

Instruction and operation manual

S531

Ultrasonic Leak Detector



Dear Customer,

Thank you for choosing our product.

Before you start up the device, please read this manual in full and carefully observe instructions stated. The manufacturer cannot be held liable for any damage that occurs as a result of non-observance or non-compliance with this manual.

Should the device be tampered with in any manner other than a procedure that is described and specified in the manual, the warranty is void and the manufacturer is exempt from liability.

The device is designed exclusively for the described application.

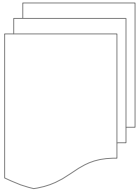
SUTO offers no guarantee for the suitability for any other purpose. SUTO is also not liable for consequential damage resulting from the delivery, capability or use of this device.

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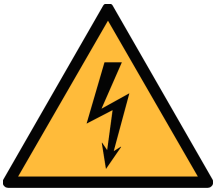
1 Safety instructions



Please check if this instruction manual matches the product type.

Please observe all notes and instructions indicated in this manual. It contains essential information which must be observed before and during installation, operation and maintenance. Therefore this instruction manual must be read carefully by the technician as well as by the responsible user or qualified personnel.

This instruction manual must be available at the operation site of the leak detector at any time. In case of any obscurities or questions, regarding this manual or the product, please contact the manufacturer.



WARNING!

Compressed air!

Any contact with quickly escaping air or bursting parts of the compressed air system can lead to serious injuries or even death!

- Avoid that persons get hit escaping air or bursting parts of the system.



WARNING!

Laser pointer!

Do not point into the eyes with the laser. It can lead to serious injuries particularly on lens and retina or even blindness!

- Never look directly at the laser
- Never point the laser at persons.
- Never point the laser at smooth and reflective surfaces. This can lead to a reflection of the laser.



WARNING!

Voltage used for supply!

Any contact with energized parts of the product, may lead to a electrical shock which can lead to serious injuries or even death!

**WARNING!**

To prevent possible hearing damage, do not listen at high volume levels for long periods.

**ATTENTION!****Permitted operating parameters!**

Observe the permitted operating parameters, any operation exceeding this parameters can lead to malfunctions and may lead to damage on the instrument.

- Do not exceed the permitted operating parameters.
- Make sure the product is operated in its permitted limitations.
- Do not exceed or undercut the permitted storage and operation temperature and pressure.

General safety instructions

- It is not allowed to use the product in explosive areas.
- Please observe the national regulations before/during operation.

Remarks

- It is not allowed to disassemble the product.

**ATTENTION!****Measurement values can be affected by malfunction!**

The device must be used properly and frequently maintained, otherwise it may lead to wrong measurement values that can lead to wrong results.

- Avoid condensation on the leak detector sensor because this will affect the accuracy enormously.

Storage and transportation

- Ensure the transportation temperature is between -20 ... +50°C.
- For transportation it is recommended to use the packaging that comes with the leak detector.
- Please ensure that the storage temperature of the sensor is between -10 ... +50°C.
- Avoid direct UV and solar radiation during storage.
- For the storage the humidity must be <90%, no condensation.

2 Registered trademarks

Trademark	Trademark owner
SUTO®	SUTO iTEC
MODBUS®	Modbus Organization, Hopkinton, USA
HART®	HART Communication Foundation, Austin, USA

3 Application

The S531 is a hand-held ultrasonic leak detector that helps you quickly detect and provides quantitative data for the leakages in compressed air or any pressurized gas systems.

Gas leaks emit ultrasound, however the frequency is too high to hear by human ear directly. The S531 converts the leak ultrasound to a lower frequency that can be heard through headphones from several meters away, which leads you to find the leak source.

In unpressurised systems, you can use an ultrasonic tone generator to generate sounds that can be detected by the S531.

To efficiently manage the leak data, SUTO offers the Leak Management Software (LMS) for your need. The LMS provides a total solution for leak detection, management and easy report creation.

This manual takes you through how to use the S531.

4 Features

- Detects leaks in the compressed air or gas system easily even from distance.
- Supports high resolution 3.5" color touch screen, easing operations in leak detection.
- Supports wireless connection with headset.
- Builds in camera to take photo of leak locations.
- Provides voice recorder for voice memos.
- Equips with laser pointer to pinpoint leak locations.
- Records leak information for statistics and repair.
- Calculates air loss in l/min, m³/h or cfm and in the local currency
- Integrates noise reduction technology.
- Supports battery capacity for up to 6 hours.

5 Technical data

5.1 General data

CE	
Principle of measurement	Ultrasonic leak detection
Measuring medium	Compressed Air, refrigerants and any compressed gases
Jack	3.5 mm stereo phone jack for headset
Operating temperature	0 ... +40°C
Battery life	About 6 hours with wireless off
Charging temperature	+10 ... +45°C
Charging time	Around 3 hours
Materials of the detector	PC + ABS
Dimensions	See section 7.3 .
Interface	Wireless connection to headset USB port for charging and data exchange
Display	3.5" color LCD
Laser pointer	Wave length: 640 ... 660 nm Output power: < 1.0 mW
Camera	5.0 megapixels
Headset	Noise isolated and wireless
Weight	3.65 kg (full set)

5.2 Electrical data

Power supply	Internal lithium-ion battery
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5.3 Performance data

The table shows the detection distance of various hole diameters at different pressures in the lab environment and with the trumpet on.

Diameter Pressure	0.1 mm	0.2 mm	0.5 mm
0.5 bar	0.5 m	1.7 m	7 m
5.0 bar	3.6 m	11.5 m	18 m

6 Scope of delivery

The S531 layout in the transportation case is shown as below.



Please make sure that below components are included in your package.

Qty	Description	Item No.
1	S531 Ultrasonic Leak Detector	P560 0104
1	Noise isolated/canceling wireless headset (page 34)	A554 0119
1	Focus tube and focus tip (used for leak detection)	A530 0101
1	Trumpet (used to increase sensitivity and isolate from environmental noise)	A554 0123
1	Battery charger	A554 0117
1	Type-C USB stick	A554 0124
1	Transport case	A554 0118
1	Leak tags to mark found leaks, 100 pieces	A554 0122
1	Instruction manual	NA
1	Calibration certificate	NA
Optional accessories:		
1	Ultrasonic tone generator	A554 0103
1	Calibration for S531	R200 0070

7 Learning about the device

This chapter describes components of the S531 main unit.

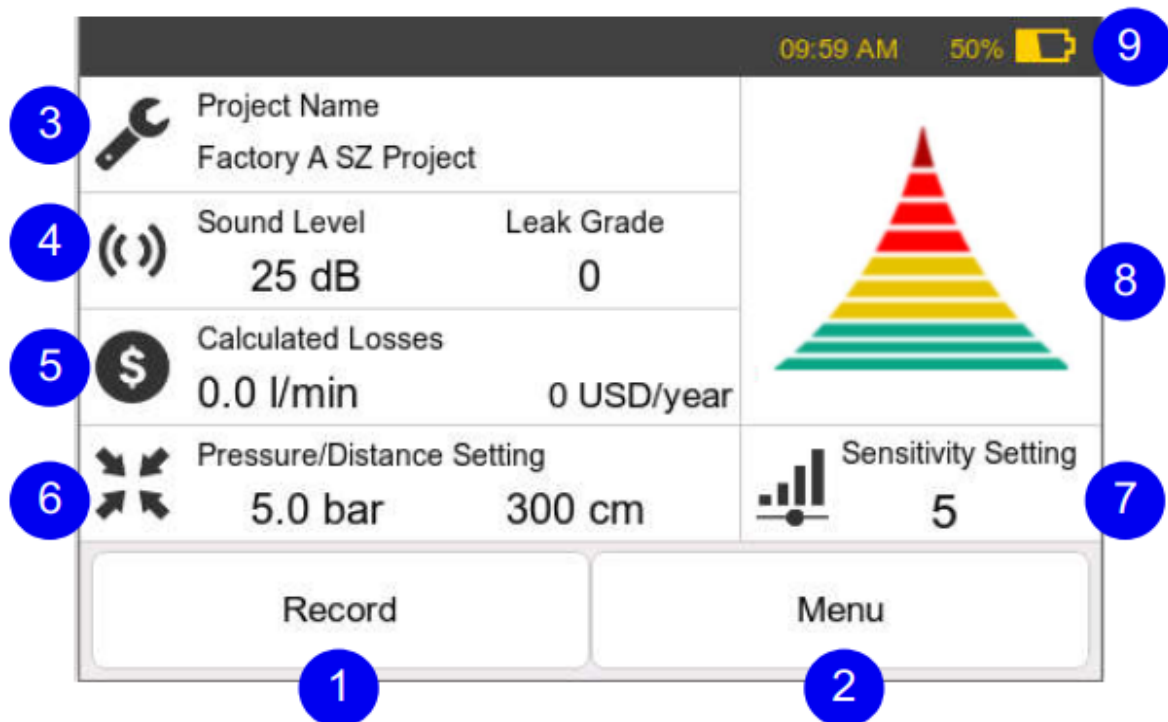
7.1 Components



Part	Description
1	Power button: Long press for 2 seconds to turn S531 on or off. It also works as a shortcut button for taking photos in leak detection.
2	Voice recording button: Click to start recording voice memos, then click to stop recording during leak detection.
3	Laser button: Press to turn laser on or off.
4	Sensitivity wheel: Turn the wheel to fine tune the sensitivity setting. Turn the wheel up to increase the sensitivity and down to decrease the sensitivity. Turning the sensitivity up or down makes the volume go up or down. Note: The sensitivity setting does not impact the sound level reading.
5	Touch screen: for further functions
6	Sensor unit: To detect the ultrasound level.

7.2 Touch screen display

The 3.5" touch screen enables you to record and manage leak records and change the S531 settings.



UI part	Description
1	Record button To detect and record a detected leakage by recording voice memos and taking photos.
2	Menu button To perform additional actions. For more details, please see the following chapters.
3	Project Name Shows the name of the project. Switch to another project by touching it and select from the project list.
4	Sound Level Shows the sound intensity in dB. Range: 0 ... 99 dB. Leak Grade Shows the grade of the detected leakage: - Grade 0: Leakage = 0 l/min - Grade 1: $0 < \text{Leakage} \leq 1$ l/min

- Grade 2: $1 < \text{Leakage} \leq 4 \text{ l/min}$
- Grade 3: $4 < \text{Leakage} \leq 9 \text{ l/min}$
- Grade 4: $\text{Leakage} > 9 \text{ l/min}$

5 **Calculated Losses**

Shows the detected leakage and the loss amount in cash per year.

Leak losses are calculated based on the sound level detected as well as the pressure and distance settings.

6 **Pressure / Distance Setting**

Shows the latest settings for the pressure in the detected object and the distance between the S531 sensor and the leak point.

You can change the settings by touching the numbers on the touch screen.

7 **Sensitivity Setting**

Shows the sensitivity level to the ultrasound. The higher the number is, the louder the volume you can hear.

By turning the sensitivity wheel, you can adjust the sensitivity level to change the volume.

8 **Sound level bar**

Indicates the intensity of the sound that the S531 detects: Red strongest, yellow the less, and green the least.

You can see the actual sound level in dB in the **Sound Level** area.

9 **Status bar**

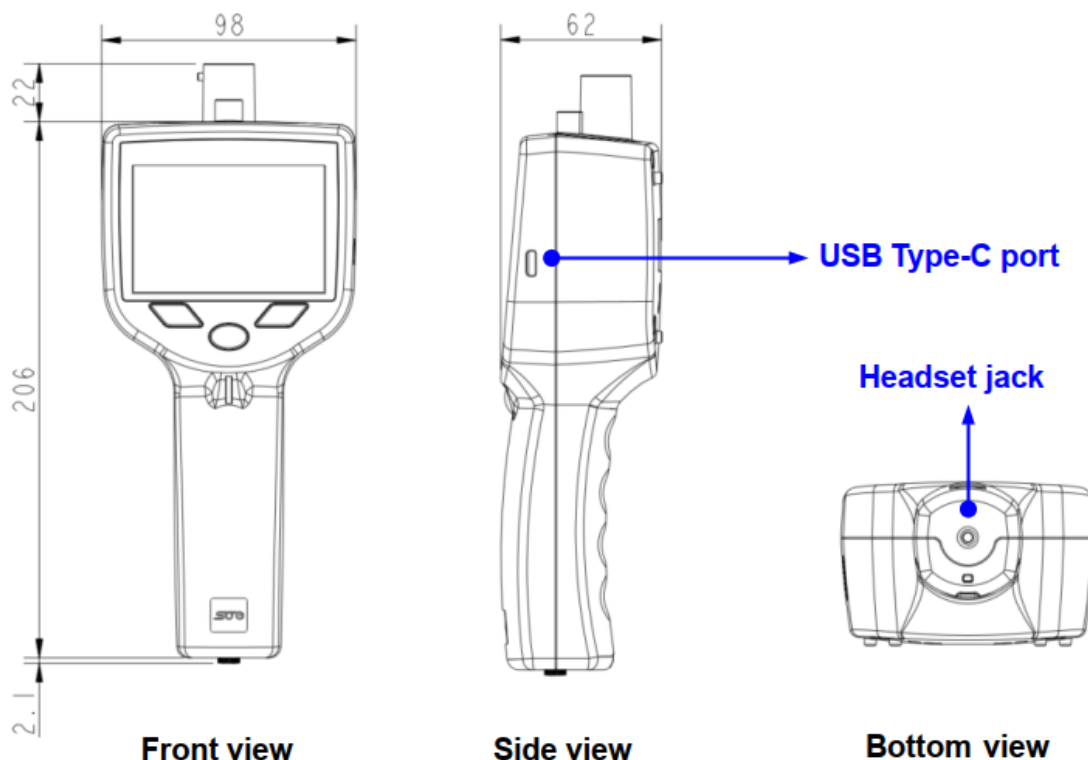
Shows the S531 status, including the following icons or text:

Type	Icon/Text	Description
Icon	Trumpet	Indicates that the trumpet is mounted on and well connected with the sensor.
Icon	Battery	Indicates the percentage of battery capacity.
Icon	Laser	Indicates that the laser pointer is turned on.
Icon	Type-C USB stick	Indicates that a USB drive is inserted.

7.3 Dimension and electrical ports

See the following figure for dimensions of the S531 main unit. The unit comes with two electrical connectors:

- USB Type-C port: On the right-hand side of the S531 in the front view, used to charge the S531 and transfer data.
- Headset jack, At the bottom of the S531 handle, reserved to connect the wireless headset through the supplied audio cable when the headset runs out of power.



8 Before you start for the first time

Before you use a new S531 to detect leaks for the first time, charge the device and perform the initial device setup.

8.1 Charging the device

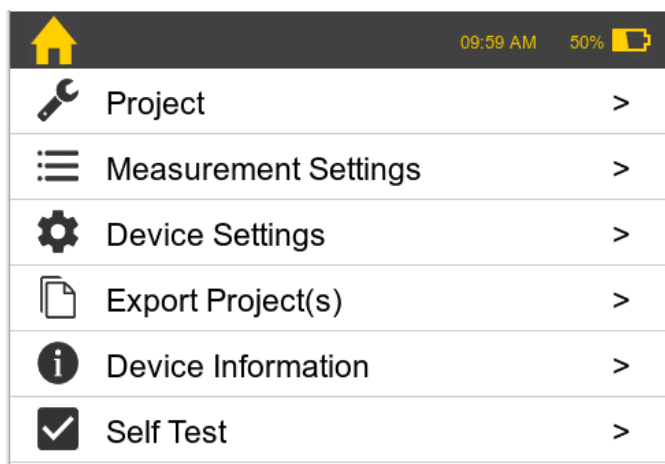
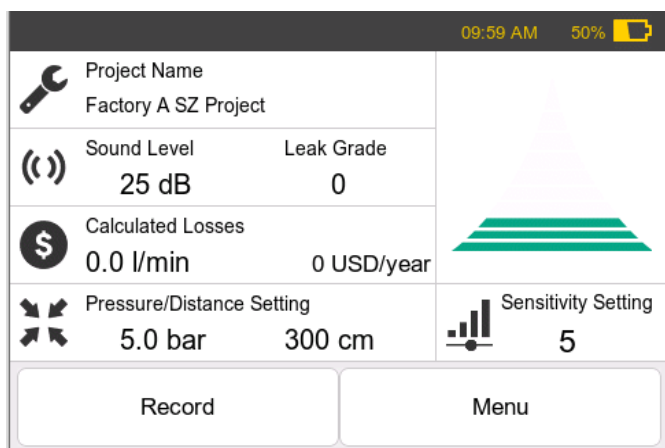
The S531 is a battery-powered device and partially charged before delivery. If the battery power is low, charge it via the USB Type-C port on the right-hand side of the device. Please use the USB cable and one of four charging adapters supplied in the delivery package to charge.

8.2 Performing initial setup



1. Turn on the S531 by pressing the Power button for a few moments.

The S531 starts up. When the process is completed the home screen shown on the left appears.



2. Access **Menu > Device Settings**

3. Click **Date/Time** to specify the date, time, and time zone.

Note: Wrong settings will lead to wrong date and time in all reports, which cannot be corrected in the LMS.

4. Click **Language** to specify the device language.

5. To enable the wireless headset, do the following:

A. Click **Pairing Headset** and then turn on the **Wireless headset enable** toggle.

B. Power on the headset by pressing and holding the **Power** button for 2 seconds.

Note: You must power on the S531 first, then power on the wireless headset.

After wireless connection is built, the message "COWIN E9 connected" appears on the S531 screen.

Notes:

- The headset is paired with the S531 before delivery. The S531 can work with only the wireless headset supplied by SUTO. After you purchase a new headset from SUTO, you must pair it with your S531 on your own. For more information about the headset and its operations, see [Appendix: Headset overview](#).
- The wireless headset is used for listen to leaking sounds, not for listening to audio recording.



ATTENTION!

After using the wireless headset, remember to turn it off. Otherwise the headset is in power-on status until the power runs out.

6. Click **Volume Control** to adjust the volume of the speaker and headset.

Note: The device cannot play the audio recordings through the wireless headset. You can play the recording on speaker or connect to a wired earphone.

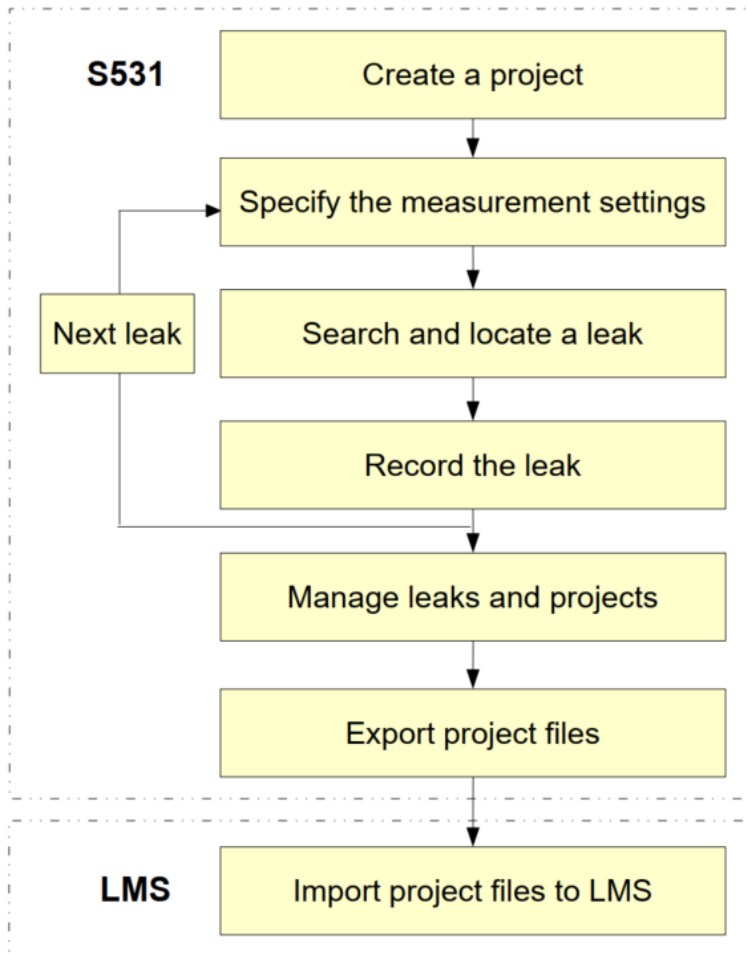
7. To select the metric unit or imperial unit, click **Unit Setting**. These will be the default setting for all projects. While defining each project, you can set specific units for that project.
8. To adjust the display brightness, click **Display Settings**.
9. To adjust the volume of pressing buttons, click **Beeper Settings**.
10. Click **Memory Info** to view the memory information of the device. The **Firmware Update** and **System Reset** are for maintenance, see Maintenance section.

Note: By clicking the  icon on the top left side, you can return to the home screen.

9 Procedures of detecting leakages

A leak detection is managed by the "Project" in the S531. By defining a project, the leak data are recorded. Multiple projects can be created in one S531.

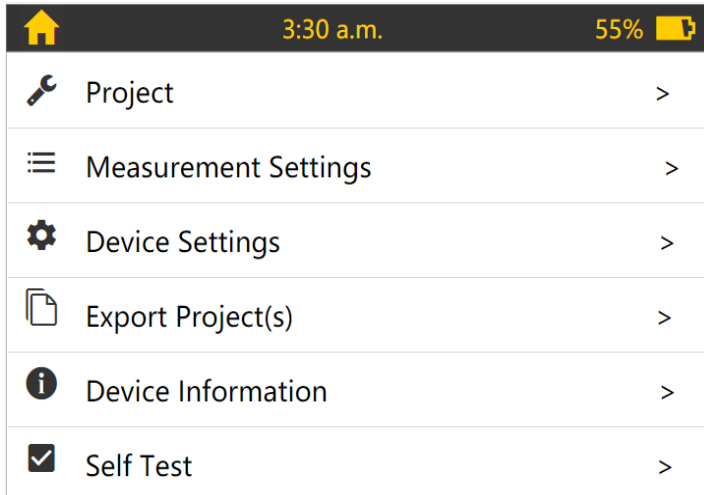
The procedure of detecting leaks is shown in the figure below.



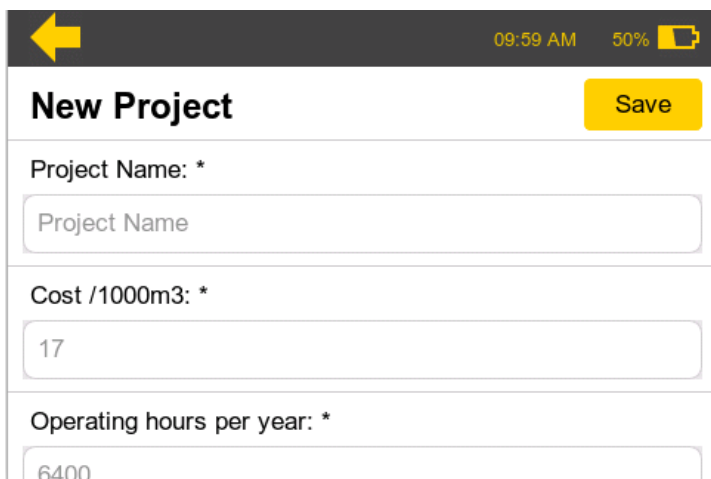
1. [Create a project](#)
2. [Specify the measurement setting](#)
3. [Search and locate a leakage](#)
4. [Record the leak](#)
5. [Manage leak record and projects](#)
6. [Export project files](#)
7. [Import project files to LMS](#)

9.1 Create a project

Follow the steps below to create a project:



1. Access **Menu > Project > Create Project.**



The screenshot shows the 'New Project' form. At the top, there is a back arrow icon, the time '09:59 AM', and the battery level '50%'. Below the status bar, there is a title bar with the text 'New Project' and a 'Save' button. The form contains three input fields: 'Project Name: *' (with a placeholder 'Project Name'), 'Cost /1000m3: *' (with a value '17'), and 'Operating hours per year: *' (with a value '6400').

2. Input **Project Name, Cost, Currency, Operating hours/year.**
Click **Edit** to select flow unit and pressure unit.
Add some description in **Note** part (optional).
3. Click **Save** to save the project.

9.2 Specify the measurement setting

1. Access **Menu > Measurement Settings** to select the following:
 - Pressure Setting: select the actual pressure of the gas in the pipe.
 - Distance Setting: select the distance that you will detect the leakage.
2. Click  to save the settings.

9.3 Search and locate a leakage



1. Go back to the home screen.



2. Mount the trumpet on the sensor.

3. Find the leak point by following the steps below.

a. Put on headset.

The noise sounds like "beep, beep". The leak sound from the headset sounds like hissing sound.

b. Trace the sound to find the source.

Note: The sensitivity does not affect the measurement value of the leak.

4. (Optional) If the leak point is not able to be found by using the trumpet, pinpoint the exact leak location using focus tube.

When you are close to the leak point, mount the focus tube and focus tip onto the sensor, and scan with the focus tip until the exact location is found.

Note: The focus tube and tip are used to pinpoint the leak area. Do not use them in measuring flow leak.





5. (Optional) Use the laser pointer to point at the leak location.

- a. Press the laser button to turn on the laser.
- b. Point at a suspected leak with the laser.

Note: To avoid laser injury, the laser function is enabled only when the home screen is displayed. If you enter other screens, the laser function is disabled.

9.4 Record the leak

After you identify the exact position of a leak point, you can start to record the leak data.

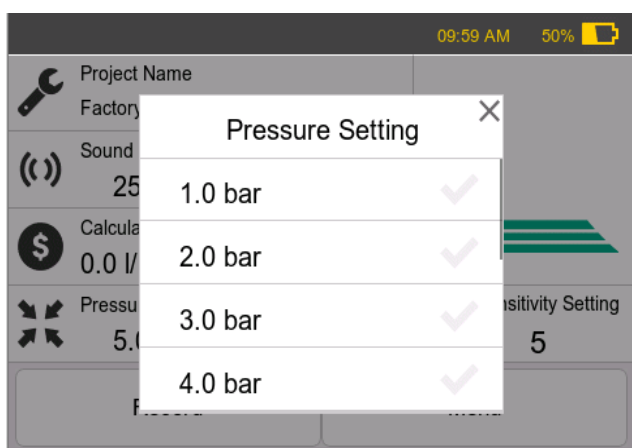


ATTENTION!

The calculation of leak losses depends on many factors, such as pressure, distance, background noise, size and shape of the leakage gap, and so on.

To get accurate results, recommend you do as follows:

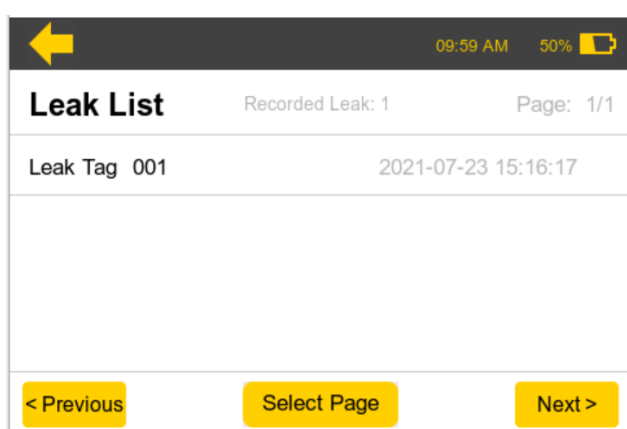
- Detect leaks with the trumpet mounted on the S531.
- Search for the maximum sound level and then trigger the leak recording.
- You can detect leaks from a distance, but keep in mind that recording loss estimation is best performed at a close distance. We recommend you record leaks at a fixed distance of 1 meter.



1. Adjust the pressure and distance.

Press the pressure value and distance value to adjust the pressure and distance. Ensure that the pressure value and distance are consistent with the actual condition.

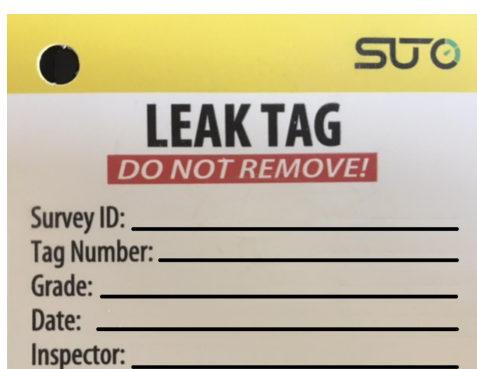
2. Start to record by pressing the **Record**.



3. Create a leak record.

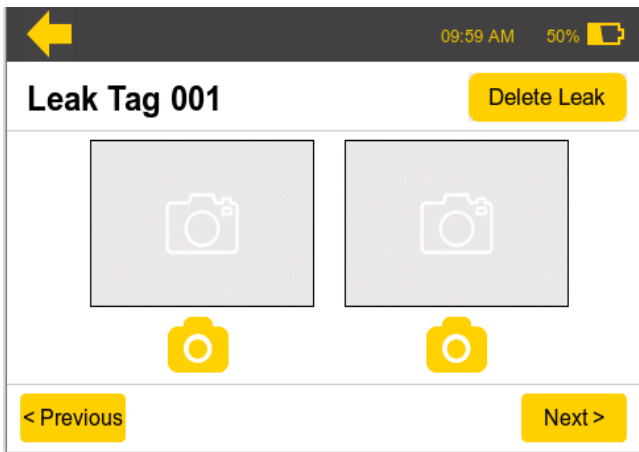
- Input the location where the leak occurs in **Location** field.
- Input the group that the leak belongs to in **Group** field.

The group can be a name of production line or component of compression system, such as compressor, pipeline, and filter. The group will easy you to manage the leak records in the LMS.



4. Write down the leak information on the paper of LEAK TAG.

Note: Fill the project name to the **Survey ID** field.

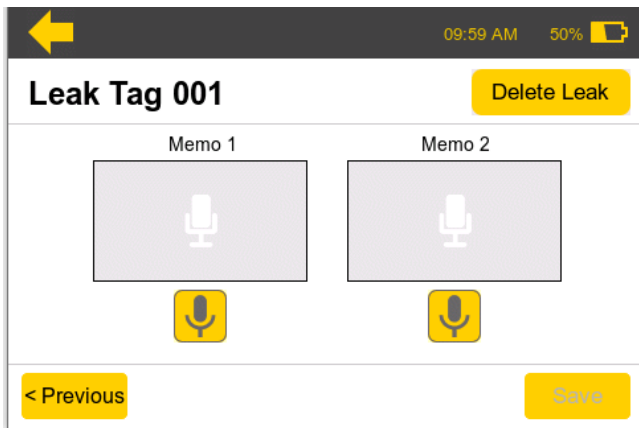


5. Take photos for the detected leak point.

- Press **Next** to enter to the photograph page.
- Press the camera icon to take a photo.

Note: Up to 2 photos can be taken. Recommended the one is a overall view, and the other is a closeup.

6. Hang the tag near the leak point.



7. Record the situation by sound recording.

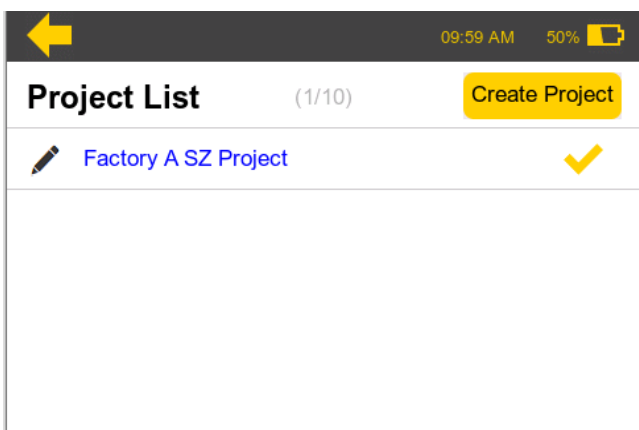
- Press **Next** to enter to the recording page.
- Press the microphone icon to record.

Note: Up to 2 audio recordings is supported.

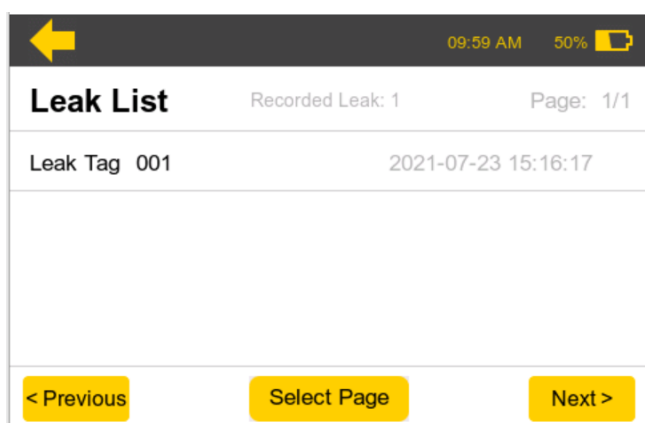
8. Save the leak record by pressing the **Save** icon.

9.5 Manage leak record and projects

9.5.1 Edit or delete a leak record

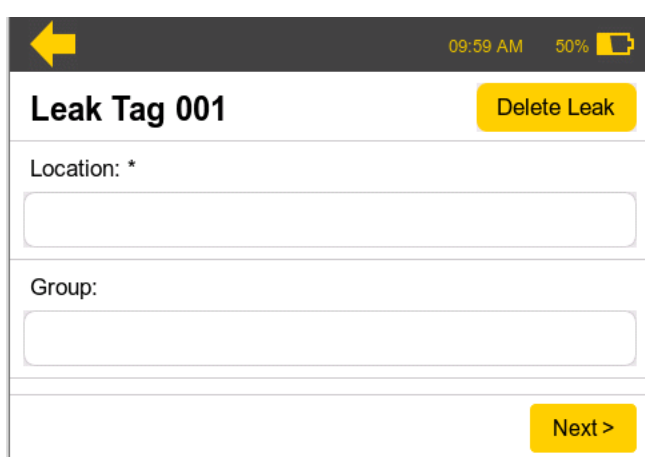


1. Access **Menu > Project** to enter into **Project List** page.

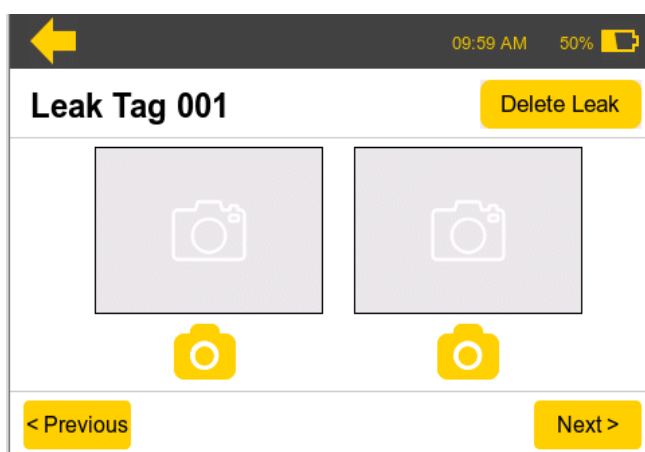


2. Click the project name in which the leak record to be edited is contained.

Note: One page only displays 4 records. Press **Previous** or **Next** to view the previous 4 records or the next 4 records. To view the other records, press **Select Page** to selected the desired page.



3. Press the specific **Leak Tag** to enter into the edit page. In this page you can edit the information in the **Location**, **Group**, and **Notes** fields.



4. Click **Next** to enter into picture page. In this page, you can remove the pictures and take new ones.

5. Click **Next** to enter into voice memo page. In this page, you can remove the voice records and take new ones.

6. Click **Delete Leak** to delete the current leak record.



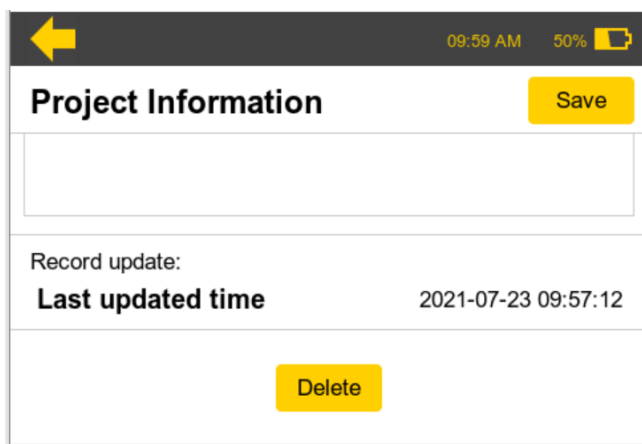
ATTENTION!

After the photo, voice memos, and records are deleted, they cannot be retrieved.

9.5.2 Edit or delete a project

1. Access **Menu > Project** to enter into **Project List** page.

2. Click on  to enter the project edit page. In this page, you can edit project information and save.



The screenshot shows a mobile application interface. At the top, there is a status bar with a yellow back arrow, the time 09:59 AM, and a 50% battery icon. Below the status bar is a header section with the title "Project Information" and a yellow "Save" button. Under the header is a large empty text input field. Below the input field is a section labeled "Record update:" containing the text "Last updated time" and the timestamp "2021-07-23 09:57:12". At the bottom of the form is a yellow "Delete" button.

3. Click **Delete** at the bottom of the page to delete the project.



ATTENTION!

After the project is deleted, all the leak data included in this project will also be deleted and cannot be retrieved.

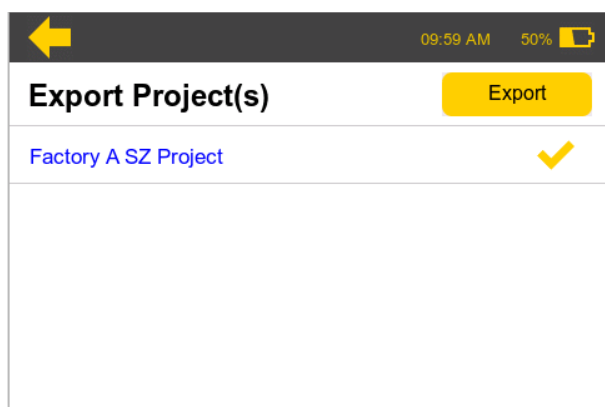
9.6 Export project files

The measurement data are in CSV format and json format, and the pictures and voice memos are save in separate folders.

There are 2 ways to export the leak files:

- Export to a USB drive
- Copy from S531 to PC

9.6.1 Export to a USB drive



1. Insert the USB drive to the S531.
2. Access **Menu** > **Export Project(s)**.
3. Select the project(s) to be exported. By default, the current project is selected. You can select multiple projects.
4. Press the **Export** icon.
Note: Only after clicking **Export**, the CSV and json files are created in project folder of the S531, and exported to USB drive. If you do not click **Export**, only the pictures and voice files can be found in the project folder.

9.6.2 Copy from S531 to PC

Note: This operation can be performed only after exporting project files to USB is complete.

1. Use the Type-C cable supplied with the S531 to connect the S531 and PC.
2. Copy the project files in the project folder of the S531 to the PC.

9.7 Import project files to LMS

Importing leak files to the LMS must be done in the LMS. For the descriptions, see LMS online help.

10 Maintenance

This chapter describes the basic maintenance operations.

10.1 Self-test

Access **Menu > Self Test**, you can self test the S531 components in the following table.

Component	Normal behavior
Display	The screen keeps displaying different colors in cycle.
Microphone	If you talk to the microphone, the corresponding sound wave is displayed on the screen.
Speaker	You can hear a piece of music.
Camera	The object that is facing against the camera is displayed on the screen.

10.2 Updating the firmware

The S531 firmware consists of device firmware and sensor firmware. You receives an email notification when the new version of the device or sensor firmware are available. Based on the instructions stated in the email, download and update the certificate via the S531 menu.

The steps for updating these two types of firmware are basically the same. The following gives an example of updating the device firmware.

Notes:

- After the device firmware is updated, it does the following to the S531:
 - Reset the S531 user settings to the factory defaults.
 - Delete the leak data except the photo, voice recording and CSV files from the storage card.

To avoid losing the leak data, before the updating, please upload the leak data to the LMS. If you need the leak data in the CSV format, make sure that you generate the CSV file before uploading the leak data to LMS.
- Updating the sensor firmware does not take the preceding actions on the S531.

Preparation:

Copy the new firmware to the root directory of the Type-C USB stick included in the delivery package.

Steps:

Device Information	
Model name:	S531
S/N main:	2021 0402
FW version main:	0.1
HW version main:	1.4
Sensor type:	0X8410
S/N sensor:	NA
FW version sensor:	1.7
HW version sensor:	2.55

1. Access **Menu > Device Information** to view the current firmware version.

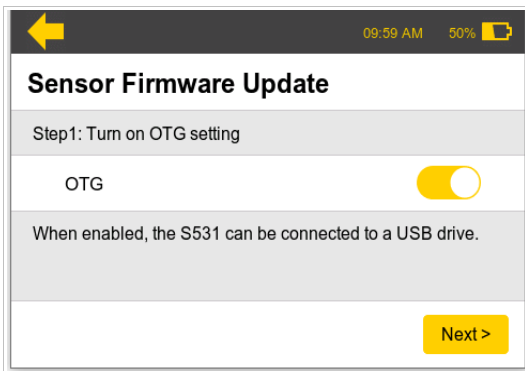
Device Settings	
System Reset	>
Firmware Update	>
Volume control	>
Memory Info	>
Battery Info	>

2. Access **Menu > Device Setting > Firmware Update**.

Firmware Update	
Sensor firmware	>
Device firmware	>

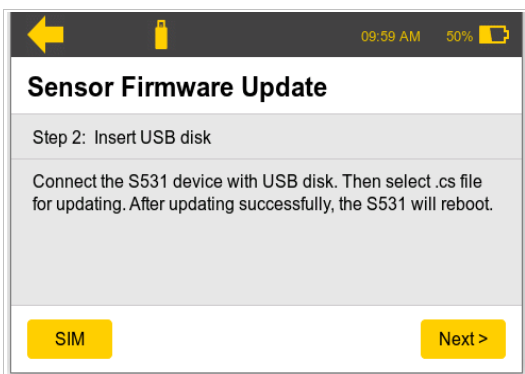
3. On the screen that appears, click **Device firmware** as needed.

Note: To update the sensor firmware update, click **Sensor Firmware**.



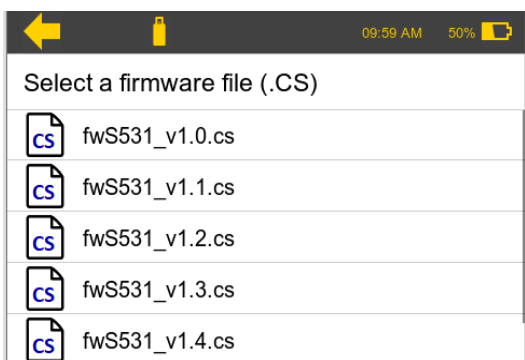
4. On the **Sensor Firmware Update** or **Device Firmware Update** screen, turn on the **OTG** toggle.

5. Click the **Next >** button to proceed.



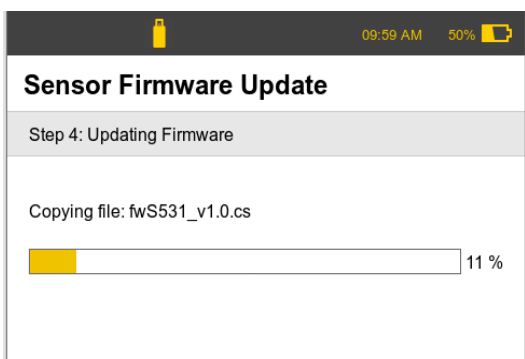
6. Insert the prepared USB stick to the S531.

7. Click the **Next >** button to proceed.



8. On the screen that appears, you can see the files in the root directory of the USB stick. Navigate to the desired firmware file and single click to select.

9. In the *Confirmation* pop-up that appears, click **Yes** to start the update.



10. Wait until the firmware update is completed. After the update process is completed, the S531 restarts automatically.

10.3 Resetting the device

In case you want to restore the ex-factory settings, you can perform the system reset.

Access **Menu > Device Settings > System Reset**. It takes about five seconds to complete the reset process.

Note: All settings will be cleared, but the leak records including photos and voice recordings will not be deleted.

10.4 Cleaning the sensor

To clean the sensor and its accessories, you are recommended to use moist cloth only.



ATTENTION!

Do not use isopropyl alcohol to clean the sensor and its accessories!

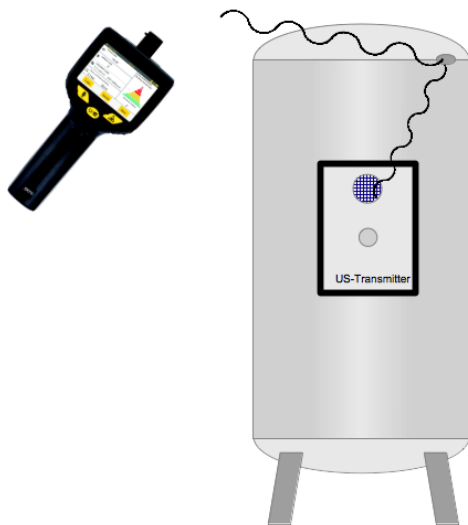
11 Optional accessories

Ultrasonic tone generator is an optional accessory that is used in pressure-less systems. The generator emits ultrasonic waves that can be detected by S531.



Specification

- Frequency: 40 kHz $\pm$ 10%
- Automatically shut-down after 10 min $\pm$ 20%
- Power supply internal: E-Block 6LR61 9 V



Application example

To detect leaks at a tank, place an ultrasonic tone generator inside the tank, the ultrasonic that is produced by the generator can flow through leaks and be detected by S531.

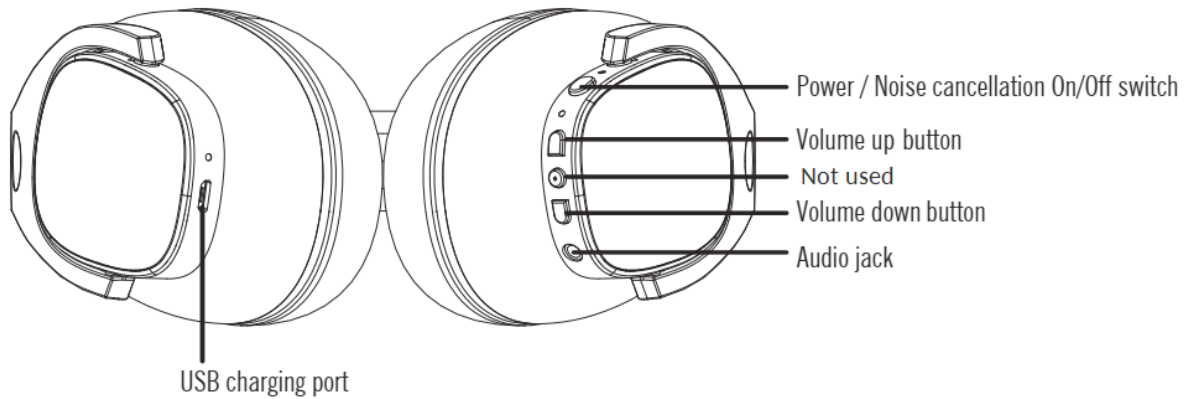
12 Disposal or waste



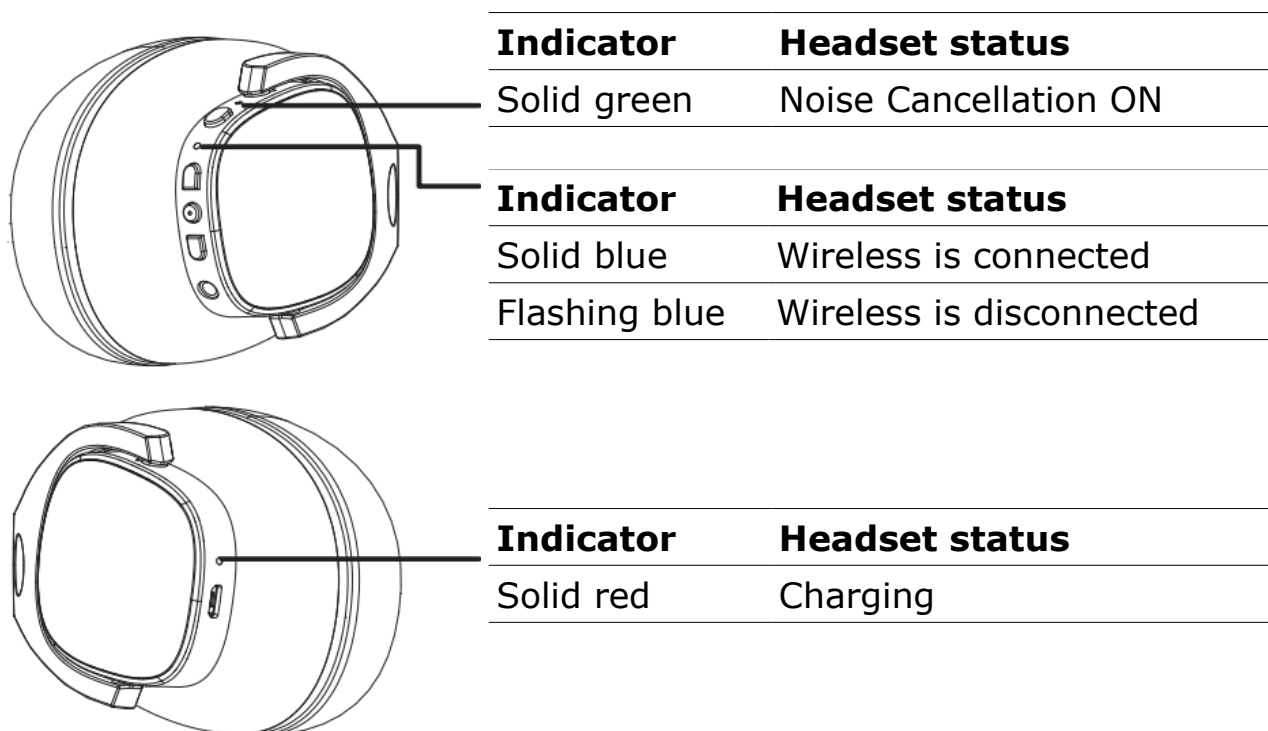
Electronic devices are recyclable material and do not belong in the household waste.

The sensor and its accessories and packings must be disposed according to your local statutory requirements. The dispose can also be carried by the manufacturer of the product. Please contact the manufacturer for details.

13 Appendix: Headset overview



Note: The Volume up and down buttons work only when the headset is used as a wired headset.



13.1 Power on or off

Press and hold the  button for 2 seconds.
You hear the power-on tone.

Note: Noise cancellation is enabled when the power is turned on.

Press and hold the  button for 2 seconds.
You hear the power-off tone.



13.2 Turn on or off Noise Cancellation

1. In the power-off state, press and hold  for 2 seconds. You can hear the voice prompting POWER ON. Meantime, Noise Cancellation is turned on as well.

2. To turn off Noise Cancellation in the power-on state, click the  button.

After the Noise Cancellation is turned off, you can hear a voice prompting ANC IS OFF.

3. To turn on Noise Cancellation in the power-on state, click the  button.

After the Noise Cancellation is turned off, you can hear a voice prompting ANC IS ON.

13.3 Switching to the wireless mode

1. Make sure that the audio cable is not plugged into the headset.
2. Power on S531 and make sure that the **Wireless headset** toggle is switched on.
3. Press and hold the  button for 2 seconds to power on the headset.

After successfully connected, you see the message "COWIN E9 connected" on the S531 screen.

Note: If you do not follow the above steps, wireless communication might not be established between the S531 and the headset. In case of abnormality, you can turn off the headset and turn it on again.

13.4 Switching to the wired mode

When the headset is working in the wireless mode, if needed (for example, low battery) you can switch it to the wired mode.

1. Turn off the S531.
2. Turn off the headset.
3. Take out the audio cable provided in the delivery package, and use it to connect the S531 and the headset.

4. Turn on the S531.

Now the headset is working in the wired mode.

5. To turn on Noise Cancellation, press and hold the  button for 2 seconds.

The green indicator lights on, indicating that Noise Cancellation is on.

13.5 Pairing a new headset with the S531

If you purchase a new headset from SUTO, you must pair the new headset with your S531. Detailed steps are as follows.

1. Make sure that the audio cable is not plugged into the headset.
2. Press and hold the  button for 2 seconds.
You hear the Power-on tone. The headset automatically enters the pairing mode. The blue LED indicator flashes.
3. On the S531, enable the wireless headset function by performing the below steps:
 - A. Navigate to **Menu > Device Setting > Pairing Headset**.
 - B. Switch on the **Wireless Headset** toggle.
4. Click **Refresh**.
The S531 detects the wireless devices nearby and shows "COWIN E9" on its screen.
5. Click "**COWIN E9**" to pair the S531 with the headset.
When the S531 and the headset are paired successfully, the S531 screen shows "COWIN E9 connected", and the headset has the blue LED indicator always on.

13.6 Care and maintenance

- Keep the product away from humid places to avoid damaging the internal circuit.
- Do not put the product in places exposed to the sun or at high temperature. The high temperature will shorten the service life of electronic components, damage battery, and deform plastic components.
- Do not put the product in cold places to avoid damaging the internal circuit board.
- Do not dismantle the product. Non-professional personnel may damage the product.
- Do not drop, vibrate strongly, strike the product with hard objects to avoid damaging the internal circuit.
- Do not use drastic chemicals or cleaner to clean the product.
- Do not use sharp objects to scratch the product to avoid damaging the shell and affecting the product appearance.



WARNING!

To guarantee your personal safety, please do not wear or keep headphones in the vicinity (closer than 10 cm) of a pacemaker.



ATTENTION!

**The maximum charging voltage is 5 V.
Inappropriate charging may cause severe damage, fire, or electrocution hazard.**

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