



Mobile Leak Detection

ALL IN ONE SOLUTION, ACCURATE LEAK LOCATING AND SURVEYING ON A SMARTPHONE

Leakage of treated water from distribution networks is a major problem for Water Utilities. Aging assets, severe weather and water hammers result in a constant battle to manage water loss. To address this challenge, Trimble Water offer a unique family of advanced leak detection capabilities as part of our Trimble Unity solutions.

The Mobile Leak Detection solution is an all in one, innovative mobile leak detection system. The solution brings the smartphone revolution to leak detection. It combines advanced acoustic detection principles with the power of cloud processing for accurate leak correlation and location. It provides leak detection and repair crews with the tools they need to accurately pinpoint and repair leaks enabling efficient leak detection investigations

The Mobile kit

Offers all the equipment necessary for professional leak detection, including hand-held sensor, ground sensor, listening stick, correlators and hydrophone sensors.

The kit when paired with the intuitive GIS/map based mobile application enables three main capabilities:

- ▶ **Mobile correlation:** Works by synchronizing the data from the two correlating sensors to accurately GPS locate and pinpoint leak locations.
- ▶ **Leak survey:** Perform field surveys by taking noise samples that are then analyzed and color coded by intensity.
- ▶ **Listening:** Provides amplified and enhanced sound filtering capabilities to listen to leaks.

Web-based Software

Simple to use GIS cloud based software to manage, analyze, visualize mobile correlations and point survey samples. Supervisors and office users can view in real-time field correlations and surveys. They can analyze the data and provide remote support to leak detection crews.

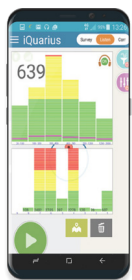
Benefits

The easy to use solution is designed not only for leak detection experts but also for all water professionals. The all in one smart leak detection kit stands out in the industry when compared to costly conventional correlators.

The Mobile Leak Detection solution empowers field crews to increase their productivity and performance by providing quick and reliable leak detection and surveying results in an all in one mobile solution.

Key Features

- ▶ **Cost Effective and Easy to Use.** Avoid conventional mobile leak detection equipment which is expensive, hard to setup and use.
- ▶ **All In-one Leak Detection Solution.** Offers all the equipment necessary for professional leak detection, including handheld sensors, ground sensor, listening stick, correlators, hydrophone sensors and software.
- ▶ **High Reliability.** Raises the bar compared with existing devices. Enables fast, accurate automatic leak surveying and mapping.
- ▶ **Reduce Main Burst & Repair Costs.** When combined with the Trimble Unity LeakManager solution, detect, pinpoint and repair leaks as they appear before significant damage is caused.



LISTENING

Ultra sensitive microphone vibration & sounds for

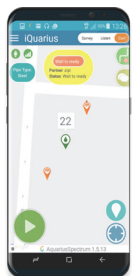
- ▶ Clear sound “frequency shift” technique enables listening to plastic pipes
- ▶ Provides graphic presentation of frequencies



SURVEY

One click operation

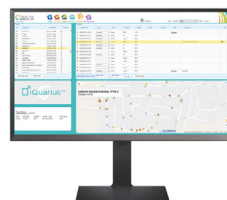
- ▶ Automatic acoustic map generation
- ▶ Each sample is represented by intensity number and color
- ▶ Automatic filtering of background noise



CORRELATION

One person operation

- ▶ Automatic leak detection and location
- ▶ Cloud based analysis
- ▶ Enable GIS pipe data integration



WEB APPLICATION

- ▶ All measurements are updated and stored in real time on the web
- ▶ An acoustic map of surveyed area highlights suspected leaks location

Mobile Leak Detection

MODES OF OPERATION

- Mode 1: Correlation between 2 smartphone-based sensors
- Mode 2: Non-correlated sampling with a single device
- Advanced digital signal processing leak survey by noise logging and GPS-assisted noise mapping
 - Tripod adaptor for hard surfaces
 - Listening stick extension with rounded tip for soft surface (soil, grass) or magnet

SENSOR TECHNICAL SPECIFICATIONS

Acoustic Sensor:

- Piezo type, sensitivity 5V/g
- IP 67
- Temperature range: -10°:+50° C (14°:122° F)
- Magnetic base for connecting to pipes or other infrastructure items
- Cable length to adaptor 1.6m (5.25 feet)
- Li-Ion rechargeable battery provides over 10 hours of continuous usage

Sensor Adapter:

- Standard 3.5mm audio jack interface to smartphone
- Micro-USB charger connector
- LED indicator confirming connection to phone

Signal Processing:

- Digital 16 bit signal sampling
- Sampling rate: 8-44khz
- Sensor frequency response: 10-4000Hz
- Correlation synchronization accuracy of <0.5ms

ACOUSTIC LEAK SURVEY

- Leak detection by acoustic measurements
- GPS positioning of sensors on GIS
- Adaptive filtering of interference and external noises
- Graphic equalizer
- Preset filtering for different sensors/extensions

CORRELATION

- Automatic correlation leak detection with 2 sensors and 2 smartphones
- Automatic or manual sensor positioning on a map
- Automatic pipe length calculation using sensor location and pipe GIS
- Detection range in metal pipes of up to 300 meters (1,000 feet) between sensors
- Adaptive filtering of signals

WEB AND SMARTPHONE DISPLAY

- Map presentation of all measurements taken per task in the iQuarius™ web platform
- Pipe layer presentation on a map
- Extensive online reporting capabilities

OPERATIONS AND AUDITING

- Task-based project management
- Built-in leak detection report
- Expert online support

SYSTEM PERFORMANCE

- Acoustic correlation leak detection and location
- Fixed sensors positioned 300-500 meters (1000-1500 feet) apart



LeakLocator Kit

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