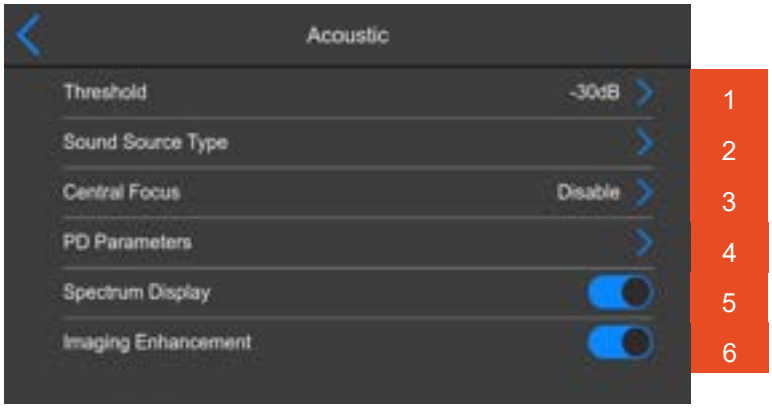
1. Brightness Settings: Display's brightness allows automatic and manual adjustment.
2. Date and Time Showcase
3. Acoustic Detail Showcase
4. Hertzinno's LOGO Display



8.1.3-No Icon is Displayed

5. Main Interface Icon Display: Tap the screen to hide the icon. Tap again to recall the button.

8.2 Acoustic Settings

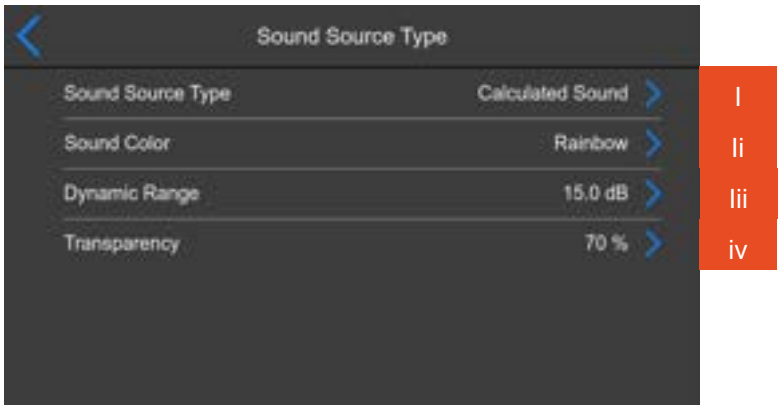


8.2.1-Partial Discharge Mode Acoustic Settings



8.2.2-Threshold Scrollbar

1. Threshold Settings: You can adjust the detection threshold by swiping on the screen. The minimum value is -30dB and the maximum value is 120dB.



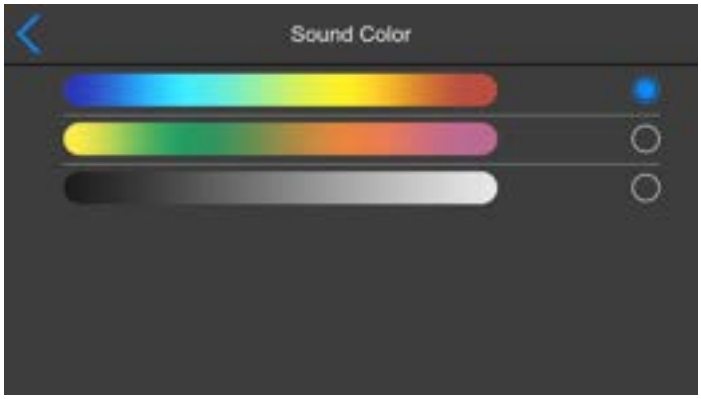
8.2.1.2-1-Sound Source Type Settings



8.2.1.2-2-Sound Source Type Settings

2. Sound Source Type Settings

i. Sound Source Type Settings: You can switch the sound source here. The calculated sound field marks the strongest sound field (or the second strongest, the third strongest). And the real sound field displays the overall sound field captured by the camera.



8.2.1.2-ii-Color Band

ii. Sound Color Settings: You can switch the sound field color and the cursor color here. The color has no inference to the result.



8.2.1.2-iii-Dynamic Range Scrollbar

iii. Dynamic Range Settings: This function is only effective when using real sound field detection. You can adjust the dynamic range of the sound field to detect close sound source.

iv. Transparency: This function is only effective when using real sound field detection. You can adjust the transparency of the real sound field detection result displayed on the screen and in the album.

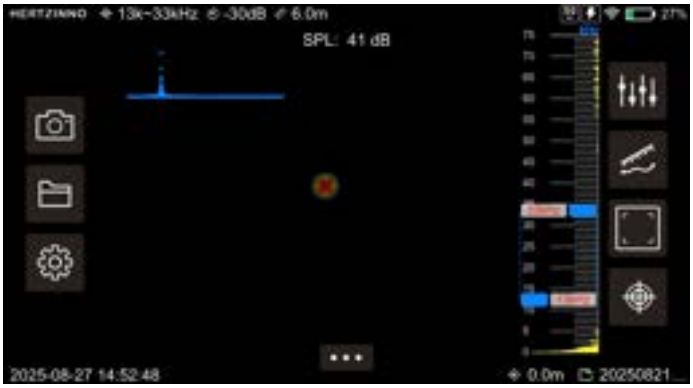


8.2.1.3-1-Central Focus Enabled



8.2.1.3-2-Central Focus Configuration

3. Central Focus Function: After enabling this function, the camera will ignore the signal outside the circle on the screen. You can adjust the size of the circle.
4. PD Parameter Setting: Please check Chapter 8.2.1,8.2.2,8.2.3.



8.2.1.5-Frequency Band

5. Spectrum Display: You can automatically set the detection frequency band by enabling this function.
6. Imaging Enhancement: After enabling this function, the detected signal will last longer on the screen, and the new detected signal will have a second delay to be displayed.

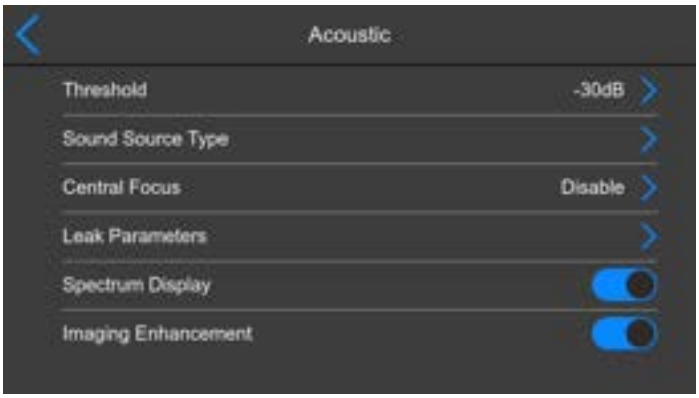
8.2.1 PD Parameter Settings



8.2.1.1-PD Parameter Setting

1. PRPD Plot: The camera can display the PRPD diagram.
2. PD Type Recognition: The camera can analyze PD type automatically.
3. PRPD Synchronization Settings: You can synchronize the frequency with the power grid.
4. Ambient Temperature
5. Detecting Voltage
6. Relative Humidity
7. Distance for note: You can set the distance for the note.

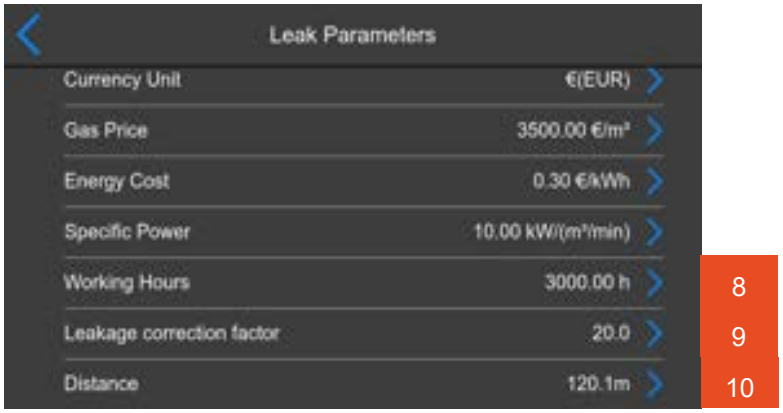
8.2.2 Leakage Detection Acoustic Settings



8.2.2-1-Leakage Detection Mode Acoustic Settings



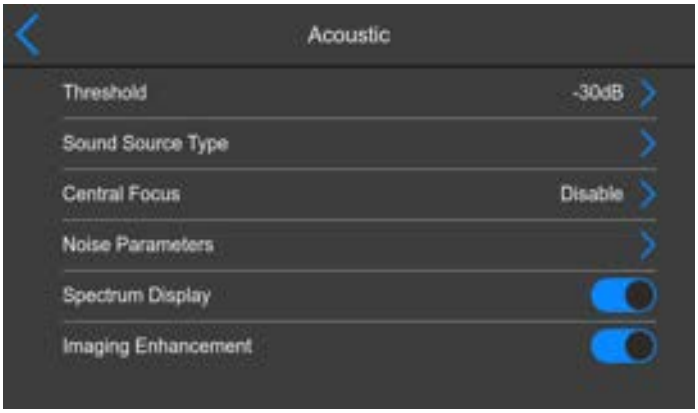
8.2.2-2-leakage Parameters



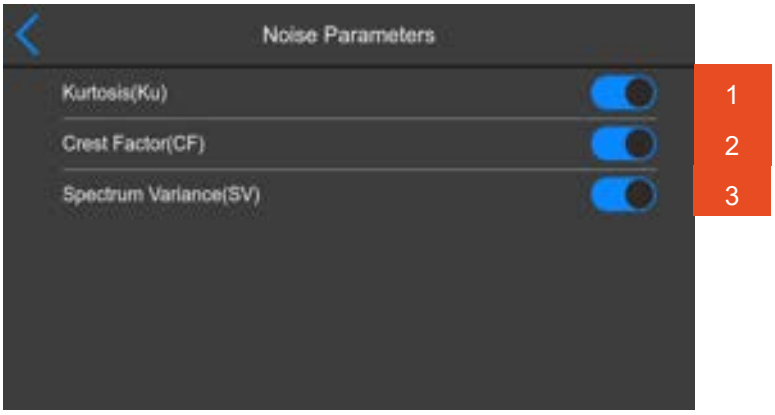
8.2.2-3-leakage Parameters

1. Leak Rate Indicator
2. Leak Loss Calculation
3. Leak Rate Unit
4. Currency Unit
5. Gas Price
6. Consumed Energy Cost
7. Specific Consumed Power
8. Evaluated Working Hours
9. Leakage Correction Factor
10. Distance for Note

8.2.3 Mechanical Noise Detection Acoustic Settings



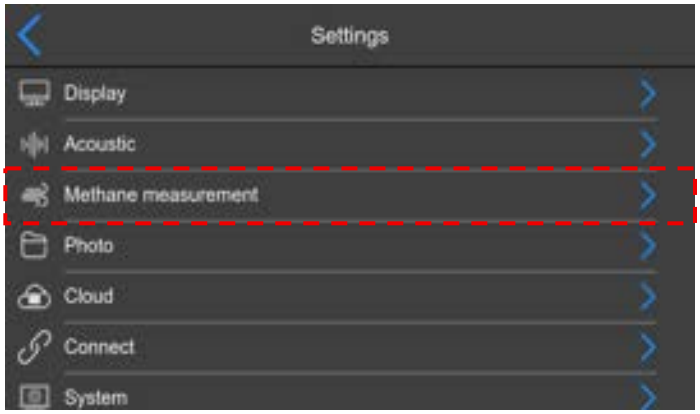
8.2.3-1-Abnormal Sound Detection Mode Acoustic Settings



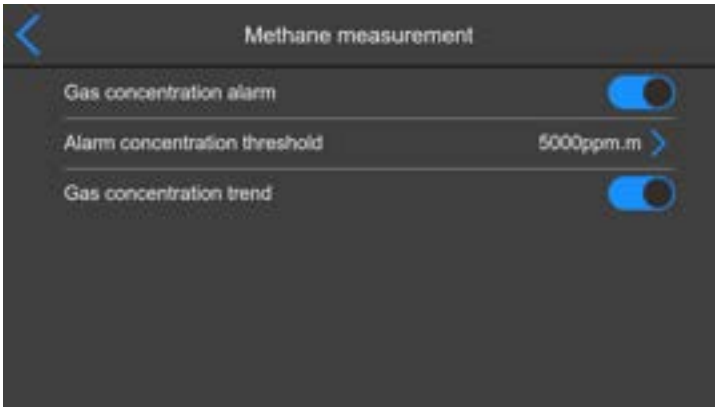
8.4.2-2-Abnormal Sound Detection Mode Acoustic Settings

1. Kurtosis Indicator: It indicates the sharp impact within the signal. It helps you to judge the fault like impact of the equipment. Closer to 3: Normal and stable, dominated by random noise. Significantly greater than3: Occurrence of impulsive events (such as impact, detonation, local leakage, bearing defects, etc.). Less than 3: Flat-topped distribution (abnormally rare, which may be caused by excessively smooth signals or excessive instrument filtering).
2. Crest Factor Indicator: It indicates the short-duration impact within the signal. It helps you to judge the collision and tear at an early stage.1.4 – 2.0: Stable rotation/uniform signal (Normal).2.0 – 3.0: Presence of mild pulses (e.g., normal combustion, valve impact). 3.0 – 5.0: Obvious impulsiveness, often indicating local anomalies (leakage, unstable ignition, local bearing defects). 5.0: Strong pulses/severe impacts (detonation, severe gear defects, bearing spalling).
3. Spectrum Variance Indicator: It tells the abnormal impact of noise on the background noise. It helps you to judge the equipment's abnormal sound. 5%: Extremely stable, with essentially no spectral fluctuation (Normal state).5% – 10%: Slight fluctuation, which may be disturbance from normal operating conditions.10% – 20%: Obvious fluctuation, requiring attention (usually corresponding to uneven combustion or local leakage). 20%: Highly abnormal, unstable spectrum, usually indicating severe faults or drastic fluctuations in operating conditions.

8.3 Methane Measurement* (HA3LX)



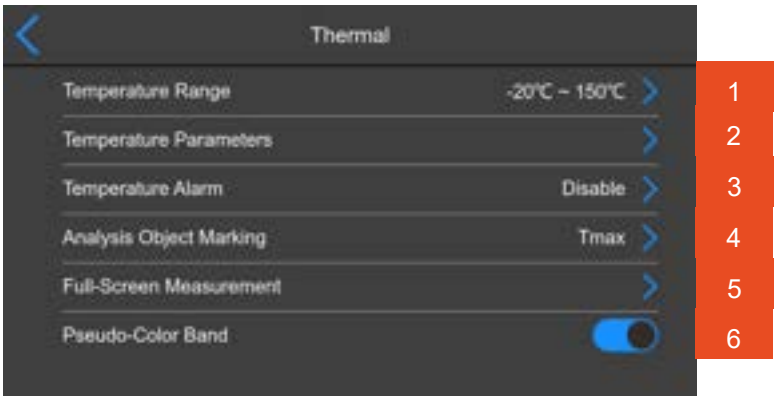
8.3-1-Methane Settings



8.3-2-Methane Measurement

1. Gas Concentration Alarm: When the gas concentration exceeds the limit, the camera will alert.
2. Alarm Concentration Threshold: You can set the trigger concentration.
3. Gas Concentration Trend: You can review the detected gas concentration trend in the screen.

8.4 Thermal Settings(HA3T)



8.4-Thermal Settings

1. Temperature Range: You can set the temperature detection range, including -20~150℃ and

150~550℃.

2. Temperature Parameters: You can revise the parameters for calculation.

3. Temperature Alarm: You can enable the Alarm here.

4. Analysis Object Marking: You can set the marking on the analysis object.

5. Full-Screen Measurement: You can revise the statistics displayed on the screen.

6. Pseudo-Color Band: You can decide whether display the pseudo-color band or not.

Note: You can check Chapter 4.2 for detailed operation instruction.

8.5 Photo Configuration



8.5.1-Photo Configurations

1. Visible Light Photo Resolution



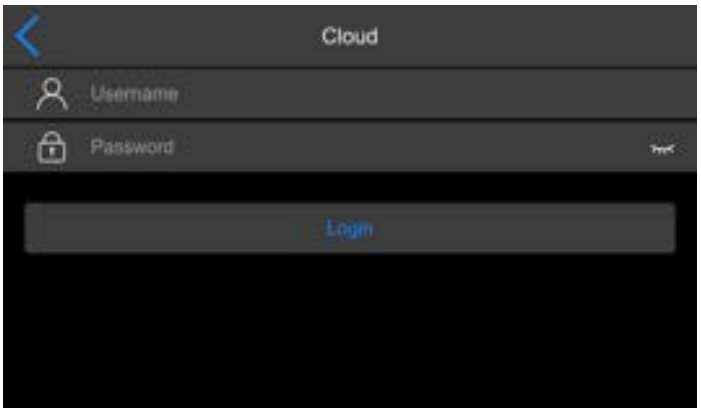
8.5.2-1-Photo Watermarks



8.5.2-2-Photo Watermarks

2. Watermark Configuration
3. Photo Annotation: If you disable this function, after you take a photo, the camera will skip the interface for annotation.
4. Video Synthesis Audio: If you enable this function, the recorded video will contain the audio.

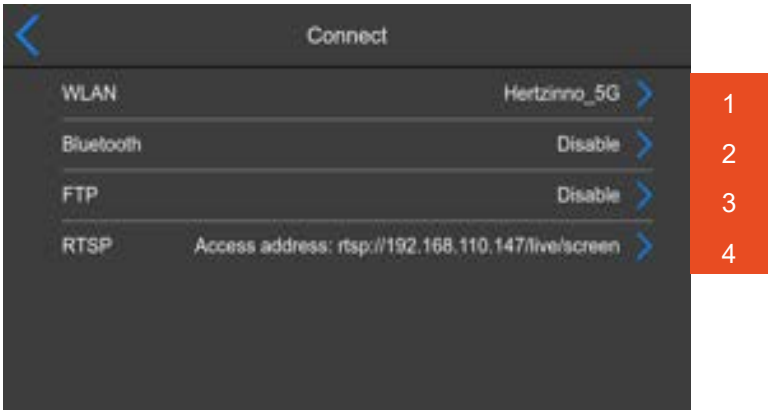
8.6 Cloud Settings



8.6-Cloud Settings Interface

We can provide you with cloud service. You can upload your file to the cloud and download it from the server.

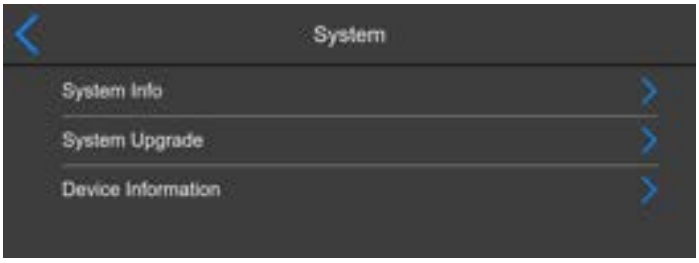
8.7 Connect Settings



8.7-Connection Settings

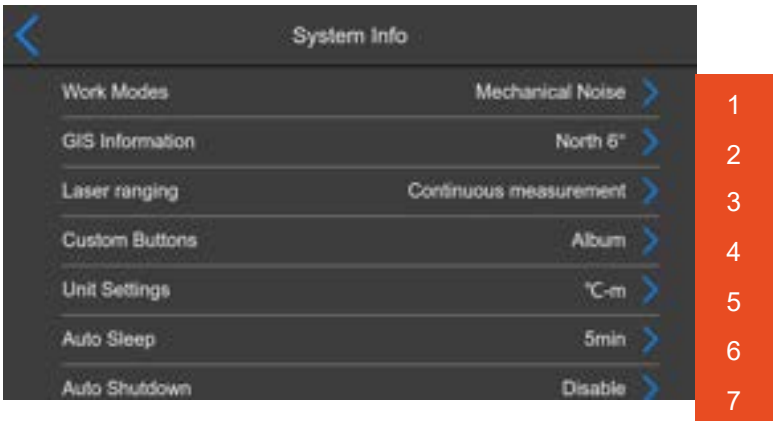
1. WLAN: You can connect the device to WLAN. This function allows you to upload the file to the cloud server and allows FTP or RTSP settings. You need to connect to the WLAN for OTA upgrade and data upload.
2. Bluetooth: You can connect to the available Bluetooth headphones.
3. FTP: If you enable this function, you can access the SD card via FTP under the same LAN. You can locally upgrade the system after you upload the package to the SD card
4. RTSP: When this device is on the same network as another device that supports RTSP live streaming, its screen can be streamed live on that other device.

8.8 System Settings



8.8-System Settings

8.8.1 System Info



8.8.1-1-System Info



8.8.1-2-System Info

1. Work Modes Adjustment: You can switch work mode here, including gas leakage detection, partial discharge detection, and mechanical noise detection.

2. GIS Information: You can enable this to activate e-compass.
3. Laser Rangefinder Settings: You can set the laser beam working mode here. A single measurement allows you to press the button to activate the laser and keep the status of the laser. Continuous measurement allows you to activate the laser only when you press the button on the camera.
4. Custom Button Settings: You can set the custom button for quick operation. The supported buttons include album, fill light, system, band switch, central focus, target mode switch, and sound source mode switch.
5. Unit Settings: It allows you to change the temperature unit to Fahrenheit, Celsius, and Kelvin degrees. It also allows you to change the distance unit to meters and feet.
6. Auto Display Sleep: You can set the auto sleep for the display.
7. Auto Device SHUTDOWN: You can set the device to shut down after several minutes of not using it.
8. Language Settings: You change the default language here. Now supports simplified Chinese, English, Spanish, Russian, Danish, French, Italian, Thai, Polish, Turkish, Czech, Indonesian, Korean, Finnish, and Japanese.
9. Date and Time Format: You can set the date and time format here.
10. Device Storage: It indicates the storage of the device.
11. RESET the Device to the Factory Settings: It will reset the device to the default settings.
12. ERASE All Content and Settings: It will erase all the data and settings on this device.

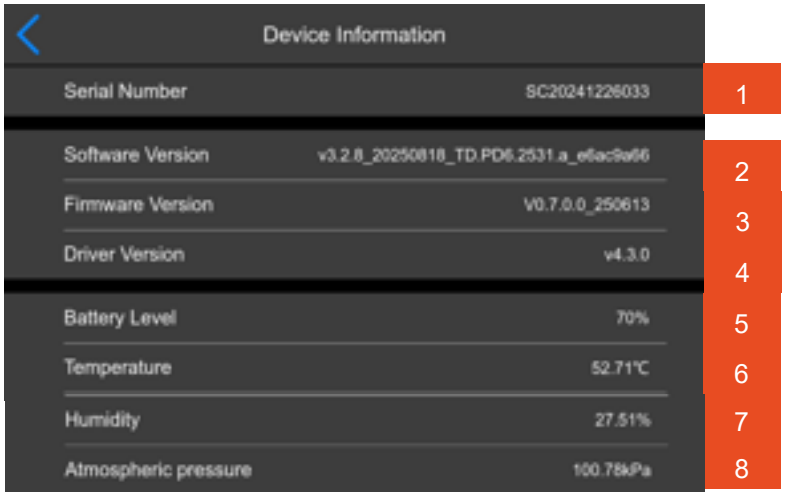
8.8.2 System Upgrade



8.8.2-System Upgrade

You can use Over-The-Air upgrade through the FTP service. You can upgrade locally by plugging in the USB drive with the latest firmware package.

8.8.3 Device Information



8.8.3-Device Information

1. The Serial Number of the Device
2. Installed Software Version
3. Installed Firmware Version
4. Driver Version
5. Battery Level for Battery Status
6. Device Temperature
7. Ambient Humidity
8. Ambient Atmospheric Pressure

Question

Q: Acoustic Localization is Unstable.

A: The target signal is weak, or the frequency band is not correctly configured. You can revise the frequency band, or you can use the automatic frequency band adjustment

Q: Two sound field points appear during localization with a single sound source
A: This may be caused by reflection. If the intensity of the reflected signal is comparable to that of the direct signal, two sound field points may appear. In this case, you can rotate the device and observe from multiple angles. At this time, the direction of the direct signal will remain unchanged, while the direction of the reflected signal will change.

Q: The Infrared mode cannot be turned on
A: First, check whether the device is equipped with an infrared camera. In addition, insufficient battery power may prevent the infrared function from turning on normally. Please charge the device and try again.

Q: The upgrade package in the USB flash drive cannot be detected
A: First, confirm that the USB flash drive is formatted as FAT32.
Second, confirm that the name of the upgrade package in the USB flash drive has not been modified and that the version number of the upgrade package is higher than the current version number of the device.
Finally, confirm that the upgrade package is located in the root directory of the USB flash drive.

Q: No sound field localization point appears
A: This may be due to an excessively high threshold setting. Adjust the threshold to a value lower than the current energy value and try again.

If you have any questions, please contact us **with Hertzinno.com**

About Us

HERTZINNO is founded on the fundamentals of acoustic and optical sciences, working closely with leading universities and research institutions in acoustics, optics, and electrical engineering. Since our team's inception in 2018, we have been dedicated to developing technologies with high performance, exceptional sensitivity, and outstanding reliability.

To date, we have accumulated over 100 application sectors worldwide. Our solutions serve diverse industries, including power, energy, oil & gas, chemical, manufacturing, mining, and renewable energy, delivering advanced capabilities for preventive maintenance, online monitoring, and quality control.

If you have any further questions, please contact us:

Visit Our Website: www.hertzinno.com

Email: info@hertzinno.com

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