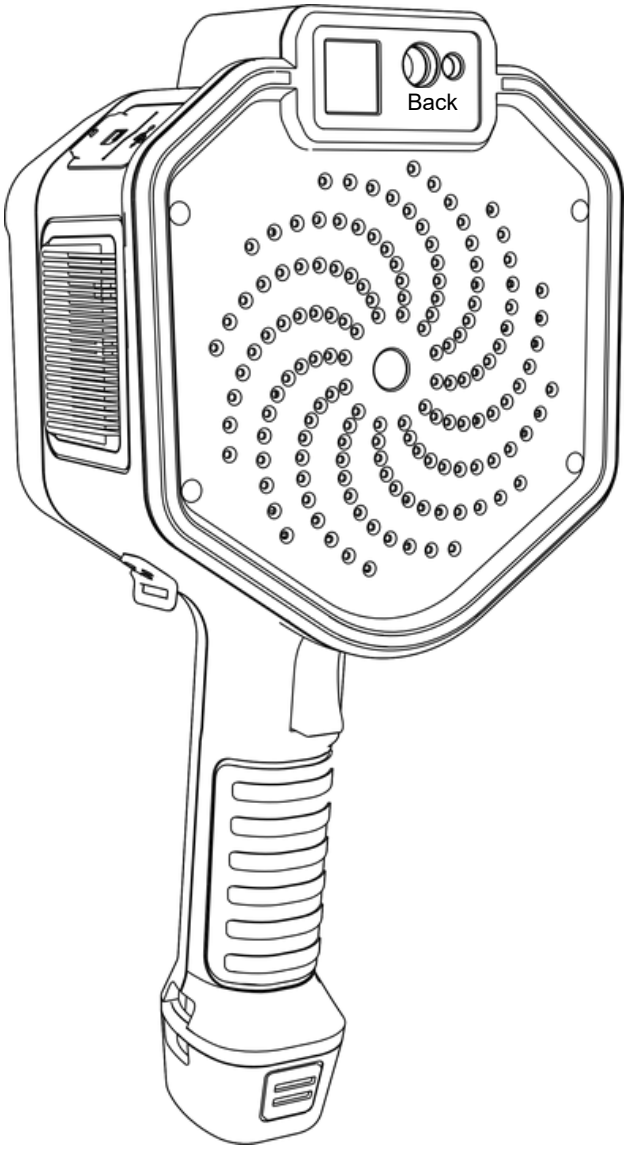
VS138X/H Handheld acoustic imaging camera

User Manual V1.0



User information

• About the manual

This manual applies to handheld acoustic imaging camera products with the following models and software versions:

Device types: VS138X/H, VS138X

Software version: V4.0.1 and above

This manual is a generic manual for a series of products, and as the product is continuously updated, the actual product you receive may be related to the manual chart

The difference in the tablet is based on the receipt in kind.

This manual is organized for user-friendliness and understanding of products, which are kept by the company as they are continuously updated and upgraded

The right to be modified without further notice.

Statement of responsibility

The entire machine product, manufactured by our division, is secured from the date of delivery of the original purchase, subject to normal storage, reasonable use and maintenance

The period of rest is two years and the duration of the spare parts is three months.

The warranty is non-transferable and does not apply to any product damaged by misuse, negligence, accident or abnormal operating conditions.

Power to dismantle the product, free quality maintenance services are no longer available.

As a result of equipment malfunctions caused by inappropriate use, unexpected drops, etc., our Division is committed to providing cost-price maintenance services.

Storage and transport

Storage

Packaged product storage environment is -40°C ~ 70°C, relative humidity not exceeding 95%, condensed, non-corrosive gases, good ventilation,

Clean the room.

Transport

Traffic should be protected against rain, water and fall, should not be affected by severe vibrations and shocks, and should be handled with caution and with strict prohibitions on throwing.

Safe use alerts

DANGER

- If the device is built into a disassembly cell, use the battery with the correct specifications, and improper use may result in an explosion of DANGER. The battery is installed

  or after dismantling has been completed, the battery warehouse is required to be safely closed.

- Please charge with a random mix of power adapters, which require reference to the product parameter table; wrong charge leads to power

  (a) The pond becomes hotter, damage is caused and even human injuries are caused;

- Do not attempt to turn on or dismantle batteries at any time, and use water as soon as leaks of batteries lead to liquid entering the eye.

  (b) Brushing eyes and medical care;

- Electrical safety regulations at the national and regional levels must be strictly observed during the installation of equipment.

Attention.

- Do not expose the equipment to dust or damp conditions and, when used in a water-available environment, avoid spilling over the instruments;
- When not using this equipment, place the instruments and all accessories in a special packing box;
- (b) Equipment stored on a permanent basis shall be subject to electrical inspection every six months and for a period not less than 3h;
- (a) Keep the equipment as stable as possible and avoid violent shaking;
- (b) Do not use or store instruments in a working or storage temperature environment beyond the authorized temperature of the equipment;
- Do not use soluble or similar liquids for equipment, cable, which may cause damage to the equipment;
- (a) Lithium batteries are incorporated in the equipment and do not place the equipment in a high temperature environment or near a high temperature object;
- Do not dismantle the machine on your own, which may cause damage to the equipment and lose warranty rights;
- For equipment equipped with thermal imaging lenses, do not direct the device to a high-intensity source of thermal radiation, otherwise it will cause the lens or heat to become

  (a) Damages such as damage to detectors, such as the sun, lasers, welders, etc.;

- (b) Do not contact the microphone panel with sharp objects to prevent damage to the water-resistant acoustic film and to affect the water-proofing and dust-proofing effects of the equipment;
- Equipment is equipped with laser modules and do not look directly at laser lights for long periods of time, which may cause eye discomfort.

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1. Product Introduction

1.1 Product Profile

Handheld acoustic imaging camera is a dedicated device for measuring the distribution of acoustic fields within a certain range using acoustic arrays.

The position and radiation state, and the visual image, or acoustic imaging, is shown in cloud-charted form. The equipment has not only traditional acoustic look.

(c) Audio-gathering, image-gathering, visualization of sound positioning, and carrying an infrared thermal imaging module or laser methane measurement module,

Multiple methods of diagnostic detection for equipment failure.

The instrument supports the hearing and ultrasound bands, which can be used for sound source positioning, abnormal sound testing, tracking of acoustic tracks, etc.

Optimal detection is available to objects of a state or high transient acoustic origin, static or motion, which is currently applied mainly to compressed gas leak detection

This is the first time that the government has been able to do this.
partial discharge

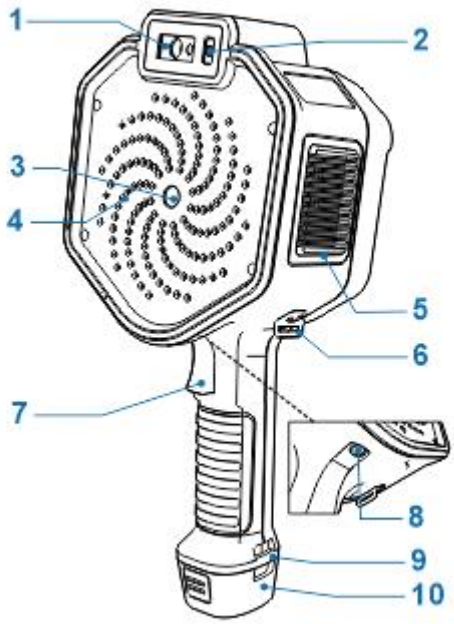
1.2 feature

- (a) An integrated 138 channel MEMS acoustic sensors with accurate sound source positioning;
- The frequency band range 2k ~ 100kHz, which captures high frequency sound signals to meet multiple scene needs;
- (b) 1300W high-resolution camera with clear photographs;
- Support for bluetooth data transmission, easy distribution of photographs and reports to other equipment;
- Support the generation of analysis reports at the end of the equipment, with a significant increase in inspection efficiency;
- **Supporting laser ranging;**
- **Supporting electronic compasses;**
- Supports the uploading of data to the cloud through WIFI;
- **Support for listening to audio via Bluetooth headset;**
- Integrated infrared temperature measurement module with clear images and accurate temperature measurements (infrared support).

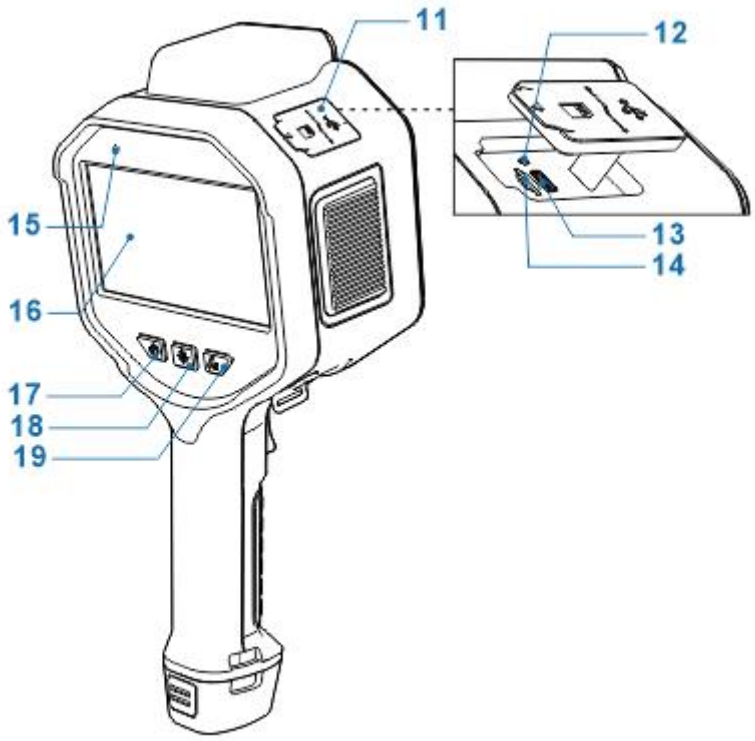
1.3 Model Description

- VS138X/H: Standard, supporting acoustic imaging functions;
- XS-SC58: Infrared, which supports acoustic imaging functions and infrared thermal imaging thermometry.

Introduction to 1.4 Product Component

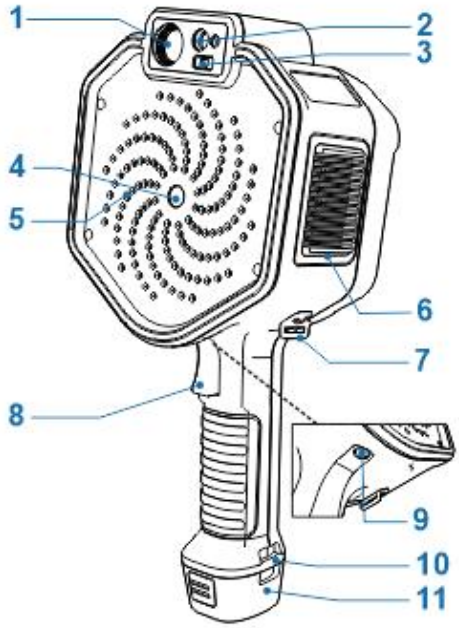


1 Laser ranging module
2 Lighting
3 Visible light camera
4 Sound Sensor
5 Thermal.
6 Wristband.
7 The trigger button.
8 1/ 4 Inch screwhole
9 Metal rings
10 Battery

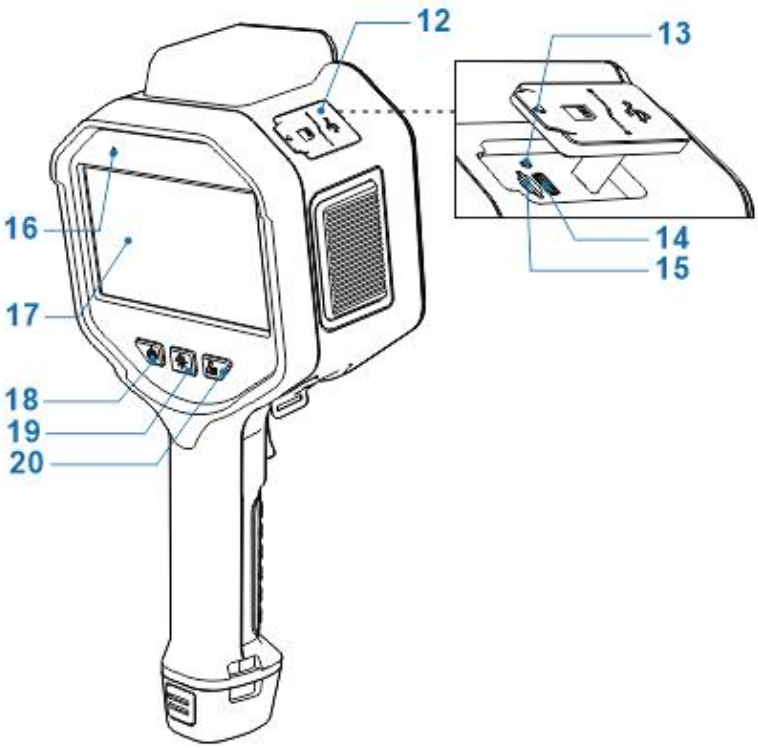


11 Silicon tape anti-dust plugs
12 Charging light.
13 USB Plugin
14 Micro SD slot
15 Sensor
16 Display
17 Switch button
18 Laser range button
19 Custom keys

VS138X/H Handheld acoustic imaging camera



1 Infrared Thermal Imaging Module
2 Laser ranging module
3 Lighting
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12 Silicon tape anti-dust plugs
13 Charging light.
14 USB Plugin
15 Micro SD slot
16 Sensor
17 Display
18 Switch button
19 Laser range button
200 Custom Key

VS138X/H Handheld acoustic imaging camera

1.5 external interface description

1.5.1 memory card interface

This product needs to be stored using Micro SD cards, and the images and videos taken are recorded on SD cards. 512GB

SD cards, with a capacity of SD cards, and SD cards, currently tested successfully, include: 128GB SD

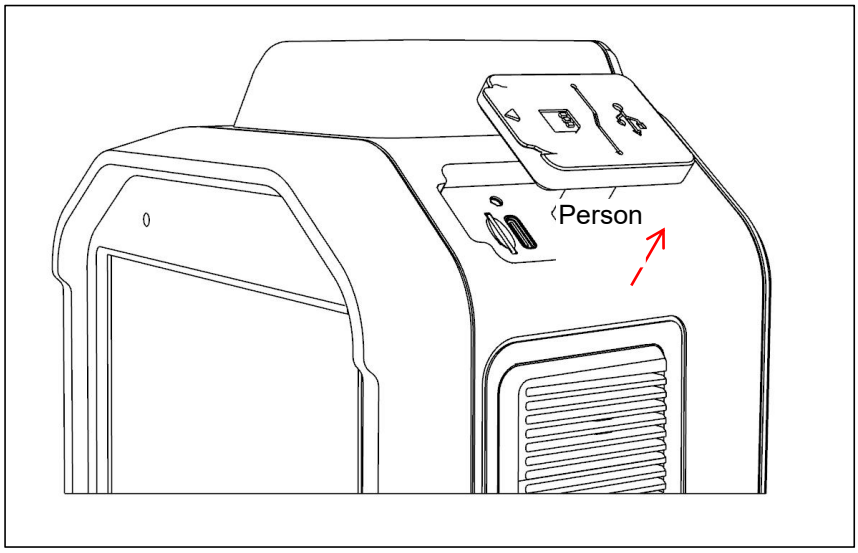
（1）Kingston(128GBCLASS10)

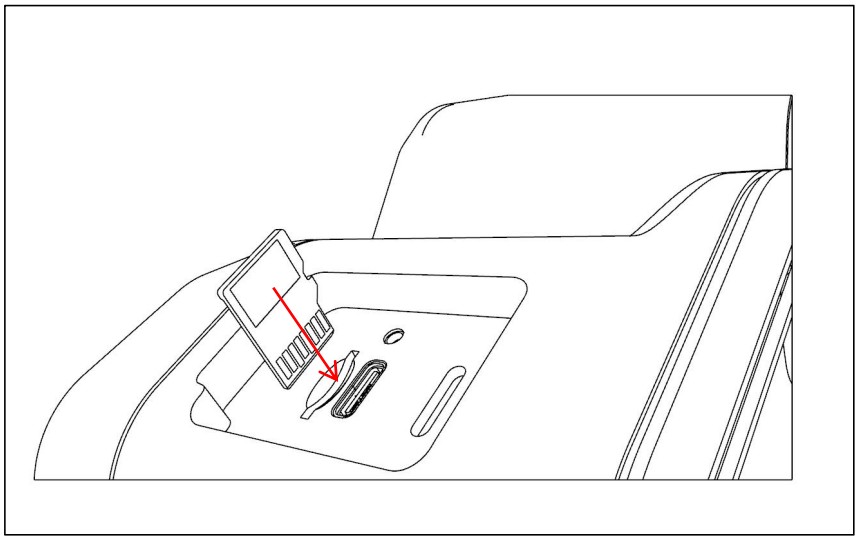
（2）SanDisk(128GBCLASS10)

1. Installation memory card

1 opens a silica-activated dust cover, slips in the direction indicated by the arrow and opens a slot cover and inserts a memory card.

2 (as shown in the chart) directs the tag side of the memory card towards you and inserts it until the sound is in place.





2. Checkout memory card

1 opens the silica-activated dust cover, slips in the direction indicated by the top chart and opens the slot cap.

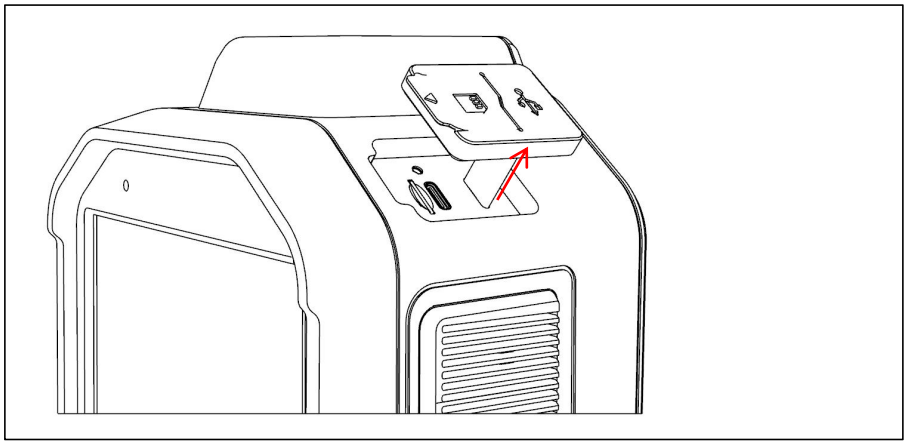
2) presses the pressure memory card down, and when it hears the sound of the bell, the SD card will eject automatically.

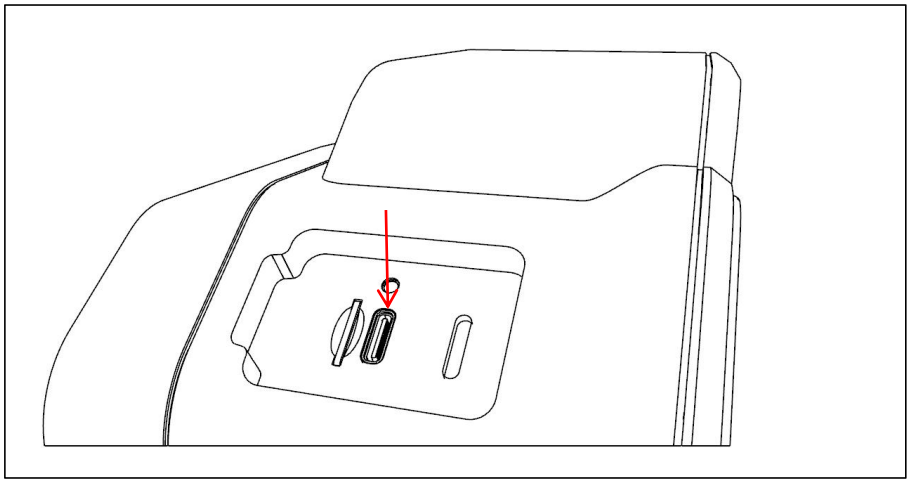
1.5.2 TYPE-C interface

1. Sees SD card files.

Connect to the computer using USB data lines, open my computer, view the in-house memory information, click on the memory device, and see

To take pictures and videos, etc.





2. Equipment charged.

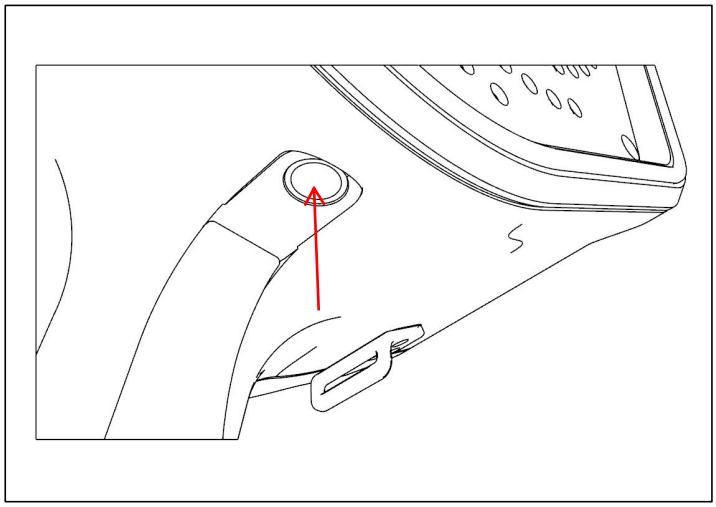
The equipment can be recharged directly using the accompanying Type-C charger.

N.B. The amount of filmable depends on the remaining capacity of the card, the image record, etc.

The device must be correctly inserted into the SD card before the computer can be mounted as a U disk device.

1.5.3 1/ 4 Inch screwhole

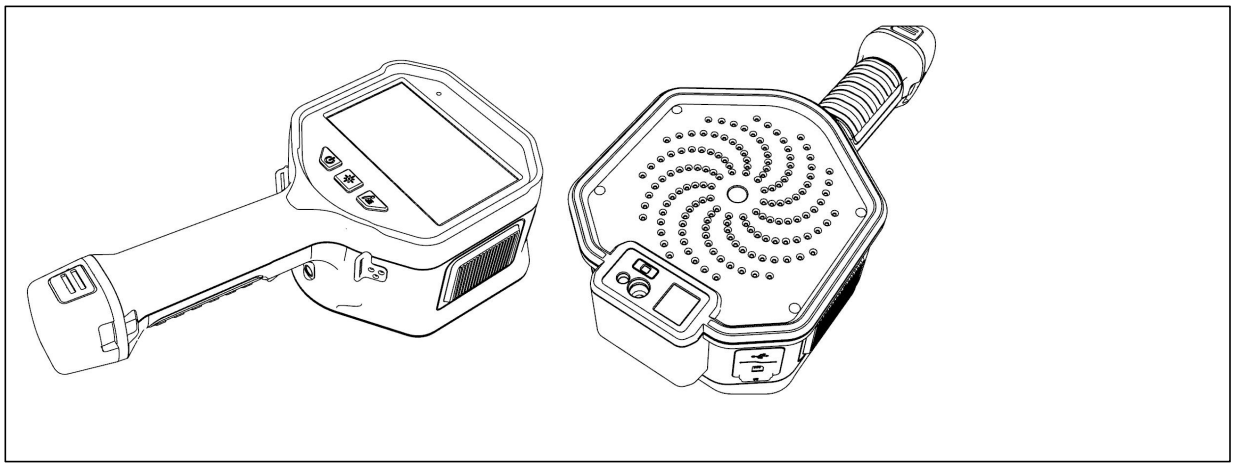
When a fixed bolt screws are to be rolled into the shell, care is to be taken to fit the shell with a diameter when selecting the frame.



Note:

1 is used with care to hold light and avoid direct collisions, causing damage to screens, microphones and other measurement modules.

If 2 does not use the equipment, please place it in a safe box in a timely manner and keep it properly.



1.6 Products and Parts

Serial number	Name	Annotations
1	acoustic imaging camera	Host equipment
2	Lithium batteries x 2	1 block installed on device
3	Charger	Direct charge or connect to charge base
4	Type-C Charge Line	For charging or connecting equipment
5	Charge base.	Independently charge 1 block batteries
6	U Disk (Type-C Interface, 64GB)	For exporting device data
7	Micro SD Card (128GB)	Installed on device
8	Hardware boxes	For protection equipment
9	Package	For portable transport equipment
10	User Manual	Guide users to use equipment
11	The warranty card.	
12	Certificate	
13	Inspection report from the factory	

2. Introduction

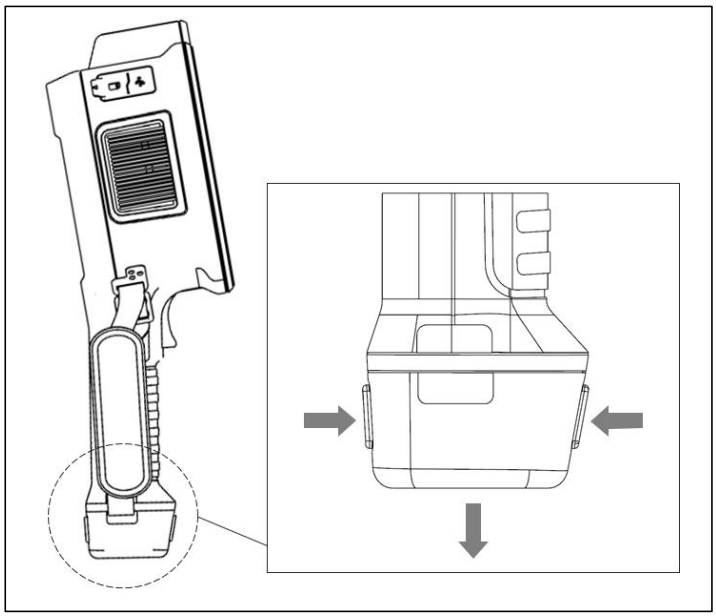
2.1 Batteries and Charges

The equipment is powered by lithium batteries, which can be dismantled.

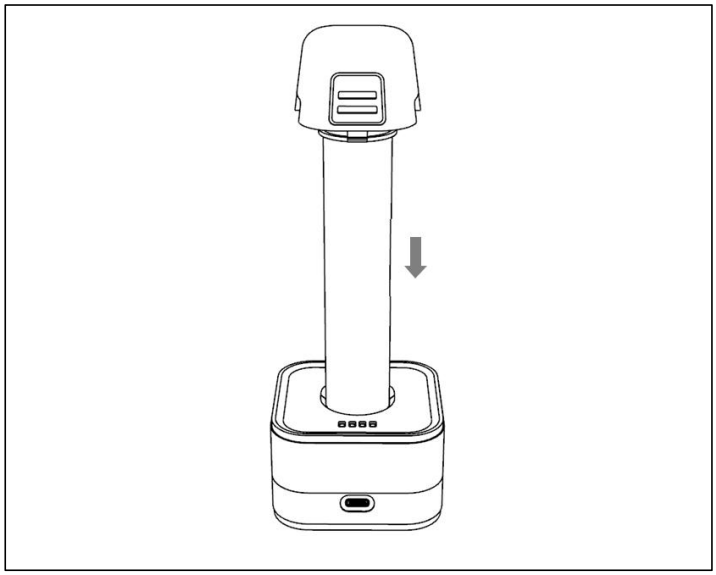
Batteries support direct charging through the Type-C interface on the equipment, and can also be removed and recharged with a charger.

2.1.1 charge by charger

1. Hand-held acoustic imaging camera mainframe, pressing locks on both sides of the pressurized battery, removes the battery from the equipment up and down.



2. Inserts batteries into chargers in the direction of arrows.



3. Charging seat Type-C interface connectors start charging.

4. During charging, the blue signal flashes on the recharge panel. Four LED lamps are on the charge base, and the constant LED light count represents battery power.

Volumes, such as 3 lamps, are constantly lit, representing the current amount of electricity around 75%.

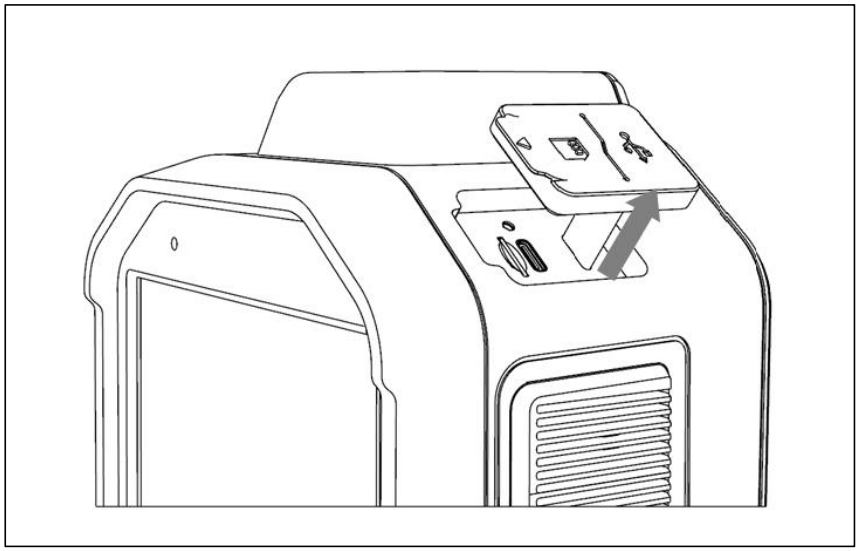
5. When batteries are full of electricity, recharge light is extinguished and the batteries can be removed from the recharge seat.

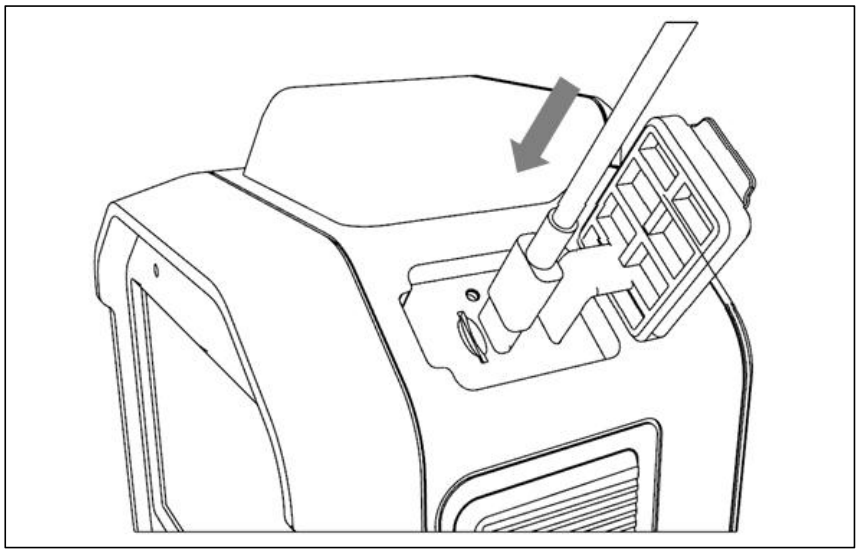
6. After removing the battery from the cell seat, reload the battery into acoustic imaging camera.

2.1.2 Charged via data lines

Batteries can be charged directly through the Type-C interface of the equipment.

1. Opens the device interface dust cover, connects one end of the data line to the device Type-C interface, and the other to charge the charger.

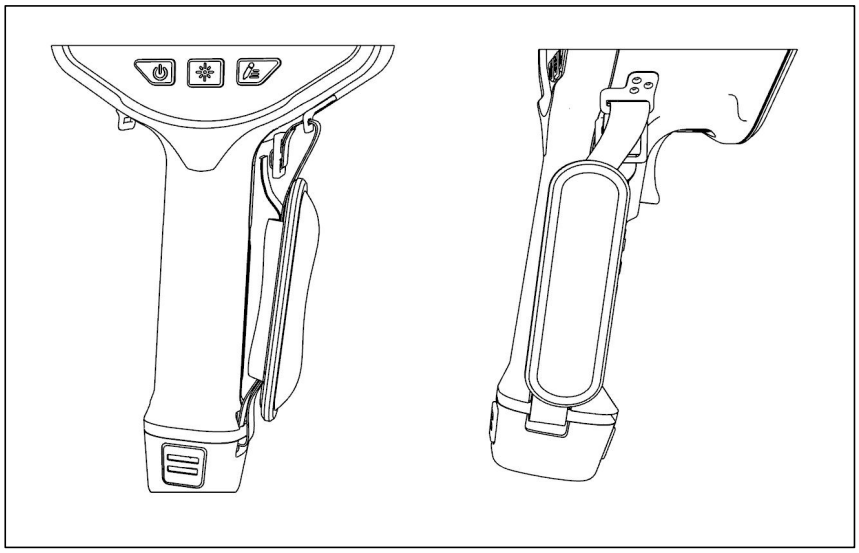




The charge light next to the Type-C interface is on. Red is charging, green is full. 2

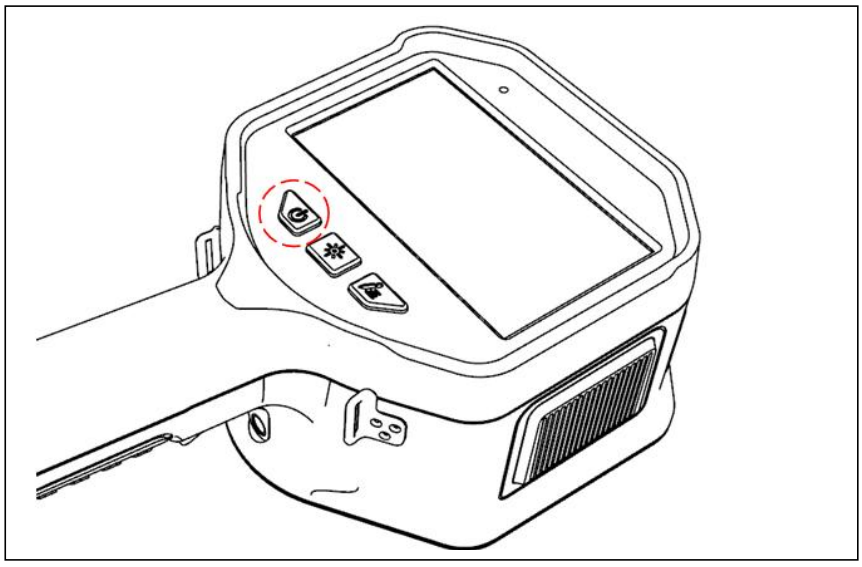
2.2 wristband adjustment

The wrists were brought to the appropriate level of ease by adjusting the buttons on the wrists.



2.3 on

Turn off, press under the screen. **About 2 seconds, equipment on.**



2.4 Shutdown

When you're on, press the device. Keys are about 2 seconds, pop-up confirmation options, and you can choose to turn off.

When you're on, press the device. **Keys are about 10 seconds, which can be forced to shut down.**

2.5 hibernation and awakening

When you're on, press the device. Keys are about 2 seconds, popup confirmation options, and you can choose hibernate.

Short-press the device when it's on. Key goes into hibernation, device sift.

In hibernation, device sift screen, short press device key to wake up the device.

2.6 laser ranging

Press the pressurized device when in real-time interface, in active condition The range is measured by the key. The laser signal is always lit and the support is aligned.

Measures the target position. After the range is completed, the results are updated in real time at the bottom right of the main interface.

The range is divided into single and continuous measurements, which can be set in setting-system settings-laser ranging.

1. Single measurements: Start ranging by pressing range and end range again by pressing range.

2. Continuous measurement: Start continuous ranging by pressing the range button, and end range by releasing the button.

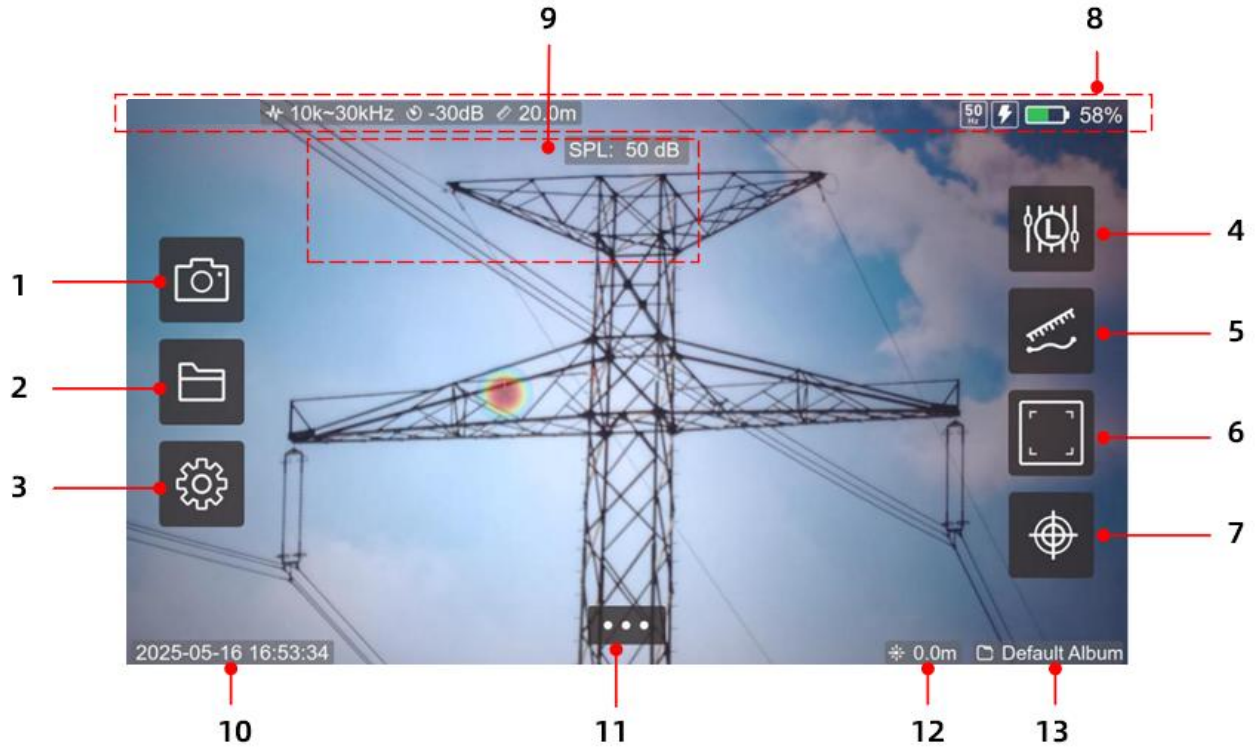
Laser ranging results can be associated with distance parameters and range ranging ranges can be activated in setting-system settings-laser ranging

Number function.

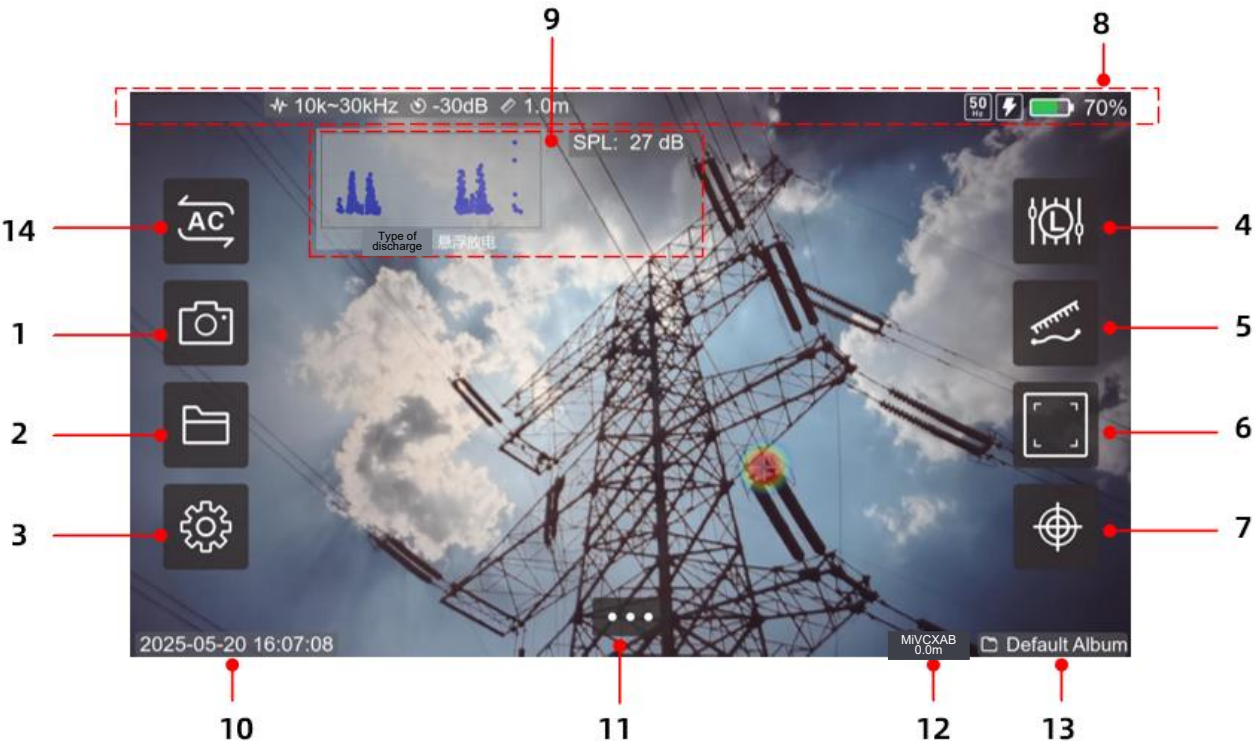
Note: When using range detection, do not look directly at laser indicators and may cause eye discomfort.

3. Image interface presentation

3.1 acoustic imaging interface



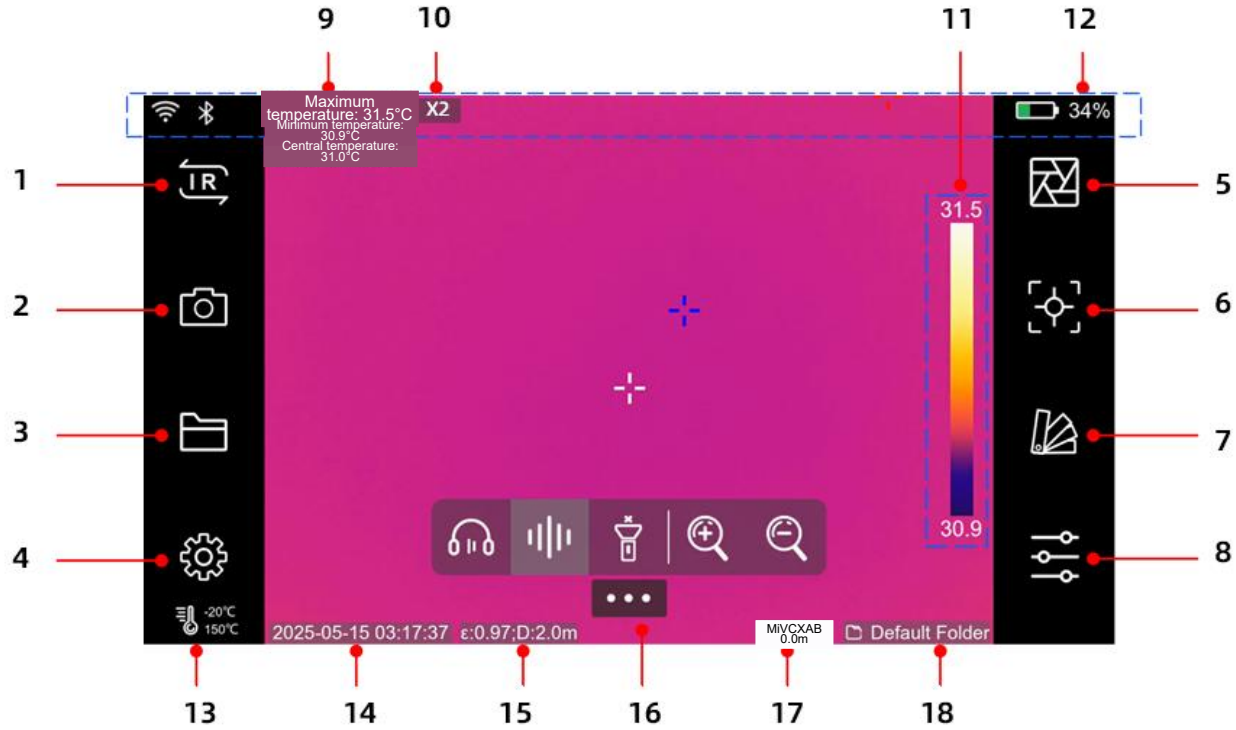
VS138X/H main interface



XS-SC58 main interface

1. Photography/video: Short-pressed photographs, long-recorded videos.
2. Album: Click to open the album to see the pictures and videos taken.
3. **Settings: Relevant system settings.**
4. Frequency band adjustment: The acoustic imaging band is adjusted, with quick choice or manual reconciliation. 4.1.1
5. Distance reconciliation: The distance between the equipment and the target is adjusted to make the analysis more accurate.
6. Imaging area: the adjusted imaging area is full screen or centre area, and the area size is adjusted in the Settings-Acoustic Settings-Image Focus.
7. **Number of objectives: Switch single and multiple targets.**
8. Status bar: brand LOGO, imaging parameters, working mode, WIFI state, Bluetooth, positioning, battery power, etc.
9. The results of the measurements are: real-time measurements are shown, SPL is the measure of acoustic pressure, and NA indicates that no signal was detected.
10. Time date: Shows the time date of the current device and shows that the format can be reconciled in Settings-system settings-time dates.
11. Hide buttons: Click on the post-eject shortcut button, including audio listening, mapping, patches, digital multiplication, etc.
12. Laser range results: Shows the results of laser range and sets the target distance.
13. Storage Path: Storage Path for Current Photography Files.
14. Image Switch: Click to switch to images, including acoustic imaging (AC), thermal imaging (IR), and simultaneous display (MIX).

3.2 Infrared Thermal Imaging Interface



1. Image Switch: Click to switch images, including acoustic imaging (AC), thermal imaging (IR), and simultaneous display (MIX);
2. Photography/video: short-stamping, long-starting video.
3. Album: Click to enter the album to view the filming data.
4. **Settings: Perform equipment-related settings.**
5. Temperature calibration: Auto-activated block closure after clicking, calibrating temperature results.
6. Analyzing object: Customized object of analysis, support point, line, circle, rectangular, etc.
7. **Colour palette: Aligning the false colour of infrared images.**
8. Temperature parameters regulation: Quick adjustment of temperature parameters, including launch rate, distance, ambient temperature, relative humidity, etc.
9. Fullscreen temperature results: The full screen temperature results are shown and can be opened or closed in the setting-temperature settings-full screen temperature measurements.
10. Multiplication indicator: Indicates a multiplication of the current image.
11. False colour band: the colour of the current infrared image, which can be set in the palette.
12. Status bar: a status display of WIFI, Bluetooth, battery power, etc.;
13. Temperature range: The current infrared temperature range is indicated and can be adjusted in the setting-temperature settings-temperature range.
14. Time date: Displays the current time date of the device, which can be opened or closed in the Settings-Show Settings.
15. Temperature parameters: Displays the launch rate and distance parameters and can be opened or closed in the Settings-Show Settings.
16. Hide buttons: Click to open or close the bottom shortcut menu, including audio listening, voice mapping, light patches and multiplication of images.
17. Laser ranging results: displaying laser ranging results.
18. Storage Path: Storage Path for Current Photography Files.

3.3 status indication

3.3.1 battery capacity

Icon	Status
	Power is enough.
	Power shortage
	Charging

3.3.2 WIFI Status

Icon	Status
	WIFI signal strong
	WIFI signal in progress
	WIFI signal normal
	WIFI signal weak

3.3.3 Bluetooth State

Icon	Status
	Bluetooth not connected
	Bluetooth Connected

3.3.4 working mode

The equipment currently supports three working models, which can be transposed in the System Settings-System Parameters-Working Mode, with specific reference to 8.8.1.

Icon	Working mode
	Play-test mode
	leak detection mode
	Mechanical isophone mode

3.3.5 PRPD frequency cycle

The PRPD frequency cycle is valid only in the station-testing mode.

Refer specifically to 8.2.4.

Icon	Work frequency cycle

	50Hz
	60Hz
	16.7Hz

4. Basic measurement operations

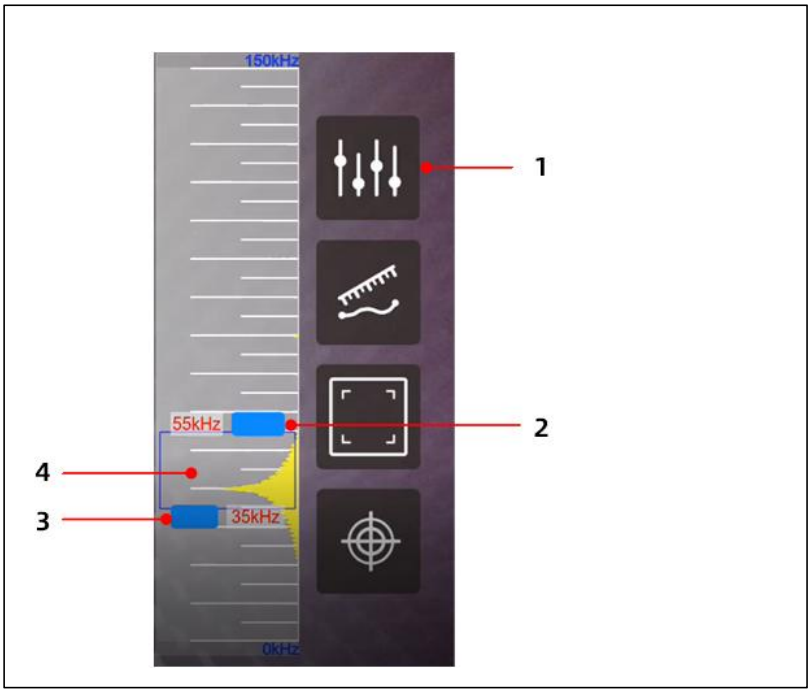
4.1 acoustic imaging Operations

4.1.1 Measuring frequency band reconciliation

Click the band button to regulate the acoustic measurement band. The band adjustment supports both manual and pre-set band fast fixes.

Icon	Status	Frequency range
	Low frequency band	10k~30kHz
	Medium band	20k~40kHz
	HF segment	28k~48kHz
	UHF segment	45k~65kHz
	Automatic frequency bands	Automatic reconciliation within band
	Manual reconciliation	Manually calibrated within band

The frequency band is manually reconciled to the system settings-acoustic settings-spectrum displays on or off, and then clicks the band button to show the real time spectrum.



1. Frequency band adjuster button, click to turn on or off the real time band.

2. Frequency band cap, drag and adjustable frequency band caps after pressing slides.

3. Lower frequency band, drag and adjustable frequency band floors after pressing slides

4. Select the band range, with the finger ticking the range by pressing the band box to drag down and down the band range.

Note: The bandwidth is minimal to 2kHz and currently supports 20kHz most.

4.1.2 target distance reconciliation

Click button.

In leak measurement mode, when leakage estimates are open, leakage calculations are automatically adjusted based on the set target distance and the distance is set to be correct.

Indeed, leakage estimates are more accurate.

In other working models, distance parameters have no effect on real-time measurements, but off-line analysis is based on distance for severity analysis, distance

The accuracy of the set will increase the accuracy of the analysis.

4.1.3 Image Area Reconciliation

Click button to adjust the imaging area to measure the centre area or the full screen area. The focus mode allows a certain degree of containment of the surrounding environment

Interference, with a marked increase in the measurement of a weak signal.

The size of the focus area can be adjusted in the setting-acoustic settings-imaging focus.



4.1.4 target number reconciliation

Click button.

The single target model only detects the maximum acoustic source target and the multi-target model detects the maximum of 3 targets.

4.2 working mode switching

The equipment currently supports three working models, one for stationary testing, the other for leak detection and the other for mechanical anisonomy, with different work modes being measured

The parameters vary.

Select the correct working pattern to measure more accurate results. The work mode icon of the main interface is used quickly

Determines the working pattern of the current device.

The working mode can be transposed in the System Settings-System Parameters-Working Mode, with specific reference to 8.8.1.

4.3 partial discharge measurements



The equipment is used to test and process partial discharge, mainly for the projection of the PRPD spectrograph and type of layout.

Under the formula, the main differences in system functions are as follows:

1. The status bar working mode indicates a station-test mode showing the PRPD frequency cycle;
2. The main interface measure area shows the results of the set-up, including the PRPD spectrograph, and the projection of the type of set-up;
3. (b) The main interface has a larger range of distance adjustments than other modes;
4. The acoustic settings display the application of the application parameter reconciliation options to the control board.

4.3.1 Operational Step

1. **(a) The working model confirms the switch to the set test model;**
2. (a) Opening of the PRPD scale and layout type projection in the setting-acoustic settings-set detection parameters;
3. The device is directed to the acoustic source and, after measuring the stable imaging point, the PRPD spectrometry and type of discharge is observed to determine whether it is abnormal.

4.3.2 measurements

1. **PRPD Map**

PRPD (Phase Resolved Partial Discharge Pattern) is an important partial discharge analysis in the insulation of electrical equipment

Tools, also known as phase-resolution partial discharge profiles. It uses the partial discharge pulse at the stage, discharge (or number of discharges) and so on.

Linked, visualized in a 2-dimensional way, thus helping users analyse the type, severity, location and possible insulation of partial discharge

The nature of the trap.

PRPD-PRPD is a cross-axis for phase angles (0°-360°) and vertical axis is the maximum discharge value within each phase. The higher the median point density, the table

The more frequent or intense the discharge activity is shown in this phase.

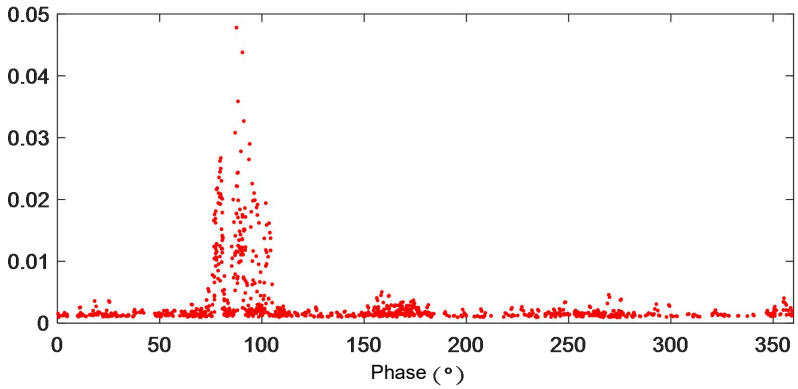
2. Set Type Forecast

The equipment currently supports three types of partial discharge type projections, with the layout type forecast relying mainly on PRPD profiles.

(1) Top discharge

Point-line discharge, typical form of electroshock discharge. Near a conductor with a very small curvature (e.g., tip of a needle, accelerator, edge of a sharp angle), gas is due to the power field.

Local ionizing of electricity occurs.



Point-up (e.g. vertigo) discharge PRPD map

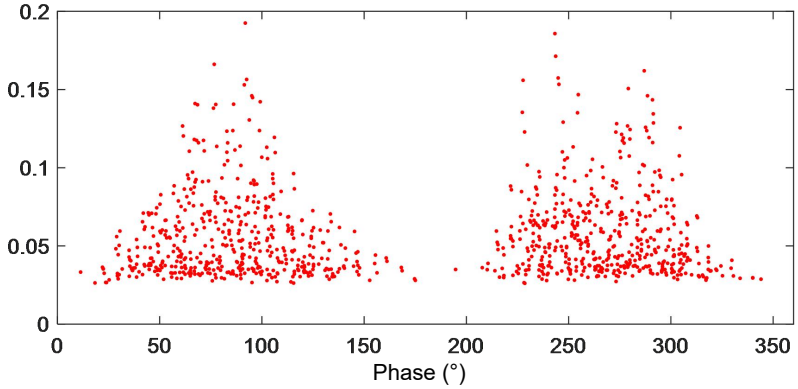
The cutting edge discharge of PRPD is concentrated near 90°, with narrow band peaks and narrower phase ranges.

The hazard of cutting-edge discharges is relatively small and generally does not require attention.

(2) On the side discharge

Emission along the side means discharge along two media interfaces (e.g., solid insulation with air/oil), commonly insulation, tubes or cable terminals

Surface.



PRPD image along the line

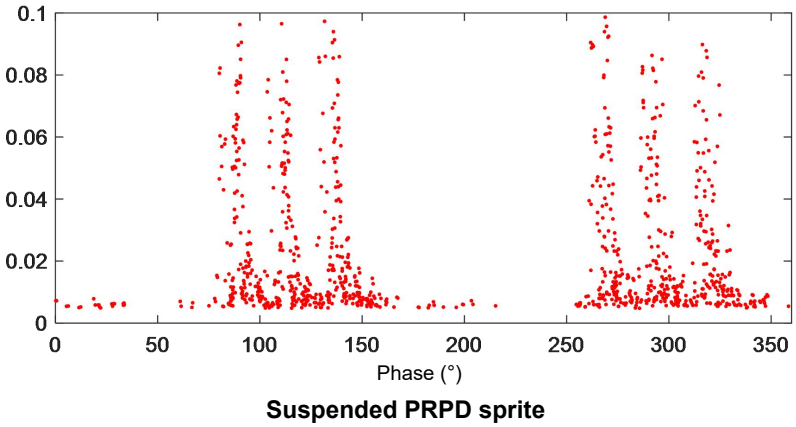
The PRPD distribution along the line covers even more extensive half-cycles, often along positive/negative half-week rises or drops.

Emission along the side is more hazardous, reduces the insulation surface flash voltage and may trigger short circuits.

(3) Suspended discharge

Suspended discharge, which means that unconnected metal parts (e.g. loose bolts, defence shield) are felt in the electric field at a floating level, and in the atmosphere between them and the surrounding conductor

Zoom triggered the discharge.



Suspended PRPD sprite

Suspended PRPD scale positive and negative half-weekly symmetry, and PRPD spectra is multi-clustered.

Suspended discharges are highly hazardous, concentrate on discharge energy and rapidly erode insulation material.

4.3.3 station detection parameters

1. PRPD work frequency cycle: the frequency cycle of the power system, supporting 50Hz, 60Hz and 16.7Hz settings.

2. Temperature of the environment: Measurement of ambient temperature for use in the assessment of the severity of the station.

3. Voltage level: The voltage level of the measuring equipment, which is used as a reference for the evaluation of the gravity of the station.

4. Relative humidity: relative environmental humidity, used as a reference for the assessment of the severity of the station.

5. Target distance: Measuring the target ' s distance from acoustic imaging camera for use as a reference for the evaluation of the severity of the station.

4.4 Gas Leak Measurement

In the leak detection model, the equipment was treated for the gas leak detection, consisting mainly of leakage rates and estimated leakage losses.

1. Status bar working mode indicator is leak detection mode;
2. The main interface measure area shows leakage measurements, including leakage rates and leakage losses;
3. (b) The main interface distance adjuster ranges are reduced and the distance adjuster step is smaller;
4. Acoustic settings display leakage parameter reconciliation options to regulate leakage measurement parameters.



4.4.1 Operational Step

1. **Working mode confirmation switch to leak detection mode;**
2. Set-Acoustic Settings-Estimation of leakage rate and leakage loss estimates in leakage estimation parameters;
3. Reconciliation of leakage estimation parameters based on actual tests;
4. The equipment is directed to the acoustic sources and, after measuring the stable imaging point, the size of the leakage and the estimated loss.

4.4.2 measurements

1. Leak rate: The estimated rate of gas leaks, in units, can be exchanged in the leakage estimation parameters.

2. Leakage losses: Equipment estimates gas leak losses based on parameters such as gas leakage and gas values.

4.4.3 estimated leakage parameters

1. Leak rate unit: Leak rate unit reconciliation, supporting l/min, ml/s, ml/min.

2. Currency units: currency units for the estimation of leakage losses, supporting multiple currencies.

3. Gas values: gas values in units of volume.

4. Energy cost: cost per kWh energy.

5. Ratio: in time, a unit of gas can produce power.

6. Length of work: The duration of the work of the equipment being measured is the length of the work performed throughout the year, and the length of work is 8760h if it is performed throughout the year.

7. Leak correction factor: When there is a deviation in the estimation of leakage, the correction may be made by setting a correction factor.

4.5 Mechanical Isophone Measurement



The equipment is processed for mechanical isophone detection in mechanical isophone mode.

The difference is as follows:

1. Status bar working mode indicates mechanical isophone mode;
2. The main interface measures the area with anisometric measurements, including peaks (Ku), peak factors (CF), frequency variations (SV).

4.5.1 Operational Step

1. **(a) The working mode recognizes the switch to mechanical isophone;**
2. The device is directed to the acoustic source and, after measuring the stable imaging point, it observes the results of the isometric characterization.

4.5.2 measurements

1. SPL

SPL is an indicator of sound strength. SPL

The pressure level is significantly higher than the normal equipment. As the failure increases, so does the sound pressure level.

2. Peaks (Ku)

Kurtosis is a statistical indicator of the height and sharpness of the probability distribution at the end, which is used to measure data distribution

. When the peak is about 5 or higher, the bearing is likely to be indicated.

The situation is deteriorating.

3. Peak factor (CF)

The Crest Factor is the key parameter for measuring the ratio of wave peak to active value in engineering signal analysis to assess signals

The peak factor is the ratio of the signal peak (Peak Value) to the active value (RMS Value).

For rotational devices such as bearings, the sound signal usually has a peak factor of less than 5. If the value is 6 or higher, this indicates that the bearing is capable of

You can need lubrication, or you can start a malfunction. As the failure increases, the peak factor increases, but when you reach a certain level, you can't do anything.

The peak factor may start to decline. That is, if a bearing has a sound pressure level (SPL) that is much higher than the normal bearing, the peak factor

At a relatively low level, the bearing failure may have been more severe.

4. Spectrum Change (SV)

Spectrum variability is the degree of spectrum variation between the two frames, the smaller the spectrum difference, the more stable the sound.

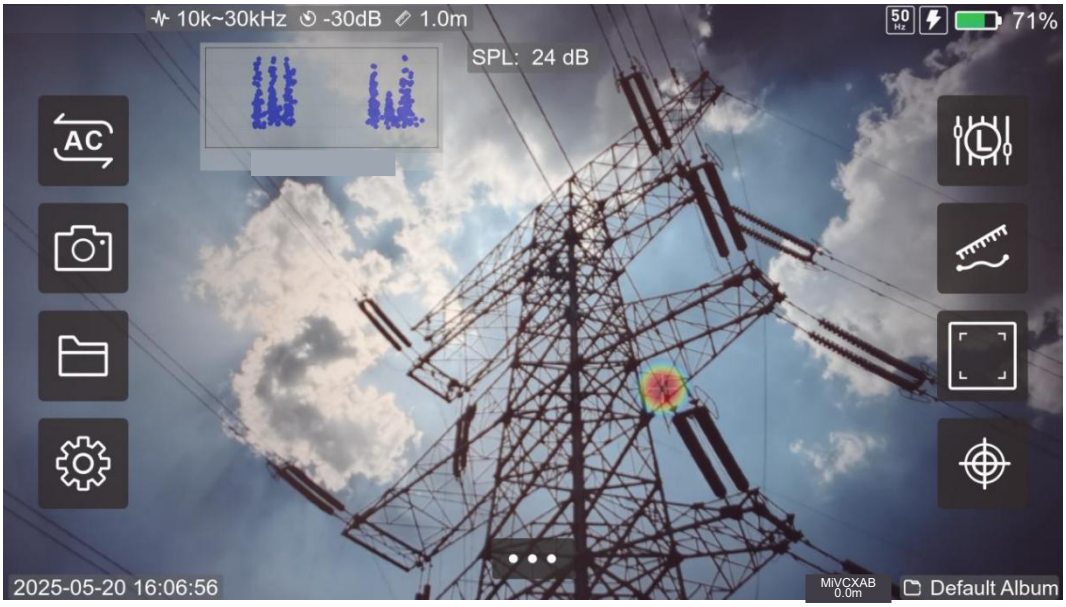
At times, the sound becomes unstable, signals fluctuate and spectrum variability increases significantly.

4.6 Image Mode Switches

4.6.1 sound imaging mode

Click AC button, select the " AC " identification area, switch the real-time preview image to acoustic imaging mode.

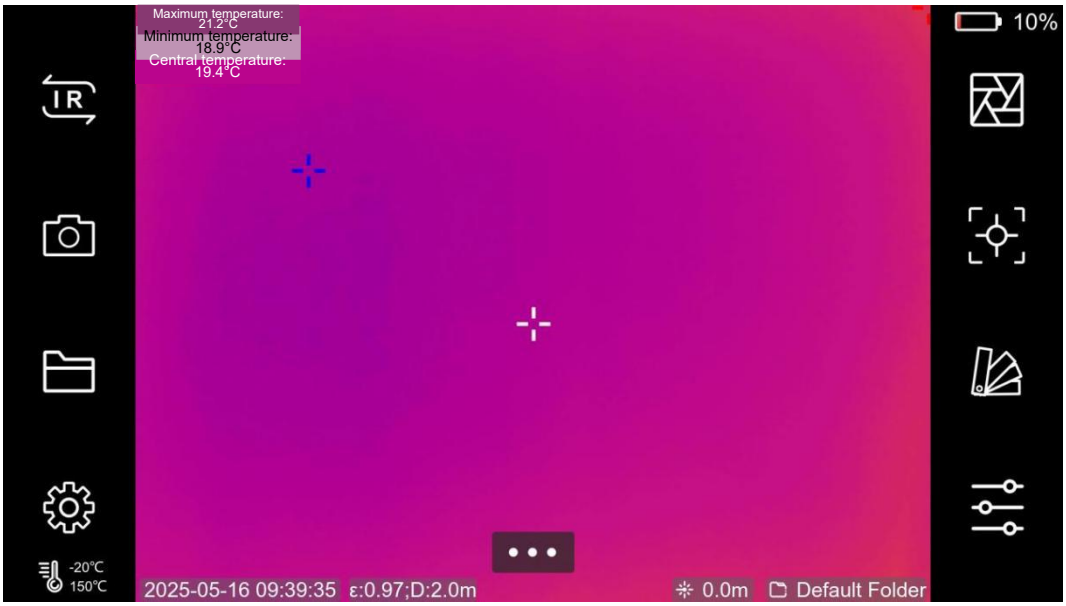
The light and sound source position.



4.6.2 Thermal Image Mode

Click IR button, select the " IR " identification area, and the real-time preview image becomes thermal imaging mode. Under the thermal imaging mode, the relevant right button changes

To operate an infrared button.



Show mode for 4.6.3

Click AC **or** IR button, select the " MIX " identification area, switch the real-time preview image to the acoustic simultaneous screen mode.

Click on the floating window button, toggle the display mode of the same screen as the suspension of the acoustic or infrared images.



4.7 Infrared Measurement Operation

4.7.1 temperature calibration

Under Infrared Main Interface, click Button calibrates the temperature. When calibrated, the infrared detector shield automatically closes and corrects the temperature.



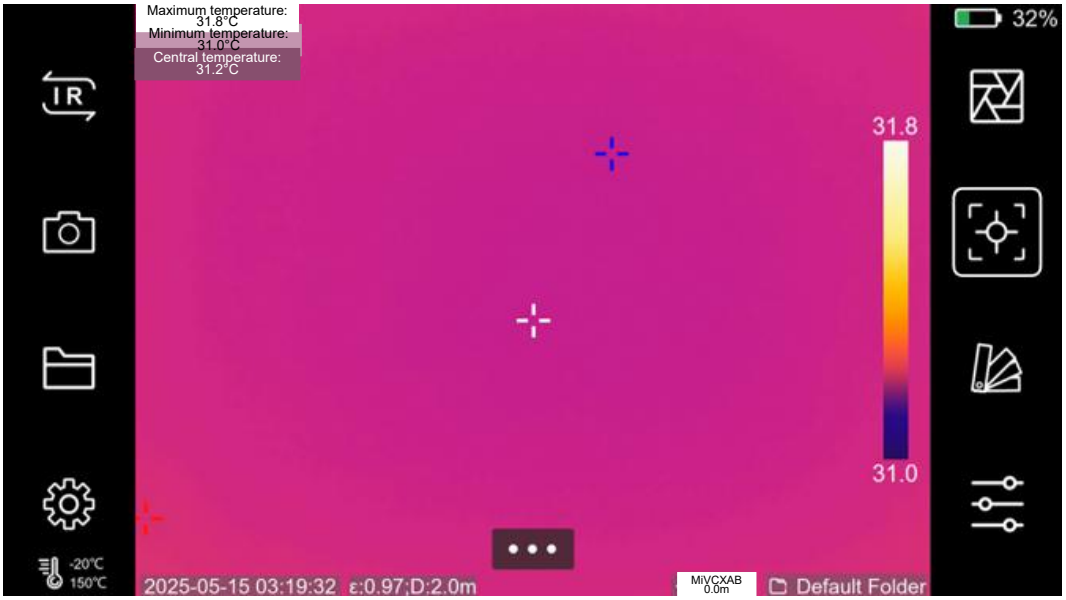
4.7.2 parsing object

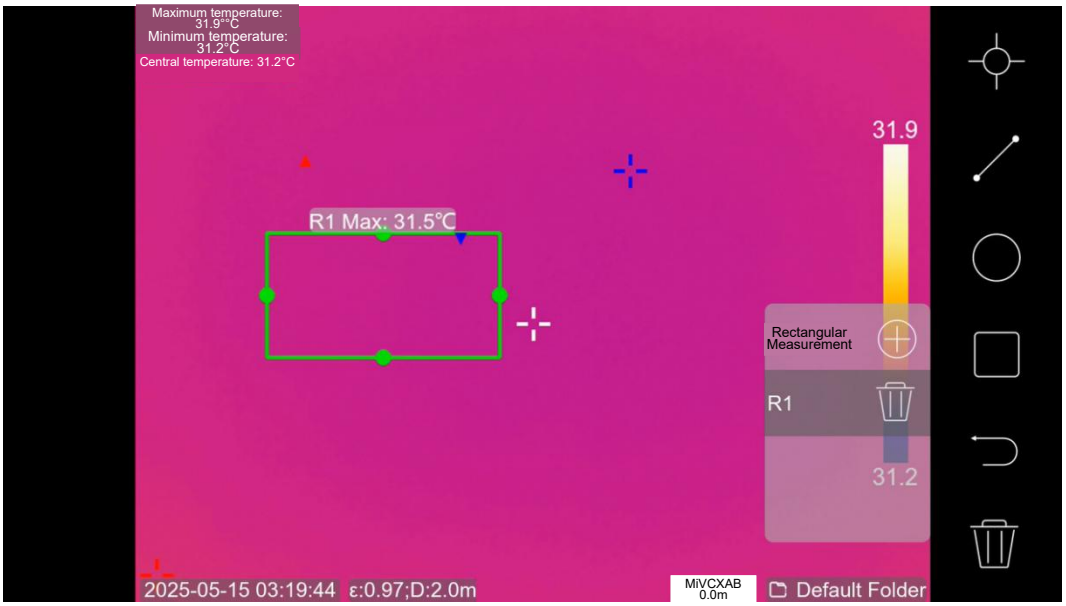
Under Infrared Main Interface, click **button.**

Analyzing object support points, lines, circles, rectangles. The maximum number of 5s is supported for each category of object.

The temperature differential between any two objects of analysis is supported, and by clicking on the temperature differential measurement button, you can select two objects of analysis for temperature differential measurements.

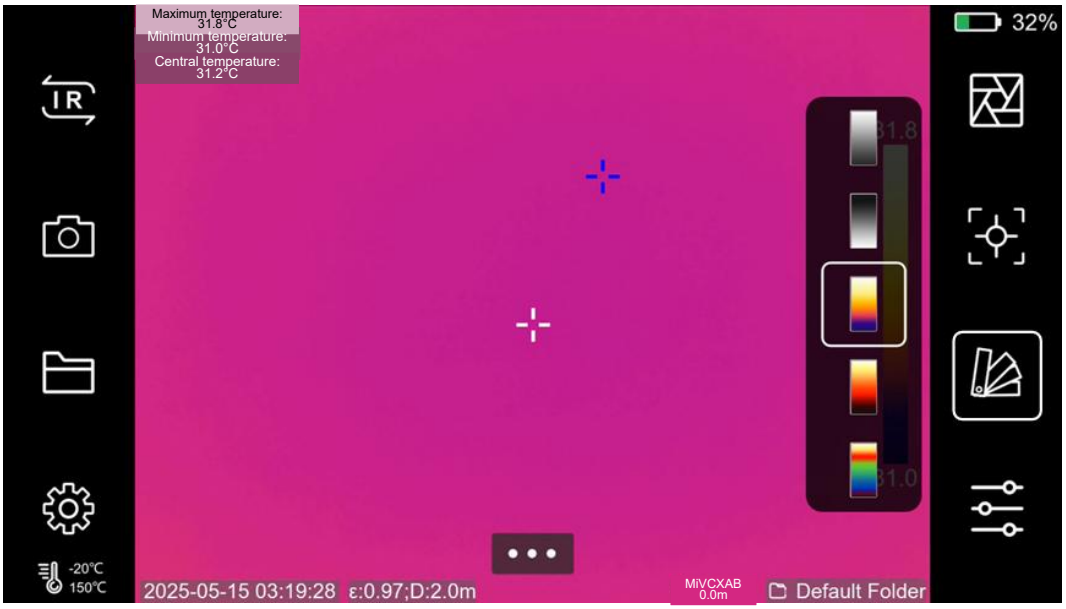
Click **button to empty all the analyze objects.**





4.7.3 Palette

Under Infrared Main Interface, click button to adjust the image's false colour colour. Slide to select the colour icon to make the image colour switch.



4.7.4 temperature parameters

Under Infrared Main Interface, click **button.**

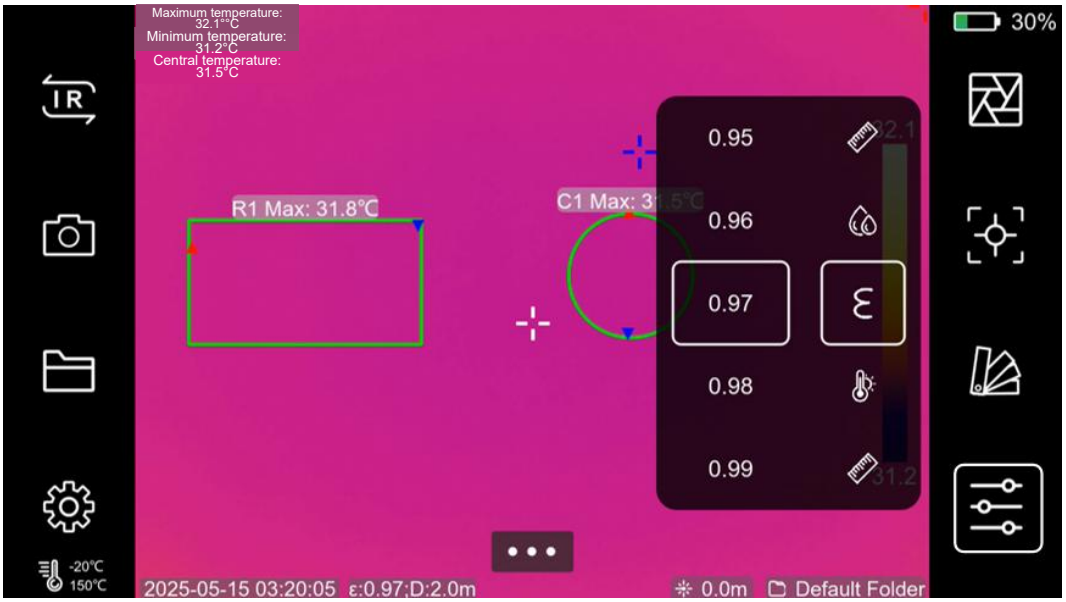
: Launch rate regulation, range: 0.01 ~1.00, resolution 0.01. Generally, the launch rate default setting for 0.97 is sufficient. Common materials

The launch rate of the aircraft may be referred to in the appendix.

Environmental temperature regulation, range: -40°C ~80°C, resolution 0.1°C, default setting for 20°C.

: Relative humidity reconciliation, range: 1% ~ 100%, resolution 1%, default settings for 60%.

Target distance reconciliation, range: 1 ~ 500m, resolution 0.1m, default settings for 2m.

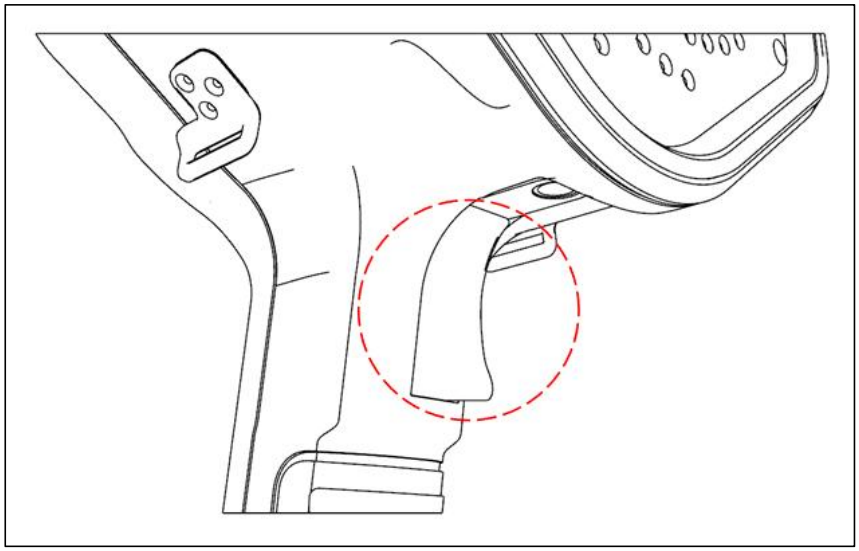


5. Photography and video

5.1 shoot pictures

Live image status, click on screen button.

In real-time image state, the short-press device trigger button can also save the photograph.

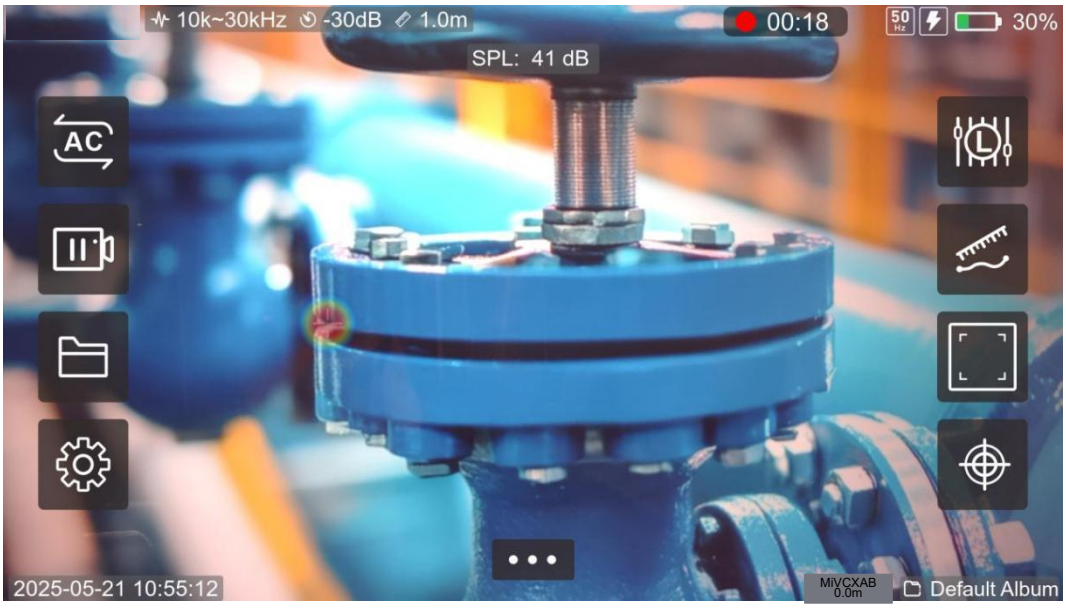


5.2 Record Video

In real time image state, press screen long button. Press the video button or trigger key.

In real time image state, the video can also be activated with a long device trigger button. **button or trigger key.**

During recording, the top status bar shows the video recording time.



6. Shortcut menu

Real time preview page, click button, expand the shortcut menu options.

6.1 Audio Monitor

Click button, pop up audio listening options. If you connect to a bluetooth headphone, click **Buttons begin to play audio, volume can slide**

Reconciliation.

6.2 Refill Light

Click button, turn on the patchlight, click again **The light can be turned off.**

6.3 Soundprint

Click button, open a real-time preview of the range map.

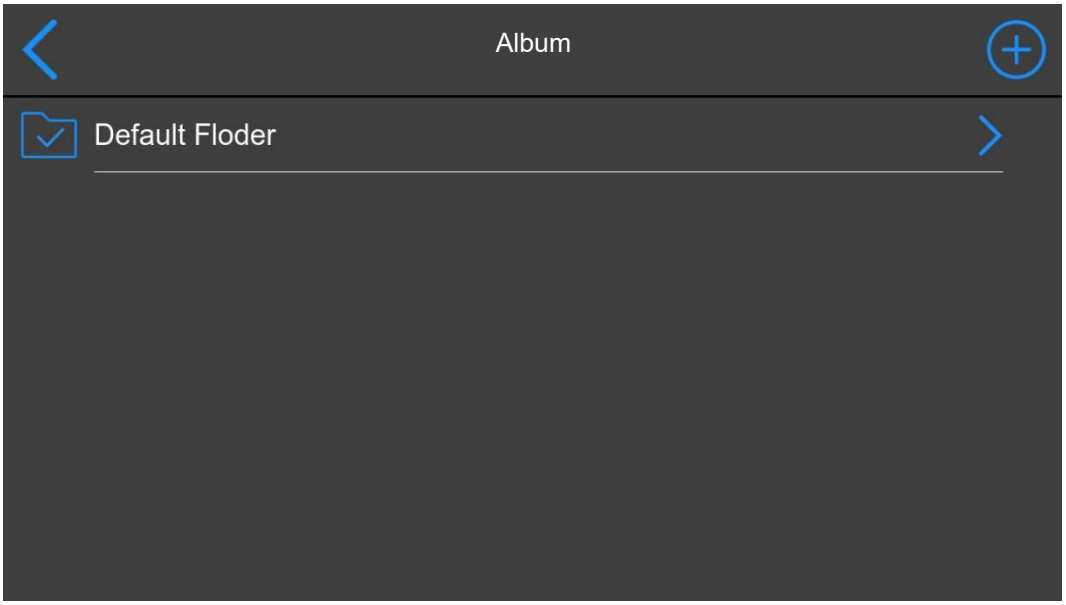
Multiplication of 6.4 images

Click button, zoom in. Click. button, narrow the image. When the image is zoomed, the current image is displayed in the status bar above the real-time picture.

Big multiple.

7. Album

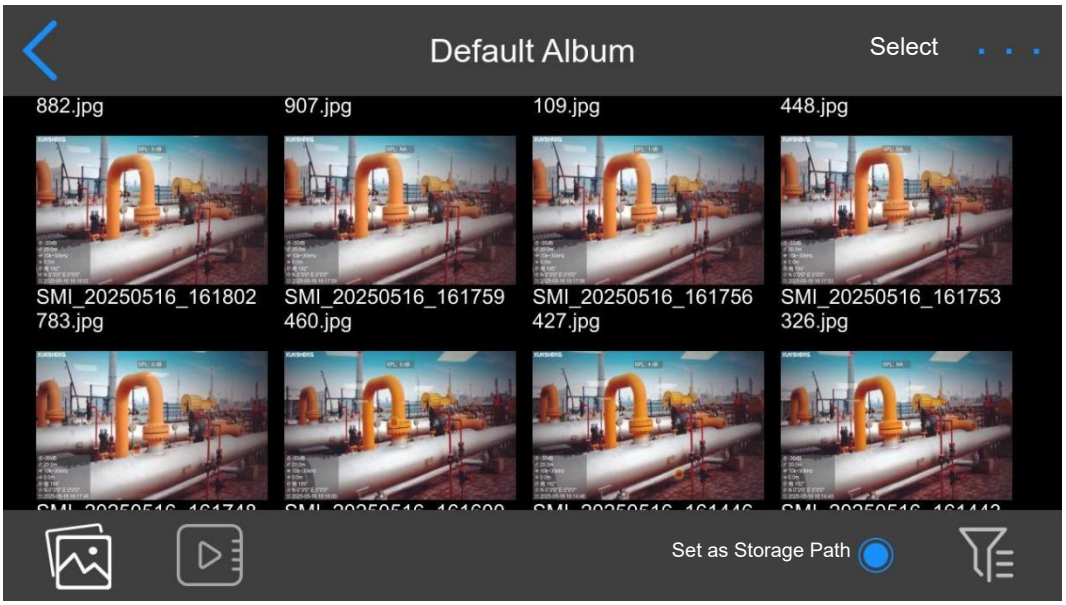
7.1 Album Management



Click the main interface album button to open the album. The device default album is: default folder.

Click on the top right corner button to add albums, adding album names to the time series by default. Album names support customisation, not with existing albums

Renamed.



When you enter the album, you can preview the photos and video files and click on the file thumbnail to zoom in on the document.

Click [%1] button selects the picture file;

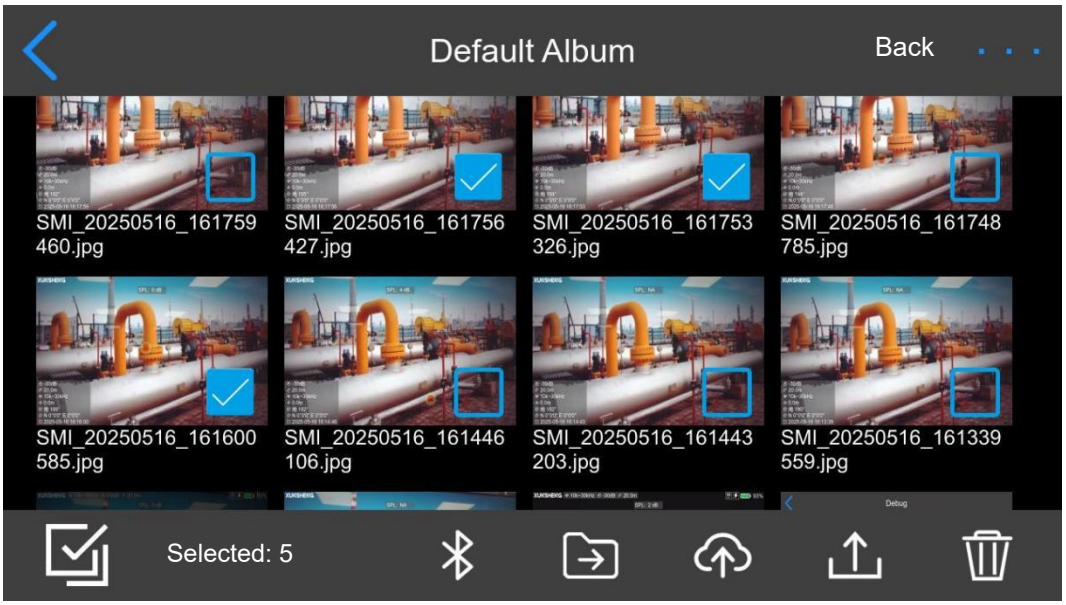
Click [%1]) button to select a video file;

Click on the [option] button to open file selection; click on [option] **) button selects the picture;**

Click [%1]) button, popup album options, including renaming and deleting albums.

Click [%1] . When this filter is completed, this icon fills the background colour.

Note: Albums cannot be deleted when they are stored.



Click the [cancelled] button to cancel the file selection after entering the file selection status.

After the file is selected, the popup file operation options are available.

Click [%1]) button to select or cancel all files.

Click [%1]) The button can send photos to other devices via Bluetooth.

Click [%1]) button to move the photo to another folder.

Click [%1] . The cloud service login is detailed in 9.6 section.

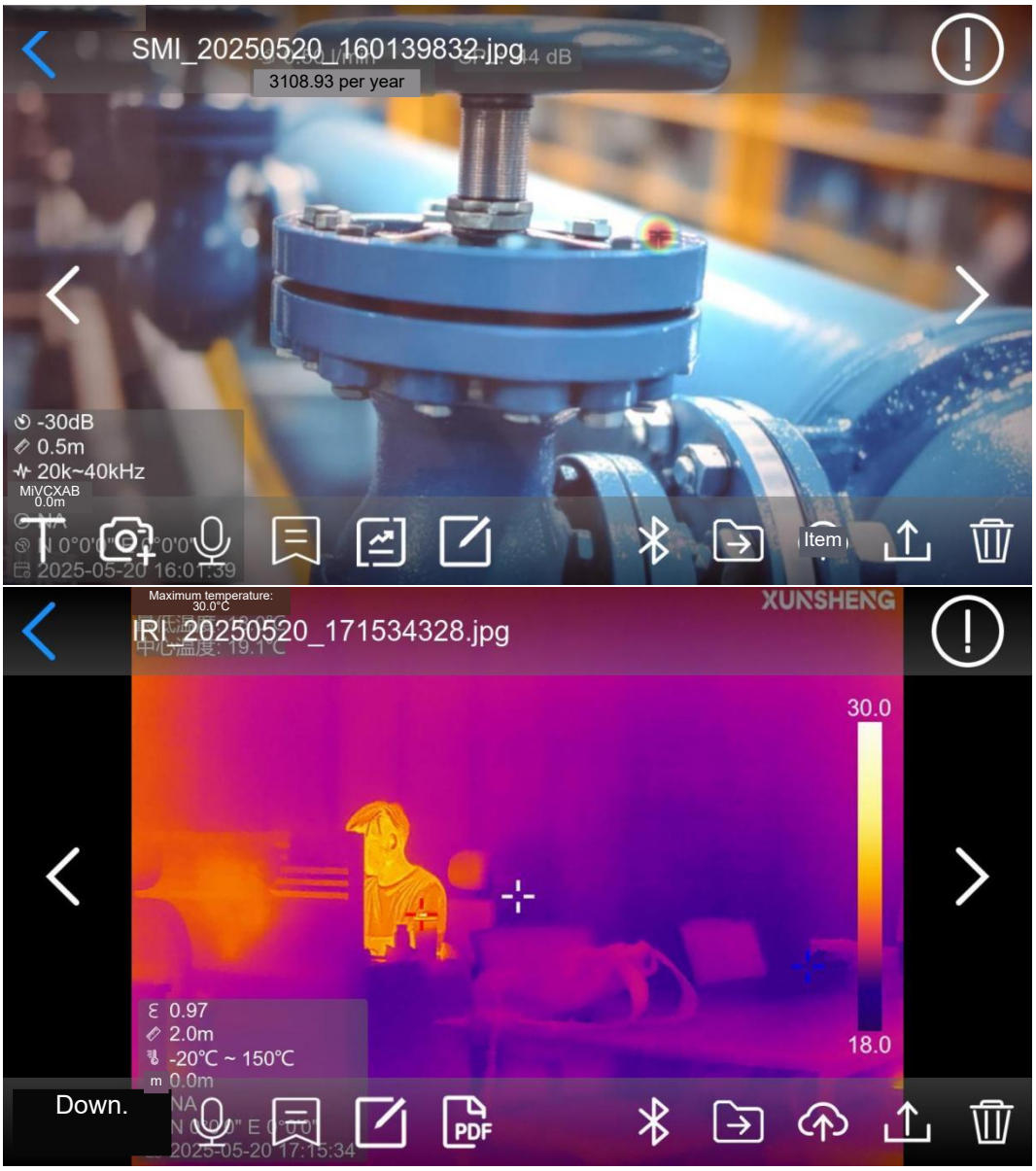
Click [%1] . When exporting data, you can select [Export image files only] and export files only. U

Preview. You can also select [Export as compressed file] for offline secondary analysis of files.

Click [%1]) button to delete the selected data.

7.2 Photo Preview

Album previews, click on the file thumbnail to zoom in on the file.



1. In the photo preview interface, click any picture to enter the edit image interface, click on an area outside the menu to get a full screen preview

Snips.

2.) **button to see the details of the picture.**
3.) **button adds text comments to the current photo.**
4.) **button adds a photo comment to the current photo.**
5.) **button to add label comments to the current photo.**
6.) **button adds a voice comment to the current photo.**
7.) **button to analyze current photos.**
8.) **button edits the current photo.**
9.) **button to generate an analysis of the current photo.**
10.) The button can send photos to other devices via Bluetooth.

11.) **button to move the photo to another folder.**

12. . The cloud service login is detailed in 9.6 section.

13. . When exporting data, select [Export image files only] and export files U

Only previewable. You can also select [Export as compressed file] for offline secondary analysis of files.

14.) **button to delete the selected data.**

7.3 Video Preview

Album previews can be expanded by clicking on a video thumbnail.

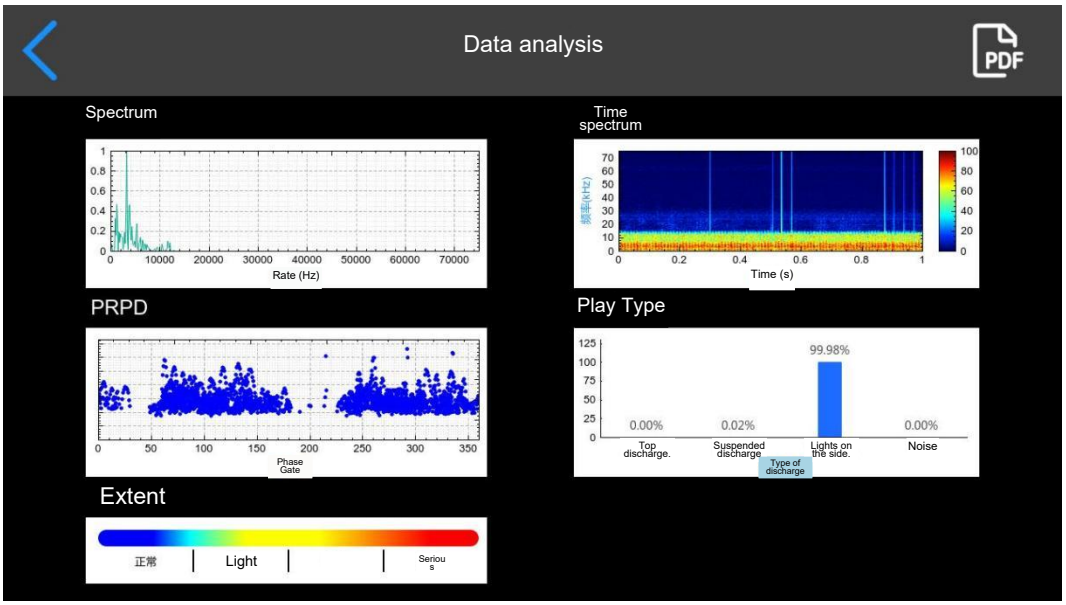
When the video is played, click anywhere on the screen to suspend the video.

When the video is played, the slide bottom area can regulate the video file's play progress.

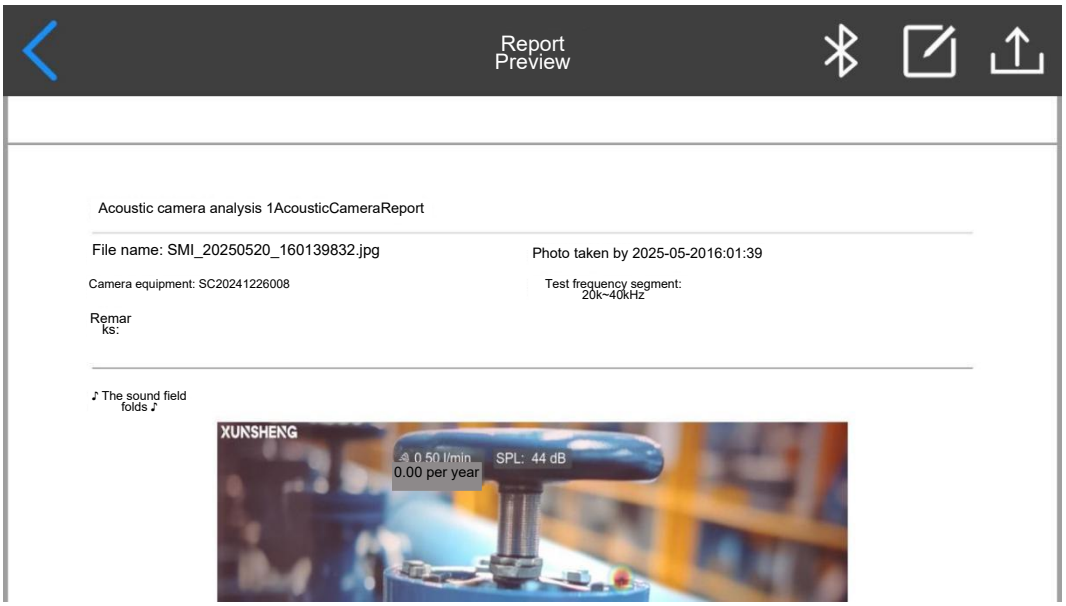
7.4 Photo Analysis

7.4.1 Audio Image Analysis

1. Photo preview interface, click button to analyse the current photo.



2. Click button to generate the analysis directly from the current photo.



3. If you need to adjust the parameters of a picture, click on the image preview interface **button to enter the picture edit page.**

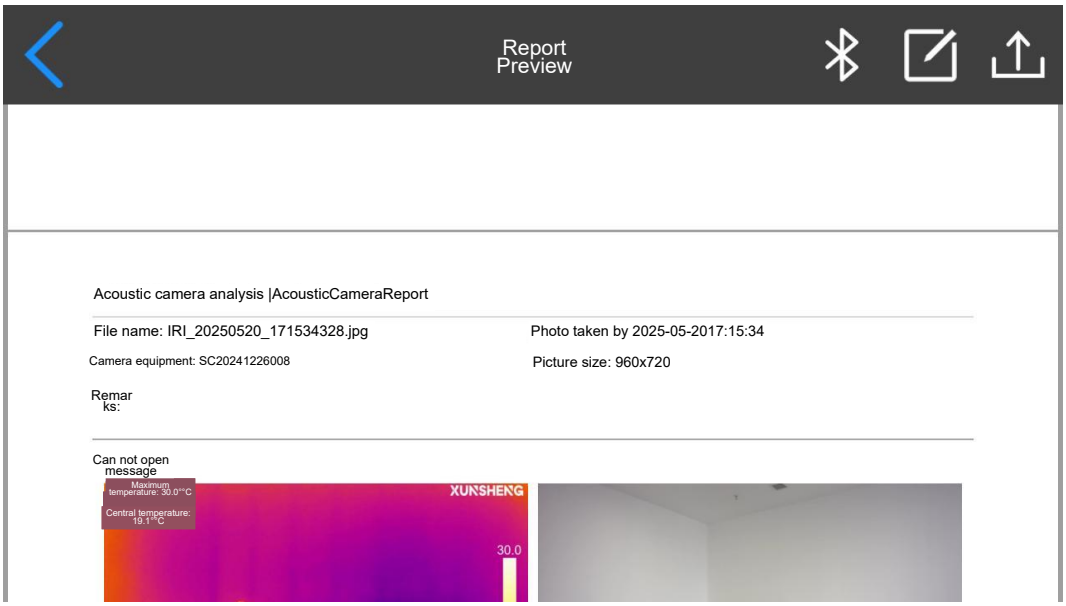


4. Click Buttons to adjust parameters, click after the reconciliation is completed **button.**

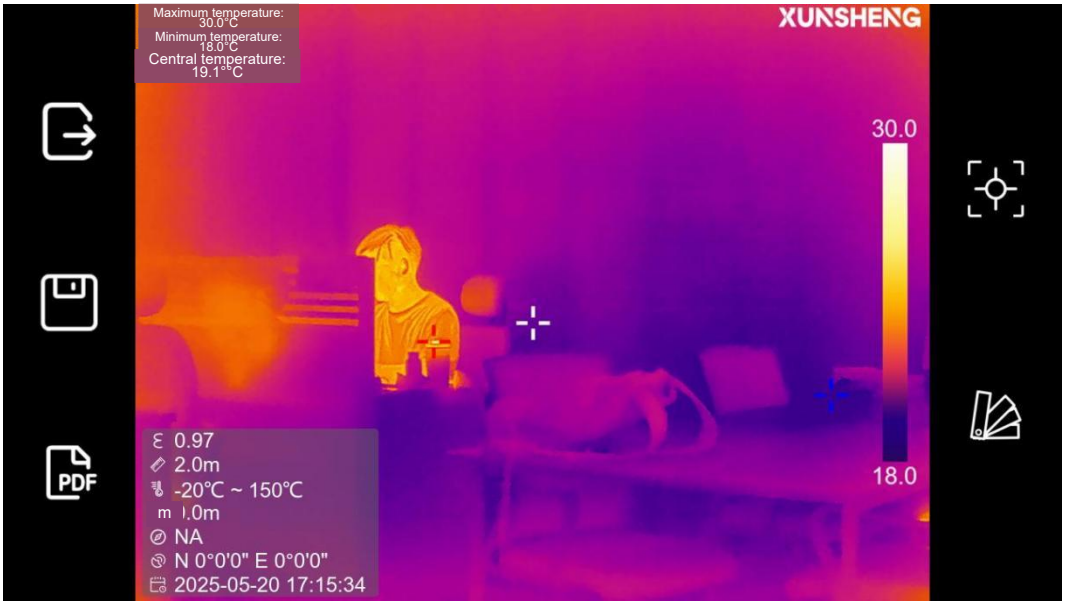
5. Click button.

7.4.2 Infrared Image Analysis

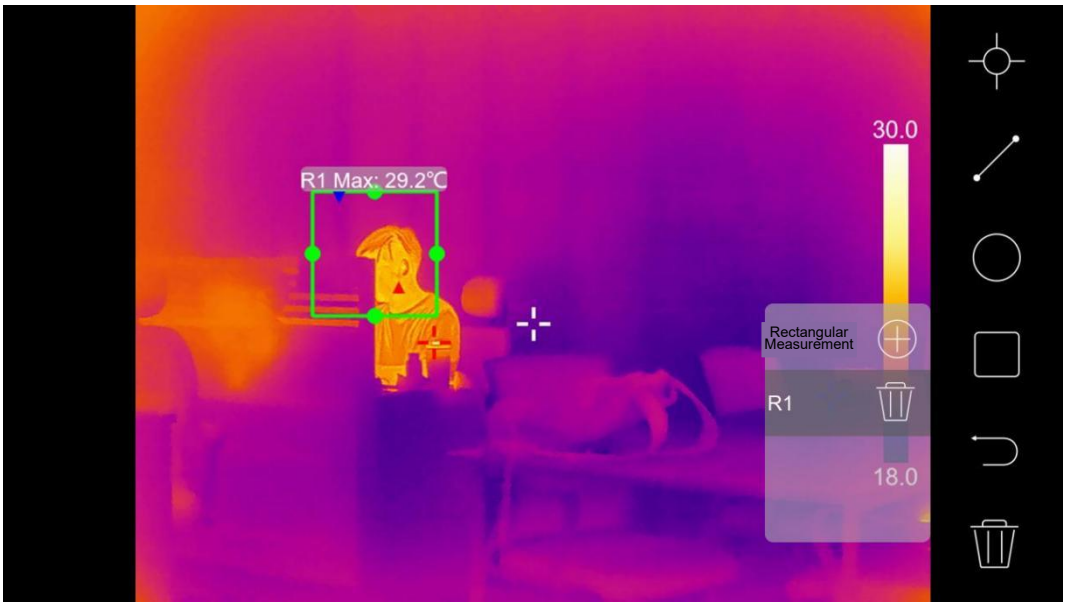
1. Infrared Photo Preview Interface, Click button to generate the analysis directly.



2. If the picture is reanalysed, on the image preview interface, click **button to enter the picture edit page.**



3. Click button.



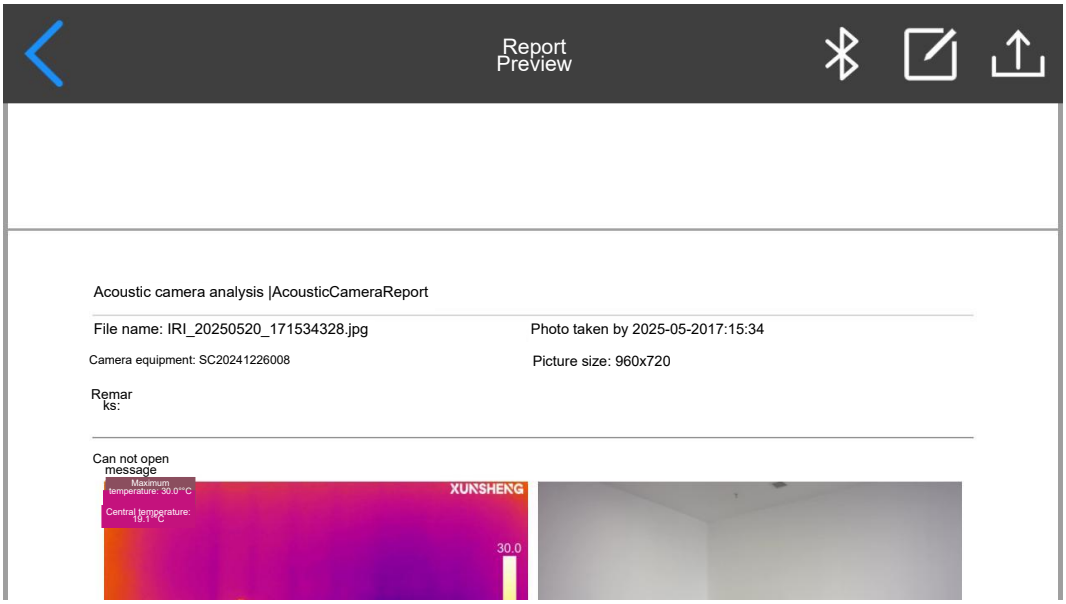
4. Click button to change the image's pseudo-color.

5. **button.**

6. Click **button.**

7.5 Generation Analysis

1. Photoanalysis interface, click PDF button.



2. button edits the report cover, which includes the report title, the client name, the report author, the location of the inspection, the location of the report.

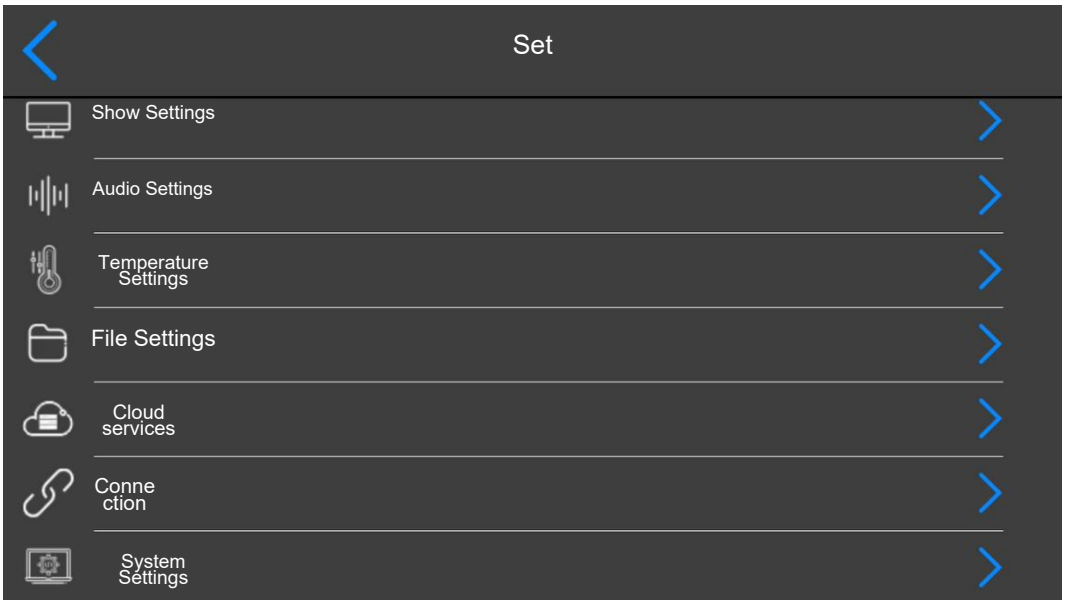
Date time, LOGO etc.

3. Click Select the contents of the cover of the report to automatically delete the cover when all is removed.

4. **Reports can be sent through Bluetooth to other devices.**

5. **button to export the report to the U disk.**

8. Settings



8.1 Display Settings

Displays the contents and effects of the settings that are used primarily to reconcile the real-time preview.

8.1.1 Screen Brightness Settings

The brightness of the screen is optional to automatic design or manual regulation.

When the automatic reconciliation is activated, the screen brightness will be adjusted to the strong light of the environment in which the equipment is located.

After closing the automatic reconciliation, you can manually adjust the brightness range 1~100.

8.1.2 Real-time Preview Display Settings

1. Date time: The live system time is displayed on the preview interface when it is on.

2. Parameters: The real-time preview interface that is open shows the measurement parameters.

3. LOGO: A real-time preview page with LOGO information.

4. Hides: On open, you can hide both sides of the acoustic interface and click on the empty area of the screen.

8.2 Audio Settings

8.2.1 imaging threshold

Sets the threshold range for acoustic imaging to show the acoustic field imaging results when the maximum level of sound pressure is greater than the set threshold.

8.2.2 soundfield image

Acoustic source mode: Supports both the acoustic source tag and the acoustic cloud chart display. In acoustic source tag mode, detected sound with a pseudo-colour mark point

Source position, tag size fixed. In acoustic cloud chart mode, display acoustic cloud image falsely in real time, and display range support through dynamic frames

The threshold is adjusted.

Acoustic Colours: The colours of the acoustic source tags and the cloud maps of the acoustic fields are currently supporting rainbows, iron reds and greys.

Dynamic range: Regulate the display range of the acoustic field, i.e. the range above [maximum of the acoustic field - dynamic range threshold], general settings

It's automatic. The larger the dynamic range, the larger the area.

8.2.3 Image Focus

Image Focus: Only the centre focus area is scanned after opening, partial interference outside the area can be shielded, and the measurement of weak signals is clearly elevated.

The switch status is synchronized with the speed adjustment of the acoustic imaging main interface.

Focus areas: set the regional size of the centre focus and support both large and small fixed range adjustments.

8.2.4 station detection parameters

The test parameters appear under the test mode.

1. PRPD Graphics: A real-time display of PRPD in the main interface after opening.

2. Set Type Forecast: Real-time Forecasting Bureau Type with the main interface.

3. PRPD work frequency cycle: the frequency cycle of the power system, supporting 50Hz, 60Hz and 16.7Hz settings.

4. Temperature of the environment: Measurement of ambient temperature for use in the assessment of the severity of the station.

5. Voltage level: The voltage level of the measuring equipment, which is used as a reference for the evaluation of the gravity of the station.

6. Relative humidity: relative environmental humidity, used as a reference for the assessment of the severity of the station.

7. Target distance: Measuring the target ' s distance from acoustic imaging camera for use as a reference for the evaluation of the severity of the station.

8.2.5 estimated leakage parameters

Leak estimation parameters appear under the leak detection working model.

1. Estimated rate of leakage: The acoustic imaging real-time preview interface shows the estimated rate of leakage after opening.

2. Leak loss estimates: On opening, the acoustic imaging real-time preview interface shows the leak loss.

3. Leak rate unit: Leak rate unit reconciliation, supporting l/min, ml/s, ml/min.

4. Currency units: currency units for the estimation of leakage losses, supporting multiple currencies.

5. Gas values: gas values in units of volume.

6. Energy cost: cost per kWh energy.

7. Ratio: in time, a unit of gas can produce power.

8. Length of work: The equipment being measured works throughout the year. 8760h

9. Leak correction factor: When there is a deviation in the estimation of leakage, the correction may be made by setting a correction factor.

8.2.6 spectrum display

After opening the spectrum, the real-time imaging interface frequency band adjustment becomes manual, and when you click the frequency band adjustment button, you show the spectrum map in real time.

Slided the measurement band range.

8.2.7 Image Enhancement

The increase in imaging is extended by the length of the imaging measurement, which is enhanced for weak signal measurements, but results in lower imaging speed.

Use only on weak signal measurements.

8.3 Temperature Settings

8.3.1 temperature range

The Infrared Thermal Imaging module supports two-tier temperature measurements, which can be matched by physical use of environmental switching.

8.3.2 temperature parameters

Temperature parameters include: launch rate, ambient temperature, relative humidity, and target distance.

The impact of the distance is relatively large and the default parameter is recommended for general measurements.

8.3.3 Temperature Alert

Sets whether temperature alarm and temperature alarm thresholds are enabled.

8.3.4 parsing object tag

The object is analysed to measure the content, and the maximum temperature or minimum temperature is set.

8.3.5 Full Screen Temperature

The full screen temperature measure includes the highest temperature, the lowest temperature, and the centre temperature. On-board real-time images of infrared thermal images show the results in real time at the top left corner of the screen.

The image shows the temperature cursor.

8.3.6 pseudo-colour belt

When a pseudo-colour belt is activated, the Infrared Thermal Image Preview is shown in real time.

8.4 File Settings

8.4.1 Visible Photo Resolution

Sets the visible photo resolution of the shot and currently supports 3840*2160 and 1920*1080.

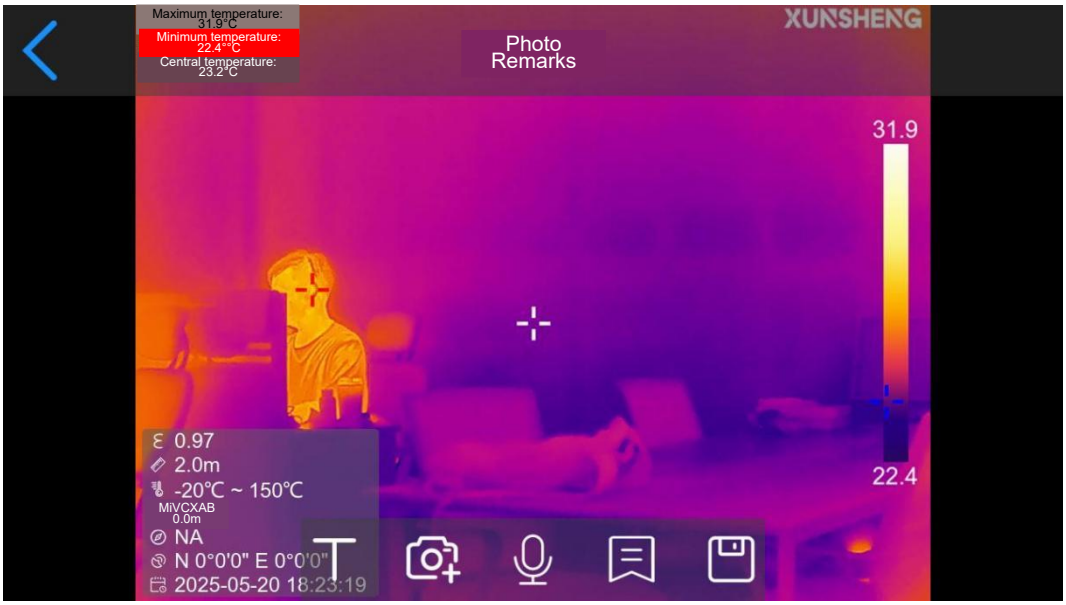
8.4.2 Photo Watermark

Select the water print that is stacked on the photograph, including date time, LOGO, parameters, laser ranging results, compass, etc.

8.4.3 Photo Remarks

After opening the photo comment, the photo finishes with the automatic popup comment option.

1. **) button adds text comments to the current photo.**
2. **) button adds a photo comment to the current photo.**
3. **) button adds a voice comment to the current photo.**
4. **) button to add label comments to the current photo.**
5.) button to save the current photo, and then you return to cancel saving the photo.



8.5 Cloud Service

The cloud service accounts do not support registration, and you can store and analyse the data from the device.

If so, contact my Division ' s technical support staff to obtain them.

8.6 Connection

8.6.1 WLAN

When you open WLAN, you can search for an available wireless network.

Click the name of the network in the list of available networks to enter the password to connect to the wireless network.

Hint: Data upload to cloud and OTA upgrades depend on network connections.

8.6.2 Bluetooth

When bluetooth is activated, you can search for available bluetooth settings, and only bluetooth headphone devices are currently supported.

8.6.3 FTP

1. After opening FTP, you can access and download data from the device SD directly via FTP under the same local area network.

2. Local system upgrades can be made by connecting to the FTP server, uploading the upgrade package to the SD Kagen directory.

Caution: The WLAN must be connected before using FTP.

8.6.4 RTSP

You can open the RTSP projectile on the device to screen the device to other support RTSP functions by pulling the RTSP stream on the device

Equipment on.

Hint: WLAN needs to be connected before using RTSP; RTSP streams are recommended with EasyPlayer tools, with lower delay

Late.

8.7 System Settings

8.7.1 system parameters

1. Working mode: This is used to set the working pattern of the equipment, including the application test mode, the leak detection model and the mechanical anisophone mode.

Models are used to detect partial discharge, leak detection, to measure gas leaks; mechanical isophones are used to detect the sound of mechanical devices.

2. Geographical location: A compass can be opened or closed.

3. Laser ranging: Set laser range measurements, package single and continuous measurements; and open or close the connection to distance parameters.

4. Custom keys: to set the device ' s custom keys function.

5. Unit Switch: Toggle current measurement units, including distance units and temperature units.

6. Automatic hibernation: Sets the time of automatic hibernation when the device is wrong.

7. Automatic shutdown: setting the time of automatic shutdown when the device is not operational

8. Language Settings: Switches the current system language, and then restarts the device.

9. Date time: Set the date time and date display format of the system. When the format is changed, the real-time preview page date displays the same format.

Step change.

10. Storage Management: Displays the usage of current storage.

11. Parameter Reset: restore all parameters of the device to the plant by default.

12. Formatting: All data of the emptied device.

8.7.2 system upgrade

1. OTA Upgrade: Upgrade to detect cloud-side upgrade packages via connection.

2. Local upgrades: System upgrades through an upgrade package to the U directory.

8.7.3 about the machine

Display equipment-related information, including equipment serial numbers, software and solid version.

9.

Q: Sound field location unstable

A: Probably due to weak target information or incorrect frequency band settings, the imaging bands are not ultrasound bands of gas leaks/discharges, resulting in

The sound field is not focused. You can try to change the frequency band and test it or use automatic mode.

Q: Two sound sites when a sound source is located

A: May be caused by reflection, with two acoustic sites likely to occur when the reflecting signal is of comparable intensity to the direct signal strength, at which point the device can be rotated from

Multiple angles observe that the direction of reaching the signal at this point is unchanged, but the reflection signal changes.

Q: Infrared mode not open

A: See if the device is equipped with an infrared camera. In addition, there may be a shortage of electricity, resulting in the infrared not being properly opened.

Try.

Q: Cannot detect upgrade packages in U disk

A: first confirm U disc format as FAT32;

Second, confirm that the name of the U upgrade package has not been changed and that the upgrade package version number is higher than the current device version number;

Final confirmation of upgrade package in U root directory

Q: No sound location

A: Probably due to excessive door-limits.

If you have any other problems with your use, you can contact us.