

Thermo Fisher Scientific provides calcium hardness detection unsurpassed at pinpointing breakthrough – creating confidence in your water purification results.

Thermo Scientific Orion 2120XP Calcium Hardness Monitor



Superior performance and ease of operation

Water acts as a universal solvent in nature by dissolving many minerals and salts from the surrounding environment. Regional changes in source water must be carefully monitored to maximize the purity of the water. Many industrial and commercial applications must efficiently and economically produce the highest quality feedwater - for high purity steam for power generation or the best tasting bottled water available to consumers.

The NEW Thermo Scientific Orion 2120XP calcium hardness monitor detects calcium as the major component of hardness in real time - providing accurate and reliable results that you can count on. Limiting the costly effects of improper water purification has never been easier.

The monitor continuously displays levels of calcium hardness to prevent against boiler tube scaling, corrosion, water flow restriction and the loss of heat transfer efficiency for power generation applications.

The Orion 2120XP provides early detection of breakthrough due to zeolite softening depletion - maximizing your process integrity while maintaining the best possible return on investment.

Let our monitor be your step by step guide to reliable and cost effective calcium hardness measurements.

Advantages:

- Holds calibration up to 60 days between reagent changes
- Fast and most accurate calibration has you back online in minutes
- Long life 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

- Bottled Water
- Municipal Water
- Food and Beverage
- Power
- Pulp and Paper

Applications:

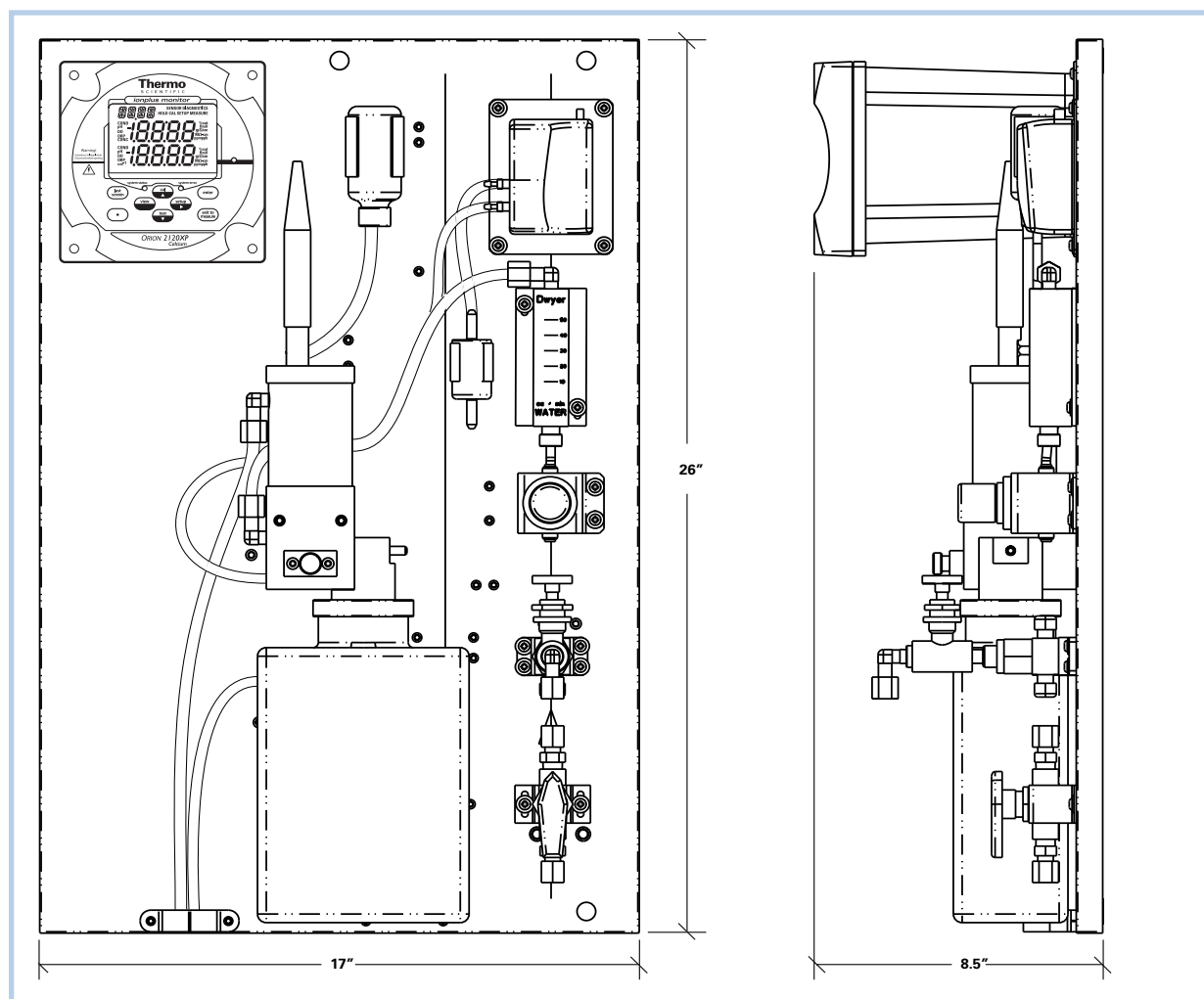
- Water Softening
- Zeolite Softener Effluent Monitoring
- Blending Applications

Benefits

- Detection limit of 25 ppb - the Orion 2120XP offers continuous calcium hardness monitoring in a wide variety of samples
- Protect against early softener breakthrough with sensitive, selective, reliable and verifiable measurements that provide early detection of calcium hardness
- Extremely easy to use while maximizing uptime - simple step-by-step scrolling instruction for set-up, 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 calcium 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 on line with security and confidence
- Easy installation has your plant up and running in minutes - the Orion 2120XP is retrofitable to the Orion 1820AO 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 2120XP installation dimensions shown without optional protective enclosure.





Thermo Scientific Orion 2120XP Calcium Hardness Monitor

Specific Ion Measurements	Range: 25 ppb to 500 ppm
	Resolution: 1, 2, 3 digits
	Accuracy (with DKA cal): ± 10% or 10 ppb CaCO ₃ , 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: ± (0.5 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 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
	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 calcium hardness, 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 1820AO 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
	Startup reset: YES
Meter Features	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 Load
	Shock, drop test in packaging: 36" on all sides and corners

Thermo Scientific Orion 2120XP Calcium Hardness 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.	Calcium Hardness Monitor Packages
2120XPEN	Calcium Hardness Monitor with Protective Enclosure Package – Includes calcium hardness monitor with protective enclosure, calcium sensing electrode (100049), reference electrode (100056), ATC (2100TP), standards solution kit (182040), CD user guide and options kit.
2120XP	Calcium Hardness Monitor Instrument Only Package – Includes calcium hardness monitor with calcium sensing electrode (100049), reference electrode (100056), ATC (2100TP), standards solution kit (182040), CD user guide and options kit.

Cat. No.	Reagent Kits and Accessories
212050XP	Calcium Hardness 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), calcium standard solution kit (182040), calcium sensing electrode (100049), reference electrode (100056), (1) x 2 oz bottle reference electrode filling solution (181073), O-ring kit (2100OK), check valve (2100VC), pipette tips (204846-001), restriction tube assembly (2100RT) and inlet filter with gaskets (181170)
212050XP*	Reagent-less Calcium Hardness 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), calcium standard solution kit (182040), calcium sensing electrode (100049), reference electrode (100056), (1) x 2 oz bottles reference electrode filling solution (181073), 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.	Calcium Electrodes and Accessories
2120XPEK	Calcium Electrode Kit – includes calcium sensing electrode (100049), reference electrode (100056), and reference electrode filling solution (181073)
100049	Calcium Sensing Electrode – for use with 2120XP
100056	Calcium Reference Electrode – for use with 2120XP, includes reference electrode filling solution (181073)
181073	Reference Electrode Filling Solution – (5) x 2 oz bottles for use with reference electrode (100056)

Cat. No.	Calcium Electrodes and Accessories (cont'd)
2100TP	2100 Series Automatic Temperature Probe – with ground (30 kΩ), for use with 2120XP
2001XT	2100 Series Automatic Temperature Probe – with 10 meter extension cable and ground (30 kΩ), for use with 2120XP
21003M	Extension Cables – (2) x 3 meter cables, for 100049 and 100056 electrodes
2120XPCAL	Calibration Kit – includes carrying case, 0.5 mL pipette (204847-001), box of pipette tips (204846-001), wash bottle, (1) x 2 oz bottle calcium standard 1 (191 ppm), (1) x 2 oz bottle calcium standard 2 (1920 ppm) and (1) inlet filter
182040	Calcium Standard Solution Kit – includes (2) x 2 oz bottles of calcium standard 1 (191 ppm) and (2) x 2 oz bottles of calcium standard 2 (1920 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
2120RBA	2120XP 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
2120XPEP	2120XP electronics faceplate
2120XPSK	Service kit – includes (1) electronics faceplate (2120XPEP), (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*