



NITRATE & NITRITE SENSOR

Real-Time | Accurate | Simple

Solving Technology Gaps in RAS

20 June 2023

Questions and Answers

Q1. How often do you need to recalibrate the analyser?

The analyser is calibrated in factory prior to release and is configured based upon the desired application. The unit is designed to not require calibration or recalibration in the field. Remote and automated prognostics on the analyser monitor chromatographic parameters to ensure accuracy and precision is maintained.

Q2. Is this true real-time monitoring. What is your maximum sampling frequency?

The maximum sampling frequency of the analyser is every 10 minutes. However, it should be noted that for most applications, hourly sampling or sampling every number of hours effectively captures the macro trends of most systems and processes.

Q3. What is the impact of salinity on traditional methods, such as direct UV probes?

UV probes do not selectively and simultaneously detect for nitrate and nitrite. They are often impacted by matrix effects and interferences present within natural waters, as a range of dissolved constituents absorb light within the UV region. These include inorganic constituents, such as iodate and hydrogen sulphide, as well as dissolved organic matter. All other UV based devices must use algorithms and matrix specific calibration when attempting to estimate nitrite and nitrate concentrations. UV probes are also very susceptible to interference with fluctuating salinity due to high concentrations of Cl^- and Br^- in seawater, which have strong UV absorbance in the NO_3^- and NO_2^- absorption range. For these reasons, such UV probes are not well suited for robust, continuous *in-situ* analysis within RAS. Aquamonitrix® uniquely combines and uses matrix elimination, ion separation and UV-LED detection to deliver selective and simultaneous measurement of nitrite and nitrate independent of salinity.

Q4. Can Aquamonitrix® be used for WWTP activated sludge systems monitoring nitrate in aeration basins?

Yes, Aquamonitrix® is readily used within WWT facilities to deliver continuous nitrite and nitrate data from final effluent and from aeration basins. When monitoring from aeration basins an Aquamonitrix® pre-treatment settler system is combined with the analyser to deliver continuous concentration data from the aeration basin. For the first time, real-time accurate nitrite and nitrate data from the aeration basin are available which opens new possibilities for improved aeration control and N₂O emission mitigation from WWTPs.

Q6. What is the maintenance cost?

The maintenance cost depends on the analysis frequency, the sample matrix and whether the user wishes to complete the maintenance themselves or requires a third-party service company. As an example, based upon typical Aquaculture monitoring applications analysing at a sampling frequency of 1 sample every hour, one consumable pack is needed every 6 months.

Q7. What reagents are used for the measurement itself?

A single mobile phase is used, which is simply dilute sodium chloride solution.

Q8. Can it be used in a BioFloc system?

Yes, Aquamonitrix® is routinely deployed within the most challenging of water matrices ranging from wastewater effluents to aeration tanks. The unit is applicable to BioFloc systems.

Q9. Can the unit be accessed remotely?

Yes, the unit is designed to be accessed remotely. All concentration data and system diagnostics are accessible via our Datamonitrix® IoT platform. Instant data communication can also be provided through Modbus RS-232, RS-485, or 4-20 mA as needed.

Q10. What is the operation range and accuracy?

The applicable analytical ranges for nitrite and nitrate are provided below. Aquamonitrix® is designed to deliver lab-quality analytical performance in the field and has attained an ISO 14034 Environmental Technology Verification (ETV) accreditation for performance when *in-situ* monitoring within wastewater environments.

Nitrate: 0.6 - 500 mg/L as NO₃⁻ | 0.14 to 113 mg/L as N

Nitrite: 0.05 - 100 mg/L as NO₂⁻ | 0.01 to 23 mg/L as N

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View the webinar recording here: <https://www.youtube.com/watch?v=SqbXA9vj4SA>

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