Silica Analyzer

THORNTON
Leading Pure Water Analytics

2800Si Silica Analyzer

- Fully automatic calibration
- Trace sensitivity
- Grab sample capability
- Low maintenance

Automated Silica Measurement

Dependable and Sensitive

METTLER TOLEDO

2800Si Silica Analyzer for
Contamination Detection in Water Treatment

The Thornton 2800Si Silica Analyzer is a reliable on-line instrument designed specifically for pure water treatment and power cycle chemistry monitoring. This Analyzer provides assurance of water purity to optimize ion exchange production of pure water and to minimize silica deposition in turbines. Early detection of trace contamination is enabled with minimal operator supervision.

Features	Benefits
• Automatic, unattended calibration	• Provides excellent repeatability and saves operator time
• Automatic zeroing with every measurement	• Assures measurement stability
• Convenient grab sample capability	• Allows measurement of additional samples for QC checks in other areas of the plant
• Simultaneous display of silica and measurement timing	• Provides convenient analyzer status at a glance, saving operator time
• Full enclosure	• Safely protects reagent containers and components from plant environment
• Large reagent containers enable a long service interval	• Reduces maintenance time
• End of measurement relay signal	• Enables use with sample sequencer for multi-stream measurements

Applications

Ultrapure water monitoring at ppb silica levels can assure the highest quality water is being delivered. Silica breakthrough of polisher anion resin is detected at very low ppb levels and contaminated water can be diverted before it reaches critical areas.

Pure water treatment anion exchange monitoring detects the first breakthrough of silica to trigger regeneration before contamination reaches subsequent treatment stages.

Power steam quality monitoring protects turbines from silica deposition and resulting imbalance, loss of capacity and efficiency. Silica measurement and control may also be needed to meet turbine manufacturer warranty requirements.

Power condensate polisher monitoring can detect the need for regeneration at low ppb levels before feedwater is significantly contaminated.

2800Si Silica Analyzer
Reliable Operation

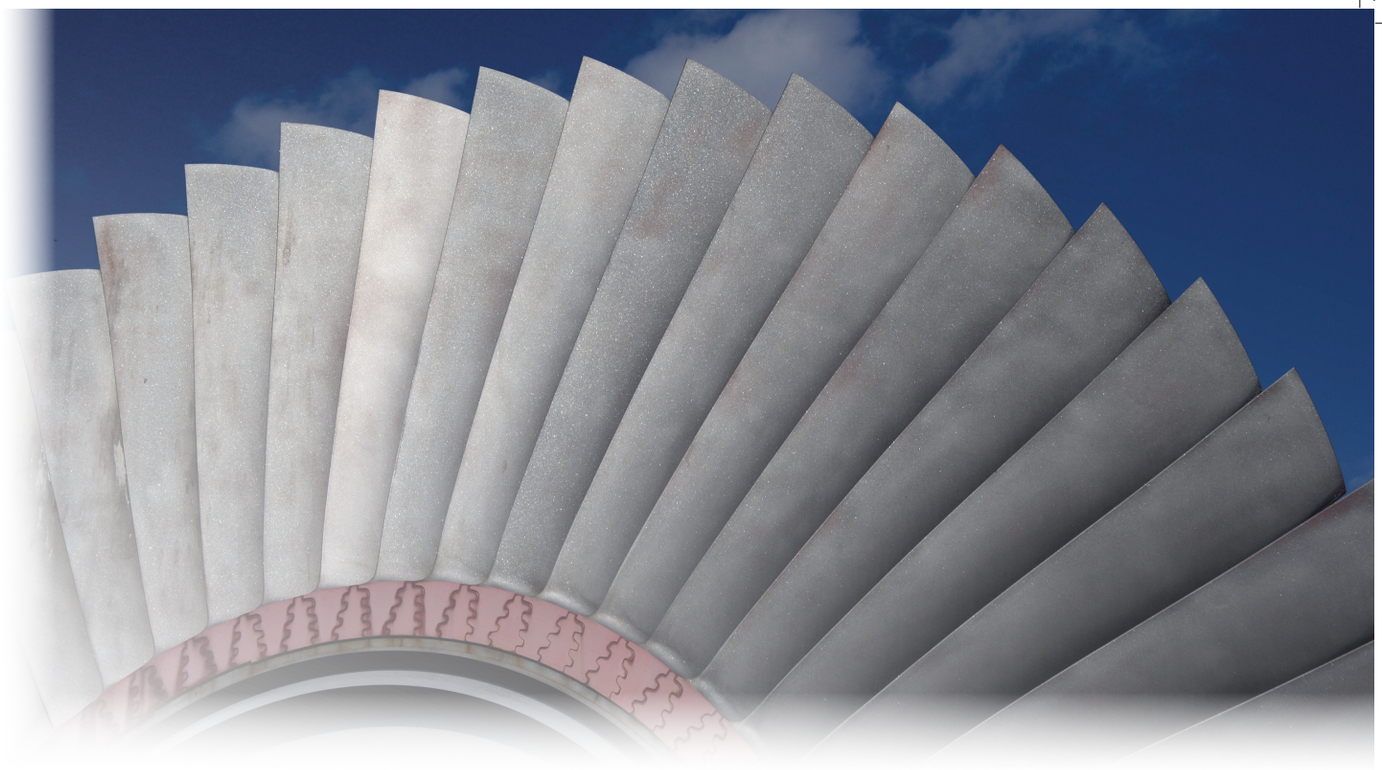
Operation
In the analyzer the sample passes through an overflow assembly that assures a fresh up-to-date sample is always available at the start of each measurement cycle. A rinse period purges the previous sample from the reaction/measurement chamber and fills it with the current sample. The measurement is zeroed. Then, reagents are metered in and reaction time allowed to produce a color change proportional to silica concentration. Where phosphates are present, an additional reagent is included to minimize its interference.

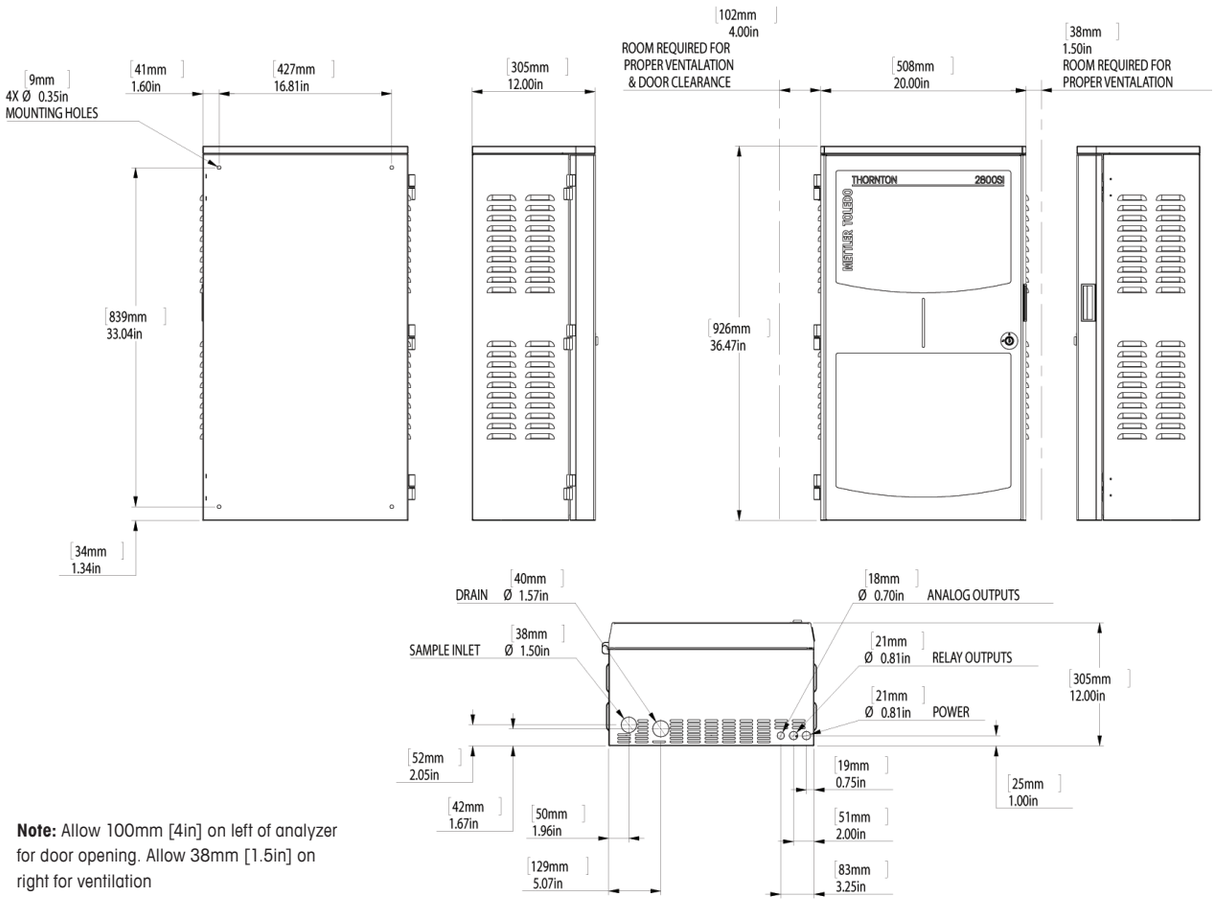
The measurement is made, the display and outputs are updated and the cycle repeats. The operator can configure the measurement interval to optimize the tradeoff of response time vs. reagent consumption. The 2800Si conforms to ASTM Test Method D7126.

The measurement incorporates Intelligent Sensor Management™ capability which stores identification, calibration and additional sensor data within the sensor. The measuring circuit is built into the sensor which then sends a robust digital signal to the readout module.

Calibration
The 2800Si performs a zero calibration before each measurement cycle. An automatic span calibration is performed at scheduled intervals (monthly is typical) using a known silica concentration standard. The calibration cycle may also be initiated manually.

Installation
The analyzer is provided with a full dust and drip resistant locking enclosure that protects the reagents and measurement components from the plant environment. .





Note: Allow 100mm [4in] on left of analyzer for door opening. Allow 38mm [1.5in] on right for ventilation

Visit the competence center
www.mt.com/pro_power

2800Si Silica Analyzer
Product Specifications

Measurement	
Range	0-5,000 ppb
Resolution	4 digits with decimal, auto-ranging; 0.001 ppb in lowest range
Limit of detection	0.5 ppb
Accuracy	± 5% of reading ±1 ppb, typical
Measurement cycle time	Adjustable, 20 min typical
Reagent consumption	Approx. 4 L per 3 months with 20 min measurement cycle time
Sample flowrate	200-250 mL/min
Sample temperature	5-60 °C (41-140 °F)
Sample pressure	0.3-7 bar (5-100 psig)
Zero calibration	Automatic, every measurement cycle
Span calibration	Automatic per schedule; once per month, typical
Grab sample measurement	1 L capacity

Outputs	
Analog output	Powered 0/4-20 mA, 22 mA alarm, 500 ohm max load, not for use with externally powered circuit
Analog output accuracy	±0.05 mA
Analog output scaling	Linear, bi-linear, logarithmic (1,2,3,4 decades), auto ranging
Relay contacts	two unpowered, SPDT, 250 VAC/30VDC, 3 A resistive, freely assignable to set point for silica; other relays used for measurement and auto-cal

Installation/Power/Enclosure	
Operator interface	4-line backlit LCD, 5 tactile keys; simultaneous display of silica concentration and measurement or auto-cal status
Process connections	Sample inlet: 1/4″ or 6 mm OD tube SS compression fitting Drain hose: 19 x 25.4 mm (¾ x 1″), 2 m (6 ft) length included
Power	100-240 VAC, 50-60 Hz, 25 W; on power loss all settings are retained without batteries
Dimensions HWD:	Enclosure: 927 x 531 x 305 mm (36.5 x 20.9 x 12″)
Weight	42 kg (93 lbs)
Ambient operating temperature	10-50 °C (50-122 °F)
Humidity	10-90% non-condensing
Ratings/approvals	CE and UL pending

Specifications subject to change

2800Si Silica Analyzer
Ordering Information

Description	Order No.
2800Si Silica Analyzer	**58 043 003**
Required Startup Kit for 2800Si Includes 3-month supply of dry reagents* and 1 L of 250 ppb silica calibration standard solution.	**58 091 276**
Sulfuric acid, 10% w/w, 10 L (used with dry reagents)	**58 140 033****

Spare Parts and Accessories	
Consumables, 6 months – dry reagents*, pump tubing, air filters, for measuring samples with phosphates. Eight liters of 10% sulfuric acid are also required to complete the reagent complement.	**58 091 250**
Consumables, 6 months – dry reagents*, pump tubing, air filters, for measuring samples without phosphates. Eight liters of 10% sulfuric acid are also required to complete the reagent complement	**58 091 251**
Dry reagents* for samples with phosphates–3 month supply	**58 091 252**
Dry reagents* for samples without phosphates–3 month supply	**58 091 253**
Solution – 1 L of 250 ppb silica calibration verification standard (250 ppb as SiO_2 using sodium silicate)	**58 078 020**
Solution - 1 L of 500 ppb silica calibration/verification standard (500 ppb as SiO_2 using sodium silicate)	**58 078 021**

* Four liters of 10% sulfuric acid purchased in polymer container and 8 liters of deionized water are required to mix with dry reagents, sufficient for a 3 month period when operating continuously at 20 minutes per measurement.

** Part number available only in the USA. In other countries consult your local METTLER TOLEDO pure water analytics representative for local sourcing.

www.mt.com/pro-power

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Visit for more information

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