HWM

STANLAY™

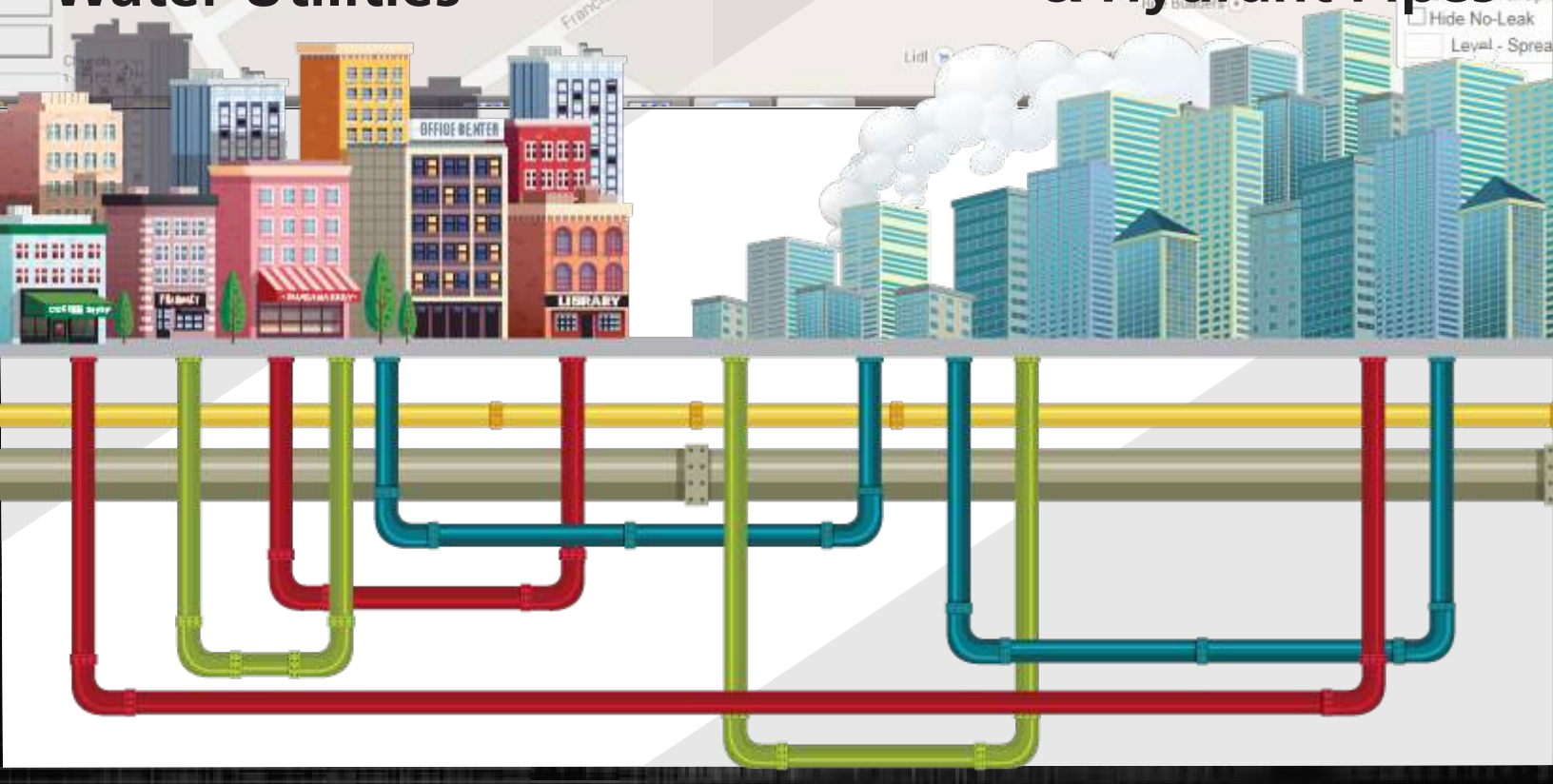
Water Leak Detection Equipment & Network Monitoring Range

2025 - 26
Book 2 ver.1

- **Water Leak Detection Equipment**
- **Permanent 24 x 7 Water Leak Noise Monitoring of Water Distribution Pipes**
- **Trunk Mains Water Leak Monitoring**

City Town Water Utilities

Industrial Water & Hydrant Pipes



Quality in Water Network Monitoring. Delivered.

CONTENTS

The Water Leak detection range offered is in association with HWM Water, the worlds leading manufacturer of monitoring and telemetry equipment for water, wastewater and gas networks. HWM Water is a part of the Halma PLC group, a conglomerate with over £1.5B in revenues & one of Great Britain's most admired companies.

With its primary focus for over 40 years on clean water and network distribution, HWM Water leak detection equipment are being used worldwide for monitoring assets, delivering data and bringing control in management of water utility networks, and have contributed to significant reduction in NRW losses and increase in revenues.

ACL Stanlay is responsible for sales, value add engineering , tech support and after sales, for ensuring efficient deployment and utilisation of HWM equipment for water network customers in India.

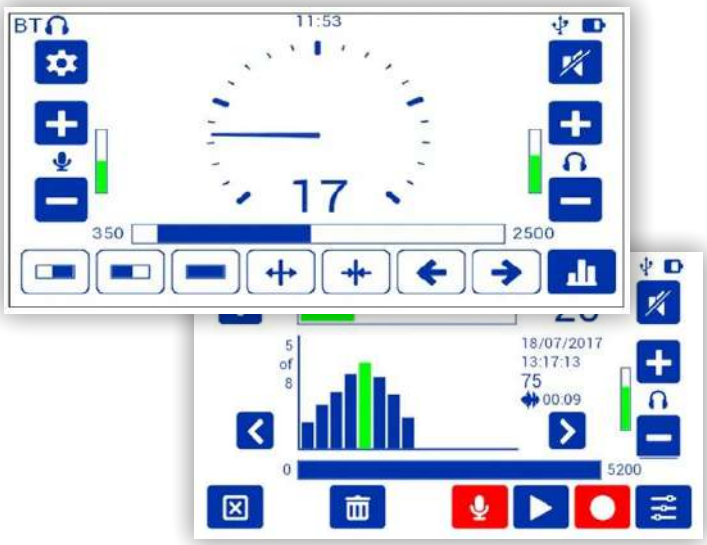
DXmic Pro | Digital Ground Microphone Water Leak Detector

DXmic Pro is the latest generation Digital Ground Microphone Water Leak Detection Equipment to precisely Localize the Position of a Leak in Buried Water Pipes.

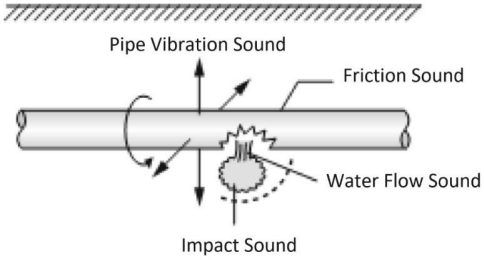
DXmic incorporates a wide variety of features including **Auto filtering** and frequency with display, to help pinpoint a leak position.

Based on a highly sensitive piezo electric **elephants foot ground microphone** with an advanced **touchscreen controller** for identifying leaks in buried water pipes of different materials & depths, The DXmic is used to listen for & pinpoint water leaks in all types of water pipe networks under pressure, such as **metallic and non-metallic water pipe networks**, in both the main lines and branches of metro & industrial environment, for **water pipes upto 600mm in diameter** & which are being used at **≥ 1 bar pressure**, allowing the operator to detect leaks in pipes buried upto 5 meter * depth below ground (* depending on pipe pressure, pipe material & condition)

DXmic Pro further records leak noise, including the **ability to replay recording**, allowing the operator to validate leak located or additionally share with the leak expert within the team for validating prior digging for repair, and additionally allowing create an archive of leak sounds for reference.



Water Leak Indication : When moving along the path of a given water pipe, the closer you get to the leak point, the signals received from the leakage will grow in intensity and/or range. The noise heard becomes louder and larger horizontal signal bar-graphs are displayed on the screen.



DXmic Pro | Digital Ground Microphone Water Leak Detector

Operating Modes : The Dxmic provides the user Two Operating Modes : Survey Mode & Minimum Level Profiling (MLP) mode.

MLP (Minimum Level Profiling) is performed by **stepping along the line of the suspect pipe and recording the sound levels.** The ground microphone is placed on the ground and the sample button pressed momentarily. The DXmic then records the minimum noise over three seconds. **As each measurement is taken the histogram graph is built** up showing the difference between each reading visually and numerically, making noise level comparison a simple task. For each measurement taken a number appears to the right of the histogram. This noise level value is a relative indicator for each measurement. Once several readings have been taken the operator can select a sample by pressing the < or > buttons either side of the graph. The numerical noise level value is then shown for each measurement. **DXmic can store up to 100 measurements.**

DXmic Pro allows the user to record sound samples when in MLP mode.

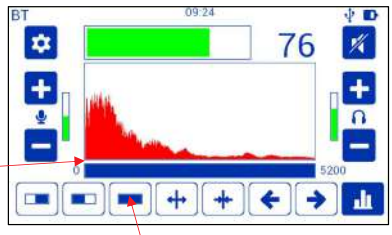
- **Up to two minutes of sound can be recorded per sample.** The **audio recording will appear as a bar in the graph.**
- When a measurement with an audio recording is selected from the graph the recording length will appear under the noise level indicator.
- To **playback** an **audio sample** navigate the bar graph and select a sample with audio recording and press the play button.
- **During playback** it is possible to **access the filter selection screen** and modify the filter configuration.

Survey Mode Screens

Unfiltered Noise

This is the initial default screen, which appears when the DXmic is switched on. This screen shows when no filters are applied.

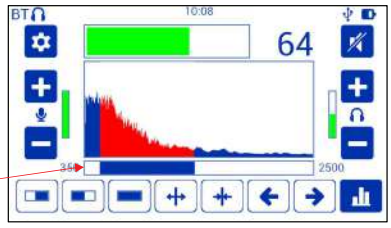
The frequency spectrum indicator bar shows that all frequencies are available.



Pre-set Filter for High Frequencies Only.

Used on metal pipes

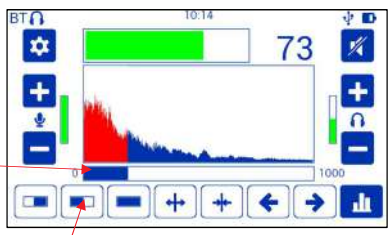
High pass filter



Pre-set for Filter for Low Frequencies.

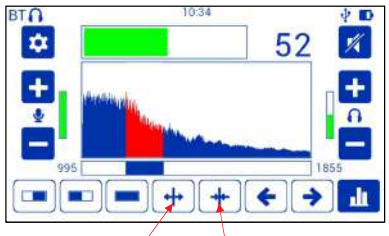
For Plastic (medium density polyethylene (MDPE)) pipes.

The frequency spectrum indicator bar shows both medium and low frequencies are allowed through.



Adjustable Filters – Bandwidth

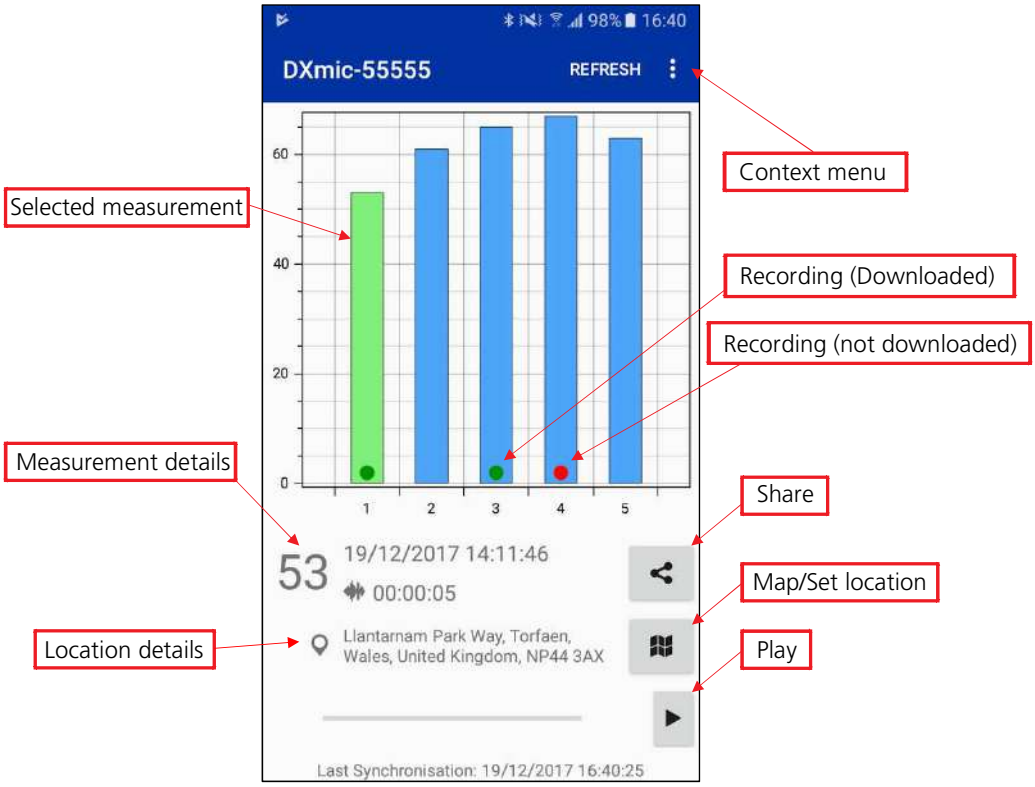
Background or unwanted noise frequencies can be filtered out using a combination of the controls on the DXmic. Unwanted frequencies can be filtered out via the bandpass, bandwidth and filter position buttons.



AUTO Function : enables the user to use AUTO dynamic adjustment of filters to lock on to leak sound

DXmic Pro | Digital Ground Microphone Water Leak Detector

Android & iOS Mobile App



DXmic Pro App allows the user to connect their mobile device to the DXmic Pro to retrieve and share data and audio recordings. The App also enables to collect location information from the mobile device to complement measurements and sound recordings.

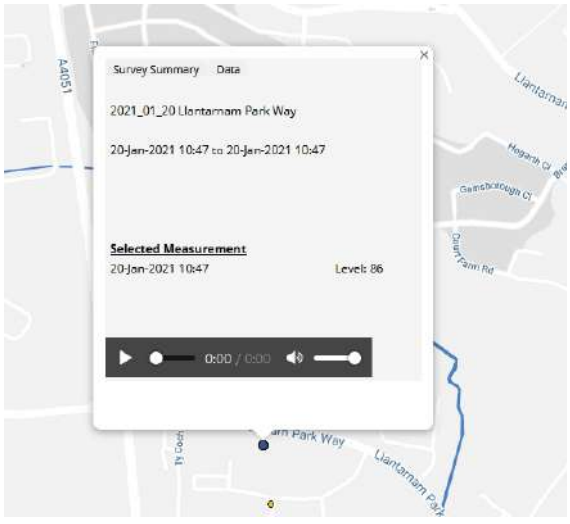
- it is possible to scroll and pinch to zoom in and out the bar graph.
- If a measurement contains location data, the location address will be shown, tap on this field to display coordinates.
- Audio recordings are represented in the graph as bars. Selecting a recording from the graph will allow the user to play the audio sample. In addition it is possible to hear all downloaded recordings.

DXmic Pro App allows the user to share measurement data and recordings via email or using the HWM cloud based web portal DataGate.

- Tapping the "Share" button will summon the Share screen, where it is possible to select which measurement to share by tapping on the bars in the graph.
- It is additionally possible to enter a name for the set of selected measurements; this name will be used to generate the email subject and/or the sub-account name on DataGate and is emailed using the default email system of your mobile.
- It is possible to further upload the measurement data & recordings to the DataGate server for archiving data based on DMA (District Metered Area) sub accounts , with facility to email the same to other team members.

Measurement Geolocation

When the DXmic Pro is used together with DXmic Pro App, geographic location data can be added to the information recorded when taking a measurement.



DXmic Pro | Digital Ground Microphone Water Leak Detector

Specifications

Sensor Pick up unit, Type	Piezoelectric type
Utilised for	Pressurized water pipes of >=1Bar, Diameter <=600mm (nominal)
Frequency Range	0 to 5000Hz
Band Pass Filters	Selectable band pass filters : Adjustable High Pass: 0Hz, Low Pass: 5200Hz
Bandwidth	Adjustable in range 0Hz….to ……5200Hz
Display Type & Size	5.0 inch TFT LCD Color TouchScreen
Backlight Control	Backlit multi-function LCD touchscreen showing: 1. Graphical and digital noise levels 2. Dynamic sensitivity (signal strength) 3. Settings and operation mode
Depth Capability of System	Upto 5 meters depth for buried water pipes (or higher), depending on pipe water pressure, pipe diameter and other conditions.
Signal display on controller	Measuring and displaying values: • Signal Strength • Minimum Signal Strength • Average Signal Strength • Display values in numeric, Bar-graph and Gauge view (User Selectable) • Length of leak noise sound recording in seconds • Date/ time of operation
Operating Modes & Filter Selection	• Survey Mode with Filter selection with noise level indicator and frequency analysis • Minimum level profiling: Records levels of leak noise at various locations for comparison as a histogram profile • Auto Survey Mode
Menu Control	GUI with icons, for easy configuration, With User control of a. Gain b. Headphone volume, including headphone pairing through bluetooth c. Ear protection filters On/Off to protect user against sudden noise, with Lo/Mid/High filters
Notch filter	Sharp filter set around the mains frequency to reduce electrical noises from mains power equipment
Leak Judgement mode	Auto survey mode in conjunction with Mobile App automatically records GPS, sound levels, recordings, and make leak judgements (Leak/No-leak)
Auto filter function	Auto Filter through Software identifies the peak and adjusts the filters to eliminate extraneous noise
Ear protection Safety	Built in Auto Hearing protection filter, selectable ,analyses the noise level of incoming signal & limits loud sound levels . Protection level include : Low (70dB), Medium (80dB) & High (90dB)
Headphone support	Studio quality headphones (Provided as default)/ Wireless Bluetooth headphones (Optional)
Memory/ Leak noise level recording function (Interface)	Bluetooth & USB
Sensor IP Rating	IP 65
Amplification	46dB
Operating / Storage Temperature:	-10 to +50 °C / -20 to +60 °C
Battery	2 x Lithium ion rechargeable batteries (Batteries replaceable in field at end of life)

DXmic Pro | Digital Ground Microphone Water Leak Detector

No of Batteries	2	
Battery Operating time	upto 25 hours	
Charger	Universal 110-240V AC mains charger with 12V DC output	
Main Unit (L x W x H)	193 x 109 x 60 mm	
Main Unit	600g (with batteries)	
Pick-up sensor with hand-switch set	2.9 KG	
Complete system	3.5 KG	
Standards compliance	FCC etc SI 2017 No. 1206* The Radio Equipment Regulations 2017. SI 2012 No. 3032* The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012. United Kingdom designated standards below: EN 301 489-1 V2.2.3 ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements. EN 301 489-17 V3.2.4 Part 17: Specific conditions for Broadband Data Transmission Systems. EN 300 328 V2.2.2 Data transmission equipment operating in the 2,4 GHz band. EN 61010-1:2010/A1:2019 Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements. EN 62311:2008 Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 GHz). RoHS: EN IEC 63000:2018 Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances. The UKCA marking is applied accordingly Contains FCC ID: 2ADHKBM83SM1, RI7-S42M	
Warranty	One Year Warranty from the date of delivery	
Standard Supply includes	1. DXmic module with adjustable carry strap. 2. Acoustically shielded ground microphone foot. 3. Wireless headphones. 4. Lithium ion battery pack and battery charger. 5. Carry case. 6. Cables. 7. Manual.	**Optional:** Hand probe is supplied with a tripod foot and two aluminium probe rods for sounding in soft ground. Each probe rod is 400mm in length

Optional Sensors:

Hand Probe Tripod Microphone

(For use on Gravely Surfaces)

1.

2.

Listening Rods

(Used with DXmic Pro for electronic listening by direct contact to pipe or by inserting through soft soil)

Touch Pro | High Performance Water Leak Noise Correlator

Touch Pro is an Advanced Leak Noise Correlation for leak detection in more difficult leak conditions of buried water pipes including metal, plastic or large diameter pipes

Touch Pro is one of the most capable equipment of the industry for quick & accurate leak detection.

The Touch Pro noise correlator is designed especially for the more difficult leak detection situations, including plastic or large diameter pipes.

The Touch Pro Portable high speed leak location system employs:

1. **Touch screen controller "base unit" with integrated noise filtering, analysis and management software with built in wireless connectivity.**
2. **2 X highly sensitive acoustic sensors (Accelerometers)**
3. **2 X Outstation units.**

Features:

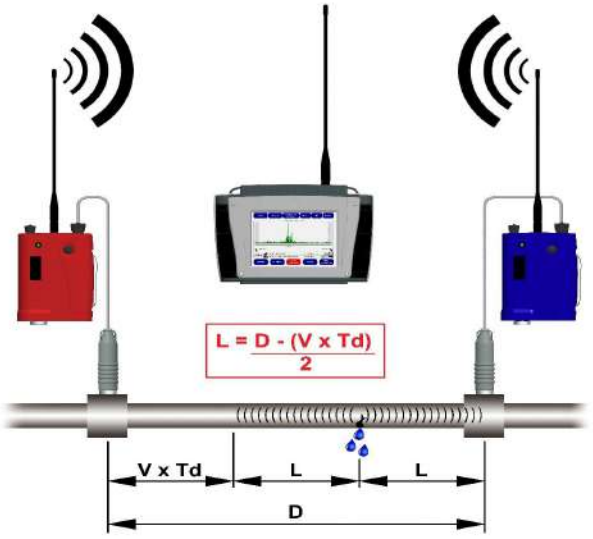
- **Automatic Intelligent Filtering System:** obtains best result by employing up to **55 filter combinations** on each correlation, automatically optimizing results.
- **Displays three correlation graphs** to allow user select best result.
- Compatible with **live and pre-recorded data**, it renders manual filter adjustments obsolete.
- The unit effectively embodies an **'expert user'** through its **intelligent filtering capabilities**.
- **High quality:** upgraded long range telemetry.
- **User definable pipe types and velocity:** to ensure accuracy of results.

- **Easy to use:** step by step menu system guides user through correlation process. Enter 3 simple inputs & begin the survey: (1. Pipe Material 2. Pipe Diameter 3. Pipe length section at which sensors installed).
- **In case charging:** through mains and 12V vehicle supply.
- **External antennas:** support improved signal strength .

Touch Pro | High Performance Water Leak Noise Correlator

How It Works :

The Touch Pro performs leak noise correlation measuring the time difference between leak noise signals arriving at each of the sensors. The touch pro determines the leak position by relating the difference in propagation time (travel time) to velocity of sound along the pipe and to the measured distance between the sensors.



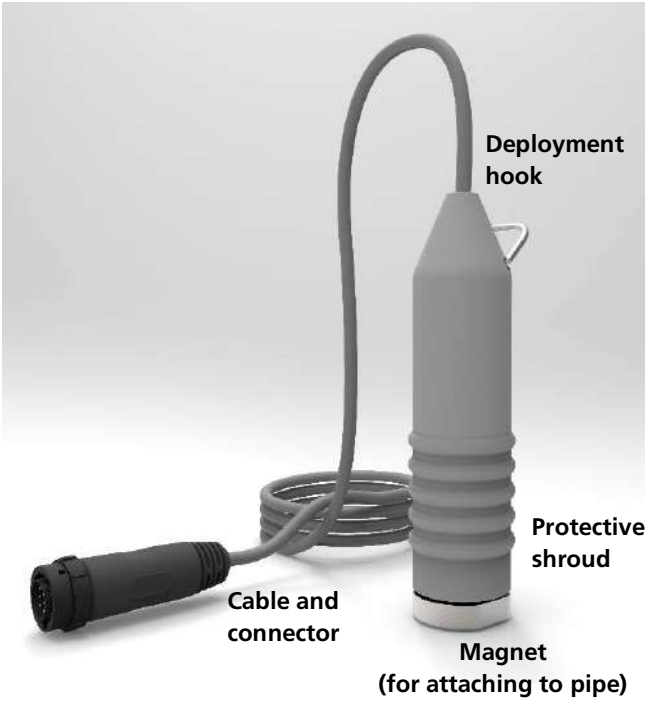
2 x sensors are physically attached & deployed on pipe fittings, on either side of the suspected leak position. Sensor is selected based on type of connection – Dry which are attached to the outside of the pipes and wet which are in direct contact with water.

The Touch Pro principle of correlation, basis is **L = 1 / 2 (D-(VxTd))** advises the leak position.

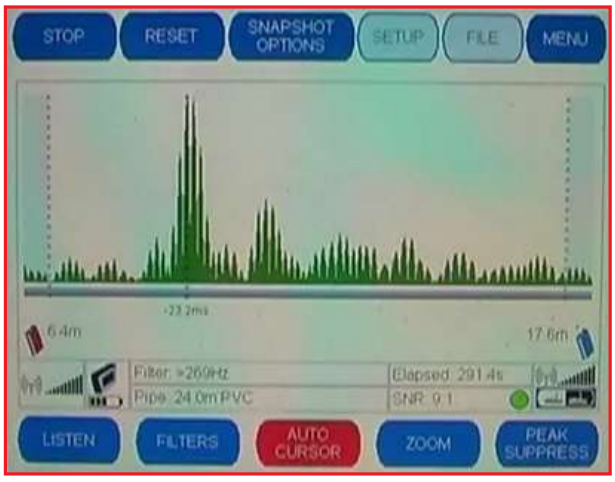
Leak noise travels at a constant velocity (V) which depends on material & diameter of the pipe. Sounds arriving at each sensor are compared, and the **sound will arrive first at the sensor closer to the leak**.

The 2 x accelerometer sensors are positioned on either side of the potential leak location on the pipe are typically utilized with the 2 X Outstation units. Each outstation unit has a built in radio transmission for remote transferring leak noise data to the base correlating control unit.

The operator monitors the noise obtained from the sensors with stereo headphones **allowing the operators to listen for signals from both out-station units.**



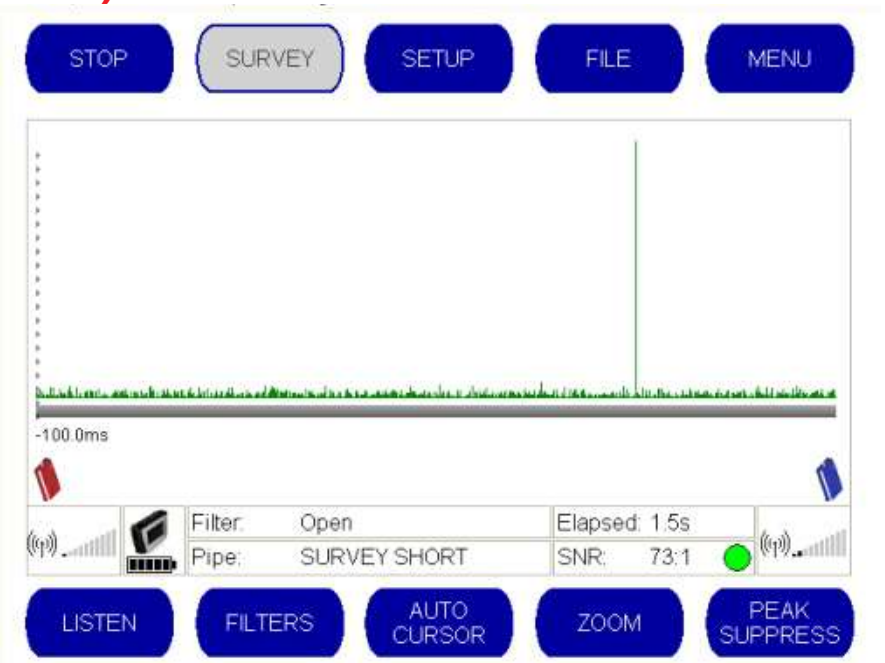
Option for Plastic Pipes & Large Diameter pipes : The Touch Pro can also be optionally **utilized with hydrophone sensors** which are utilized in difficult operating conditions where they are mounted for direct contact with water column at hydrant, air valve or flow meter points (pressurised water) - Hydrophones are also more ideally suited for large diameter trunk leaks and all types of plastic pipe systems, and detects the noise signals travelling within the water column itself.
Note : Hydrophone sensor set would need to be procured as an addition to the TouchPro LNC Set.



Touch Pro | High Performance Water Leak Noise Correlator

Basic LNC Survey

Survey Mode (Quickly Check for Leaks) :



Survey Mode provides a simplified correlation display that enables you to check large distances rapidly for the presence of leaks. (No pipe material settings are required as all of the filters can be set to 'open').

The **survey mode helps to identify whether there is a leak on the pipe** ; it does not try to locate the leak.

Accelerometers are the most practical signal sensors for quick operation and for highest accuracy the distance between sensors should be kept reasonably short; generally, up to 400 metres for metal pipes and 50-60 meters for plastic is a good maximum for accelerometers in this mode of operation.

It is however possible as example to deploy the sensors upto 2 Kms range on metal

Material Database (Define Pipe Materials)

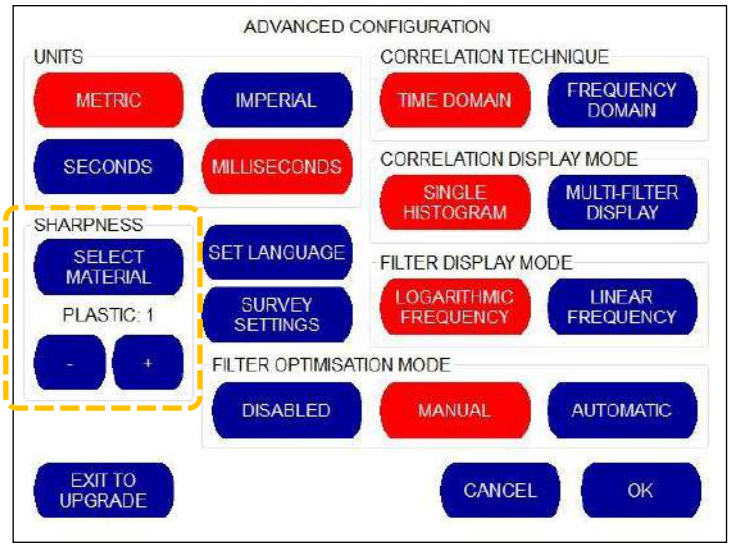
To activate the Survey mode, attach the sensors to the pipe fittings and tap on the 'Survey' button that is shown within the main screen.

The Touch Pro base unit has a built-in database of pipes of differing material types and diameters. Each pipe material type and pipe diameter is pre-programmed with the expected speed of sound traveling through it.

This enables the correlator to obtain a good estimate for the speed sound in a pipe network when doing correlations, allowing it to pinpoint the distance from the sensors to the leak (when the correct pipe material(s) and diameter(s) are identified).

Touch Pro | High Performance Water Leak Noise Correlator

Advanced features for Accuracy :



AFIS (Filter Optimization) feature:

While the Touch pro provides default filter settings for a wide range of pipe material and sizes, to account for Unknown variables that can change the frequency of the Leak noise, the Touch Pro incorporates an "automated filtering interference system" (AFIS) which **effectively applies multiple filter settings to determine the best possible correlation result**

During the correlation the **closest and most accurate result presented is after running up to 55 different filters combinations to present to the user/operator , the most accurate result .**

Auto-Cursor feature

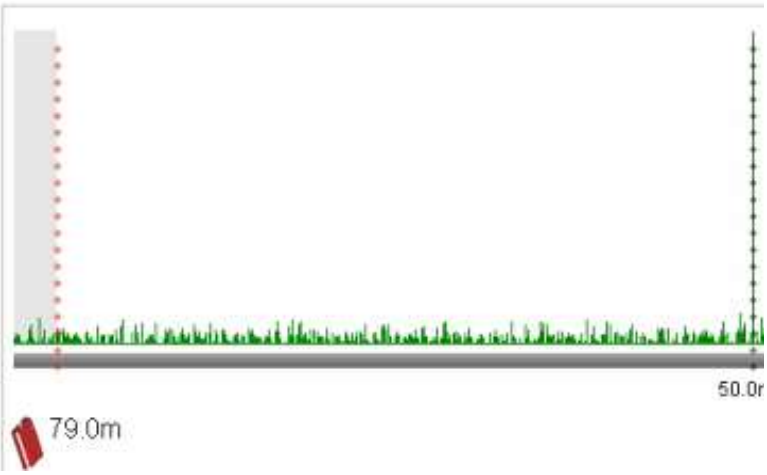
The Auto Cursor will always **locate itself onto the highest peak**, allowing the operator to automatically pinpoint exactly where the highest peak is.

The Auto Cursor is immediately switched off and the screen displays the **distance from the outstations to the selected position**.

Peak Suppress feature

Peak suppression allows the operator to remove an unwanted peak from the correlation result. This is useful when the source of that peak has been identified as a non-leak.

By suppressing this, the unit will correlate ignoring the sound levels being produced at this location on the pipe.



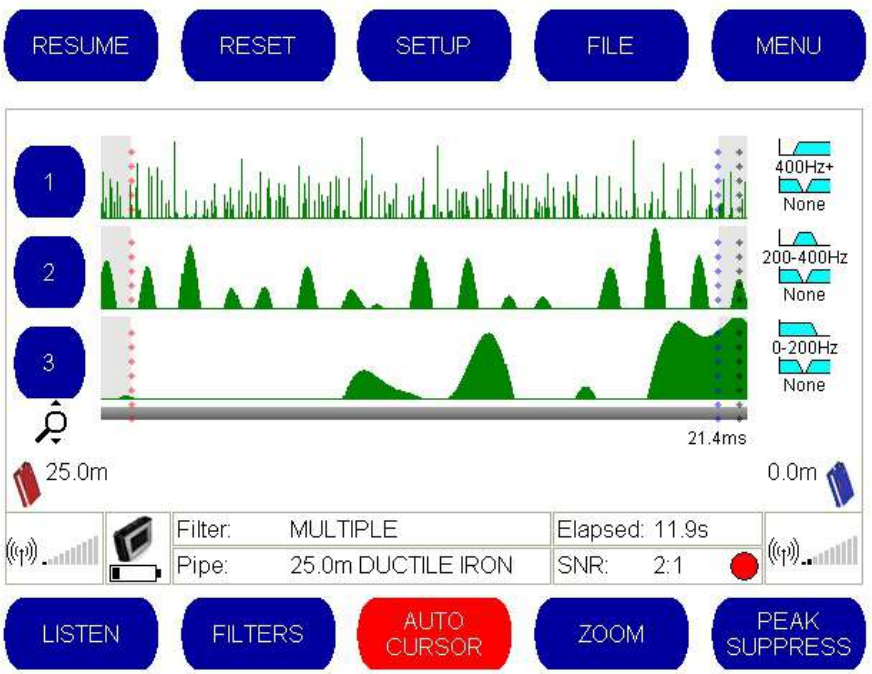
Touch Pro | High Performance Water Leak Noise Correlator

Advanced features for Accuracy :

Multi-Graph Modes

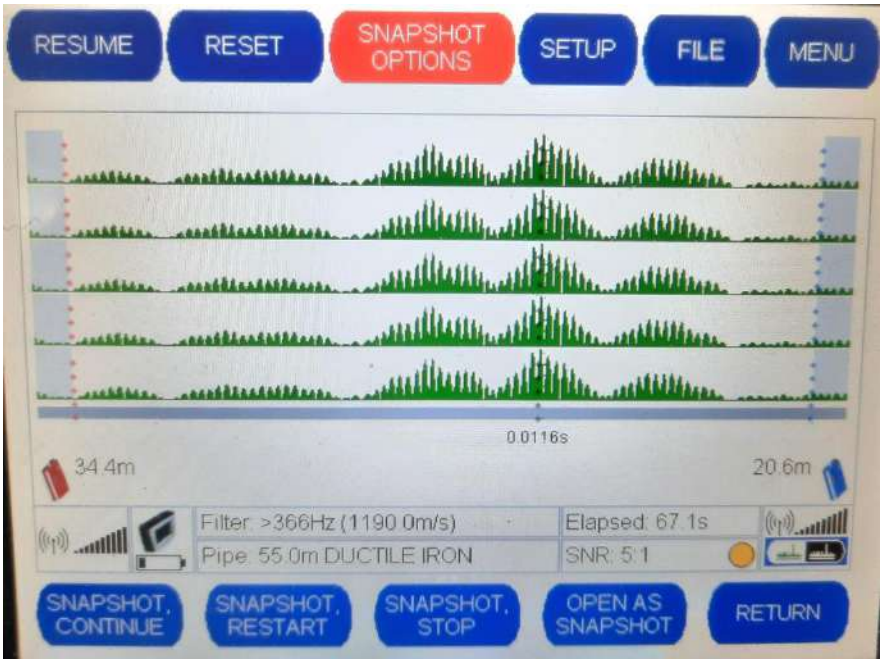
1. Correlation Display (1 Histogram / 3 Histogram) :

- The **default setting is to display a Single Histogram graph during the correlation**.
- When the **Multi-Filter Display option** is selected, the main correlation screen changes to s**imultaneously, display three correlation graphs.**
- This setup **allows the operator to perform three different correlations simultaneously at the leak site.**
- Each graph has different filter settings applied, thereby **enabling the operator to choose (at a glance) the best out of the correlation results that are on display.**



2. Snapshot Options (Graph Copy)

- The Snapshot feature enables the operator to record (for comparison purposes) a still image of the correlation graph at any time during a real-time correlation.
- Useful for highlighting temporary noises such as sudden traffic noise that might interfere with the correlation result.
- The Snapshot feature effectively enables the operator to compare noise levels at different points during the correlation process



Touch Pro | High Performance Correlation

Specifications

Filter Selection	Manual, FFT, Coherence and Tri Filter correlation. Pipe-data related default settings
Resolution	+ 0.1m
Display	7" Resistive VGA colour touch screen
Antennae	External antennae/magmount (optional)
Battery Type	Rechargeable lithium batteries
Battery Life	12 hours (rechargeable in case)
PC Download	USB to PC, Windows compatible software
Dimensions	H = 90mm, W = 250mm, D = 180mm
Weight	1.9Kg
Temperature Range	-20 to +50°C
Environmental	IP65
Enclosure	PC/ABS plastic enclosure
Connectors	Military specifications
Sensor	
Frequency response	d.c- 5000Hz
Environment	IP68, rubber shroud for shock protection
Connection	2m/3m/5m cables with strain relief military spec connector
Outstation (Optional 1 or 2 radio outstation)	
Radio Frequency	Local regulations apply
Connections	Headphones, external antenna, charging
Battery Type	Rechargeable lithium batteries
Battery Life	12 hours (rechargeable)
Antenna	External antenna (optional)
Dimensions	H = 200mm, W = 135mm, D = 50mm
Weight	870g
Environment	IP65
Housing	PC/ABS plastic enclosure

Note: DXmic Pro ground microphone water leak detector will be required to be used for validation of leak location, after correlation, prior digging for repairs.

Lmic | Water Leak Ground Microphone & Electronic Listening Stick

Lmic is an easy-to-use, relatively lower cost, electronic listening stick and ground microphone combined.

It is ideal for general buried water leak detection based on sounding operations and is used in two ways :

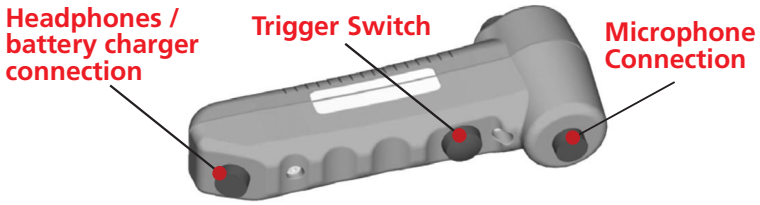
1. Based on either a tripod foot (for use as a ground microphone) or
2. Probe rods (for sounding at fittings or in soft ground).

Control unit is handheld with a trigger operation and a volume sensitivity rotary control. The electronic listening stick can penetrate through soft soil / or connect to pipe to listen for leaks and the tripod foot can be placed on hard ground for acoustic survey.

Features

- **Excellent acoustic performance**
- **Military specification connectors**
- **Rechargeable battery pack**

Lmic Controls



Bottom view of the Lmic showing the trigger switch and the connections for the headphones / battery charger and microphone.

Supply Contains

1. Lmic hand-held control unit
2. Microphone unit with cable
3. Tripod unit
4. 2 probe rods
5. AC adapter

Top view of the Lmic showing the rotary control for volume and sensitivity.

Rotary volume / sensitivity control.(Dial includes numbers on later models)

ST20 Listening Stick | Leak Amplification Device

The high performance ST20 Listening Stick uses mechanical amplification to detect and pinpoint leakage and has an acoustic resonance chamber for noise amplification

The **high performance ST20 Listening Stick** uses mechanical amplification for **detecting and pinpointing leakage** and has an acoustic resonant chamber for noise amplification.

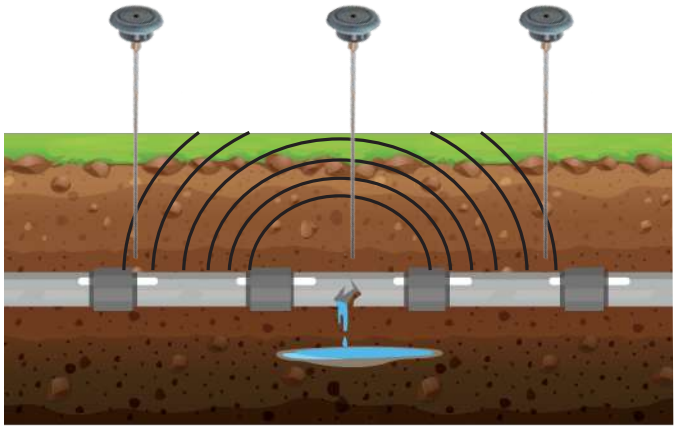
The two segment plated steel bar screws together to form a **1.5 metre length** as standard. Alternatively, a 1 metre long listening stick is available.

The listening stick **transmits the leak noise vibrations to a brass diaphragm within the resonant cavity**. **The radiated noise is mechanically amplified within the chamber to improve sensitivity**.

Made from chromium plated mild steel, it is suitable for basic level leak detection and ideal for individuals who may experience difficulty in differentiating between static and leak noise on an electronic listening stick.

Features:

- **Easy to use:** single user operation
- **Economical:** practical, low cost leak detection
- **Portable:** lightweight and easy to carry
- **Hard wearing:** rugged, long lasting design
- **Quality:** Chromium-plated mild steel
- **Flexible:** 1m or 1.5m length options
- **Non-electric:** no mains or battery power needed



Applications

- The **listening stick transmits leak noise vibrations to a brass diaphragm** within the **resonant cavity**.
- Radiated noise is mechanically amplified within the chamber to enhance sensitivity.
- Constructed from **chromium plated mild steel**.
- Suitable for basic level leak detection.
- Ideal for individuals who may have difficulty differentiating between static and leak noise on an electronic listening stick.

PermaNET+ | GPRS/4G enabled Correlating Leak Noise Logger

Fixed Network Buried Water Pipe Leak Detection

PermaNET+ is the award-winning leak detection system that combines a leak noise sensor with versatile telemetry technology for creating a fixed network to monitor leakage in buried water pipes.

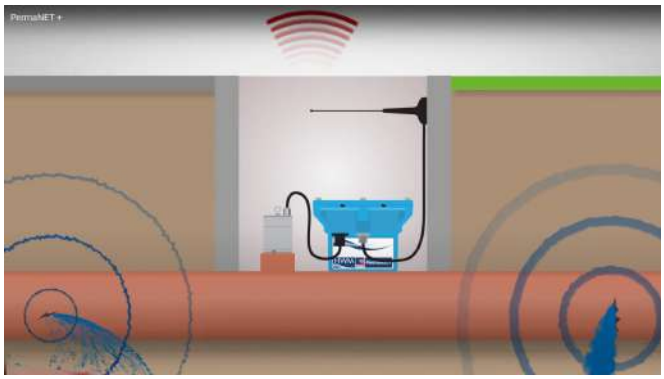
Representing the **next stage in development of noise logging and leak detection**, **PermaNET+** is a **cost-effective solution** that is **practical for large-scale deployment**.

Compatibility with Google Maps ensures users are provided with **real-time visual representations** of precise PermaNET+ **deployment sites**, **allowing leakage teams to respond quickly**.

PermaNET+ is a data logger & leak noise sensor device based on fixed network telemetry for **24X7 leak monitoring of buried water pipes**.

The PermaNET + installed usually as **multiple units** for creating a fixed leak detection network detection system, employs a specialized microphone that monitors & detects sound waves created by escaping water from a leaking buried water pipe and performs statistics analysis to generate data for a **"noise histogram".**

The PermaNET+ leak detection system **may alert the operator up to 10 days prior the water reaching the surface**



Features:

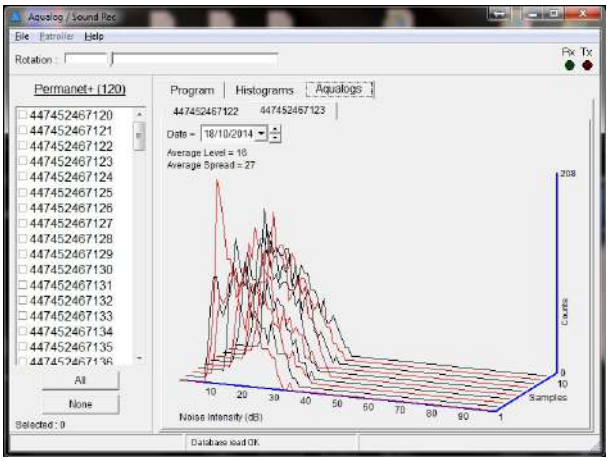
- **Quick response:** enables leakage teams to respond quickly to specific locations when a leak is detected
- **Determine leak size:** by matching daily alarms with flow data to enable prioritisation of leak alerts
- **Telemetry:** LTE-based 4G cellular communication standard with fallback 2G capability
- **Precise logging:** ability to log noise more frequently to establish the noise profile and profile alarms for precise immediate leakage alarm
- **Secondary validation:**
  - Aqualog - detailed noise histogram to reduce 'false positives'
  - Audio - remotely listen to the noise
  - Remote correlation to localise leak position
- **Fully waterproof:** the IP68 rating has been tested at 10m depth over a 24 hour period
- **Easy to use:** compatible with the HWM Deployment app and can also be programmed through PermaNET Web
- **PermaNET Web:** software supports
  - Correlation
  - Map view
  - Aqualog
  - GIS Interface
  - Remote reconfiguration
  - Filtering

PermaNET+ | Fixed Water Network Leak Detection

How the PermaNET+ is used to create a Leak detection network :

PermaNET+ is a powerful leak detection system that allows the user to **deploy a fleet of data loggers** around a water network that are **permanently installed to listen for leaking pipes**.
Typically ≥ 20 loggers are recommended to be installed within an area keeping distance upto 200 meters between loggers when installed on a metal pipe & upto 50 meters when installed on plastic pipes

The device listening for possible leaks analyses & determines **Leak /No Leak** and **in case of a suspected leak**, based on built in algorithms , **goes into an alarm mode** , alerting the water department team, while **recording the leak noise sound.**



Sound and data files recordings : in the logger are **automatically** sent over the internet to the **DataGATE server,** and accessible through the PermaNET web application.

Length of Sound recording of suspected leak identified by the PermaNET + is by default for **10 seconds** (Max: 20 seconds).

Histograms & Aqualogs: Additionally, the leak detection team can view daily Histograms of individual loggers, or via detailed Aquascans including 3D views.

Built in Telemetry & GIS Mapping : Equipped with an integral modem supporting GPRS/2G, 4G, LTE-M (Cat-1), with an external GPRS antenna. PermaNET+ operates on low cost cellular data transmission to the DataGate server. In such a case that data transmission is unavailable, it falls back to 2G based on sim card which is slotted into the system , in which case an SMS with Logger ID is included as a message to the user advising a potential leak. With the Built in 2 way UDP communication , it is also possible to remotely reprogram the logger.

Remote Monitoring : PermaNET+ is also compatible with google maps & allows overlay allowing leakage teams to monitor each deployed logger's status via Google Maps compatible software

The leak noise sensor loggers can be programmed to switch on at a given time in a night or day for noise sampling.

The system can be ordered to make recordings remotely to take an additional recording at a time of choice the next day.

Sites coloured Yellow are not detecting a leak, Red sites are where a leak is suspected.

When sound files are available, two buttons. appear. To perform secondary confirmation validation click <Add to Validate List> and the <Validate> button to launch the Leak Localisation & Correlation tool.

PermaNET+ | Fixed Water Network Leak Detection

The Sensors once installed are viewable on the DataGate server for complete management of water network, viewing status of sensors installed with capability of proactive & progressive correction of Leaks as they appear with alarms.

Leak Localisation and Correlation Tool

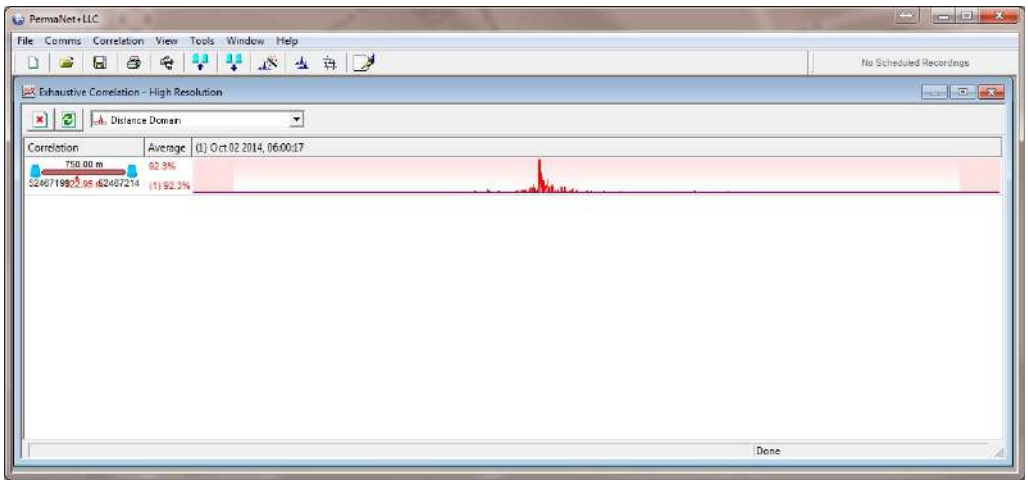
In addition to listening to the sounds recorded, you can use this tool to perform some rudimentary correlations to gain confidence that a leak is present.

1. Choose 2 loggers to test between. In the example shown, a check is being performed between the 2 sites ringed to identify if the Leak suspected can be confirmed.

2. For both loggers, click <<Add to Validate List>>

3. Next click the <<Validate>> button

4. The PermaNET+LLC (Leak, Localisation & Correlation) tool will launch and perform a correlation on the sound files available



5. The Average indicates a confidence level for the correlation a clear peak indicated on the graph confirms that a leak is detected with high confidence between the two loggers selected.

***The department team or designated expert can **validate the leak by hearing the sound** & use secondary measure of acoustic leak detection to confirm leak location.

Alarms:

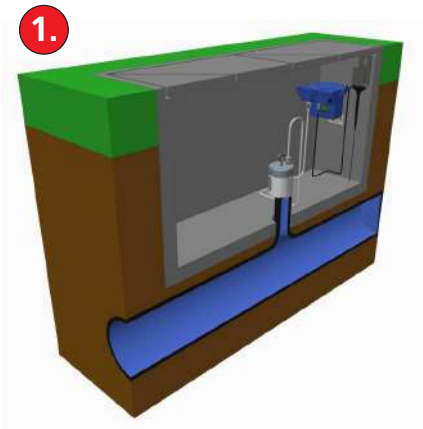
- In case the PermaNET + logger signal is no longer available will show up as an alarm.
- In case the sensors suspect a leak, the unit can be programmed to call out twice on the same day.

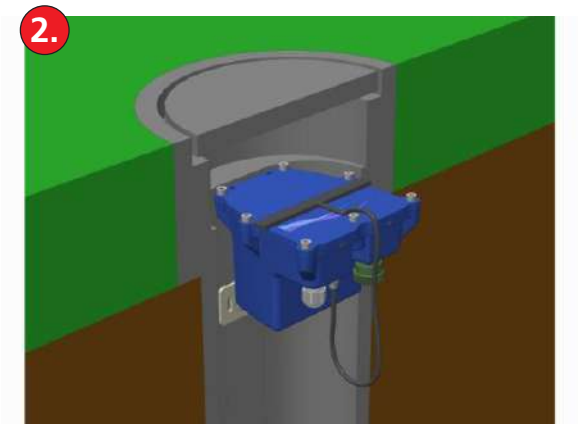
PermaNET+ | Fixed Water Network Leak Detection

Antenna options for LTE 4G connectivity:

Antennas for cellular GPRS data transmission is selected or advised based on chamber construction, and is installed as close to the surface as possible. Antenna options include :

1. Carant Type (Subsurface Chambers)
2. I-Bar (for attaching to structures external to subsurface chambers)
3. Button (drilled into chambers manhole / lids)





Specifications

Operating Temperature	-20 to 60°C
Battery Life	5 years (depending on settings and signal condition)
Memory	Primary recording: 1 million readings
Dimension	Logger without antenna: H = 84mm, W = 114.5mm, D = 113.3mm Leak Noise Sensor: H = 89.3mm, W = 50mm, D = 50mm
Weight	Logger: 338g, Leak Noise Sensor: 476g
Construction	PC/ABS plastic enclosure Stainless steel LNS
Antenna	Multiple external options
Internal Cellular moddern	Cellular modem supporting 2G/3G/NBIoT/LTE-M (Cat-1) with SMS backup where available
Alarms	Leak / No Leak Signal Received / Not Received
Logger ID	7 alphanumeric characters. Readable factory set serial number in firmware
Communication	Laptop or Desktop PC via USB
Environmental	IP68

Hydrophone 2 | High Performance Plastic & Trunk Main Sensor For Water Leak Detection

- High-performance leak detection sensor.
- Excels in low-frequency detection.
- Upgraded low-frequency sensitivity.
- Flexible with various adapters.
- Enables simultaneous leak monitoring.
- Beneficial for limited fittings.
- Compatible with Touch PRO leak noise correlator

Our all-new Hydrophone 2 is an advanced leak noise sensor that is proven to deliver significantly increased performance on plastic pipes and water trunk mains/ water transmission pipes.

Hydrophone 2, a high-performance sensor, excels in detecting leaks in plastic pipes with low-frequency noise. Featuring upgraded amplification circuitry and a push-fit pressure monitoring connection, it ensures easy connection and simultaneous monitoring of leak noise and pressure..

Extremely sensitive, and ideal for detecting low frequency leak noise, Hydrophone 2 excels in difficult larger diameter and non-metallic pipelines.

Hydrophone 2 | High Performance Plastic & Trunk Main Sensor For Water Leak Detection

Features:

- **High performance:** increased leak detection and correlation performance over long pipe lengths, larger diameter and non-metallic pipes.
- **Sensitive:** highly sensitive to low frequency noise.
- **Advanced:** all new sensor and amplification circuitry provides a step change in performance on plastic and trunk mains.
- **Accurate:** allows leaks to be detected and pinpointed in situations where standard accelerometers will not.
- **Versatile:** screws directly into Aptlas / boundary box fittings: compatible with a range of hydrant adapters and other pressure-enabled fittings.
- **Compliant:** DWI reg 31 approved.
- **Compatibility:** compatible with Touch Pro correlators and PermaNET+ acoustic loggers.
- **Pressure monitoring:** includes additional push-fit pressure monitoring point as standard.

Specifications

Operating Temperature	-20 to 60°C
Storage Temperature	-40 to 60°C
Weight	1.054kg
Safety Tested	to 25Bar
Life in Service	+5 years
Material (Body)	Stainless Steel 316 - DWI regulation 31
Material (Sensor)	Araldite DFB/HY951 - BS 6920:2014
Environmental	IP68

View Data

Map View

Satellite View

PermaNET TM GPS |

Multi-Parameter Water Trunk Main Leak Detection with GPS Time Sync

PermaNET TM GPS is an acoustic monitoring system for trunk mains, plastic and sensitive pipelines that uses GPS Time Synchronisation to produce highly accurate correlations over long distances, on large diameter pipes and in difficult conditions.

Combining high performance Hydrophone 2 l**eak detection capability** with **flow and pressure transient information** not only delivers highly accurate leak noise correlations but will potentially **identify from where leaks are originating**. The system is available with flow and pressure channels with fast logging capability.

Features:

Battery-powered telemetry acoustic (flow and pressure) leakage monitoring

- **Hydrophone 2:** high performance hydrophone for best results on large and non-metallic pipes.
- **GPS Time Synchronisation:** accurate correlation even over long runs and in rural locations.
- **Multi-parameter options:** flow and pressure capability, including fast logging (transient).
- **Easy to deploy:** battery powered, no requirement for solar or mains infrastructure.
- **Telemetry:** latest NBIoT/LTE-M/4G or 2G HWM telemetry.
- **PermaNET Web:** software supports
  - Correlation
  - Map view
  - Aqualog
  - GIS Interface
  - Remote reconfiguration
  - Filtering
- **Fast Burst Detection:** profile alarms on noise level (pressure and flow) to quickly identify leaks.
- **External battery packs:** to support fast logging or accelerated dial-in regimes.
- **Easy to use:** compatible with HWM Deployment app. Select features can be programmed through PermaNET Web.
- **Variable sampling:** sample times can be changed remotely through PermaNET Web or via IDT software.
- **Long-term monitoring:** typical 5 years battery life (depending on settings and signal strength).

PermaNET TM GPS |

Multi-Parameter Water Trunk Main Leak Detection with GPS Time Sync

Specifications

Logger Features	
Frequency	Variable logger sample rate from 1s to 24hrs (this may affect battery life and communication costs)
Construction	PC/ABS plastic enclosure
Storage Temp. / Operating Temp.	-40 to 60°C / -20 to +60°C
Environmental	IP68 submersible
Power	Lithium Thionyl-Chloride, typical 5 years (depending on settings and signal condition). External power connection for battery box and DC input
Memory	Primary recording: 1 million readings (non-volatile memory)
Fast Logging (secondary channel)	Secondary, fast channel supports sampling up to 100 Hz and record average, minimum, maximum, standard deviation or time interval between pulses (for data smoothing)
Alarms	Multiple alarm options including Rate of Change, Profile, Minimum Night Flow and Threshold. 16 alarms per logger. Can be programmed to auto dial up to 8 telephone numbers on alarm. Over 16 alarms per logger depending on channel configuration
Internal Cellular Modem	Cellular modem supporting 2G/4G/NBIoT/LTE-M (Cat-M1).
Accelerated dial-in	Dial-in rate is increased if alarm situation is triggered. Logger can accelerate dial-in at alarm level for multiple applications - including SonicSens, Flow, Pressure and other alarmed sensors
Inputs	
Noise	HWM Hydrophone 2 or LNS Accelerometer
Flow	One bi-directional pulse for Flow. Two single-directional pulse inputs for Flow logging. Up to 64 pulses per second
Analogue (Pressure)	Internal Pressure Transducer. External pressure. 4-20mA (optional). 0-20 bar / 0-200 meters head / 0-300psig, 0.1% repeatability / please note that the logger is calibrated to 10 bar as standard. (20 bar calibration must be specified at time of order if required). (0-10 bar / 0-100 meters head / 0-150 psig option also available)
Leak Detection	
Leak Identification	HWM noise level and spread algorithm, or Trunk Main mode: continuous sampling with alarm on threshold or profile breach
Sound File	Automatically recorded on alarm or manual request. Remote audio 'listening' Remote correlation
Correlation	Full feature correlation with GPS time synchronisation
Hydrophone Specification	
Unit Gross Weight	1.054kg
Safety Tested	Up to 25Bar
Material: Body	Stainless Steel 316 - DWI regulation 31
Material: Sensor	Araldite DFB/HY951 - BS 6920:2014
Environmental	IP68

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Catalogue Version : F1/25-26/HWM

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