

PermaNET TM GPS

Multi-Parameter 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 leak 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.



Key Features and Benefits

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 NBloT/LTE-M/4G or 2G HWM telemetry
- **PermaNET Web:** cloud software supports
 - Correlation
 - Map view
 - Aqualog
 - select GIS file formats
 - 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
- **Long-term monitoring:** typical 5 years battery life (depending on settings and signal strength)
- **Variable sampling:** sample times can be changed remotely through PermaNET Web or via IDT software

Applications

Combining the proven sensitivity of our new Hydrophone 2 with our advanced-telemetry data logger and GPS Time Sync, PermaNET TM GPS delivers leak noise detection and correlation over greater distance on plastic and large diameter pipes.

A flexible solution, PermaNET TM GPS can be supplied with pressure and flow inputs to deliver multi-parameter monitoring and detect problems as they arise, with the pressure channel supporting a fast-logging mode to detect transients.

The system is battery-powered by the logger, with additional battery packs supporting accelerated dial-in and fast logging. No expensive mains or solar power infrastructure is required, meaning the PermaNET TM GPS has the flexibility for fixed or portable, short or long-term deployments.

MONITORING ASSETS, DELIVERING DATA, BRINGING CONTROL

PermaNET™ GPS

Multi-Parameter Trunk Main Leak Detection with GPS Time Sync

Logger Features

Frequency	Variable logger sample rate from 1s to 24hrs (this may affect battery life and communication costs)
Construction	PC/ABS plastic enclosure
Operating Temp.	-20 to +60°C (-5 to +140°F)
Ingress Protection	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/NB-IoT/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

Operating Temperature	-20 to 60°C (-5 to 140°F)
Storage Temperature	-40 to 60°C (-40 to 140°F)
Ingress Protection	IP68
Unit Gross Weight	1.054kg (2lb 3oz)
Safety Tested	to 25Bar
Material: Body	Stainless Steel 316 - DWI regulation 31
Material: Sensor	Araldite DFB/HY951 - BS 6920:2014



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