

Now with enhanced functions

SeCorrPhon AC 200

Correlator and acoustic water leak detector combined
professional – flexibel – intelligent



The **SeCorrPhon AC 200** is a multifunctional leak detector offering three functions in one: prelocation, pinpointing and correlation. The clever combination of these processes in one system allows you to confidently locate the leak regardless of the ambient conditions. With just a few finger strokes, you can quickly and easily switch between the various applications.



The principle of acoustic water leak detection

The water escaping from the leak causes the material in the pipeline to vibrate. These vibrations travel along the pipe and can be picked up as structure-borne noise, even at distant contact points, for example fittings. The vibrations also travel through the ground up to the earth's surface as ground-borne noise, albeit heavily muted. The **SeCorrPhon** system is your perfect assistant for detecting leaks because it makes the vibrations audible to the human ear and also records and displays the volume and frequency spectrum as a graph.

Prelocating leaks

Place carrying rod **TS 200** and the connected touch microphone **TM 200** on fittings along the pipeline and evaluate the volume. By evaluating the noise intensity, you will be able to identify the section of pipeline where the leak is likely to be.

Pinpointing

Evaluate the volumes in the identified section of pipe using ground microphone **BM 200** (for paved surfaces) or **BM 230** (for unpaved surfaces). Connect carrying rod **TS 200** to a ground microphone and move over the pipeline in short intervals. The acoustic signal and the visual display of the intensity make it easy to find the maximum. The leak is then located with sufficient accuracy to allow confident excavation.

The principle of correlation

Location with a correlator involves simultaneously measuring the noises caused by a leak on the pipeline at two fittings (e.g. on valves or hydrants). Highly-sensitive microphones record the noises on the fittings; radio transmitters transmit the signals to a receiver – the correlator, which then determines the run time difference, i.e. the time lag between the noises reaching the two measuring points. The correlator calculates the exact leak position using the entered pipeline length, the pipe material and diameter.

Comparison of correlative and acoustic location techniques

The correlation method is essentially different to the conventional method of acoustic water leak detection: instead of systematically checking the fittings (prelocating) and then pinpointing with ground microphones at one position, it involves taking two simultaneous measurements at two fittings. With acoustic location the user compares and evaluates the leak noises. This technique can be used in many network structures, however successful location is dependent upon human hearing and, to a large extent, the experience of the user. Leak detection by correlation, on the other hand, provides accurate measurement values – regardless of the hearing of the user and largely irrespective of external perturbations.

Professional

The user interface of the **SeCorrPhon AC 200** is clearly and logically laid out. There are many extra functions available for complex location scenarios.

The high quality piezo microphones with frequency response optimised especially for leak detection and the digital signal processing offer outstanding acoustic properties. Thanks to the excellent sound quality and minimisation of sound interference, you can reliably identify and locate leaks even if the sound intensity of the leak is weak or there is significant ambient noise.

At the touch of a button the **SeCorrPhon AC 200** will apply tailored filters to the current noises and will automatically select the appropriate frequency ranges. Alternatively, you can set manual filter limits according to your individual hearing and select frequency ranges which accentuate the leak noise. This allows you to concentrate fully on the leak without any sound interference.

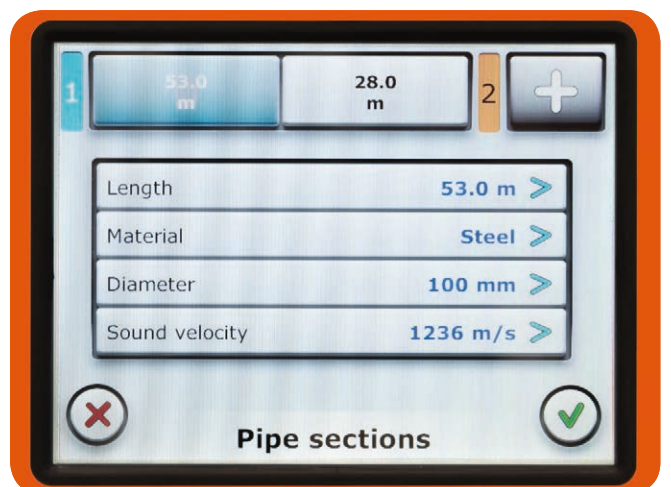
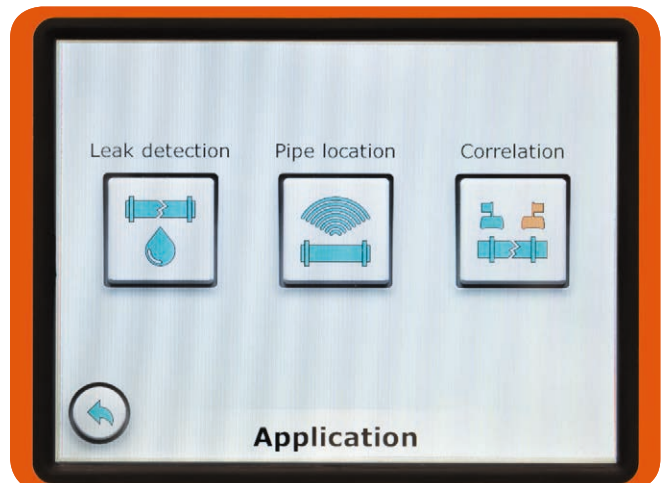
In addition, you have the option of recording leak noises with the integrated audio player and comparing them with each other. You can use these recordings for training or demonstration purposes or to create a noise database, allowing you to better evaluate leak noises on site.

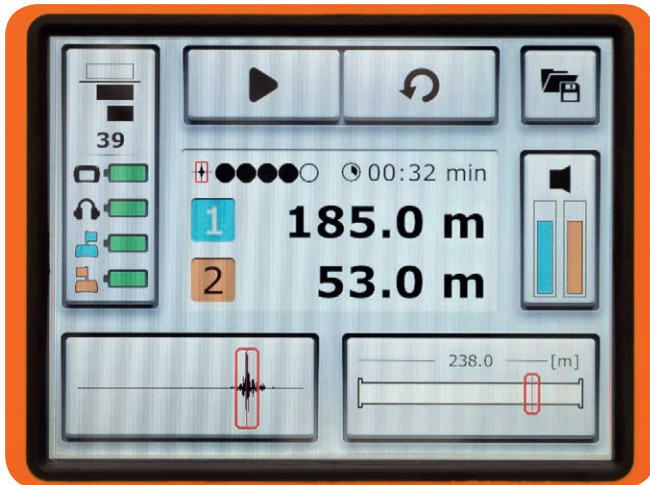
Flexible

All-in-one device: prelocation, pinpointing and correlation. The clever combination of these methods in one system allows you to confidently locate the exact source of the leak regardless of the ambient conditions.

The **SeCorrPhon AC 200** is recommended for all users undertaking professional leak detection because it can handle any everyday location scenario. It can easily measure different pipe sections, pipe materials, diameters and pipe lengths.

With acoustic leak detection, the current sound intensity is displayed as a graph and as a numeric value on the large and clear 5.7 inch receiver display. Alongside, you can see the previous values for better comparison as well as the current frequency analysis of the noise.





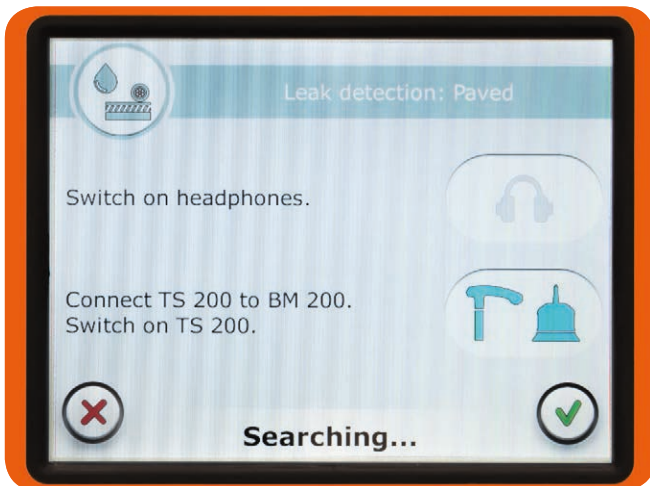
Intelligent

The sophisticated firmware of the **SeCorrPhon AC 200** means that the measurement sequence is almost fully automatic. Once the pipeline data has been entered and the measurement started, all other steps are performed without the intervention of the operator. The measured noises are constantly analysed in the background and the optimal filter settings selected.

The **SeCorrPhon AC 200** guides the user through the various applications with instructions. This means that even users with less experience and occasional users can use the device with confidence.

The **SeCorrPhon AC 200** independently optimises the measuring results by automatically selecting appropriate filters – without the user having to intervene. However, the filters can also be set manually.

One special feature of the correlator is its results-oriented, user-friendly on-screen display of the measuring results. Concrete information about the position of the leak is highlighted, instead of having to interpret complex curves. The quality of the calculations shown in the display provides the user with constant information about how reliable the measurement is. Thanks to the results-oriented view, the user can immediately implement further steps, e.g. confirm the location by acoustic means.



Pinpointing of leaks

NEW

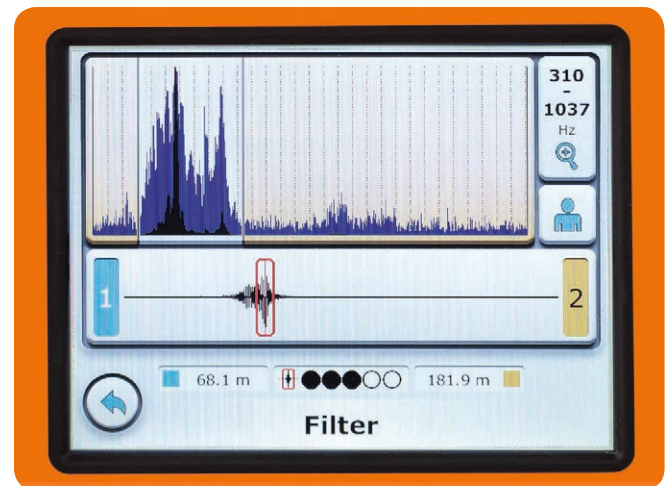
The **SeCorrPhon AC 200** receiver is also available to buy with an optional integrated module for positioning. The **GNSS (Global Navigation Satellite System)** module stores the current user position when a leak noise is identified. This means the exact geographic position of the leak can be associated with the noise, making it available for documentation at a later date. Noises stored temporarily in the audio player can also be subsequently associated with the appropriate location data once the measurement has been stored.



Optimised filter settings

NEW

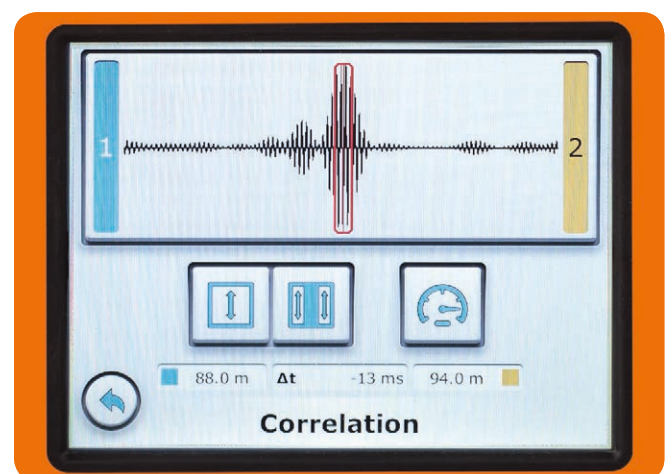
Set the upper and lower filter limits simply and easily by clicking on the graphical representation of the leak noise. Alternatively, manual fine setting in 50 Hz steps is also possible. Select the required filter limit by pressing the key and then set the figure precisely.

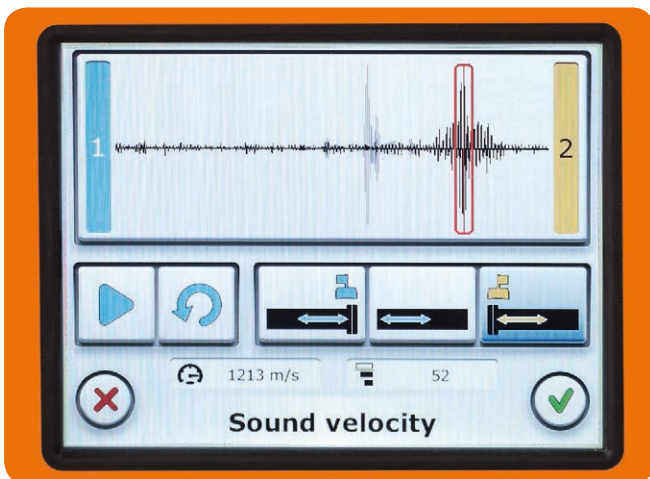


Suppression of interfering peaks

NEW

The feature of peak suppression helps with optimisation in situations where one area of the correlation function is selected and then suppressed. The graph is then normalised in accordance with the next smallest peak, making it much easier to identify. If more than one leak is detected within the correlation line, peak suppression can be used to separate the visible peaks from each other.

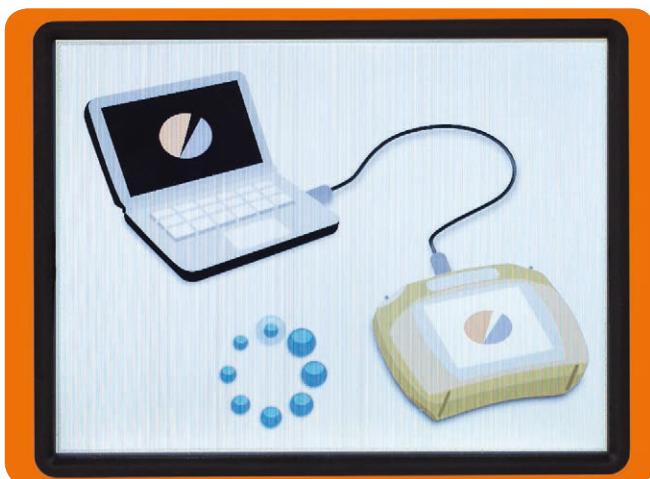




Measuring sound velocity

NEW

When measuring sound velocity, a second source of noise at a known location is created in addition to the real leak. Two measurements are then taken (one with the second source of noise and one without), and they are used to calculate the sound velocity on the measuring section. The measurements displayed on the receiver focus clearly on the second measurement, paying special attention to the position of the additional sound source. The result is rapid measurement of the sound velocity in just a few steps.



Documentation with WaterCom Software

NEW

Measurements saved in an **A 200**, **C 200** or **AC 200** receiver can be transferred quickly and easily to a computer via USB. Just connect the receiver to the computer via cable and the measuring data will be transferred automatically.

It is possible to set up different user and customer data sets in the software. The position of the location for each measurement is shown on an online map (e.g. Google Maps). The locations on the map can be edited, meaning the exact position of the radio transmitter or damage detected by the ground microphone can be pinpointed exactly. It is also possible to add notes to any measurement or point of damage. The software can generate PDFs to produce paper documentation of any measurements.



Noises which have been recorded can be played back using the player integrated into **WaterCom**. If the software is used regularly to save measurements, it will start to build up a useful noise database. This can then be used, for example, to train new starters in leak detection in what to listen out for.

SeCorrPhon system – system components for acoustic water leak detection

The **TS 200** carrying rod can be connected to three different microphones. In the past, a special test rod and a carrying rod would have been required for ground microphones, but now the **TS 200** performs both functions. It records the relevant microphones depending on the application. The **TS 200** is powered by a high-performance rechargeable battery, which guarantees reliable operation for a full working day. It can be recharged in less than four hours directly in the system case.

The **TM 200** touch microphone has been specially developed for prelocation along fittings in the pipe network. Its frequency response allows the reliable detection of both muted and low-pitched noises, as tend to occur on plastic pipes, and loud and high-pitched leak noises on metal pipelines. The probe tip and available extensions in varying lengths allow optimal adjustment to structural conditions in all pipe networks. The **TM 200** features a torch function, which is activated on the **TS 200** carrying rod to allow secure positioning on the key rods in dark slide gate covers.

Ground microphone **BM 200** is ideal for paved surfaces. The extremely robust housing is optimally detached from the actual microphone capsule. A lifting mechanism ensures consistently perfect contact with the ground. Small surface bumps, therefore, no longer affect results.

Ground microphone **BM 230** is better suited to unpaved surfaces. The solid tripod ensures a consistently secure position. If the ground is particularly soft, an extra spike can be screwed in to allow even better noise transmission.





SeCorrPhon system – system components for correlation

The **RT 200** radio transmitters feature 500 mW high-performance transmission paths. These allow noiseless data transmission, even on measuring sections covering hundreds of metres. The **RT 200** radio transmitter comes on as soon as you plug in the microphone cable. Three different bandpasses mean that the noises can be fully processed before radio transmission, making the **RT 200** radio transmitter adjustable to a wide range of pipe materials and pipe sections. The microphone's torch function can also be activated via the membrane keypad.

The **UM 200** microphone for picking up structure-borne noise features a very wide frequency response and is extremely sensitive in the low frequency range. This makes the **UM 200** perfect for recording even the quietest of noises, particularly on plastic pipes. The cable is extremely robust and can withstand heavy mechanical loads. This guarantees a long service life in daily use, even under the harshest of conditions. A high-quality plug and an extremely strong contact adapter make the **UM 200** microphone a professional all-rounder.

The **HY 200** hydrophones make the **SeCorrPhon** an excellent measuring system for use along large transmission pipelines and long distances between the individual attachment points. Because they are installed directly in the water column, hydrophones do not use the structure-borne noise that travels along the pipe, but rather the noise transmitted by the water in the pipe. The **HY 200s** are extremely sensitive in the very low frequency range, far below audible sounds. This also makes them the perfect complement to the **SeCorrPhon** system when used in plastic pipe networks. The set comes in a dedicated plastic case, keeping all the components such as hydrophones, adapters for installing in underground hydrants and connecting cables, close to hand.

The sturdy system case has space to safely hold all the system components. The **SeCorrPhon AC 200**, two **RT 200** radio transmitters, two **UM 200** microphones, two **BM 200/ BM 230** ground microphones, a **TM 200** touch microphone, **TS 200** carrying rod and the **F8** wireless headphones as well as optional accessories can all be stored in the case with optimal protection for transit. The system components can be charged in the closed case in the workshop or the measuring vehicle.

Please contact us for a comprehensive quotation, including additional technical specifications and information on accessories.

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