THE FLUIDION ALERT SYSTEM (BACTERIAL ANALYZER)

The industry's first fully-automated in-situ microbiology lab

The ALERT System is a field-deployable, autonomous and remotely controllable analyzer for the measurement of *E.Coli* and other bacteria. Suitable for source water and environmental monitoring, it performs seven discrete measurements with data transmitted wirelessly. Installed in-situ, it enables rapid response to contamination, quantifies bacterial content and provides automatic alerts in real-time.

A fully-automated in-situ microbiology lab

The ALERT System from *fluidion* is a unique analyzer capable of automatic, remote, contamination-free sample collection in-situ. The device then performs automatic incubation, optical monitoring (multispectral absorbance and fluorescence) and wireless data transmission, enabling rapid bacterial enumeration (*E. coli* or enterococci). By sampling and starting the measurement protocol remotely, the ALERT System greatly simplifies measurement logistics by eliminating the need for sample collection and refrigeration during transportation prior to standard laboratory measurements, thus minimizing errors due to sample degradation between collection and measurement.

On-demand remote analysis in any environment

The ALERT System can be used for quantifying *E. coli* or enterococci in a number of environments, such as lakes, rivers, coastal waters, storm water runoff, irrigation canals, catchment sites or water treatment plants, and for obtaining bacterial concentration time series. It can float like a buoy or be mounted on a rail and, can operate without an external power supply in harsh environments under the most unforgiving weather conditions. The system is quick to install and can be remotely controlled from a cell phone or web interface, transmitting the data wirelessly. Capable of carrying out seven measurements on a battery and reagent charge, with maintenance of less than 30 minutes in the field, full water quality sampling and monitoring is considerably simplified while minimizing cost and time-to-result.

A fast and reliable response

Fully validated scientifically[1,2], the ALERT System provides a quantified response in terms of bacteria/100 mL present in the sampled water. The system implements *fluidion*'s multispectral optical detection technology, which ensures consistent measurements every time and fast time-to-result. Triggered via a mobile phone or from a web interface, the analyzer measures a wide range of concentrations and can send out automatic alerts if the threshold is exceeded, in order to improve operator responsiveness.

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 patented fluidic systems.

www.fluidion.com

Contact us:
Email: contact@fluidion.com
fluidion (HQ) Paris, FR
✆ +33 1 82 39 02 90

fluidion in Los Angeles (USA)
✆ +1-626-765-5580

TECHNICAL SPECIFICATIONS

Dimensions	*L: 36 cm, D: 25 cm*	**Total measurements**	*7 per charge*
Weight	*12 kg*	**Response time**	*2 h-12 h*
Measurement trigger	*On-demand, pre-program, inline sensor (optional)*	**Environmental conditions**	*0 °C - 40 °C*
Parameters	*E. Coli, Total coliforms or Enterococci*	**Communication**	*GSM/GPRS, LTE, USB, secure web*
Measurement range	*4 CFU – 5×10^5 bacteria/100 mL*	**Power**	*Li-ion battery*
System materials	*PP, PE, SST, PVC, glass, resin*	**Autonomy**	*2-4 weeks depending on operational mode*

ALERT cell phone and web interface

The ALERT System uses a wireless communication protocol based on the cell phone network for both system configuration and data management. Alternatively, the system can operate on long-range radio networks using the LoRaWAN protocol (optional). The system can be configured from an operator cell phone using intuitive SMS-based commands and can generate automatic alerts. Real-time data is sent via the cell network/LoRa 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 and LoRaWAN is not installed, 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 RS485 (optional).

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[1] ANGELESCU, D, HUYNH, V., HAUSOT, A., YALKIN, G., PLET, V., MOUCHEL, J.-M., GUERIN-RECHDAOUI, S., AZIMI, S. AND ROCHER, V. (2018) Autonomous system for rapid field quantification of E. Coli in surface waters. Journal of Applied Microbiology doi:10.1111/jam.14066

[2] LOEWENTHAL Matthew, NEWTON Andrew D., WRIGHT Steve, CAMPBELL Claire, CROSSLEY Andy, HAUSOT Andreas, ANGELESCU Dan E. (2018) Rapid microbiology field instrumentation: Source tracking in sensitive areas, Institute of Water Magazine, Q3, pp. 86-87.

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