The New Device Class for Preventive Maintenance

Advantages at a glance:

- New applications through new processes
- User-friendly interface speeds up your inspection process
- Record ultrasonic frequencies from 20 to 100 kHz
- Store test data and spectrograms
- Add photographs, voice memos and comments to the measuring point
- Create test reports with a few clicks
- Minimize downtimes and increase operational safety
- Improve energy efficiency
In the age of Industry 4.0 the optimizing processes, increasing operational safety, and improving energy efficiency are becoming more and more significant. Meet the challenges of Maintenance 4.0 with the new SONAPHONE from SONOTEC. The digital ultrasonic testing device combines innovative sensors and software for preventive maintenance that can be operated intuitively and paves the way for new processes for new applications.

With the new SONAPHONE you can

- detect and classify leaks in compressed air, gas and vacuum systems and reduce your energy costs,
- monitor the condition of your machines and determine the optimal maintenance time,
- identify leaks in windows, doors, vehicles, components and containers and ensure compliance with specified quality requirements,
- find electrical partial discharges and insulation damage and increase your operational safety,
- assess the function of steam traps and prevent energy and steam loss and damage to the steam system.
The mobile handheld device is operated with a touchscreen like a tablet and is the ideal companion throughout the entire test procedure – from planning, to measurement, to analysis. Store level spectrogram level record photos voice memos comments to the test object. With only a few clicks you receive a test report and can prove your contribution to energy efficiency and process optimization. Depending on your requirements and applications, we offer you user-friendly software, innovative ultrasonic sensors and versatile accessories for your SONAPHONE.

**Video**

**Technical Data**

**GENERAL DATA SONAPHONE**

<table>
<thead>
<tr>
<th>Device design</th>
<th>Digital ultrasonic testing device</th>
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</thead>
<tbody>
<tr>
<td>Display</td>
<td>5” TFT-Display with multi-touch controller</td>
</tr>
<tr>
<td>Acoustic output of signals</td>
<td>Via loudspeakers or wired headphones</td>
</tr>
<tr>
<td>Dimensions (W x H x D)</td>
<td>90 x 174 x 25 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>370 g</td>
</tr>
</tbody>
</table>
| Temperature range      | Storing temperature: -20 to +60 °C  
                          Operating temperature: -10 to +40 °C                                |
| Battery                | Charging time 4 h typically  
                          Operating time in practical use 8-12 h  
                          Operating time in continuous operation 4 h                          |
| Connectors and interfaces | 1 x fast ultrasonic channel (Lemo)  
                           USB 2.0 (microB)  
                           stereo headphones (jack plug 3.5 mm)  
                           slot for microSD card    |
<table>
<thead>
<tr>
<th><strong>Protection class</strong></th>
<th>IP40</th>
</tr>
</thead>
</table>
| **Memory**          | 8 GB Flash system memory  
16 GB Flash internal measurement data memory |
| **Standards and directives** | EMV RL 2014/30/EU  
WEEE RL 2012/19/EU  
RoHS RL 2011/65/EU  
ASTM E1002-2005 |

**GENERAL DATA SENSORS**

<table>
<thead>
<tr>
<th><strong>Airborne sound sensor</strong></th>
<th><strong>Structure-borne sound &amp; temperature sensor</strong></th>
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</thead>
</table>
| **Device design**         | Sensor for detection of air ultrasound signals incl. target laser and LED light  
Contact sensor for detection of structure-borne ultrasound, interchangeable waveguides, contactless infrared temperature sensor, LED-light |
| **Operating**             | Via keys on sensor or via SONAPHONE touchscreen  
**Keys:**  
start/stop measurements  
LED light  
laser  
volume  
Via keys on sensor or via SONAPHONE touchscreen  
**Keys:**  
start/stop measurements  
LED light  
volume |
| **Dimensions (W x H x D)** | 30 x 155 x 30 mm  
30 x 155 x 30 mm |
| **Weight**                | 80 g  
140 g |
| **Temperature range**     | Storing temperature: -20 to +60 °C  
Operating temperature: -10 to +40 °C  
Storing temperature: -20 to +60 °C  
Operating temperature: -10 to +40 °C |
| **Protection class**      | IP40  
IP40 |
| **Frequency range**       | 20 to 100 kHz  
20 to 100 kHz |
| **Temperature range**     | -  
-70 to +380 °C object temperature |
| **Resolution**            | 1 dB  
Ultrasound: 1 dB  
Temperature: 1 K |
| **Connector**             | Cable connection to SONAPHONE  
Length coiled cable: 160 cm  
Cable connection to SONAPHONE  
Length coiled cable: 160 cm |
Interchangeable attachments to increase the signal strength:

- **Small acoustical horn** for close range,
- **large acoustical horn** for long distances,
- **attachment for precise localization** of defective parts

**Short Waveguide:**
- Length: 22 mm
- Diameter: 18 mm
- Weight: 33 g

**Long Waveguide:**
- Length: 150 mm
- Diameter: 18 mm
- Weight: 15 g

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**LevelMeter App for SONAPHONE**

LEVELMETER APP FOR SONAPHONE

When used in conjunction with innovative sensor technology and the LevelMeter software, your SONAPHONE turns into a multi-functional ultrasonic testing device. The software for preventive maintenance is intuitive to operate and assists you through the entire testing process.

The LevelMeter software provides you with a comprehensive measurement and analysis solution for the following applications:

- **Leak detection**
- **Bearing and mechanical inspection**
- **Steam trap and valve testing**
- **Detection of partial discharges**

**Testing - documenting - evaluating**

**1. Performing the test**

The received ultrasound signals are processed by innovative airborne and structure-borne sound sensors. The measured data is shown by the LevelMeter software in the form of a spectrogram and a level curve on the display.

- Broadband analysis of the ultrasound signal in a frequency range from 20 to 100 kHz
- Graphic display of spectrogram and level curve on the display

The following measurement levels (in dB) can be selected:

- **L** - Instantaneous level
- **LF** - Instantaneous level with time weighting
- **Lpk** - Peak level
- **Leq** - Equivalent continuous sound level
- **Lmin** - Minimum level of instantaneous level
- **Lmax** - Maximum level of instantaneous level
Integrated infrared temperature sensor in the structure-borne sound sensor
Individually adjustable process for making signals audible (phase vocoder/heterodyne)
Use of high-quality noise-protection headphones (noise-canceling)

2. Adding additional information
The LevelMeter software guarantees the simple and structured documentation of your measured data. You can also optimize your documentation thanks to the option of adding photos, text comments and voice memos.

   Simple recording and saving of measured data
   Quick recording of photos with the integrated camera and marking of potential weak points
   Integration of text comments and voice memos to supplement your test data

3. Evaluating the measured data
After your testing procedure, you can create a professional evaluation for management or your customers with just a few clicks.

   Export the data as a ZIP file for further processing in your maintenance software
   Clear summary of the testing procedure in a PDF report: Visualization of the recorded spectrograms and level curves, including text comments and recorded photos

We offer the DataViewer software as supplementary software for your computer for the analysis and management of the recorded measured data.
LeakExpert - application-specific software for leak detection and evaluation

With the SONAPHONE ultrasonic testing device, the innovative airborne sound sensor and the LeakExpert software, not only can leaks in compressed air, gas and vacuum systems be detected, but simultaneously evaluated as well. Based on methods of aeroacoustics, SONOTEC has developed the world’s first process for the classification and evaluation of leaks. The leak is displayed in liters per minute at the touch of a button. You can then use this information to set priorities for repair. The software, which has been specially developed for leak detection, also has integrated test routines that guide you through the measurements.

The integrated documentation functions allow for state-of-the-art maintenance management. All maintenance-relevant information about a leak is stored directly in the SONAPHONE database. Paper records, which are error-prone and above all laborious, are therefore a thing of the past. Your measured data can be exported in just a few steps in order to be maintained in your existing system. You can also create a PDF report in no time at all. This allows you to contribute to your company’s success thanks to cost savings and increased energy efficiency.

Leak detection – loss assessment – documentation – evaluation

1. Leak detection and assessment of the loss

Leaks in compressed air, gas and vacuum systems lead to air flows that can be located using ultrasound. The SONAPHONE testing device makes the ultrasonic signals audible and simultaneously shows them on the touchscreen. With various attachments for small and large distances and the graphic display of spectrogram and level curve, you are optimally equipped for leak detection and evaluation.

- Broadband analysis of the ultrasound signal in a frequency range from 20 to 100 kHz
- Graphic display of spectrogram and level curve on the display
- Individually adjustable process for making signals audible (phase vocoder/heterodyne)
- Use of high-quality noise-protection headphones (noise-canceling)
- Evaluation of the leak at the touch of a button, and immediate display of the loss in liters per minute.
- Automatic classification of the leak size in order to estimate the savings potential

2. Documenting the leaks

The LeakExpert software guarantees simple and structured testing and documentation. Test paths can be defined by entering the building, area, system and component, and help to locate leaks quickly during repair work. You can also add additional information in the form of text comments and voice memos, and take photos with the integrated camera.

- Simple organization and management of the leaks thanks to the clear structure in the device
Individual prioritization of the individual leaks
Storage of detailed information on the repair and option to add voice memos
Quick recording of photos with the integrated camera and marking of potential weak points +

3. Evaluating the measured data
Save time not only when recording but also when evaluating your measured data. With just a few clicks, you can create a professional evaluation for management or your customers at the end of your testing procedure. The different export functions make it easy for you to integrate the measured data into existing maintenance software. A PDF report can also be created of your work, summarizing all of the data in a structured manner and showing it in the form of diagrams.

Simple transmission of the test data to your maintenance software by exporting a CSV file (text file of the data for further processing)
Clear summary of the testing procedure in a PDF report: Processing the measured data in diagrams with information relating to the total loss. Clear listing of all saved leaks including text comments, photos and repair information
Option to create a ZIP file to backup all test data (including sound files and photos)

Innovative Ultrasonic Sensors
Innovative sensors pave the way for new domains of use. While other ultrasonic testing devices can only find leaks, SONAPHONE can also be used to classify the leak size at the same time. Based on methods of aeroacoustics SONOTEC developed a completely new process for classification and evaluation of leaks. The result of the methods are plausible values for the classification of the leak size and for estimation of the savings potential.
AIR BORNE SOUND SENSOR BS10
Applications:
Leak detection and classification on compressed air, gas and vacuum systems up to 8 m
Tightness testing of unpressurized systems up to 8 m
Detection of partial discharges up to 8 m

Set consisting of:
Airborne sound sensor BS10
Precise locator BS10-1
Small acoustic horn BS10-2
Large acoustic horn BS10-3

STRUCTURE-BORNE SOUND & TEMPERATURE SENSOR BS20
Applications:
Condition monitoring of machinery
Steam trap and valve inspection

Set consisting of:
Structure-borne sound & temperature sensor BS20
Short waveguide 22 mm BS20-1
Long waveguide 150 mm BS20-2
Magnetic waveguide BS20-3
Set of keys for changing the waveguides

PARABOLIC SENSOR BS30
Applications:
Leak detection on compressed air, gas and vacuum systems up to 25 m
Tightness testing of unpressurized systems up to 25 m
Detection of partial discharges up to 25 m

Set consisting of:
Parabolic sensor BS30
Red dot sight
Bag
Downloads

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DO YOU HAVE ANY QUESTIONS?

Then contact us! We're here to help.

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APPLICATIONS:

Ultrasonic Leak Detection
Ultrasonic Tightness Testing
Steam Trap & Valve Inspection
Bearing Monitoring & Lubrication
Detection of Partial Discharges