



Orion 8030cX

Silica

Analyzer

Quick Start Guide

QUICK START GUIDE

Thermo Scientific Orion 8030cX Silica Analyzer

Unpacking

The silica analyzer has been carefully tested and packaged before leaving the factory. Open the inner and outer packing and check the product and accessories according to the Packing Checklist. If any components are missing or damaged, please contact Thermo Fisher or its representative office immediately.

- It is recommended that two people shall be used to lift and handle the instrument.
- In the process of lifting the instrument, the instrument door should not be used as the lifting point, otherwise the door and sealing elements could become damaged.
- The shipping box contains the analyzer, LVD (low voltage directive) safety manual, quick start guide, and user manual USB drive.

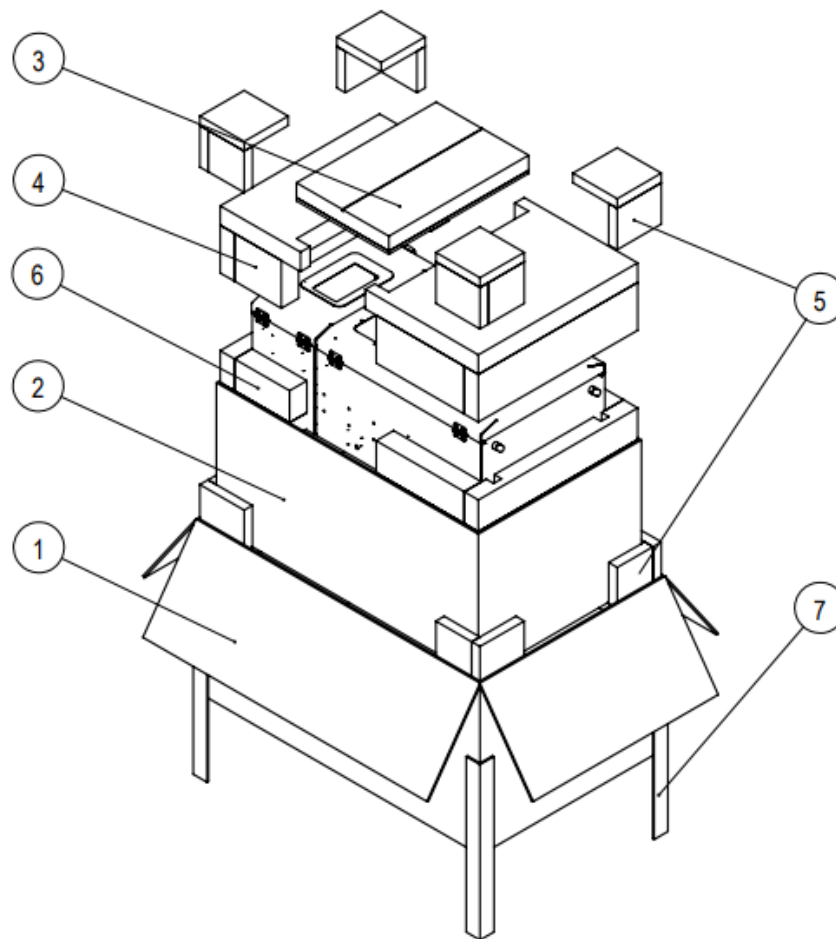


Figure 1. Open box

1	Outer Box	5	Corner Foam Blocks
2	Inner Box	6	Bottom Foam Insert
3	Accessories Box	7	Box Reinforcement Sleeves
4	Upper Foam Insert		

Mounting the 8030cX Silica Analyzer

The instrument can be hung on the wall using the mounting bracket, installed in a vertical cabinet, or put onto a table for operation. No matter what installation method is adopted, it is recommended to secure the instrument to prevent it from moving. After being mounted, the instrument shall not move freely in the process of operation.

Ensure that the selected wall on which the instrument is to be installed can support at least 4 times the weight of the instrument (about 40kg);

Enough space should be reserved on the right side of the instrument to facilitate wiring and placing the liquid waste tank or deionized water tank.

Enough space should also be reserved on the left side of the instrument to facilitate door opening, tubing for sample delivery and wiring.

The instrument should be installed at a position with suitable height. It is suggested that the screen shall be level with the operator's line of sight.

During installation, it is important to ensure that the instrument is level and not tilted. A level is recommended for leveling.

For the instrument installation, please refer to Figure 2.

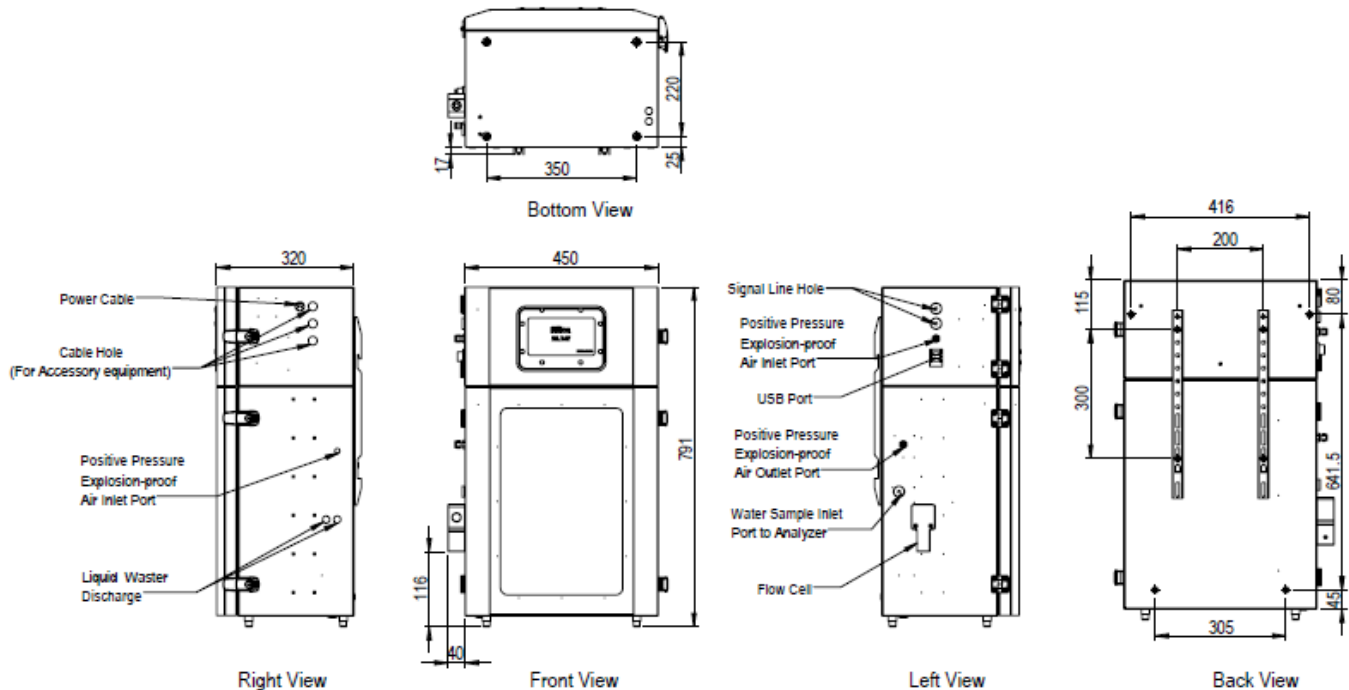


Figure 2. Silica Analyzer Installation Dimensions and Ports (Unit: mm)

Plumbing the 8030cX Silica Analyzer

The sample inlet is on the left of the analyzer. Please mount the flow cell onto the lower left side of the instrument. The flow cell allows fresh water sample to be collected by the analyzer. Connect the sample inlet soft tube to the bottom of the flow cell, while the other end goes to water sample source. Connect tubing to the overflow drain port on the right side of the flow cell; connect the small analyzer sample inlet fitting to the left side of the flow cell. Details of flow cell installation can be found in the user manual.


Wiring Power to the 8030cX Silica Analyzer

Safety Wiring

- Only trained or authorized operators are allowed to carry out electrical wiring and maintenance. Proper protection is required when working near electrically sensitive devices to avoid electrostatic discharge, otherwise the electronic components inside the circuit board may be damaged.
- It is recommended to release static electricity on an operators' body before touching any electronic components (such as the PCB board and its subcomponents).

Notes during Wiring

- Make sure that the instrument is not powered when wiring;
- Strip off a 6mm insulation layer from each cable;
- Insert the stripped metal wire into the wiring terminal and tighten the screw. The maximum torque for tightening the screw shall not exceed 0.6N*m, meanwhile the maximum pulling force shall not exceed 20N;
- The isolation design is applied to the external RS485 and 0/4-20mA interfaces;
- Maximum switching capacity of relay contacts: 250V/8A (resistive load).

	<p>Warning!</p> <p>The instrument is not equipped with a power switch, so the power switch with the functions similar to that of a breaker should comply with local safety standards and must be prepared before final installation.</p> <p>The circuit breaker should be as close to the instrument as possible and convenient to be controlled by the operator. When the instrument is powered off, there must be a clear and explicit indication.</p> <p>All conductors need to have a temperature resistance of at least 75°C.</p> <p>Do not power on the instrument until all preparation work (including reagent installation, water sample access, etc.) is completed!</p>
---	--

Connection of Power Cord

- The instrument is equipped with power wiring terminals in the electrical cabinet (see Figure 3 and Table 1).
- It is strongly suggested that the user shall install an external power switch or a circuit breaker (with GFCI protection) for easy shut-down or start-up. In addition, the instrument must be powered off during maintenance operations such as component replacement.
- The instrument power cord should be installed through the threaded conduit on the right side of the upper enclosure.
- The power cord shall be a certified 3-core wire, with a minimum of 0.75mm²/18AWG, and the temperature resistance shall not be less than 75°C. The power cord must be connected to a safely grounded terminal.

Table 1: Wiring Mode of AC Power Supply

Wire Terminals	Line (L)	Ground (G)	Neutral (N)
Wire Color	Brown	Yellow green	Blue
	Black	Green	White

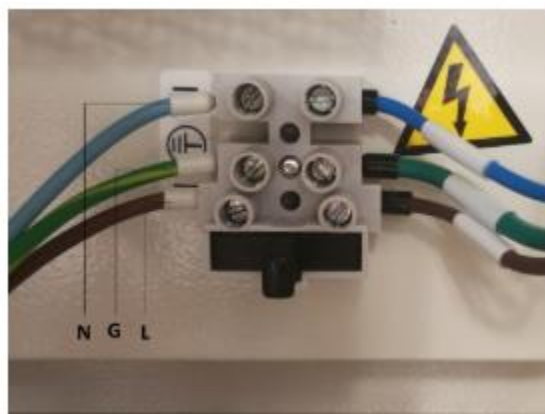


Figure 3. Wiring of AC Power Supply

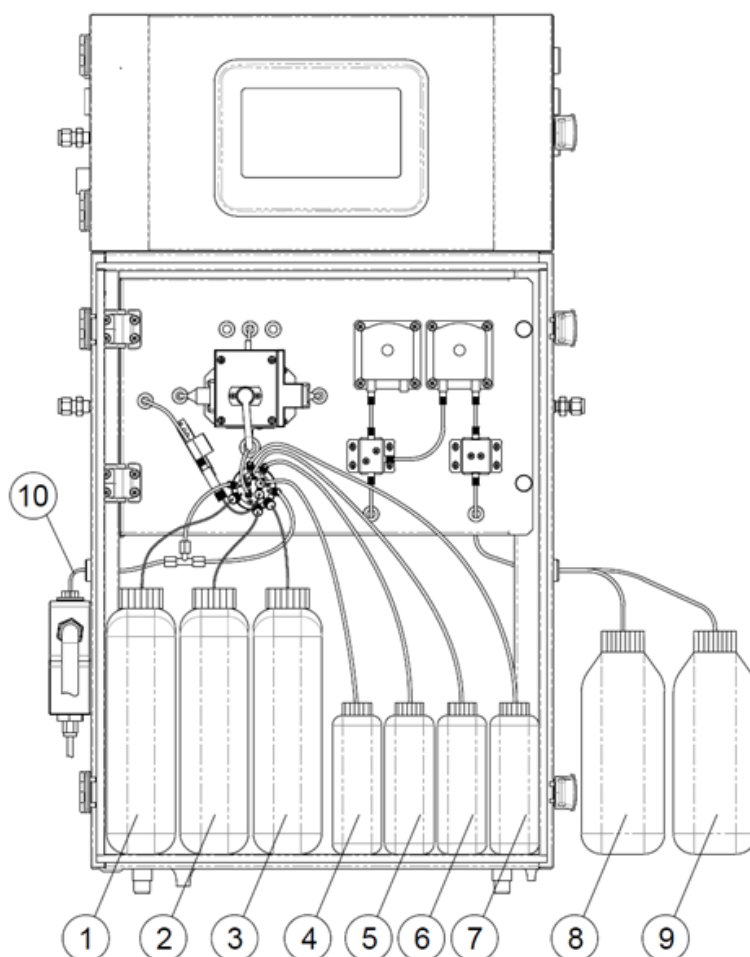
Reagent/Standard/Clean Solution Tubing Connection

Installation of Reagent Bottles and Tubing Connection

This instrument is equipped with a total of 3 reagents (Reagent 1, Reagent 2, and Reagent 3), a maximum of two standard solutions, one validation solution, and one cleaning solution. It is highly recommended to purchase them directly from Thermo Fisher.

Please refer to Figure 4 for the installation of specific reagents, standard solutions, validation solution and cleaning solution.


Refer to Table 2 for the schematic diagram of port positions on the electronic rotary valve (ERV) inside the instrument and its tubing connection information.



1	Reagent 1 bottle	6	Standard solution 1 bottle
2	Reagent 2 bottle	7	Standard solution 2 bottle
3	Reagent 3 bottle	8	Clean waste bottle/tank
4	Validation solution bottle	9	Chemical waste bottle/tank
5	Deep clean solution bottle	10	Sampling tube

Figure 4. Reagents, Standard Samples, and Cleaning Solutions Installation

Table 2: Electronic Rotary Valve (ERV) Port and its Port Connections

Installation Direction of Electronic Rotary Valve (ERV) and Port Connections	Port No.	Description	Remark
	Port 1	Cleaning Solution	To cleaning solution bottle
	Port 2	Standard Sample 2	To standard sample bottle 2
	Port 3	Standard Sample 1	To standard sample bottle 1
	Port 4	Water Sample 1	To water sample tube Tee
	Port 5	Reagent 3	To reagent bottle 3
	Port 6	Reaction/Measurement cell	To Reaction/Measurement cell
	Port 7	Reagent 1	To reagent bottle 1
	Port 8	Reagent 2	To reagent bottle 2
	Port 9	Water Sample 2	To water sample tube Tee
	Port 10	Validation	To validation bottle
	Intermediate Port (CTR)	Common port	To the buffer ring

Note:

- Only trained and qualified personnel can perform reagent-related operations;
- The various liquid delivery tubings must be correctly inserted into the corresponding reagent bottles and standard solution bottles;
- Ensure that the tubing is fully inserted and touches the bottom of the bottle;
- After installation, ensure that all vent holes of the bottles are unblocked;
- The length of reagent tubing, R1, R2 and R3 should be controlled within a certain range, and it is suggested not to exceed 1.0 meter.
- For the installation of the reagent bottles and standard solution bottles, it is recommended to follow the process shown below.

1. Take the guide tube assembly out of the accessory bag and pull out the guide tube from the inverted barbed joint.



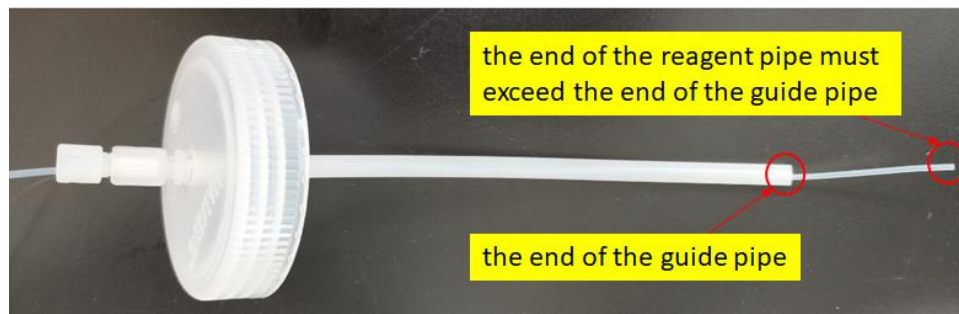
2. Remove the cap of a reagent/solution bottle and use a tool to cut a round hole with a diameter of about 4mm. The tool can be a power drill, a drill-press, a knife, etc.



3. Insert the inverted hook joint into the opening of the bottle cap, and then insert the guide tube into the inverted hook joint to connect them together.



4. Insert the small reagent/solution tube attached to the analyzer into the guide tube. The end of the small reagent/solution tube must exceed the end of the guide tube by a few centimeters so that the small reagent/solution tube inlet is close to the bottom of the solution bottle. Then, lock the inverted cone connector at the top of the bottle cap, so that the small reagent/solution tube is firmly fixed on the bottle cap. This tube assembly fixes the small reagent/solution tube inlet to the bottom of the solution bottle.



5. Place the newly-assembled bottle cap on the reagent bottle and tighten it.



Installation of Clean Waste Tank, Chemical Waste Tank, or Drain Connections

Please refer to Figure 4 and Table 2 regarding waste tubing.

The instrument has two liquid waste tubes for discharging spent chemical and sample. Waste can either be collected or discharged to the drain/waste system, depending on site requirements.

If waste is collected, one waste tube should be connected to a designated chemical waste tank and the other tube should be connected to a designated clean waste tank. It is also recommended that the waste tubing is secured to the lid of the waste tank to prevent chemical spills.

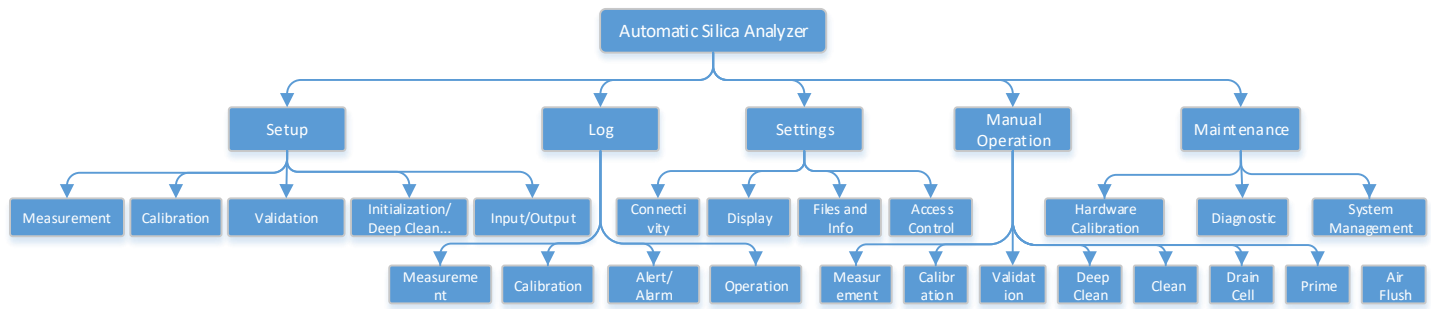
If waste is to be discharged to the drain/waste system, route the waste tubing as appropriate to the drain/waste system. Ensure the tubing is secured to the drain to prevent chemical spills.

Instrument Fluidics Priming

Before starting analysis, it is recommended to prime all sample and reagent tubing. The main purpose of priming is to remove air from the reagent and water sample lines by filling the tubing with fresh sample and reagents, ensuring proper analysis. It is recommended to prime 3 mL of sample to prevent “lack of sample” alarm.

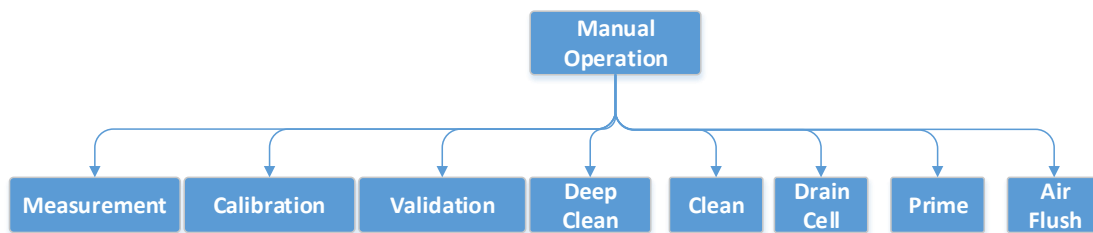
Users have eight options when priming: water sample, standard 1, standard 2, reagent 1, reagent 2, reagent 3, validation, and cleaning solution. For details, please refer to the instruction manual.

Menu Interface Navigation Tree



Manual Operation

The Orion 8030cX Silica Analyzer provides users with the following Manual Operation menus: Measurement, Calibration, Validation, Deep Clean, Clean, Drain Cell, Prime and Air Flush.



Calibration

Click “Start” to begin manual calibration. Before calibration, it is recommended to check the Calibration Range, Points (Double - two-point calibration, or Single), Standard Concentrations, allowable deviation, and calibration failure response mechanism. Default settings are recommended to begin with. If these parameters need to be modified, enter the Calibration Setup menu to modify the parameters and enter the Manual Operation-Calibration menu again after saving.

For the range 0~1000µg/L (ppb), if calibration points is set to Double (two point calibration - recommended), check the Setup-Calibration Setup menu to ensure that the settings for Standard 1 Conc. (Default is 20µg/L) and Standard 2 Conc. (Default is 200µg/L) match the concentrations of the solution bottles installed in the instrument. If calibration point is set to single, ensure that the settings for Standard 1 Conc. (Default is 20µg/L) match the concentration of the bottle connected to the Standard 1 tubing. Also, for single point calibration, the Calibration Background should be set according to the background of reagent solutions, such as 3ug/L (or use earlier double point calibration background - intercept). For the range of 1000~5000µg/L, two calibration points are strongly recommended to ensure measurement accuracy. In this range, Standard 1 Conc. should be set to 1000µg/L, Standard 2 Conc. should be set to 4000µg/L, and the corresponding standard solution bottles should be used.

After the instrument calibration is finished, the instrument will pop up a window to show calibration results. Click “Confirm” to complete the instrument calibration.

The calibration results of the instrument will be kept in calibration records. Users can enter the Log-Calibration Log page to view the calibration results.

Validation

Validation is used to verify the instrument performance. A validation solution with known concentration is used for verification. 20µg/L silica standard is often used for validation for ultrapure water. Insert the validation tubing into the validation solution bottle, go to Measurement-Validation and check the validation setup parameters in the validation setup menu, then click the “Start” button for validation.

When conducting the instrument verification, it is recommended that the validation solution shall be purchased from official channels.

If the validation fails, a new calibration is recommended. Auto-calibration can be setup in the Setup-Validation Setup menu. In the “Action When Fails” setting, select Calibrate to enable this auto-calibration feature. It is recommended to perform Validation again to ensure that the re-calibration was effective.

Measurement

Click “Start” to run measurements according to the configured parameters. Relevant measurement parameters and measurement progress is displayed on this page. Before measurement, it is recommended to check the measurement parameters. If any modification is needed, enter the Setup-Measurement Setup menu to modify the parameters and enter the Manual Operation-Measurement page again after saving.

During measurement, the current operation can be aborted by clicking “Stop”. It is not recommended to use the “Stop” function under this circumstance as pressing “Stop” will cause the instrument to fully flush the lines and rinse the flowcell.

Global support - with experience that comes from supporting our customers for over 50 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.thermofisher.com/processwater.