

Real-time analysis of chloride levels are essential across many industrial applications. Used to maintain the proper chloride balance in many food and beverage products as well as in the prevention of stress corrosion failures—we have the system to optimize your process.

## Thermo Scientific Orion 2117HL High Level Chloride Analyzer



### Markets

- Agricultural water
- Semiconductor
- Power
- Pulp and paper

### Applications

- RO feedwater
- Seawater cooled condenser leak detection
- Boiler water
- Agricultural water

### Superior Performance and Ease of Operation

Confronted by the many challenges of maintaining your plant's chemistry control, we have the solution for your high chloride measurement needs. The new Thermo Scientific Orion 2117HL high level chloride analyzer offers industry leading performance to measure elevated levels of chloride in real time. We have the reliability needed to maintain the optimal balance of water purification.

Based upon our premium electrode technology for stability combined with a virtually maintenance free fluidic design and reagent-less system—the 2117HL analyzer provides high performance results, simply and accurately.

### Advantages

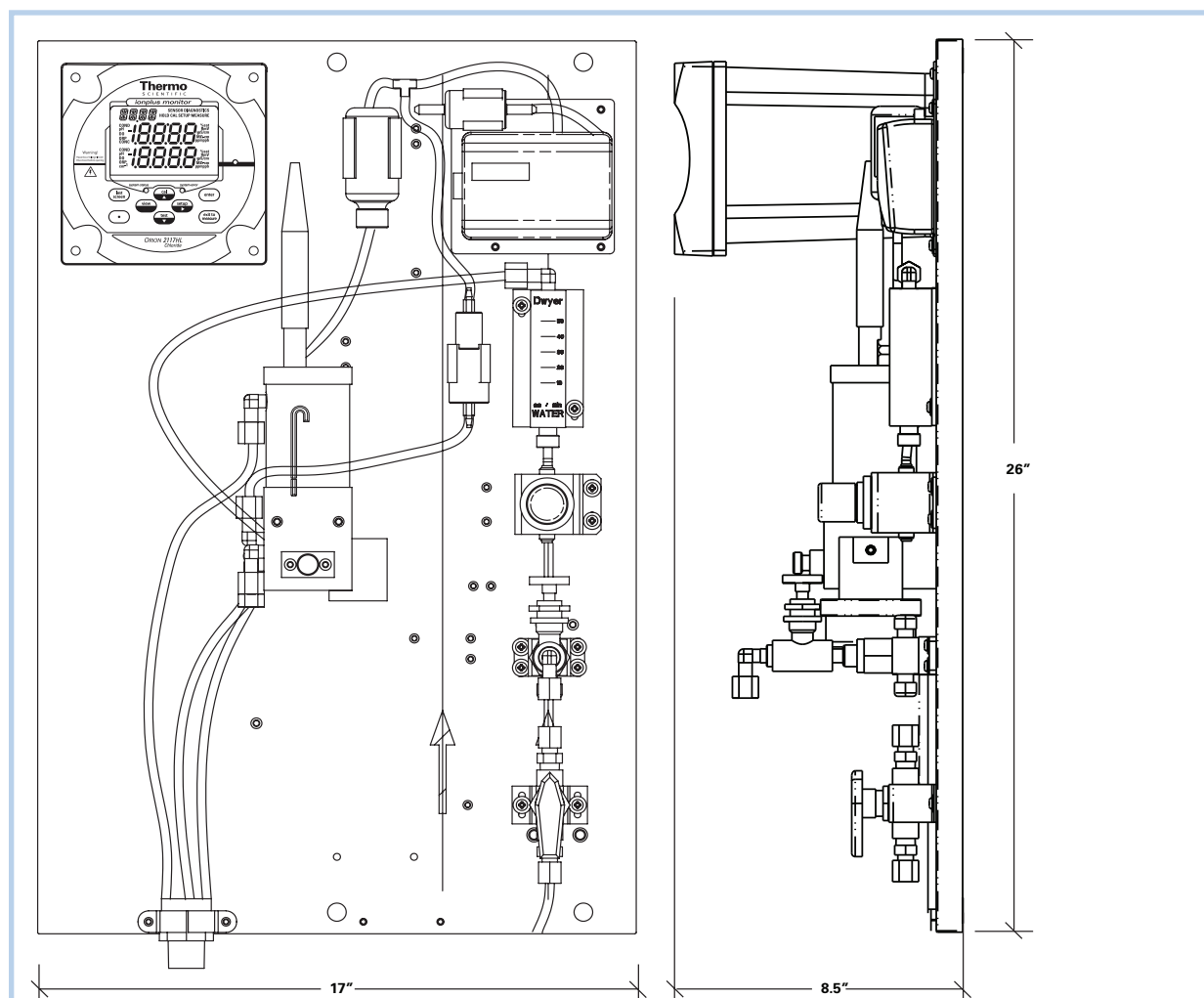
- No reagent required for analysis
- Fast and highly accurate calibration has you back online in minutes
- New enhanced electrode technology offers long lasting reliability and accuracy
- Simple operation and minimal maintenance required—no moving parts
- Repeatable and verifiable measurements at a glance using the large, user friendly display

### Benefits

- Detection range of 75 ppm to 1000 ppm – the 2117HL analyzer offers continuous chloride monitoring in a wide variety of samples
- New Thermo Scientific Orion high level chloride electrode has been optimized from long lasting response and performance
- 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 Thermo Scientific Orion chloride electrode technology
- Minimize operator time and maintenance without use of reagents, 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 2117HL analyzer is retrofitable to the Thermo Scientific Orion 1817HL panel mounting footprint
- Expandable platform with grab sampler, automation and automatic validation modules

### Dimensions

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





## Thermo Scientific Orion 2117HL High Level Chloride Analyzer

<b>Specific Ion Measurements</b>	<b>Range:</b> 75 ppm to 1000 ppm
	<b>Resolution:</b> 2, 3 or 4 digits
	<b>Accuracy (with DKA cal):</b> ± 10%
<b>Response Time</b>	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/minute 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> Two, 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>Hardware calibration function:</b> YES
<b>Meter Features</b>	<b>Non-volatile memory:</b> YES
	<b>Battery backup:</b> YES
	<b>Expansion bus:</b> Serial communication & power
	<b>Waterproof enclosure:</b> IP66 and NEMA 4X
	<b>Regulatory and Safety</b>
<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 2117HL 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.
- **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/processwater](http://www.thermo.com/processwater).

Cat. No.	Chloride Analyzer Packages
<b>2117HLEN</b>	<b>High Level Chloride Analyzer with Protective Enclosure Package</b> – includes high level chloride analyzer with protective enclosure, chloride electrode (210017), reference electrode (100057), ATC probe (2100TP), chloride standard solutions kit (211740HL), CD user guide and options kit
<b>2117HLENG</b>	<b>High Level Chloride Analyzer with Protective Enclosure Package</b> – includes high level chloride analyzer with protective enclosure and integral grab sampler, chloride electrode (210017), reference electrode (100057), ATC probe (2100TP), chloride standard solutions kit (211740HL), CD user guide and options kit
<b>2117HL</b>	<b>High Level Chloride Analyzer Only Package</b> – includes high level chloride analyzer with chloride electrode (210017), reference electrode (100057), ATC probe (2100TP), chloride standard solutions kit (211740HL), CD user guide and options kit
<b>2117HLG</b>	<b>High Level Chloride Analyzer Only Package</b> – includes high level chloride analyzer and integral grab sampler with chloride electrode (210017), reference electrode (100057), ATC probe (2100TP), chloride standard solutions kit (211740HL), CD user guide and options kit
Cat. No.	Accessories and Electrodes
<b>211750HLF</b>	<b>High Level Chloride Consumables Kit</b> – for one year operation, includes chloride standard solutions kit (211740HL), chloride electrode (210017), reference electrode (100057), (1) x 2 oz bottle reference electrode filling solution (900063), O-ring kit (2100OK), check valve (2100VC), pipet tips (204846-001), restriction tube assembly (2100RT) and inlet filter with gaskets (181170)
<b>2117HLCAL</b>	<b>Calibration Kit</b> – includes carrying case, 0.5 mL pipet (204847-001), box of pipet tips (204846-001), wash bottle, (2) x 2 oz bottles chloride standard 2 (2946 ppm) and (1) inlet filter
<b>211740HL</b>	<b>Chloride Standard Solutions Kit</b> – includes (5) x 2 oz bottles of chloride standard 2 (2946 ppm)
<b>2117HLEK</b>	<b>Chloride Electrode Kit</b> – includes chloride electrode (210017), reference electrode (100057) and (1) x 2 oz bottle reference electrode filling solution (900063)
<b>210017</b>	<b>Chloride Sensing Electrode</b> – for use with 2117HL
<b>100057</b>	<b>Chloride Reference Electrode</b> – for use with 2117HL, includes (1) x 2 oz bottle reference electrode filling solution
<b>900063</b>	<b>Reference Electrode Filling Solution</b> – (5) x 2 oz bottles, for use with 100057 reference electrode
<b>2100TP</b>	<b>2100 Series Automatic Temperature Probe</b> – with ground (30 kΩ)

Cat. No.	Accessories and Electrodes (cont)
<b>2001XT</b>	<b>2100 Series Automatic Temperature Probe</b> – with 10 meter extension cable and ground (30 kΩ)
<b>2100EC</b>	<b>Electrode Cables</b> – (2) x 1 meter cables, for 210017 and 100057 electrodes
<b>21003M</b>	<b>Extension Cables</b> – (2) x 3 meter cables, for 210017 and 100057 electrodes
Cat. No.	Field Replaceable Units
<b>2100EN</b>	2100 series protective enclosure
<b>2100FP</b>	Fluidics panel assembly only
<b>2100BP</b>	Steel back panel assembly
<b>2100NV</b>	Inlet valve assembly
<b>2100BV</b>	Bypass/needle valve assembly
<b>2100RG</b>	Regulator assembly
<b>2100DA</b>	Drain and clamp assembly
<b>2100FM</b>	Flow meter assembly
<b>2100RT</b>	Restrictor tube assembly
<b>2100FC</b>	Flow cell assembly
<b>2100PA</b>	Air pump assembly
<b>2100AF</b>	Air filter assembly
<b>2100DV</b>	Diverter valve assembly
<b>2100VC</b>	Check valve
<b>181170</b>	(2) Inlet filters
<b>2117HLM</b>	Flow cell manifold for 2117HL analyzer
<b>2117PN</b>	Pressurized needle assembly for reference filling solution bottle
<b>2100OK</b>	O-ring kit
<b>2100EC</b>	(2) x 1 meter electrode cables
<b>2100FK115</b>	Fuse kit assembly 115 V
<b>2100FK230</b>	Fuse kit assembly 230 V
<b>2100PS</b>	Power supply assembly
<b>2117HLEP</b>	2117HL electronics faceplate
<b>2117HLSK</b>	<b>Service Kit</b> – includes (1) electronics faceplate (2117HLEP), (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)

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Process Water Instruments

North America

166 Cummings Center  
Beverly, MA 01915 USA  
Toll Free: 1-800-225-1480  
Tel: 1-978-232-6000  
Dom. Fax: 1-978-232-6015  
Int'l Fax: 978-232-6031

Europe

P.O. Box 254, 3860 AG Nijkerk  
Wallerstraat 125K, 3862 CN  
Nijkerk, Netherlands  
Tel: (31) 033-2463887  
Fax: (31) 033-2460832

Asia Pacific

Blk 55, Ayer Rajah Crescent  
#04-16/24, Singapore 139949  
Tel: 65-6778-6876  
Fax: 65-6773-0836

[www.thermo.com/processwater](http://www.thermo.com/processwater)

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