GUTERMANN

ZONESCAN HYDRO

Correlating NB-IoT Hydrophone Leak Logger

For Distribution Networks

The permanent leak detection solution particularly suitable for plastic pipes in water distribution networks.

ZONESCAN HYDRO relies on the same communication and leak detection principles as ZONESCAN AI but boasts a hydrophone sensor for increased sensitivity and performance in difficult conditions.

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Easy to deploy

Pipe Length: 455.9m
Sound Vel.: 377 m/s
Material: MDPE, PE80

Unprecedented Sensitivity, Distance and Precision

Reliable Communication

Secure Global Cloud
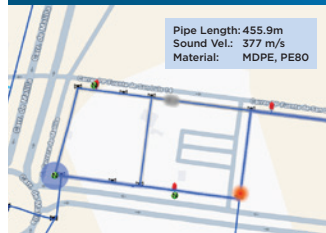
Ultra compact for efficient installation and maintenance

Installing a hydrophone leak noise logger is often a challenge but thanks to the ultra-compact design and the field proven Android app ZONESCAN INSTALL it is now easier than ever before. The user is guided through the process of activating the ZONESCAN HYDRO logger, registering it to the NB-IoT network, assigning its exact location and programming the noise recording times.

With a single casing unit and the smallest dimensions in the industry, the ZONESCAN HYDRO logger fits into almost any size chamber.

The maintenance of loggers is optimised thanks to:

- Field replaceable battery
- Inbuilt 3D motion sensor to detect logger displacements
- Fuel gauge chip for improved battery lifetime prediction
- Humidity and temperature sensors to monitor logger health

High precision leak pinpointing over longer distances

The recorded sound signal of every logger is time synchronised via Guterman's proprietary technology with best-in-class precision of typical better than 1 millisecond, this precision is also achieved in unsynchronised NB-IoT networks. Thus, it enables the cloud software to automatically correlate the data between all neighbouring ZONESCAN HYDRO sensors and to provide leak indications even where the individual loggers don't recognise the existence of a nearby leak. The correlation with ≤ 1ms enables pinpointing of leaks with a typical precision of ≤ 1m. Loggers spacing is depending on the area and the pipe properties as this impacts the leak noise transmission - with typical values in-between 150 – 350m in distribution networks.

ZONESCAN HYDRO is using the well proven leak score indicator today and will benefit from future developments of Gutermann's AI technology.

NB-IoT data transmission from below the chamber lid directly to the cloud

ZONESCAN HYDRO is using NB-IoT (Narrowband Internet of Things) technology, supported by most GSM operators. It is best suited for battery powered devices installed in underground chambers. The use of the latest radio chip, high performing antennas and close software collaboration with the GSM providers are optimising communication to the GUTERMANN CLOUD. ZONESCAN HYDRO using NB-IoT significantly outperforms other LoRa Wan or 3G/4G devices due to:

- Typically 5+ year battery life
- Deep underground coverage with no need of external antennas or drilling holes into the chamber
- Firmware and configuration upgrades over NB-IoT network
- Lower communications costs
- User or factory mounted SIM card with multi network roaming option
- Outstanding typical daily read rates of ≥95%

GUTERMANN CLOUD Industry-leading cloud software for leak analysis

GUTERMANN CLOUD has a Google Maps™ and Street View™ based user interface which allows you to manage your entire leak detection infrastructure, import your own GIS pipe data and to analyse and process leak alarms. Parameters such as recording times, alarm thresholds and many more can be changed anytime.

An event management tool facilitates:

- Efficient workflow and the classification of your leak alarms
- Track active and repaired leaks
- Generation and distribution of detailed leak reports

The leak prediction reliability reaches a completely new level.

ZONESCAN HYDRO provides the required hardware for artificial intelligence, using a state-of-the-art CPU with additional cyber security.

Technical Specifications

Enclosure material:	100% stainless steel with IP68 protection
Dimensions:	Length 125mm/4.9", Ø 52mm/2.0"
Weight:	0.59 kg (1.3 lbs)
Temperature range:	-30° to +70°C (-22° to +158°F)
Communication:	Cellular (NB-IoT), various bands
SIM Card:	Nano, exchangeable
Battery:	Field replaceable Li-SOCl2 cell size C
Battery life:	Typically, 5 years, depending on configuration, NB-IoT coverage and temperature profile
Antenna:	High performance mono band extended antenna with magnetic base and RSMA connector. In shallow chambers, a flexible antenna can be directly mounted on the logger.

Cloud Software Features

✓ Browser-based cloud software with data hosted on secure servers of GUTERMANN's professional hosting partners
✓ PEN tested, ISO 27001 certification pending
✓ Automatic daily leak correlation
✓ Calculation of leak probability using leak score – ready for cloud AI
✓ Advanced spectrum analysis to avoid false leak alarms even in noisy environments
✓ Display of all historical sound histograms, frequency spectrums and correlation data
✓ Geospatial mapping of loggers and leaks (using Google Maps™ and Street View™ technology)
✓ Ability to import GIS and piping data in KML format
✓ Maintenance mode for real-time check-up of each logger
✓ Event ticket management with work-flow support
✓ Remote access possible from anywhere in the world
✓ On demand assist by GUTERMANN specialists to support difficult leak investigations
✓ Automatic upgrades of cloud software, Android app and firmware

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