

THE FLUIDION CHEMICAL ANALYZER

The autonomous microfluidic lab-on-chip platform for water quality monitoring!

fluidion introduces the new Chemical Analyzer, a complete microfluidic lab-on-chip that allows complex multi-parameter chemical measurements to be performed in-line in the field. Fully autonomous on a battery charge and operational right out of the box, the Chemical Analyzer requires minimal logistics, allowing immediate data visualisation on client or cloud servers.



An automated lab-on-chip chemical analysis system

The in-line Chemical Analyzer from *fluidion* is a unique highly miniaturized system capable of performing multi-parameter chemical analysis of drinking water using approved chemistry protocols and the latest microfluidic technology, in a fully autonomous and unattended manner. The system uses only microliters of sample for each measurement, which allows it to operate continuously for weeks while generating minimal waste. It can log the pH of water and accurately quantify a number of chemical compounds such as Chlorine, Nitrites, and/or Ortho-phosphates, sending data wirelessly to the operator cell phone and remote cloud and/or client-based servers.

Simple installation and maintenance

The Chemical Analyzer can be installed in any facility or field location in under 15 minutes, and is fully operational out of the box. Integrated is its own miniaturized pump so it does not require a pressurized line. Operating on rechargeable batteries, it can provide measurements even in remote locations far from the power grid. A floating version of the Chemical Analyzer is also available (optional), which can be installed directly inside a water tank, thus obviating the need for expensive infrastructure (piping, pumps, solar panels, cabinets, communication equipment etc.) The maintenance procedure is quick, and consists of swapping battery and reagent every 4-12 weeks (depending on measurement frequency), and emptying the waste reservoir. Field calibration is not required.

A fast and reliable response

The Chemical Analyzer uses wet chemistry and multispectral optical detection, similar to the standard laboratory methods, thus enabling a reliable measurement to be performed with minimal interference and no requirement for field calibration. Data is transmitted in real time for processing and visualization, leading to fast operational response times for optimal tank management.

Enjoy the fluidion approach to chemistry!

PRELIMINARY TECHNICAL SPECIFICATIONS

Dimensions	10.2" X 9.6" X 6.6"	Autonomy	Min 30 days @ 2 measurements/hour
Weight	8 lbs	Measurement time	Parameter dependent 1-30 min
Total Cl range	0-4 mg/L	Environmental conditions	0°C-40°C
Nitrite range (NO₂-N)	5-100 µg/L	Materials	PP, PE, PEEK, PFA, SST
pH range	5-9	Antenna	Internal / External
Battery type	Li Ion	Communication	GSM/GPRS, USB, secure web interface (optional)

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Operational description

The Chemical Analyzer is equipped with a water inlet, and it includes a miniaturized pump to direct the sample through the system and out to the Water Tank via the outlet. Several microliters of the water sample are routed through an internal microfluidic analysis bypass, where the chemical measurement is performed. The resulting waste is collected in a small external waste tank. The system is housed inside an IP67-certified housing, which makes outdoor installation possible. Communication is performed via the GSM antenna, which can be internal or external depending on application.



System configuration and data communication



The Chemical Analyzer uses a wireless communication protocol based on the GSM network for both system configuration and data management. The system can be fully configured from an operator cell phone using intuitive SMS-based commands, and can generate cell phone alerts. Real-time data is sent via the GSM network to a telecomm server, which pushes data to the fluidion cloud-based data management and visualization server (server installation in client datacenter is possible). In case there is no cell coverage in the installation area, the system can be pre-configured from a PC via the USB interface, and data can be sent via serial protocols such as RS232 or I2C.

fluidion is a high-technology company that designs and manufactures innovative sample collection and chemical/microbiological in-line analysis instruments for water quality monitoring and environmental applications. The core technology relies on fluidion's proprietary MEMS and microfluidic systems.