

Real-time ammonia results for effective corrosion control

Ensure boiler reliability and maximize power production efficiency

The Thermo Scientific™ Orion™ 2110XP Ammonia Analyzer provides continuous, direct and precise measurements for the control and optimization of boiler ammonia levels. Help reduce operational costs while producing the highest purity steam with ease of use for optimal results.

The Orion 2110XP Analyzer shows the most sensitive changes in ammonia concentration for condensate and feedwater optimization and control. Often plants will use conductivity or pH to control ammonia; however these methods are negatively influenced by other ionic species from the boiler treatment chemicals in the sample. The all-in-one analyzer system analyzer maintains sensitivity and accuracy at high and low levels to produce rapid results with the utmost confidence.

Advantages

- Accurate detection allows precise ammonia control and maintains proper chemical feed levels without the guess work or excessive operating cost
- Repeatable and verifiable ammonia measurements using superior Orion ammonia electrode technology for the highest level of performance available
- Designed for ammonia specificity, the unique chemistry provides unsurpassed results without the pitfalls of pH and conductivity “bottom out effects”
- Easy to operate and step-by-step calibration process, ensuring a successful calibration the first time



Markets

- Power
- Pulp and paper
- Semiconductor

Applications

- Boiler feedwater



Orion 2110XP Ammonia Analyzer

Global support

With experience that comes from supporting our customers for over 50 years throughout the world, our water quality specialists and customer support teams offer a quick, thorough and professional response to any problem encountered.

Product Specifications

Specification	Description
Specific ion measurements	Range: 0 to 10 ppm
	Resolution: 1, 2 or 3 digits
	Accuracy (with DKA cal): $\pm 5\%$ or 0.03 ppm, whichever is greater, at 20°C and 35°C
	Interferences: Level of interfering ions causing a 10% error at 0.5 ppm NH_4^+ :
	K ⁺ 0.5 ppm Na ⁺ 30 ppm Ca ⁺² 600 ppm
	Reagent: Acetic acid
Response time	Initial response within 15 seconds, reach 90% of reading within 1 minute of injecting a standard solution
Units displayed	ppb, ppm (auto ranging), mV, temperature
mV measurement	Range: ± 1999.9 mV
	Resolution: 0.1 mV Relative accuracy: $\pm (0.5 \text{ mV} + 0.1\%)$
Temperature measurement	Range: -10 to 120°C
	Resolution: 0.1°C
	Relative accuracy: $\pm 0.5^\circ\text{C}$
	Continuous temperature readings: Yes ATC probe connection detection: Yes
Sample conditions	Temperature: 5 to 45°C
	Total alkalinity: Less than 250 ppm CaCO_3
	Inlet pressure: 8 to 100 psig
	Flow rate: 40 mL/min nominal set by pressure regulator
	Sample inlet: 1/4" NPTF tube fitting Sample drain: 3/4" NPT male
Display	Custom backlit LCD with temperature, concentration, mV, error codes and menu driven prompts
Inputs	ATC: 2 x NTC 30K (second ATC with second parameter card)
	Specific ion input & reference: Potentiometric

Focus on user benefits

We work closely with you to define your needs, and ensure you are using the analyzer in a way that improves your bottom line. For more information, contact your local water quality specialists.

Outputs	Analog output: Galvanically isolated
	Number of analog outputs: 2, programmable sensing and temperature in any order
	Output selections: 0 - 20 mA or 4 - 20 mA
	Programmable range: Yes
	Log & linear output options: Yes, user selectable
	Alarm outputs: 3
	Number of relay outputs: 3
	Maximum relay load: 250 VAC, 5 A, 30 VDC
	Minimum value alarm: Yes
	Maximum value alarm: Yes
Physical size	Electronics: 144 x 144 x 187 mm
	Entire system: 65 x 45 x 27 cm (26" x 17" x 11")
	Fits on 1820AO panel mounting footprint
Power	Input: 100 to 120 V, 200 mA or 200 to 240 V, 100 mA, 50 / 60 Hz
Software features	Self-test & diagnostics: Yes
	Real time clock: Yes
	Meter serial number: Yes
	Password protection: Yes
	Programmable alarms: High, low, error, calibration/offline Reset function: Yes
Meter features	Startup reset: Yes
	Hardware calibration function: Yes
	Non-volatile memory: Yes
	Battery backup: Yes
Electronics	Expansion bus: Serial communication & power
Regulatory and safety	Waterproof enclosure: IP66 & NEMA 4X
Environmental operating conditions	CE, CSA, FCC Class A limits
	Ambient operating temperature: 5 to 45°C
	Relative humidity: 5 to 95% non-condensing
Case material	Storage temperature: -20 to 60°C
	Storage humidity: 5% to 95%, non-condensing
Shock and vibration	Valox 364
	Vibration, shipping/handling: 0 - 60 Hz @ 1 G Load
	Shock, drop test in packaging: 36" on all sides and corners

Ordering information

Description	Cat. No.
Ammonia analyzer packages	
Ammonia Analyzer with Protective Enclosure Package –includes ammonia analyzer with protective enclosure, ammonia electrode (100047), reference electrode (210056), ATC probe (2100TP), ammonia standard solution kit (181040), CD user guide and options kit	2110XPEN
Ammonia Analyzer with Protective Enclosure Package –includes ammonia analyzer with protective enclosure and integral grab sampler, ammonia electrode (100047), reference electrode (210056), ATC probe (2100TP), ammonia standard solution kit (181040), CD user guide and options kit	2110XPENG
Ammonia Analyzer Instrument Only Package – includes ammonia analyzer, ammonia electrode (100047), reference electrode (210056), ATC probe (2100TP), ammonia standard solution kit (181040), CD user guide and options kit	2110XP
Reagent kits and accessories	
Ammonia Consumables Kit – for one year operation, includes (2) x 2 L bottles acetic acid reagent (181130), (2) x 4 ft diffusion tubing assemblies with O-rings (150060), reagent bottle adapter (2110RBA), (1) ammonia standard solution kit (181040), (1) ammonia electrode (100047), (1) reference electrode (210056), (5) x 2 oz bottles reference filling solution (181073), (1) O-ring kit (21100K), (1) restriction tube assembly, (2100RT), (2) x 60 micron inlet filters, (1) filter gasket (181127) and (1) set of 100 pipette tips (204846-001)	211050XP
Reagent-less Ammonia Consumables Kit – for one year operation, includes (2) x 1 L empty bottles for use with ammonia reagent (181130), (2) x 4 ft diffusion tubing assemblies with O-rings (150060), reagent bottle adapter (2110RBA), (1) ammonia standard solution kit (181040), (1) ammonia electrode (100047), (1) reference electrode (210056), (5) x 2 oz bottles reference filling solution (181073), (1) O-ring kit (21100K), (1) restriction tube assembly, (2100RT), (2) x 60 micron inlet filters, (1) filter gasket (181127) and (1) set of 100 pipette tips (204846-001)	211050XPF*
Acetic Acid Reagent – for 6 months operation, includes (1) x 1 L bottle acetic acid reagent (does not include tubing, purchase 150060 separately) (181060)	181030
Diffusion Tubing Kit – (1) x 4 ft diffusion tubing assembly with O-rings	150060
Diffusion Tubing Only – (1) x 100 ft thick-walled diffusion tubing (does not include O-ring, purchase 21100K separately)	150063
Calibration Kit with Carrying Case – 0.5 mL pipette (204847-001), set of 100 pipette tips (204846-001), (1) ammonia standard solution kit (181040), (1) inlet filter, wash bottle and (1) x 4 ft length diffusion tubing (150060)	2110XPCAL
Ammonia Standard Solution Kit –includes (1) x 2 oz bottle of standard 1 (191 ppm) and (1) x 2 oz bottle of standard 2 (1920 ppm)	181040

*For International Use Only

Ammonia electrodes and accessories	
Ammonia Electrode Kit –includes (1) ammonia electrode (100047), (1) reference electrode (210056) and 1 x 2 oz bottle reference filling solution (181073)	2110XPEK
Ammonia Sensing Electrode – for use with 2110XP	100047
Ammonia Reference Electrode – for use with 2110XP, includes 1 x 2 oz bottle reference electrode solution (181073)	210056
Reference Electrode Filling Solution – (5) x 2 oz bottles, for use with reference electrode (210056)	181073
Electrode Cables – (2) x 1 meter cables, for 100049 and 100056 electrodes	2100EC
Electrode Cables – (2) x 3 meter cables, for 100049 and 100056 electrodes	21003M
2100 Series Automatic Temperature Probe – with ground (30 kΩ)	2100TP
2100 Series Automatic Temperature Probe – with 10 meter extension cable and ground (30 kΩ)	2001XT
Field replaceable units Refer to user guide for complete list	
2100 series enclosure	2100EN
Fluidics panel assembly only	2110FP
2110XP electronics faceplate	2110XPEP
Inlet valve assembly	2100NV
Needle valve assembly	2100BV
Regulator assembly	2100RG
Flow meter assembly	2100FM
Restrictor tube assembly	2100RT
Reagent bottle adapter assembly with diffusion tube assembly	2110RBA
Air pump assembly	2100PA
Air filter assembly	2100AF
Check valve	2100VC
Tygon™ tubing (4 ft)	2100TG
Power supply assembly	2100PS
Fuse kit assembly 115 V	2100FK110
Fuse kit assembly 230 V	2100FK230
O-ring kit, includes O-rings for reagent bottle and diffusion tube assembly	21100K
(2) inlet sample filters and gaskets	181170
Service Kit – includes (1) electronic faceplate (2110XPEP), (1) air pump assembly (2100PA), (1) regulator assembly (2100RG), (2) electrode cable with gland assemblies for sensing and reference electrodes, (1) power supply assembly (2100PS), and (1) fuse kit assembly (2100FK115 and 2100FK230)	2110XPSK

Find out more at thermofisher.com/processwater

ThermoFisher
SCIENTIFIC