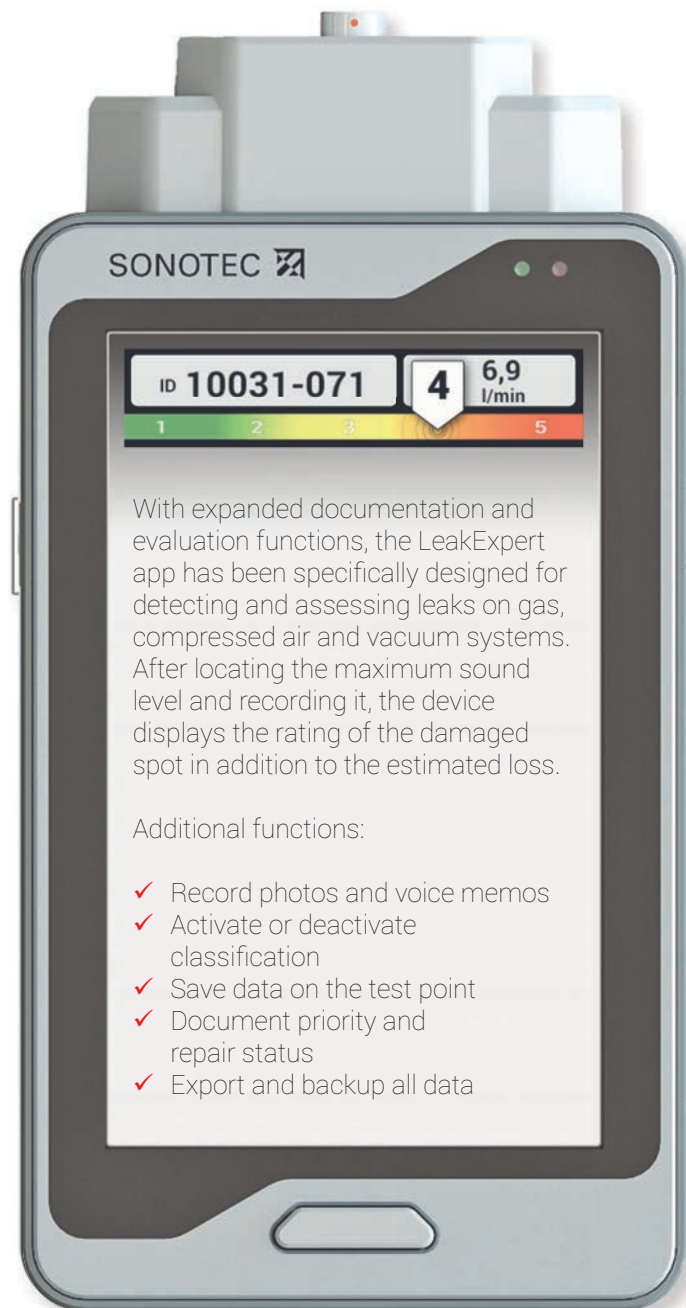


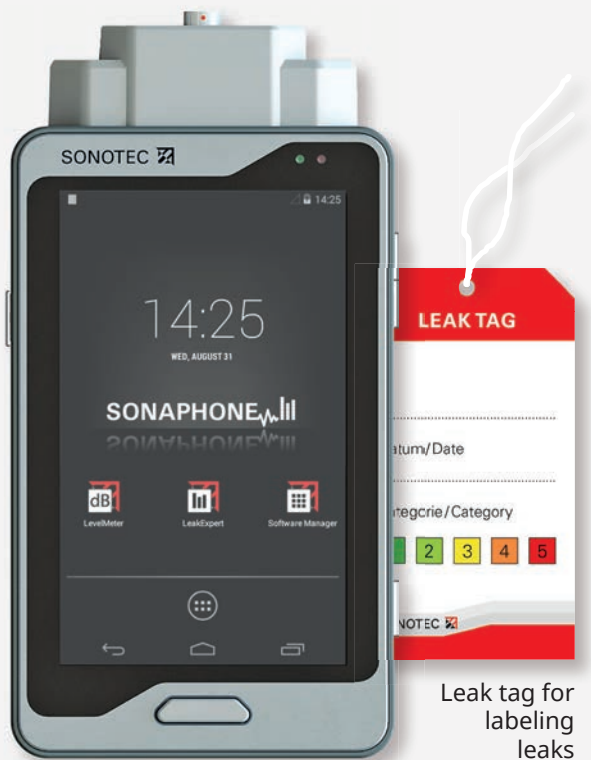
# LEAK XPERT



QUICK REFERENCE GUIDE FOR SOFTWARE

SONAPHONE 

# Equipment for Leak Detection and Evaluation



Leak tag for labeling leaks

Large acoustic horn BS10-3 for locating leaks over longer distances



Airborne sound sensor BS10 with small acoustic horn BS10-2 to increase signal strength at close range

Precise locator BS10-1 for accurately pinpointing and assessing leaks



This quick reference guide exclusively describes tests with the Leak Expert app as a supplement to the SONAPHONE quick reference guide.



## Safety

Before commissioning and using the SONAPHONE and its accessory parts, always read all of the safety information in the quick reference guide and user documentation.

All applicable safety regulations for industrial facilities must be adhered to without fail when carrying out tests with the SONAPHONE and associated sensors.

The SONAPHONE and its accessory parts comply with the current state of the art and the safety-related regulations. The user must ensure that safe use is not impaired.


## 1

### Preparing Tests

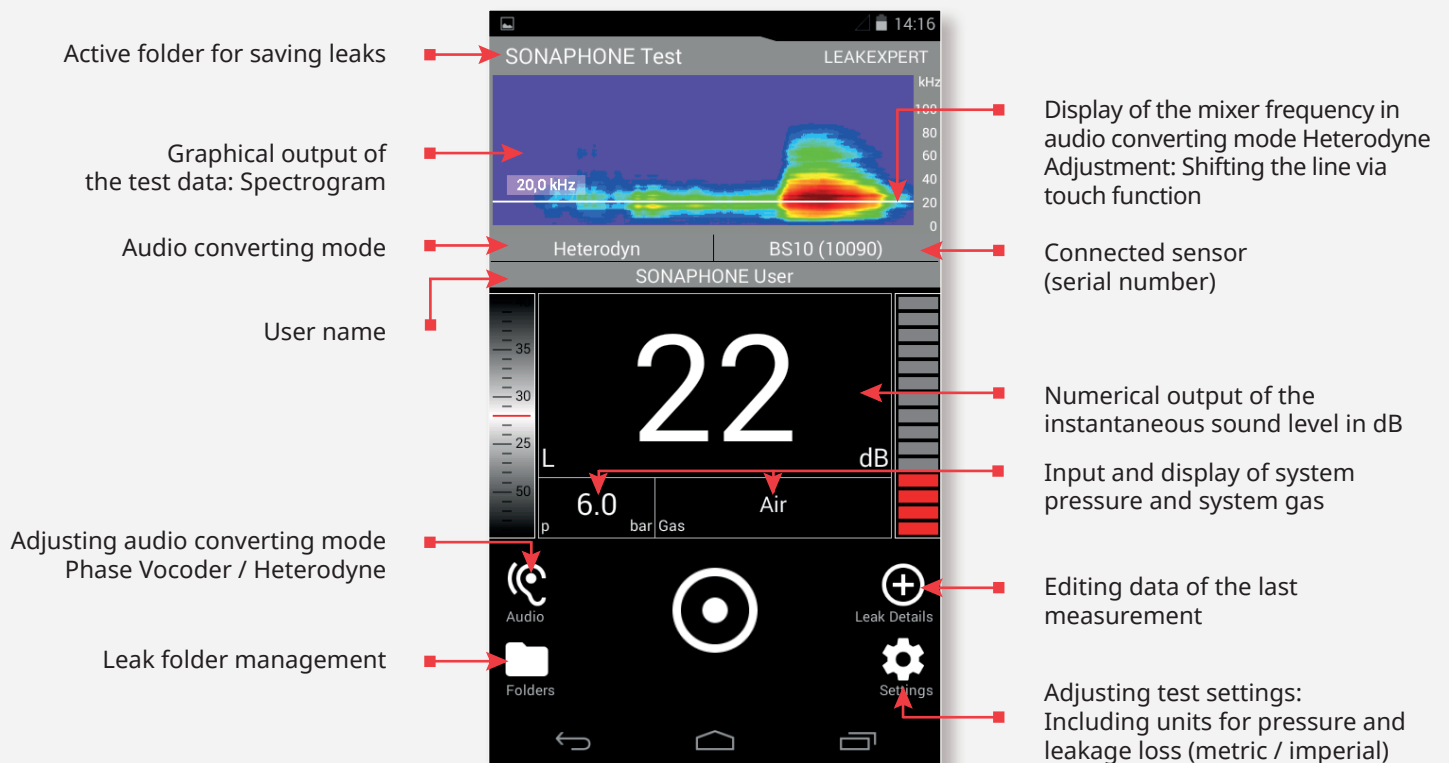
- Attach large acoustic horn BS10-3 on airborne sound sensor BS10 for the initial leak search.
- Keep attachments BS10-2 and BS10-1 and, if applicable, headphones ready for detecting leaks.
- Switch on the device.



Tests with the LeakExpert app can only be started when the following settings have been made:

- Start the LeakExpert app.
- Define a name for the current folder:  
Tap the  icon and then tap "Create New Folder".
- Define name and confirm with "Next".

# Test Mode and Audio Settings



- Confirm inputs with "Done" and close with "Save".
- ↳ The folder is activated automatically.
- Tap the ↶ icon to return.



When creating or selecting a folder, please note that the leaks from one folder are always summarized for the PDF report. It will not be possible to move or sum up the folder later.

- Enter system pressure: Tap in the input box "p", enter value and confirm with "OK".
- ↳ The value is displayed in the pressure area "p".
- Enter the system gas:



The gas specification influences the determination of leakage rate and class. An assessment can only be performed for air and nitrogen. For other gases only the sound level is recorded.

- Tap the input box "Gas" to select a gas from the list or to define a new gas.
- ↳ The selection is displayed in the test mode.

## 2 Finding Leaks

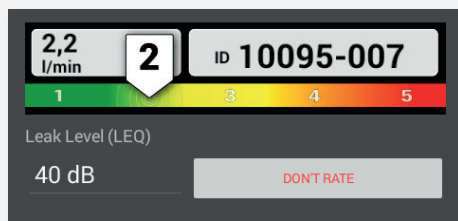
- Attach airborne sound sensor and attachments BS10-3 and BS10-2 to detect a leak.



If, for process-related reasons, a higher ambient ultrasound level is to be expected, a mixer frequency can be selected in the Heterodyne audio converting mode in which the ambient noise is dampened (without influencing the assessment). As a result, leak detection is usually still possible.

- Change setting of audio converting mode: Tap the 🎧 icon, select settings and confirm with "Close".
- ↳ The selection is displayed in the test mode.

# Leakage Rating and Related Details



## Display of rated loss and leak class:

After triggering the evaluation, the estimated leakage rate and a class from 1 to 5 are indicated.

The leak assessment can be deactivated after the recording. If test conditions are not complied with, for example because the leak is difficult to access, these can still be recorded and documented for the report without assessment.

## Adding locations:

Tap the text field and create name for building/area/facility/component and save via checkbox

## Add description:

Tap text (without illustration) to save additional information

For every leak it is possible to save whether a repair must be scheduled or not and what priority this should have. If the leak can be repaired immediately, this can be documented.

## PhaseVocoder

Implementation of the frequency range from 20 to 100 kHz in the audible range.

## Heterodyne

Output of a narrow frequency range around a carrier frequency (for example  $38 \pm 2$  kHz). The frequency can be adjusted in 0.5 kHz increments.

## Triggering the assessment:

Tap the icon or press the "Record" button on the sensor to start the assessment.

- ↳ The icon turns red, the device records for approx. 1 sec., stops automatically, changes to the leak details and outputs the leakage rate and leak class.

## 3 Search for Maximum Sound Level and Trigger Leak Rating

- Attach precise locator BS10-1 onto sensor BS10.
- **By panning the sensor around the leak, assessments of the spectrogram and audio output find and hold the position in which the maximum sound level can be found.**



A distance of 5 to 10 cm should be maintained for the leak assessment.

## 4 Supplementing Leak Details

- Tap the and icons to add photos and voice memos.
- ↳ The data will be added at the end of the list.
- Add locations, define priority and save details on repair (see Fig.)
- Tap "OK" to confirm.
- ↳ The device is ready for the next leak detection.

Mark the leak with a leak tag (optional) to label it for repair.

# Managing Leaks

**Display folder overview:**

- Number of recorded leaks: 4
- Leak distribution among the leak classes (1 to 5; from left to right) (leaks with an activated rating are displayed)

**Display leak overview:**

- Display of leakage class

**Display leak details:**

(see previous page "Assessment of Leaks")

**Annotations:**

- Data export as PDF (report), CSV or ZIP
- Edit folder properties
- Activate a folder
- Changes display of leaks in the overview (typing): NAMES = time stamp, IDS = unique number (consecutive during recording)
- Display of the leakage rate
- Leak with deactivated rating

## 5 Supplement and export test results subsequently

### Display folder overview:

- Tap the icon.
- ↳ The SONAPHONE lists all folders that are stored in the device with name, number of leaks recorded and the leak overview with the distribution of the assessed leaks and the leak classes.

### Change tests results or supplement them subsequently:

- Tap on the folder and then on an individual leak to add the test results.
- Change data and return with the icon.



The information on gas or pressure can be changed at any time. Please note that the adjustments have a direct influence on the calculation of leakage rate and leak class. The rating is always adjusted to the current information. This may result in an invalid calculation ("not assessable").

### Summarize test results for export:

- Tap the PDF / CSV / ZIP icon.
- Define export settings.
- ↳ The files are saved in the internal memory with the time stamp YYYY-MM-DD.

**PDF:** See next page for description report.

**CSV:** Export of the test results to a folder as comma-separated values for further processing.

**ZIP:** Backup all recorded test results (measurement data, photos, audio) of leaks from any number of folders.

### Transfer data to a computer:

- Connect SONAPHONE with computer via USB.
- Switch on the device.
- ↳ The SONAPHONE is recognized automatically and displayed as a mobile device.
- Open "SONAPHONE" device and then open "Internal Memory" folder.
- ↳ The displayed data can be transferred.

# Documentation of Test Results as a PDF Report

PDF: Summary of the leak survey (all leaks from one folder) in a report

**Create report?**

**Include**

Images

**Storage Location**

External SD Card  Internal Storage

**Page Size**

A4  Letter

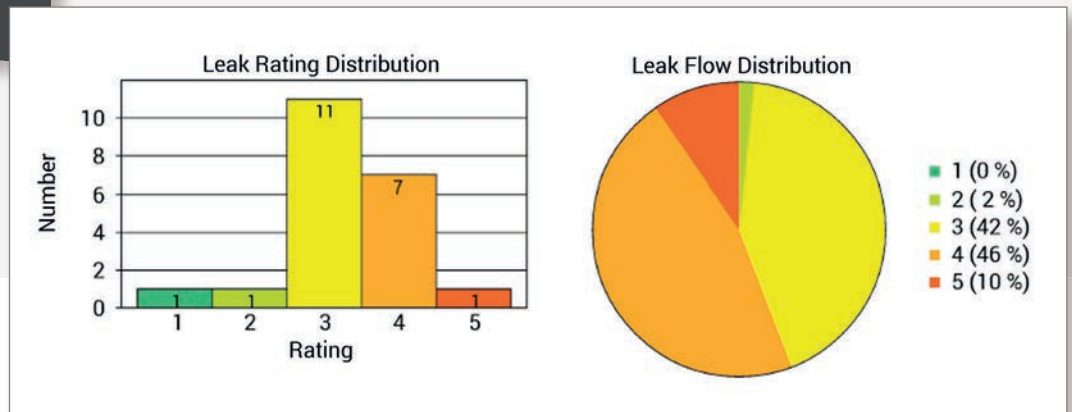
**Leak Table Sorting**

Creation Date  Rating

Individual export settings for creating the PDF report

In addition to the author of the report (user name), the device name with serial number, the sensor name with serial number and the version of the app, the following data are listed:

- ✓ User-defined folder name
- ✓ Number of rated and unrated leaks
- ✓ Time stamp of the first and last recording
- ✓ Number of already repaired leaks



Overview of all leaks for which the rating is activated

Rating	Tag	Flow (l/min)	Level (dB)	Pressure (bar)	Building	Area	Facility	Component	Gas	Priority	To repair	Repaired	Repairer	Repair Date
5	10047-001	11.1	79	8.1	house 4	compressor room	oil filter	sealing	Air	high	yes	no		
Description: hemp sealing at screw connection												repair note::		
IMG_0001.JPG		IMG_0002.JPG												

List of all recorded leaks with leakage rate and class

The SONAPHONE operating system includes free software that is subject to licensing terms. More information can be found in the user documentation. Rev. 2

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