

# Orion 8010cX Ammonia Analyzer

The Thermo Scientific™ Orion™ 8010cX Online Ammonia Analyzer is based on the EPA-approved standard method of salicylic acid spectrophotometry, which is reliable, traceable and does not require toxic reagents.

With a state-of-the-art industrial design that boasts an intuitive user interface and an anti-interference measurement process algorithm, the Orion 8010cX Ammonia Analyzer can be utilized in various applications to meet regulatory compliance and process control requirements.

Part of the flexible Thermo Scientific™ Orion™ 8000 Series Analyzer Platform that enables monitoring for multiple parameters through one simple interface, the Orion 8010cX Analyzer delivers high performance, ease of setup and reliability.

## Market

- Municipal wastewater
- Drinking water
- Surface water
- Industrial wastewater

## Applications

- Municipal sewage: online monitoring, sewage treatment facility influent and effluent monitoring
- Surface water: water sources to include lakes, reservoirs and other online monitoring
- Drinking water: quality control of disinfection process and online monitoring of drinking water
- Industrial wastewater: process control



The Orion 8010cX Online Ammonia Analyzer

## Overview

Ammonia is one of the most common pollutants in our waterways. Its direct impact on the environment and indirect harm (such as eutrophication) caused by the contribution of nitrogen after its discharge into natural water bodies are a source of concern. Many government agencies have strict regulations around the discharge of ammonia, which is one of the main monitoring indicators in sewage discharge standards. As a result, ammonia measurements are included in one of two aggregate control targets, which were introduced 15 years ago in China. In order to meet the discharge standard, in addition to the emission target control monitoring of the discharge outlet, each sewage discharge facility must strictly control the ammonia concentration during each stage of the sewage treatment process in order to adjust the relevant process parameters for treatment. Without this in place, it is extremely difficult to meet final discharge requirements.

Online detection technology enables organizations to obtain ammonia monitoring data quickly and accurately and provides the foundation for ammonia emission supervision. However, accurate and reliable monitoring instruments must meet multiple needs and requirements. When dealing with complex sewage conditions, the equipment must withstand the pollution from sewage to the equipment, and, at the same time, it must exclude these interference factors and provide accurate data. In addition to meeting these requirements, the Orion 8010cX Online Ammonia Analyzer is equipped with functions such as automatic range switching, calibration and cleaning to ensure long-term and stable unattended operation of the instrument.

Our new ammonia analyzer is designed to provide accurate and stable online ammonia detection solutions for complex applications. The instrument combines an EPA-approved measurement method, multiple features, an intuitive menu interface and low maintenance all of which provide application flexibility and an enriching user experience.

### **Advantages**

- The aim is to provide accurate and reliable measurements to meet emissions regulations and process control requirements
- Automatic range switching function ensures data validity and accuracy
- Multiple software functions, intuitive graphical operation interface, easy to understand and operate
- Incorporated is a special test flow design and an algorithm to remove interferences (color and turbidity, etc.)
- The analyzer is compact and robust
- Modular design, IP65 protection class chassis and long-life key components to ensure long-term stable operation
- Low operating cost, low maintenance requirements - automatic calibration function, self-cleaning function
- Low reagent consumption and reduced chemical waste liquid production

### **Orion 8010cX Online Ammonia Analyzer specifications**

1. The salicylic acid colorimetric method for the measurement of ammonia is a method approved by the EPA.
2. Measurements can be performed in continuous or interval mode for additional flexibility.
3. Five measurement ranges of 0.02–2 mg/L, 0.1–15 mg/L, 0.5–30 mg/L, 2–100 mg/L and 30–500 mg/L are standard. The instrument can switch ranges without recalibration. The working range can also be selected manually in the menu interface.
4. The analyzer uses low water sample volumes in harsh working environments, reducing sample waste.
5. Multi-featured menu with a user-friendly interface.
6. The analyzer has multi-input and output capability, including 2 digital inputs, 2 programmable relay outputs, 2 isolated 4–20 mA outputs and standard MODBUS output. Digital inputs and programmable relay outputs can be used to control external pumps, valves and pretreatment. The MODBUS register addresses can satisfy routine data transmission and allows customers to obtain the specific state of the instrument remotely.
7. The instrument has an automatic calibration function to reduce maintenance cost. Once the calibration is complete, the analyzer is back on-line.
8. Auto clean function allows the entire fluidic system to remain clean, while generating a small amount of chemical waste (<5 L per month).
9. Analyzer with high-precision injection pump sampling system, advanced anti-interference measurement process and algorithm design to ensure accurate measurement. Over 1 million test cycles, the robust design of the ERV valve ensures long-term stability of the instrument.
10. Lifecycle of key components and reagent management function to remind customers in advance of necessary maintenance or reagents replacement.
11. The analyzer can be wall-mounted or panel-mounted.
12. IP65 protection level enclosure helps protect the analyzer from harsh environments.

13. Low operating costs and waste liquid production:  
2-hour test interval, reagent can be used for over 100 days, monthly waste liquid quantity is only 5 L.
14. The analyzer has been certified by cTUVus to comply with UL 61010-1, CSA C22.2 No. 61010-1. The analyzer passes the EMC requirements for FCC Class A, ISED's ICES-1, and is registered under Australia's RCM and South Korea's KC requirements.
15. The analyzer meets European Community (EC) directives 2014/30 / EU and 2014/35 / EU, as well as REACH directives.
16. The analyzer also has China CPA certification.
17. The analyzer has a leak detector installed to prevent fluid build-up resulting from a leak.

Orion 8010cX Online Ammonia Analyzer specifications			
Auto range	Accuracy	Repeatability	Limit of detection (LOD)
0.02–2 mg/L	3% ± 0.04 mg/L	3% or ± 0.02 mg/L	0.02 mg/L
0.1–15 mg/L	3% ± 0.1 mg/L	3% or ± 0.05 mg/L	0.1 mg/L
0.5–30 mg/L	3% ± 0.2 mg/L	3% or ± 0.1 mg/L	0.5 mg/L
2–100 mg/L	3% ± 0.3 mg/L	3% or ± 0.3 mg/L	1 mg/L
30–500 mg/L	5% ± 4 mg/L	3% or ± 1 mg/L	5 mg/L
Resolution	A reading of <100 mg/L is 0.001 mg/L When reading ≥100 mg/L, it is 0.01 mg/L		
Measurement interval	Continuous, interval (configurable start time)		
Analysis principle	Salicylic acid method		
Environmental			
Ambient operating temperature	5–40°C (41–104°F)		
Maximum humidity	95% RH has no condensation		
Sample equipment			
Sample flow	50–1,000 mL/min		
Sample pressure	0.2–5 bar (3–73.5 psi)		
Sample temperature range	0–50°C (no ice present) / (32–122°F)		
Sample inlet/outlet connector	Flow cell inlet G1/2 female thread Flow cell G1/2 female thread		
Total dissolved solids (TDS)	≤600 mg/L		
Total suspended solids (TSS)	<30 mg/L		
pH	4–9		
Color (platinum-cobaltic method)	<180°		
Installation			
Enclosure protection class	IP65		
Enclosure dimensions (W x H x D)	450 mm x 737 mm x 322 mm (17.7 inches x 29 inches x 12.7 inches)		
Shipping weight	40 kg (88 lbs)		
Electrical			
Power requirements	100–240 VAC, 100 W, 50/60 Hz		
Data and control			
Current loops	Two isolated 4–20 mA, Maximum load 900 Ω		
Relay	Two relays, 2 A @ 250 VAC		
Digital communication	RS485, MODBUS (standard), PROFIBUS (optional)		
Regulatory			
Safety	cTUVus, CE: EN/IEC 61010-1		
EMC	FCC (Class A), ICES, CE: EN/IEC 61326-1, RCM, KC		
Environmental safety	CE-RoHS, REACH, China RoHS, Prop 65		

Certification:     

## Orion 8010cX Online Ammonia Analyzer global support

With 50 years of experience in supporting our customers around the world, our water quality experts and customer support team will respond quickly, comprehensively and professionally to any problem.

We coordinate and work closely with you to identify your needs and ensure that you use the analyzer in a cost-effective manner. For more details, please visit [thermofisher.com/orion8000](http://thermofisher.com/orion8000)

### Ordering information

Description	Cat. No.
Orion 8010cX Online Ammonia Analyzer	8010cX
Orion Ammonia Reagent, Including Reagent 1, Reagent 2, Reagent 3	8010RE
Orion Ammonia Standard Solution, 2 mg/L	8010002
Orion Ammonia Standard Solution, 5 mg/L	8010005
Orion Ammonia Standard Solution, 30 mg/L	8010030
Orion Ammonia Standard Solution, 100 mg/L	8010100
Orion Ammonia Standard Solution, 500 mg/L	8010500
Accessories	
Refrigerator (220V AC) for reagent 2	8010RFG220
Refrigerator (115V AC) for reagent 2	8010RFG115
Profibus communication card	8010PCM
Maintenance item	
Orion 8010cX Annual Maintenance Kit	8010MK



For more details, please visit [thermofisher.com/orion8000](http://thermofisher.com/orion8000)