

Managing corrosion in steam generating systems remains a consistent challenge, costing the power industry billions of dollars each year. Thermo Scientific offers real-time ammonia results for effective corrosion control to ensure boiler reliability and maximize power production efficiency.

Thermo Scientific Orion 2110XP Ammonia Monitor



Superior performance and ease of operation

The NEW Thermo Scientific Orion 2110XP ammonia monitor provides continuous, direct and precise measurements for the control and optimization of boiler ammonia levels. Reduce operational costs while producing the highest purity steam with ease of use for results that only the Orion 2110XP can provide.

The Orion 2110XP indicates 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. Our monitor maintains sensitivity and accuracy at high and low levels to produce rapid results with the utmost confidence.

The 2110XP provides stable and drift-free measurements with minimal maintenance and eliminates the need for frequent calibrations, saving you time and money.

Advantages:

- Accurate detection allows precise ammonia control with confidence - maintain 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 across a wide range without the pitfalls of pH and conductivity "bottom out effects"
- Easy to operate and calibrate - the Orion 2110XP walks you through the step-by-step calibration process, ensuring a successful calibration the first time and every time



Markets

- Power
- Pulp and Paper
- Semiconductor

Applications:

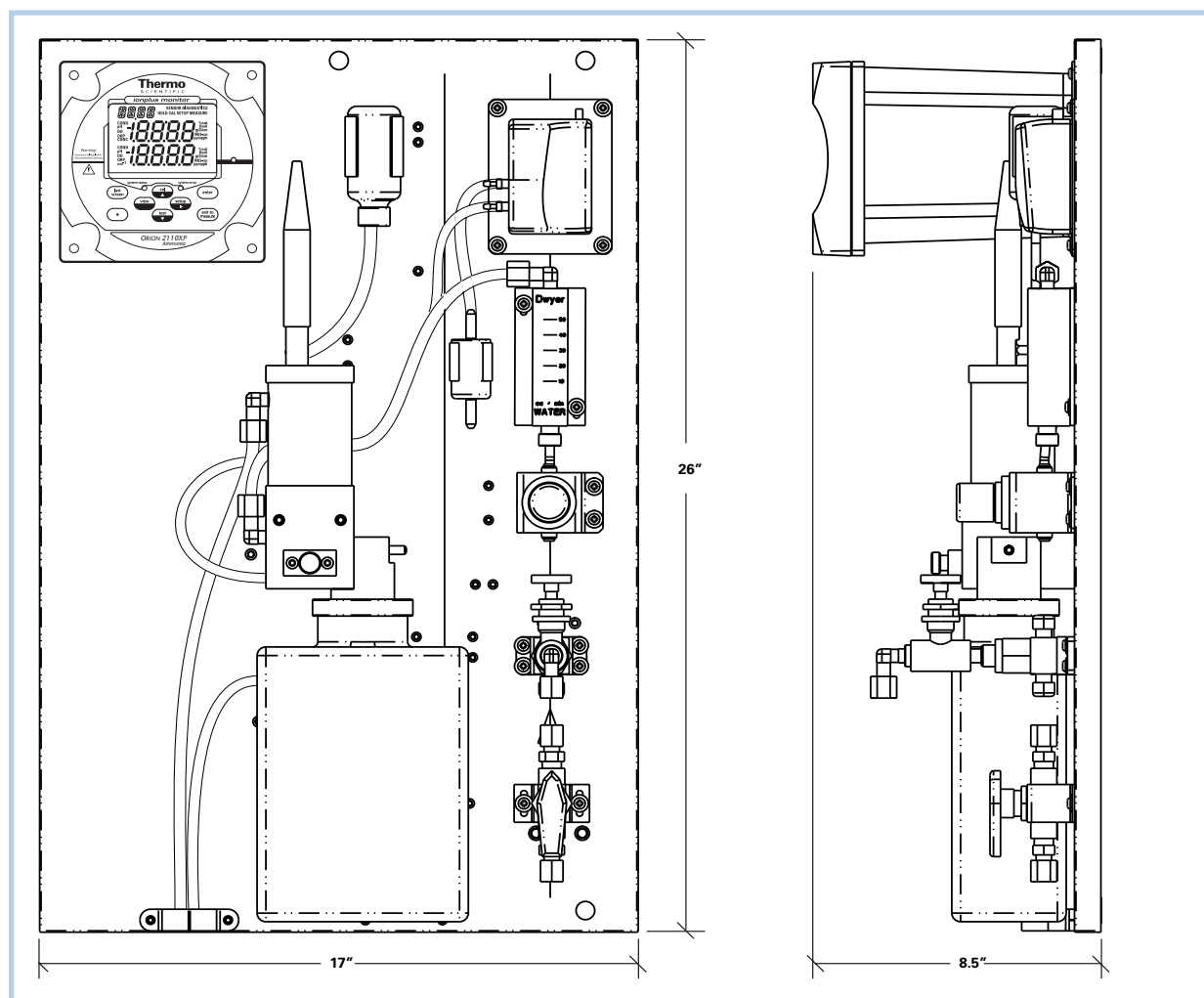
- Boiler Feedwater
- Condensate

Benefits

- Ammonia detection range of 0 to 10 ppm for the most direct, accurate and precise results available
- Continuous online measurement ensures real-time information for optimum control of the ammonia feed without excessive operating costs
- Selective and sensitive for ammonia, our system surpasses the performance of other systems that have the limitations of pH and conductivity to track real-time boiler ammonia levels
- Extremely easy to use while maximizing uptime - simple step-by-step scrolling instruction for setup, calibration, operation and diagnostics menus
- Measurements at a glance from any distance for even the lowest light conditions using the large operator friendly visible backlit display
- Fastest most stable measurements, limiting unnecessary calibration cycles due to drift with superior Orion ammonia electrode technology
- Minimize operator time and maintenance without use of complicated moving parts or pumps that often require frequent attention and expensive spare part expenditures
- Extend reagent consumption up to 2 months using our uniquely simple reagent addition design to condition the sample pH and suppress interfering ions for optimal measurement performance
- Advanced user interface with detailed calibration, measurement and diagnostic logs for early diagnostic and action level notification, configurable for your facilities desired level of performance- all password protected if preferred
- Easy installation has your plant up and running in minutes - the Orion 2110XP is retrofitable to the Orion 1810A0 panel mounting footprint

Dimensions

Thermo Scientific Orion 2110XP installation dimensions shown without optional protective enclosure.





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Specific Ion Measurements	<p>Range: 0 to 10 ppm</p> <p>Resolution: 2, 3 or 4 digits</p> <p>Accuracy (with DKA cal): ± 5% or 0.03 ppm, whichever is greater, at 20 °C and 35 °C</p> <p>Interferences: Level of interfering ions causing a 10% error at 0.5 ppm NH₄⁺: K⁺ 0.5 ppm Na⁺ 30 ppm Ca²⁺ 600 ppm</p> <p>Reagent: Acetic acid reagent</p>
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	<p>Range: ± 1999.9 mV</p> <p>Resolution: 0.1 mV</p> <p>Relative accuracy: ± (0.5 mV + 0.1%)</p>
Temperature Measurement	<p>Range: - 10 to 120 °C</p> <p>Resolution: 0.1 °C</p> <p>Relative accuracy: ± 0.5 °C</p> <p>Continuous temperature readings: YES</p> <p>ATC probe connection detection: YES</p>
Specific Ion Calibrations	<p>DKA calibration: YES</p> <p>DKA calibration points: 2 points</p> <p>Offline calibration: YES</p> <p>Offline calibration points: 1 point</p> <p>Pre-programmed standard values: YES</p> <p>Custom programmed standard values: YES</p>
Sample Conditions	<p>Temperature: 5 to 45 °C</p> <p>Total acidity: less than 250 ppm CaCO₃</p> <p>Inlet pressure: 8 to 100 psig</p> <p>Flow rate: 40 mL/min nominal set by pressure regulator</p> <p>Sample inlet: 1/4" NPTF tube fitting</p> <p>Sample drain: 3/4" NPT male</p> <p>Grab sampler supported: YES</p>
Display	Custom backlit LCD with temperature, concentration, mV, error codes, menu driven prompts
Inputs	<p>ATC: 2 x NTC 30K</p> <p>Specific ion input & reference: Potentiometric</p>

Outputs	<p>Analog output: Galvanically isolated</p> <p>Number of analog outputs: 2, one dedicated to ammonia, one to temperature; shared ground</p> <p>Output selections: 0 - 20 mA or 4 - 20 mA</p> <p>Programmable range: YES</p> <p>Log & linear output options: YES, user selectable</p> <p>Alarm outputs: 3</p> <p>Number of relay outputs: 3</p> <p>Maximum relay load: 250 VAC, 5 A, 30 VDC</p> <p>Minimum value alarm: YES</p> <p>Maximum value alarm: YES</p> <p>Error alarm: YES</p> <p>Calibration/offline alarm: YES</p> <p>Programmable min & max values: YES</p>
Physical Size	<p>Electronics: 144 x 144 x 186 mm</p> <p>Entire system: 65 x 45 x 27 cm (26" x 17" x 11") Fits on 1810AO panel mounting footprint.</p>
Power	Input: 85-132 or 170-264 VAC
Software Features	<p>Self-test & diagnostics: YES</p> <p>Real time clock: YES</p> <p>Meter serial number: YES</p> <p>Password protection: YES</p> <p>Programmable alarms: High, low, error, calibration/offline</p> <p>Reset function: YES</p>
Meter Features	<p>Startup reset: YES</p> <p>Hardware calibration function: YES</p> <p>Non-volatile memory: YES</p> <p>Battery backup: YES</p> <p>Expansion bus: Serial communication & power</p> <p>Waterproof enclosure: IP66 & NEMA 4X</p>
Regulatory and Safety	CE, CSA, UL, FCC Class A limits
Environmental Operating Conditions	<p>Ambient operating temperature: 5 to 45 °C</p> <p>Relative humidity: 5 to 95% non-condensing</p> <p>Storage temperature: - 20 to 60 °C</p> <p>Storage humidity: 5 % to 95 %, non-condensing</p>
Case Material	Valox 364
Shock and Vibration	<p>Vibration, shipping/handling: 0 - 60 Hz @ 1 G Load</p> <p>Shock, drop test in packaging: 36" on all sides and corners</p>

Thermo Scientific Orion 2110XP Ammonia Monitor

- **Global support**– with experience that comes from supporting our calcium hardness customers for over 35 years throughout the world, our water quality specialists and customer support teams offer a quick, thorough and professional response to any problem encountered.

- **Focus on user benefits**– we work closely with you to define your needs, and ensure you are using the monitor in a way that improves your bottom line.

For more information, contact your local water quality specialists, call 1-800-225-1480 or visit www.thermo.com/water.

Cat. No.	Ammonia Monitor Packages
2110XPEN	Ammonia Monitor with Protective Enclosure Package – Includes ammonia monitor with protective enclosure, ammonia sensing electrode (100047), reference electrode (210056), ATC probe (2100TP), ammonia standard solutions kit (181040), CD user guide and options kit
2110XP	Ammonia Monitor Instrument Only Package – Includes ammonia monitor, ammonia sensing electrode (100047), reference electrode (210056), ATC probe (2100TP), ammonia standard solutions kit (181040), CD user guide and options kit
Cat. No.	Reagent Kits and Accessories
211050XP	Ammonia Consumables Kit – for one year operation, includes (2) x 2 L bottles of acetic acid reagent (181130), (2) x 4 ft length diffusion tubing assemblies with O-rings (150060), reagent bottle adapter (2110RBA), (1) ammonia standard solution kit (181040), (1) ammonia sensing 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*	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 length diffusion tubing assemblies with O-rings (150060), reagent bottle adapter (2110RBA), (1) ammonia standard solution kit (181040), (1) ammonia sensing 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)
181030	Acetic Acid Reagent – for 6 months operation, includes (1) x 1 L bottle of acetic acid reagent (does not include tubing, purchase 150060 separately)
150060	Diffusion Tubing Kit – (1) x 4 ft diffusion tubing assembly with O-rings
150063	Diffusion Tubing Only – (1) x 100 ft thick-walled diffusion tubing (does not include O-ring, purchase 21100K separately)
2110XPCAL	Calibration Kit with Carrying Case – (1) x 0.5 mL pipette (204847-001), (1) set of 100 pipette tips (204846-001), (1) ammonia standard solution kit (181040), (1) inlet filter, (1) x 125 mL wash bottle, and (1) x 4 ft length diffusion tubing (150060)
181040	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)

Cat. No.	Ammonia Electrodes and Accessories
2110XPEK	Ammonia Electrode Kit – includes (1) ammonia electrode (100047) and (1) reference electrode (210056)
100047	Ammonia Sensing Electrode – with screw cap, for use with 2110XP
210056	Ammonia Reference Electrode – with screw cap, for use with 2110XP, includes reference electrode solution (181073)
181073	Reference Electrode Filling Solution – (5) x 2 oz bottles for use with reference electrode (210056)
21003M	Extension Cables – (2) 3 meter cables, for 100047 and 210056 electrodes
2100TP	2100 Series Automatic Temperature Probe – with ground (30 kΩ), for use with 2110XP
2001XT	2100 Series Automatic Temperature Probe – with 10 meter extension cable and ground (30 kΩ), for use with 2110XP
Cat. No.	Field Replaceable Units
2100EN	2100 series enclosure for use with 2110XP
2110FP	Fluidics panel assembly only
2110XPEP	2110XP electronics faceplate
2100NV	Inlet valve assembly
2100BV	Needle valve assembly
2100RG	Regulator assembly
2100FM	Flow meter assembly
2100RT	Restrictor tube assembly
2110RBA	Reagent bottle adapter assembly with diffusion tube assembly
2100PA	Air pump assembly
2100AF	Air filter
2100VC	Check valve
2100TG	Tygon tubing (4 ft)
2100PS	Power supply assembly
2100FK115	Fuse kit assembly 115 V
2100FK230	Fuse kit assembly 230 V
21100K	O-ring kit- includes O-rings for reagent bottle and diffusion tube assembly
181170	(2) Inlet sample filters and gaskets
2110XPSK	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)