Product Specifications

Thermo Scientific products provide fast, accurate and reliable online Silica detection – optimized for any application that requires early detection of low level Silica.

Thermo Scientific Orion 2230

Silica Analyzer

Markets

- Power
- Semiconductor
- Pharmaceutical
- Pulp and Paper
- Chemical

Applications

- Demineralizer
- Boiler water

Unparalleled performance and reliability

When system efficiency is paramount, silica monitoring is a critical measurement. High silica levels can coat internal process components, leading to decreased efficiency, diminished safety, damage, and costly downtime.

The Orion 2230 provides continuous and online measurement of reactive silica to protect mission critical systems.

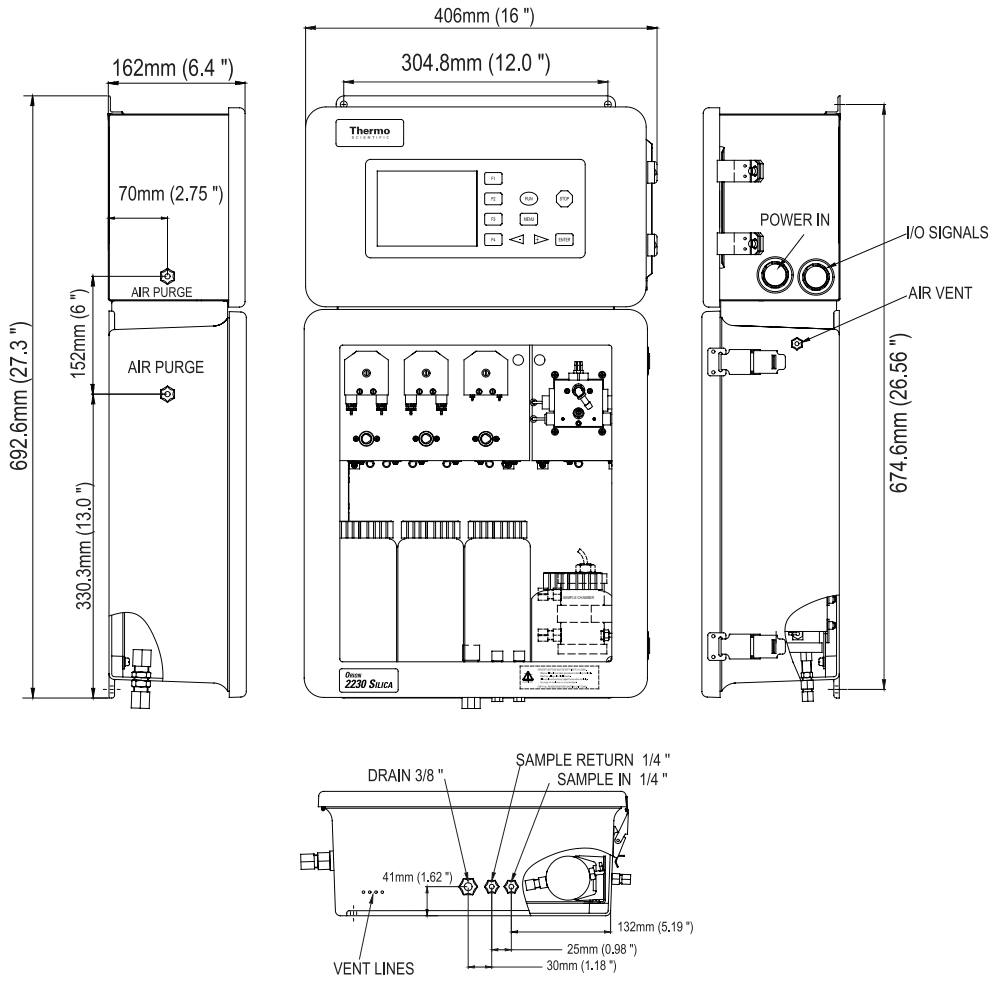
Thanks to the optimized design of the Orion 2230, reagent consumption is drastically reduced as compared to other systems, thus reducing the overall cost of ownership.

Advantages:

- **Low reagent consumption** – thanks to a highly optimized, state of the art design.
- **Wide range of detection** – 0 to 5000 PPB provides a more complete picture of silica intrusion in the process.
- **Large, easy to read display** – allows for easy viewing in all types of lighting conditions.
- **Simple menu navigation** – an easy to read and understand menu structure.
- **Compact size** – smallest total system footprint on the market today, capable of being panel or wall mounted.

Engineering Specifications

1. The silica analyzer shall measure silica concentrations using a Heteropoly-molybdenum blue colorimetric method.
2. Measurement shall be semi continuous and be <15 minutes.
3. The range of measurement shall be between 0 and 5000 ppb or µg/L.
4. The detection limit shall be ±.5 ppb or 5% of reading, which ever is greater, in the range of 0 – 300 ppb and 10% of range from 300 – 5000 ppb.
5. Repeatability shall be <± 2% or ±.5 ppb, which ever is greater, in the range of 0 – 500 ppb and <± 5% or range from 500 – 5000 ppb.
6. Analyzer shall be capable of auto ranging and auto calibration.
7. Analyzer shall take blank samples before every measurement and shall compare and correct the measurement against the blank sample.
8. Analyzer shall provide 2 isolated 4/20mA outputs and 4 programmable alarm relays. Relays shall be rated for 5A @ 240VAC.
9. Analyzer shall have a heated sample cell with sample presence detection.
10. Display shall be a digital graphics LCD with backlight.
11. Sample delivery requirement shall be between 50 and 100 mL/min.
12. Analyzer shall be capable of grab sample analysis.
13. Analyzer shall be wall or panel mounted.
14. Analyzer fluidics cabinet shall be constructed to NEMA 4X/IP65. Enclosure shall be constructed of fiberglass with clear poly windows.
15. Power requirement shall be 100 – 240V AC, 100W, 50/60 Hz, auto-detection.
16. Analyzer shall have cTUVus approvals to meet UL61010-1 and CSA C22.2 No. 61010-1 certifications and FCC Class A requirement.
17. Analyzer shall meet EC Directives 2006/95/EC and 2004/108/EC.



Product Specifications

Measurement Performance	**Measuring Range:**	0 – 5000 ppb auto-ranging or user programmable
	Accuracy Error:	Less than 5% of reading or +/-0.5 ppb, whichever is greater, from 0 to 300 ppb. Less than 10% of reading from 300 to 5000 ppb.
	Resolution Error:	0.5 ppb in all ranges
	Response Time:	Less than 15 minutes per analysis
	Repeatability Error:	Less than +/-2% of reading or +/-0.5 ppb, whichever is greater from 0 to 300 ppb. Less than +/-5% of reading from 300 ppb to 5000 ppb.
	Limit of Detection:	0.5 ppb
	Method:	Optical absorption at 810 nm
Environmental	**Ambient Operating Temperature:**	0 to 45 °C (32 to 113 °F)
	Maximum Humidity:	90% at 40 °C (104 °F)
Sample Requirements	**Sample Flow:**	50 – 1000ml/min
	Sample Pressure:	5 psi max
	Sample Supply:	Continuous
	Sample Temperature Range:	5 to 40 °C (41 to 113 °F)
	Suspended Solids:	Less than 60 microns
	Sample Inlet/ Outlet Connections:	1/4 inch OD flexible tubing - Polypropylene or similar material
	Drain Tubing:	3/8 inch OD flexible tubing - Polypropylene or similar material
	Sample Streams:	One
Construction	**Enclosure Integrity:**	NEMA12 (Electronics cabinet), NEMA4X (Fluidics cabinet)
	Enclosure Dimensions:	27 inches x 15 inches x 6 inches (695mm x 395mm x 158mm)
	Shipping Weight:	18kg (40 lbs)
Electrical	**Power Requirements:**	100-240 VAC, 100W, 50/60Hz
Data and Control	**Current Loops:**	Two 0/4-20 mA - Direct or Reverse Acting (Isolated). Maximum 900 ohm load.
	Relays:	Four SPDT, 5A @240V - Programmable
	Digital Comms:	RS232 ASCII protocol for data reporting
Regulatory	**Safety:**	CE: EN/IEC61010-1, cTUVus
	EMC:	CE: EN61326
	FCC:	Class A

Thermo Scientific Orion 2230 Silica Analyzer

Global support – With experience that comes from supporting our 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. To contact your local water quality specialists call 1-800-225-1480; outside North America, call 001 978-232-6000. For more information visit www.thermoscientific.com/water.

Cat. No.	Description
223000	Model 2230 Silica Analyzer
	Reagent and Standards
2230RE	Reagents 1, 2, and 3. Boxed separately, 1 liter each, 45 day supply.
223002	20 ppb Calibration Standard, 0.5 L
223010	100 ppb Calibration Standard, 0.5 L
223020	200 ppb Calibration Standard, 0.5 L
223030	1000 ppb Calibration Standard, 0.5 L

Maintenance and Service Items	
2230MK	Maintenance Kit - sample tubing harness, and tubing lubricant
2230PA	3 ea. Pump Head Tubing Covers
2230PS	Power Supply Assembly
2230FS	Power Fuses
2230PI	Air Purge Fittings
2230TK	Main Tubing Kit
2230BC	Empty Auto Cal Bottle (Validation Sample Bottle)
2230SF	Fittings, Sample In, Sample Out and Drain
2230RC	Reagent Bottle Cap - includes fittings
2230SC	Cal Bottle Cap - includes fittings
2230SAC	Sample Chamber

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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
info.water@thermo.com

Netherlands
Tel: (31) 033-2463887
info.water.uk@thermo.com

China
Tel: (86) 21-68654588
wai.asia@thermofisher.com

India
Tel: (91) 22-4157-8800
wai.asia@thermofisher.com

Singapore
Tel: (65) 6778-6876
wai.asia@thermofisher.com

Japan
Tel: (81) 045-453-9175
wai.asia@thermofisher.com

www.thermoscientific.com/water