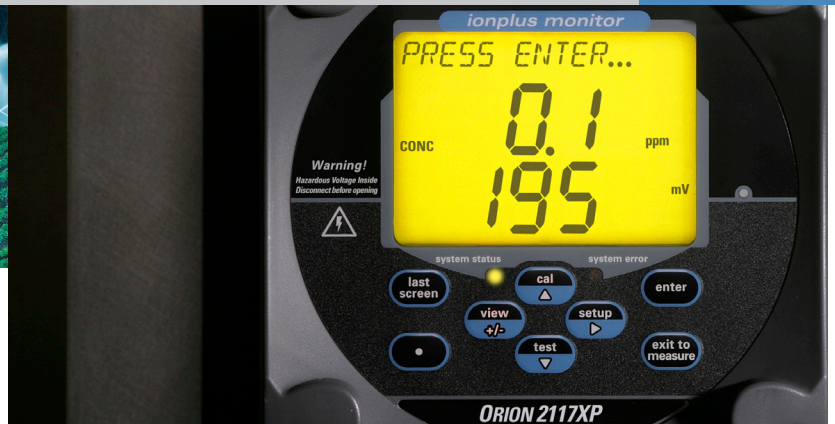


Thermo Fisher Scientific provides chloride detection with rapid response – your best defense against the costly effects of corrosion. Let us show you how to trust your water chemistry results and maximize turbine efficiency with ease.

Thermo Scientific Orion 2117XP Chloride Monitor



Superior performance and ease of operation

The risks associated with adverse steam chemistry cost the power industry millions and lead to the accumulation of corrosive deposits that jeopardize the efficiency and safety of steam turbine components.

The NEW Thermo Scientific Orion 2117XP chloride monitor detects chloride in real time – providing accurate and reliable results that you can count on. Early detection of chloride ingress from feedwater helps your plant maintain the optimal balance of water purification with ease and peace of mind.

Based upon our premium electrode technology for stability combined with a virtually maintenance free fluidic design – the Orion 2117XP provides high performance results with confidence. The monitor continuously displays levels of chloride to prevent against corrosion effects known to cause mechanical damage to steam cycle components and subsequent efficiency losses.

Advantages:

- Holds calibration up to 60 days between reagent changes
- Fast and highly accurate calibration has you back online in minutes
- Long life solid state sensor technology offers stability and high performance
- Simple operation and minimal maintenance required – no moving parts
- Repeatable and verifiable measurements at a glance using the large, user friendly display



Markets

- Agricultural Water
- Semiconductor
- Power
- Pulp and Paper

Applications:

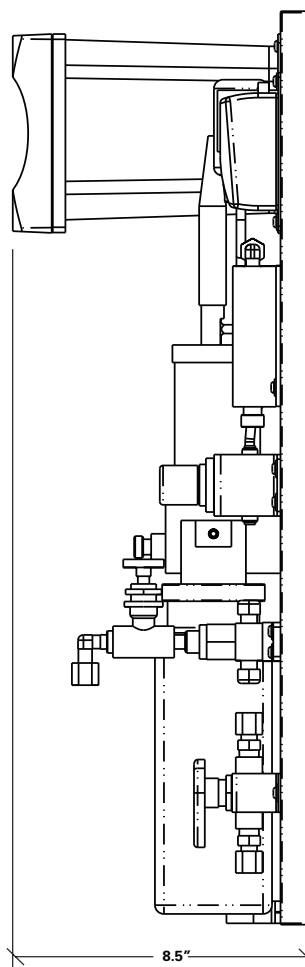
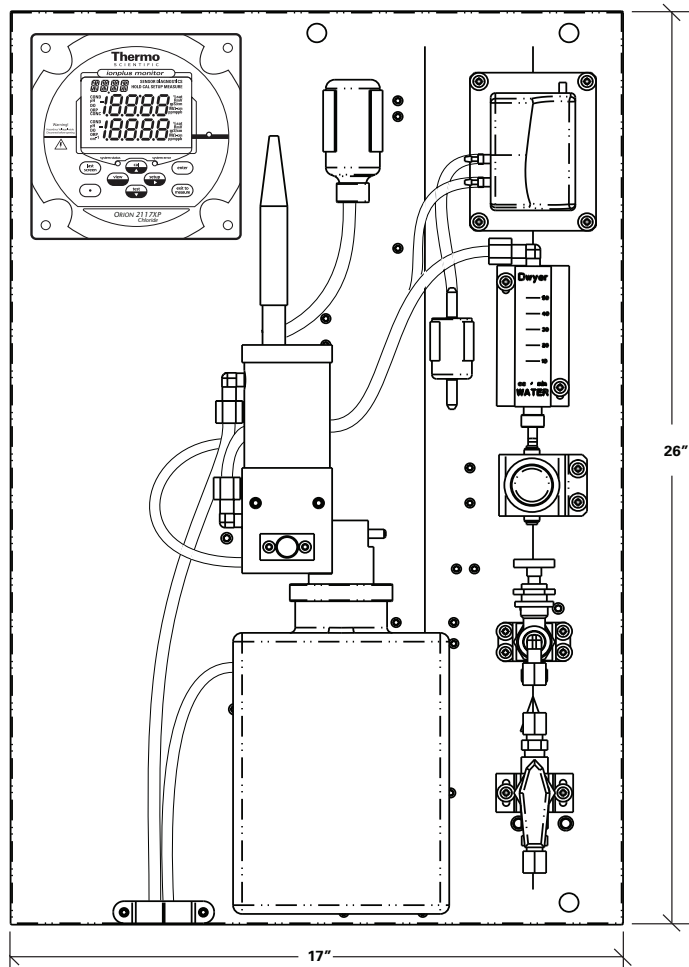
- RO Feedwater Monitoring
- Seawater Cooled Condenser Leak Detection
- Boiler Water Monitoring
- Agricultural Water Monitoring

Benefits

- Detection limit of 0.1 ppm - the Orion 2117XP offers continuous chloride monitoring in a wide variety of samples
- Protect against early breakthrough with sensitive, selective, reliable and verifiable measurements that provide early detection of chloride in RO and boiler systems
- 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 that limit unnecessary calibration cycles due to drift with superior Orion chloride 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
- Advanced user interface with detailed calibration, measurement and diagnostic logs for early diagnostic and action level notification, configurable to your facility's desired level of performance, and all password protected if preferred
- Simple and fast calibration cycles using double known addition - quickly have your system back online with security and confidence
- Easy installation has your plant up and running in minutes - the Orion 2117XP is retrofittable to the Orion 1817HL panel mounting footprint
- Expandable platform with grab sampler, automation and automatic validation modules
- Reagent adjusts pH for proper sample conditioning to ensure accurate and reliable measurements consistently

Dimensions

Thermo Scientific Orion 2117XP installation dimensions shown without optional protective enclosure.





Thermo Scientific Orion 2117XP Chloride Monitor

Specific Ion Measurements	Range: 0.1 ppm to 100 ppm
	Resolution: 2, 3 or 4 digits
	Accuracy (with DKA cal): ± 0.1 ppm or 10%, whichever is greater
	Reagent: Formic Acid
Response Time	Reach 95% of final reading within 2 minutes of injecting a standard solution
Units Displayed	ppb, ppm (auto ranging)
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: ± 0.5 °C
	Continuous temperature readings: YES
	ATC probe connection detection: YES
Specific Ion Calibrations	DKA calibration: YES
	DKA calibration points: 3 points
	Offline calibration: YES
	Offline calibration points: 1 point
	Pre-programmed standard values: YES
	Custom programmed standard values: YES
Sample Conditions	Temperature: 5 to 35 °C
	Total alkalinity: Less than 50 ppm CaCO_3 <i>*Sulfite must not be present in the sample*</i>
	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
	Grab sampler supported: YES
Display	Custom backlit LCD with temperature, concentration, mV, error codes, menu driven prompts
Inputs	ATC: 2 x NTC 30K
	Specific ion input & reference: Potentiometric

Outputs

Analog output: Galvanically isolated

Number of analog outputs: 2, one dedicated to chloride, one to temperature; shared ground

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

Error alarm: YES

Calibration/offline alarm: YES

Programmable min & max values: 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 1817HL panel mounting footprint.

Power

Input: 85-132 or 170-264 VAC

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

Expansion bus: Serial communication & power

Waterproof enclosure: IP66 & NEMA 4X

Regulatory and Safety

CE, CSA, UL, FCC Class A limits

Environmental Operating Conditions

Ambient operating temperature: 5 to 45 °C

Relative humidity: 5 to 95% non-condensing

Storage temperature: - 20 to 60 °C

Storage humidity:
5 % to 95 %, non-condensing

Case Material

Valox 364

Shock and Vibration

Vibration, shipping/handling:
0 - 60 Hz @ 1 G LoadShock, drop test in packaging:
36" on all sides and corners

Thermo Scientific Orion 2117XP Chloride Monitor

- **Global support**— with experience that comes from supporting our chloride 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.	Chloride Monitor Packages
2117XPEN	Chloride Monitor with Protective Enclosure Package — Includes chloride monitor with protective enclosure, chloride sensing electrode (100025), reference electrode (100057), ATC (2100TP), standards solution kit (211740), CD user guide and options kit.
2117XP	Chloride Monitor Instrument Only Package — Includes chloride monitor with chloride sensing electrode (100025), reference electrode (100057), ATC (2100TP), standards solution kit (211740), CD user guide and options kit.
Cat. No.	Reagent Kits and Accessories
211750XP	Chloride Consumables Kit — for one year operation, includes (6) x 1 L bottles formic acid reagent and (6) x 2 ft long diffusion tubing with O-rings (182011), chloride standard solution kit (211740), chloride sensing electrode (100025), reference electrode (100057), (1) x 2 oz bottle reference electrode filling solution (900063), O-ring kit (2100OK), check valve (2100VC), pipette tips (204846-001), restriction tube assembly (2100RT) and inlet filter with gaskets (181170)
211750XPF*	Reagent-less Chloride Consumables Kit — for one year operation, includes (6) x 1 L empty bottles for use with formic acid reagent (182011), (6) x 2 ft long diffusion tubing with O-rings (181060), chloride standard solution kit (211740), chloride sensing electrode (100025), reference electrode (100057), (1) x 2 oz bottles reference electrode filling solution (900063), O-ring kit (2100OK), check valve (2100VC), pipette tips (204846-001), restriction tube assembly (2100RT) and inlet filter with gaskets (181170)
182011	Formic Acid Reagent — 60 day supply- includes (1) x 1 L bottle formic acid reagent and (1) x 2 ft long diffusion tubing with O-rings (181060)
182011F*	Reagent-less Formic Acid Reagent Bottle — includes (1) x 1 L empty bottle for use with formic acid reagent (182011) and (1) x 2 ft long diffusion tubing with O-rings (181060)
182011F6*	Reagent-less Formic Acid Reagent Bottle — includes (6) x 1 L empty bottles for use with formic acid reagent (182011) and (6) x 2 ft long diffusion tubing with O-rings (181060)
181060	(1) x 2 ft long diffusion tubing and O-rings
181160	(3) x 5'8" long thin-walled diffusion tubing and O-rings for high alkalinity samples, 6 month supply
Cat. No.	Chloride Electrodes and Accessories
2117XPEK	Chloride Electrode Kit — includes chloride sensing electrode (100025), reference electrode (100057) and reference electrode filling solution (900063)
100025	Chloride Sensing Electrode — for use with 2117XP
100057	Chloride Reference Electrode — for use with 2117XP, includes reference electrode filling solution (900063)
900063	Reference Electrode Filling Solution — for use with 100057 reference electrode, (5) x 2 oz bottles

Cat. No.	Chloride Electrodes and Accessories (cont'd)
2100TP	2100 Series Automatic Temperature Probe — with ground (30 kΩ), for use with 2117XP
2001XT	2100 Series Automatic Temperature Probe — with 10 meter extension cable and ground (30 kΩ), for use with 2117XP
21003M	Extension Cables — (2) x 3 meter cables, for 100025 and 100057 electrodes
2117XPCAL	Calibration Kit — includes carrying case, 0.5 mL pipette (204847-001), box of pipette tips (204846-001), wash bottle, (1) x 2 oz bottle chloride standard 1 (296 ppm), (1) x 2 oz bottle chloride standard 2 (2946 ppm) and (1) inlet filter
211740	Chloride Standard Solution Kit — includes (2) x 2 oz bottles of chloride standard 1 (296 ppm) and (2) x 2 oz bottles of chloride standard 2 (2946 ppm)
Cat. No.	Field Replaceable Units
2100EN	2100 series enclosure
2100FP	Fluidics panel assembly only
2100BP	Steel back panel assembly
2100NV	Inlet valve assembly
2100BV	Bypass/needle valve assembly
2100RG	Regulator assembly
2100DA	Drain and clamp assembly
2100FM	Flow meter assembly
2100RT	Restrictor tube assembly
2100FC	Flow cell assembly
2100PA	Air pump assembly
2100AF	Air filter assembly
2100DV	Diverter valve assembly
2100VC	Check valve
2117RBA	2117XP reagent bottle adapter
2100OK	O-ring kit
2100EC	(2) x 1 meter electrode cables
2100FK115	Fuse kit assembly 115 V
2100FK230	Fuse kit assembly 230 V
2100PS	Power supply assembly
2117XPEP	2117XP electronics faceplate
2117XPSK	Service kit — includes (1) electronics faceplate (2117XPEP), (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)

* For International use only