LD6000 combi-detector

Leak detection and acoustic pipe location

BENEFITS IN PRACTICE:

- Acoustic and trace gas leak detection in only one device
- High-resolution colour graphic display with touchscreen functions
- **The only one of its kind in its class.** State-of-the-art smart function for even faster pinpoint leak detection (patent filed)
- Numerous preprogrammed common applications for quick access
- All filters and parameters can be configured individually
- Pipe detection mode
- Complies with all guidelines governing according to VBG 121 (when used with original headphones) (VBG - trade association safety regulations)
- Highly-sensitive, high-quality, robust precision microphone made in Germany

The LD6000 cutting-edge leak detection device sets new standards in the field of leak detection...

- ***Acoustic pinpoint leak detection***
- ***Pipe detection***
- ***Long-term measuring with logging function***
- ***Trace gas detection***
- ***All in only one device!***

Whether you need it for laying out pipes or to narrow down the search or pinpoint a leak – the highly-sophisticated LD6000 and the high-quality microphone, which both carry the hallmarks of a product made in Germany, allow you to determine even the tiniest of leaks and display the signal before it is processed.

Overview of the functions

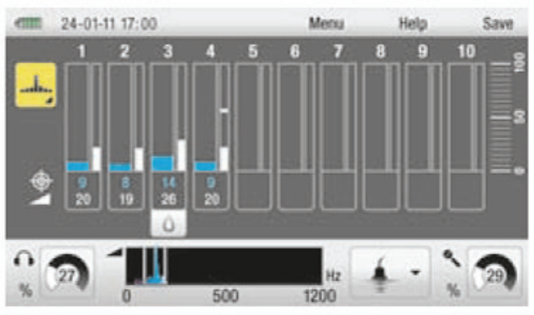
F&L mode – hear and see leaks

As many as ten measuring cycles are displayed either as a number or a two-segment colour bar – one for frequency and one for volume. The leak is there where the two segments are at their steepest.

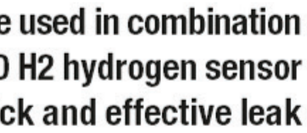
Smart mode

The state-of-the-art smart function is the only one of its kind in its class and has been filed for patent – the smarter way to find leaks.

Complex algorithmic calculations which are carried out unseen in the heart of the device provide you with a clear view of what you need to see: the exact position of the leak, revealed to you by means of a bar indicator which rises sharply where the leak is. It doesn't get any easier than that!



Long-term measurements



In order to be able to pinpoint the leak exactly, an onboard sound logger can be activated to log measurements carried out over a period of up to 60 minutes, which can then be used to determine or rule out any leaks with the help of the recorded measurement curve.

Pipe detection mode

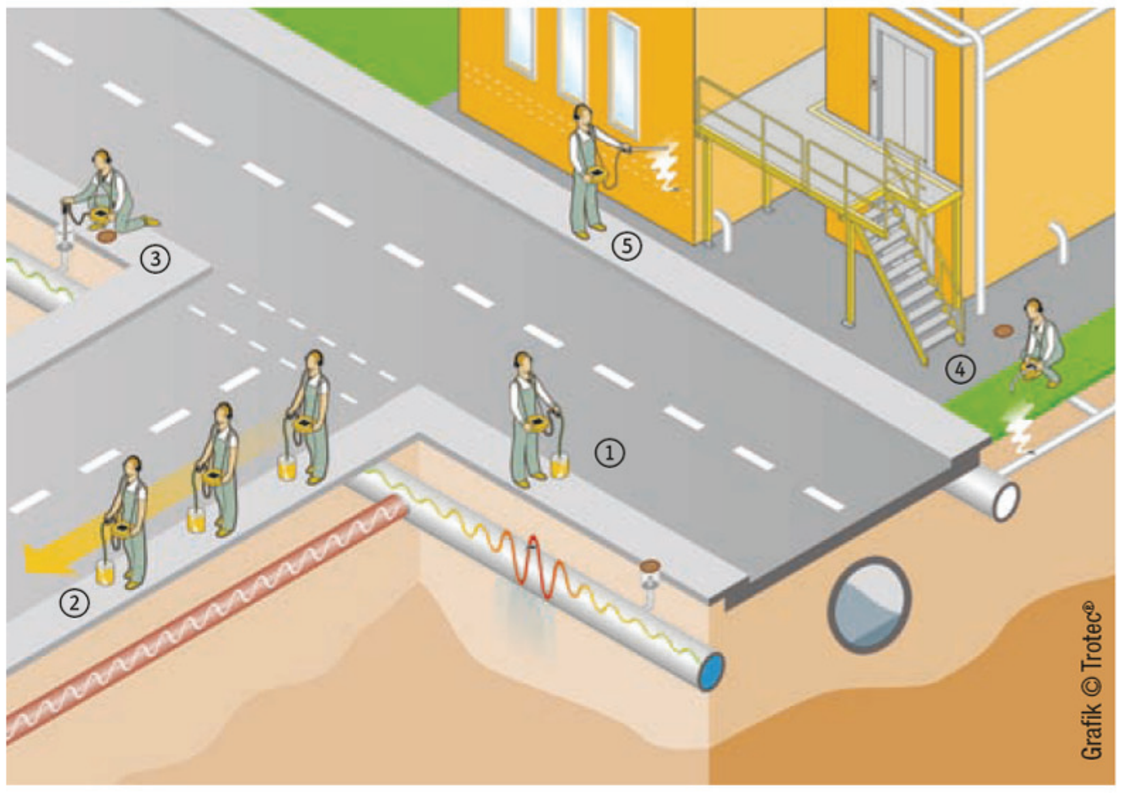
This mode is designed especially to detectplastic pipes which are subjected to ultrasound via the LD-PULS impulse generator.

Trace gas detection

Trace gas can be used in combination with the LD6000 H2 hydrogen sensor to carry out quick and effective leak detection in pipe networks and pipe systems in houses.

The trace gas used is hydrogen, which due to its specific structure is able to penetrate and pass through various materials like soil, concrete, tiles etc. easily before then being detected by the sensor at the places where it escapes through the system that is being inspected.

The LD6000 is able to show the exact concentration of hydrogen. The thresholds can be individually configured and an acoustic and optical signal warns the user when these thresholds have been exceeded.



The innovative, state-of-the-art LD6000 combi detector is suitable for a variety of different application and allows you to detect leaks using both the acoustic and trace gas method with only a single device.

❸ Acoustic pinpoint leak detection with geophone ❷ Detection and pipe laying, also for plastic pipes ❸ acoustic body sound measurement. ❹ trace gas leak detection in drinking water systems. ❺ leak detection and leak tightness inspection of pipe systems in houses and industrial pipe networks.

The principle of acoustic leak detection

Water which escapes from high-pressure pipes at high speed causes friction which in turn can be picked up in the form of sound waves.

The pipes themselves start to oscillate. The sound that is generated is transmitted through the pipes and can be transformed into audible sound with a **body sound microphone** at a distant contact point (valve, hydrant, armature).

In addition the water leaking out through the crack or hole in the pipe generates sound which is carried through the ground to the surface. This sound can be picked up by a **geophone** and transformed into audible sound.

Standard scope of delivery:

- LD6000 measuring device ①
- LD K – sound blocking headphones ②
- LD6000 BM – universal microphone with magnet adapter ③
- LD6000 DA – tripod adapter ④
- LD6000 VL – stick extension with tip ⑤
- LD6000 TG – shoulder strap ⑥
- PC connecting cable
- LD6000 carry case

Optionally available accessories:

- LD6000 BMW – wind protected ground microphone (with dead-man's button) ⑦
- LD6000 VK – connecting cable
- LD6000 DM – tripod magnet for LD6000 BMW ground microphone ⑧
- LD6000 H2 – hydrogen hand sensor ⑨
- LD6000 H2 – hydrogen ground sensor ⑩

Technical data	LD6000
Article no.	3.110.008.010
Operating mode	Acoustic leak detection (F&V, Smart, long-term measuring), pipe detection and trace gas leak detection
Measuring and device functions	Measuring modes for minimum level, averaged level, pulse wave measurements, simultaneous F&V analysis, logging function, automatic functions for setting filter frequencies and sensor sensitivity, memory preference for manual filter settings, sound level overmodulation protection, trace gas detection with concentration-dependent signal (optic and acoustic)
Controls	Either via touchscreen, keys or control dial
Amplification	120 dB low noise factor
Input impedance	1MΩ
Filter	Up to 256 can be configured individually (for stick sensor and ground microphone)
Display	Colour LCD (automatic illumination), 480 x 272 pixels
Battery check	Via micro-controller
Output impedance	≤ 10 Ω
Power supply	4 x batteries type LR14 C 1.5 V
Operating time	up to 14 h in non-stop operation, up to 40 h in normal operation
Connections	Bayonet nut connector (microphone / sensor), 6.3 mm jack plug (headphones)
Protection class	IP54
Housing	Aluminium, powder-coated
Temperature conditions	During operation: -5 °C to +55 °C; Storage: -25 °C to +65 °C
Dimensions approx.	L 210 x W 160 x H 60 mm
Weight approx.	1,050 g

Technical data	LD6000 H2 hydrogen hand and ground sensor	
Article no.	3.110.008.111	3.110.008.015
Response sensitivity	1 ppm H_2	
Measuring range	10 ppm H_2 to 20,000 ppm H_2	
Resolution	1 ppm H_2	
Reaction time	0.5 s	
Design	**Hand sensor** with flexible swan-neck (length 50 cm) and 160 cm connecting cable for LD6000 **Ground sensor** with two-part stick microphone (length approx.1 m) and rubber sleeve, approx. 200 cm connecting cable for LD6000	
Temperature conditions	During operation: -10 °C to +60 °C; Storage -20 °C to +60 °C	

LD-PULS pulse wave generator

This impulse generator is excellently-suited for use with the LD6000 measuring device.

The LD-PULS is not affected by electric cables and can detect non-metallic water pipes up to a depth of 2 metres without having to close off any part of the network or system.

The LD-PULS generates up to 60 oscillations per minute which under favourable conditions can spread out as far as 600 m into the pipe before being detected by a ground microphone.

This means that this method can be used to compile, complete or check plans and pipe layouts or networks.

Standard scope of delivery:

- LD-PULS – pulse wave generator built into sturdy case with integrated rechargeable battery
- Separate power supply for LD-PULS

Optionally available accessories:

- LD-PULS repair set containing an Allen key and 4 valves

Technical data	LD-PULS
Article no.	3.110.008.012
Minimum pressure	2 bar (29 psi) (minimum pressure of the service pipes)
Operating time	Approx. 12 hours
Pulse sequence	Approx. 60 per minute
Connection	1-inch GEKA high pressure coupling
Power supply	Internal battery (rechargeable) or 230V AC
Weight	4.2 kg