

We provide 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 Analyzer



### Markets

- Agricultural Water
- Semiconductor
- Power
- Pulp and Paper

### Applications

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

### 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 analyzer 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 analyzer continuously displays levels of chloride to prevent against corrosion effects known to cause mechanical damage to steam cycle

components and subsequent efficiency losses.

### Advantages

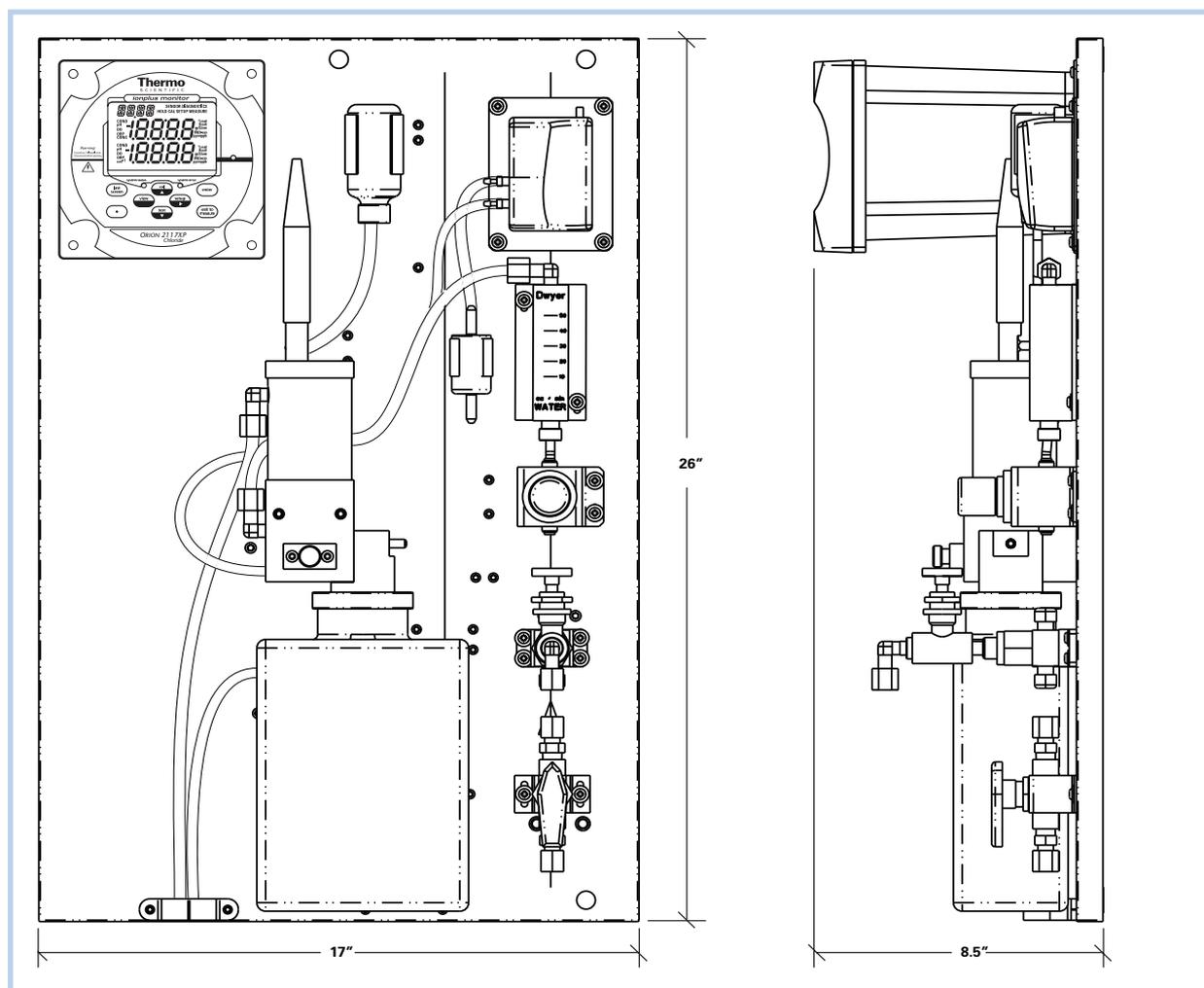
- Holds calibration up to 60 days between reagent changes
- Fast and highly accurate calibration has you back online in minutes
- Long life solid state sensor technology offers stability and high performance
- Simple operation and minimal maintenance required – no moving parts
- Repeatable and verifiable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

### Benefits

- Detection limit of 0.1 ppm – the Orion 2117XP offers continuous chloride analyzing 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 backlit display
- Fastest and most stable measurements, limiting 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 retrofitable to the Thermo Scientific 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 Analyzer

<b>Specific Ion Measurements</b>	<b>Range:</b> 0.1 ppm to 100 ppm
	<b>Resolution:</b> 2, 3 or 4 digits
	<b>Accuracy (with DKA cal):</b> ± 0.1 ppm or 10%, whichever is greater
	<b>Reagent:</b> Formic acid
<b>Response Time</b>	Reach 95% of final reading within 2 minutes of injecting a standard solution
<b>Units Displayed</b>	ppb, ppm (auto ranging)
<b>mV Measurement</b>	<b>Range:</b> ± 1999.9 mV
	<b>Resolution:</b> 0.1 mV
	<b>Relative accuracy:</b> ± (0.5 mV + 0.1%)
<b>Temperature Measurement</b>	<b>Range:</b> - 10 to 120 °C
	<b>Resolution:</b> 0.1 °C
	<b>Relative accuracy:</b> ± 0.5 °C
	<b>Continuous temperature readings:</b> YES
	<b>ATC probe connection detection:</b> YES
<b>Specific Ion Calibrations</b>	<b>DKA calibration:</b> YES
	<b>DKA calibration points:</b> 3 points
	<b>Offline calibration:</b> YES
	<b>Offline calibration points:</b> 1 point
	<b>Pre-programmed standard values:</b> YES
	<b>Custom programmed standard values:</b> YES
<b>Sample Conditions</b>	<b>Temperature:</b> 5 to 35 °C
	<b>Total alkalinity:</b> Less than 50 ppm CaCO <sub>3</sub> <i>*Sulfite must not be present in the sample*</i>
	<b>Inlet pressure:</b> 8 to 100 psig
	<b>Flow rate:</b> 40 mL/min nominal set by pressure regulator
	<b>Sample inlet:</b> 1/4" NPTF tube fitting
	<b>Sample drain:</b> 3/4" NPT male
	<b>Grab sampler supported:</b> YES
<b>Display</b>	Custom backlit LCD with temperature, concentration, mV, error codes and menu driven prompts
<b>Inputs</b>	<b>ATC:</b> 2 x NTC 30K
	<b>Specific ion input &amp; reference:</b> Potentiometric

<b>Outputs</b>	<b>Analog output:</b> Galvanically isolated
	<b>Number of analog outputs:</b> 2, one dedicated to chloride, one to temperature; shared ground
	<b>Output selections:</b> 0 - 20 mA or 4 - 20 mA
	<b>Programmable range:</b> YES
	<b>Log &amp; linear output options:</b> YES, user selectable
	<b>Alarm outputs:</b> 3
	<b>Number of relay outputs:</b> 3
	<b>Maximum relay load:</b> 250 VAC, 5 A, 30 VDC
	<b>Minimum value alarm:</b> YES
	<b>Maximum value alarm:</b> YES
	<b>Error alarm:</b> YES
	<b>Calibration/offline alarm:</b> YES
<b>Programmable min &amp; max values:</b> YES	
<b>Physical Size</b>	<b>Electronics:</b> 144 x 144 x 187 mm
	<b>Entire system:</b> 65 x 45 x 27 cm (26" x 17" x 11") Fits on 1817HL panel mounting footprint.
<b>Power</b>	<b>Input:</b> 85-132 or 170-264 VAC
<b>Software Features</b>	<b>Self-test &amp; diagnostics:</b> YES
	<b>Real time clock:</b> YES
	<b>Meter serial number:</b> YES
	<b>Password protection:</b> YES
	<b>Programmable alarms:</b> High, low, error, calibration/offline
	<b>Reset function:</b> YES
	<b>Startup reset:</b> YES
<b>Meter Features</b>	<b>Hardware calibration function:</b> YES
	<b>Non-volatile memory:</b> YES
	<b>Battery backup:</b> YES
	<b>Expansion bus:</b> Serial communication & power
	<b>Waterproof enclosure:</b> IP66 & NEMA 4X
<b>Regulatory and Safety</b>	CE, CSA, FCC Class A limits
<b>Environmental Operating Conditions</b>	<b>Ambient operating temperature:</b> 5 to 45 °C
	<b>Relative humidity:</b> 5 to 95% non-condensing
	<b>Storage temperature:</b> - 20 to 60 °C
	<b>Storage humidity:</b> 5% to 95%, non-condensing
<b>Case Material</b>	Valox 364
<b>Shock and Vibration</b>	<b>Vibration, shipping/handling:</b> 0 - 60 Hz @ 1 G Load
	<b>Shock, drop test in packaging:</b> 36" on all sides and corners

## Thermo Scientific Orion 2117XP Chloride Analyzer

- **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 analyzer 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](http://www.thermo.com/water).

Cat. No.	Chloride Analyzer Packages
2117XPEN	<b>Chloride Analyzer with Protective Enclosure Package</b> – includes chloride analyzer with protective enclosure, chloride electrode (100025), reference electrode (100057), ATC probe (2100TP), standard solution kit (211740), CD user guide and options kit.
2117XPENG	<b>Chloride Analyzer with Protective Enclosure Package</b> – includes chloride analyzer with protective enclosure and integral grab sampler, chloride electrode (100025), reference electrode (100057), ATC probe (2100TP), standard solution kit (211740), CD user guide and options kit.
2117XP	<b>Chloride Analyzer Instrument Only Package</b> – includes chloride analyzer with chloride electrode (100025), reference electrode (100057), ATC probe (2100TP), standard solution kit (211740), CD user guide and options kit.
2117XPG	<b>Chloride Analyzer Instrument Only Package</b> – includes chloride analyzer and integral grab sampler with chloride electrode (100025), reference electrode (100057), ATC probe (2100TP), standard solution kit (211740), CD user guide and options kit.
Cat. No.	Reagent Kits and Accessories
211750XP	<b>Chloride Consumables Kit</b> – for one year operation, includes (6) x 1 L bottles formic acid reagent and (6) x 2 ft diffusion tubing with O-rings (182011), chloride standard solution kit (211740), chloride electrode (100025), reference electrode (100057), (1) x 4 oz bottle reference electrode filling solution (100057F4), O-ring kit (2100OK), check valve (2100VC), pipette tips (204846-001), restriction tube assembly (2100RT) and inlet filter with gaskets (181170)
211750XP*	<b>Reagent-less Chloride Consumables Kit</b> – 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 electrode (100025), reference electrode (100057), (1) x 4 oz bottle reference electrode filling solution (100057F4), O-ring kit (2100OK), check valve (2100VC), pipette tips (204846-001), restriction tube assembly (2100RT) and inlet filter with gaskets (181170)
182011	<b>Formic Acid Reagent</b> – 60 day supply, includes (1) x 1 L bottle formic acid reagent and (1) x 2 ft diffusion tubing with O-rings (181060)
182011F*	<b>Reagent-less Formic Acid Reagent Bottle</b> – includes (1) x 1 L empty bottle for use with formic acid reagent (182011) and (1) x 2 ft diffusion tubing with O-rings (181060)
182011F6*	<b>Reagent-less Formic Acid Reagent Bottle</b> – includes (6) x 1 L empty bottles for use with formic acid reagent (182011) and (6) x 2 ft diffusion tubing with O-rings (181060)
181060	(1) x 2 ft diffusion tubing and O-rings
181160	(3) x 5'8" thin-walled diffusion tubing and O-rings, for high alkalinity samples, 6 month supply
<b>* For International Use Only</b>	

Cat. No.	Chloride Electrodes and Accessories
2117XPEK	<b>Chloride Electrode Kit</b> – includes chloride electrode (100025), reference electrode (100057) and (1) x 4 oz bottle reference electrode filling solution (100057F4)
100025	<b>Chloride Sensing Electrode</b> – for use with 2117XP
100057	<b>Chloride Reference Electrode</b> – for use with 2117XP, includes (1) x 4 oz bottle reference electrode filling solution
100057F4	<b>Reference Electrode Filling Solution</b> – (4) x 4 oz bottles, for use with 100057 reference electrode
2100TP	<b>2100 Series Automatic Temperature Probe</b> – with ground (30 kΩ)
2001XT	<b>2100 Series Automatic Temperature Probe</b> – with 10 meter extension cable and ground (30 kΩ)
2100EC	<b>Electrode Cables</b> – (2) x 1 meter cables, for 100025 and 100057 electrodes
21003M	<b>Extension Cables</b> – (2) x 3 meter cables, for 100025 and 100057 electrodes
2117XPCAL	<b>Calibration Kit</b> – 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	<b>Chloride Standard Solution Kit</b> – 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 - For a complete listing of FRUS refer to the user guide
2100EN	2100 series enclosure
2100FP	Fluidics panel assembly only
2100BV	Bypass/needle valve assembly
2100RG	Regulator assembly
2100FM	Flow meter assembly
2100RT	Restrictor tube assembly
2100FC	Flow cell assembly
2100PA	Air pump assembly
2100AF	Air filter assembly
2117RBA	2117XP reagent bottle adapter
2100EC	(2) x 1 meter electrode cables
2100PS	Power supply assembly
2117XPEP	2117XP electronics faceplate
2117XPSK	<b>Service Kit</b> – 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)