

Sodium Analyzer

THORNTON

Leading Pure Water Analytics

2300Na Sodium Analyzer

Fully automatic calibration

Trace sodium sensitivity

Reagent addition confirmation

Grab sample capability

Low maintenance



Automated Sodium Measurement
Sensitive and Reliable

METTLER TOLEDO

2300Na Sodium Analyzer for Water Treatment & Contamination Detection

The Thornton 2300Na Sodium Analyzer offers a new design for a traditional measurement for pure water treatment and power cycle chemistry monitoring. This Analyzer provides assurance of water purity to maximize water production and minimize corrosion. Early detection of trace contamination is enabled with minimal operator supervision.

Features

- Fully automatic, unattended calibration
- Reagent addition confirmation by pH
- Convenient grab sample measurement
- Slow and complete reagent consumption
- Simultaneous display of sodium, adjusted pH, temperature and calibration progress
- Automated electrode conditioning with each calibration
- Four analog outputs for sodium, pH and temperature with choice of scaling
- Choice of two enclosures

Benefits

- Assures reliable operation while saving technician time
- Assures consistent measurement results
- Additional samples and QC checks for other areas of the plant
- Saves reagent costs and eliminates waste disposal issues
- Provides convenient analyzer and sample status at a glance, saving operator time
- Minimizes the need for electrode etching
- Enables full integration into data acquisition or control systems
- Fully enclosed for dirty plant environments or with controls conveniently accessible for clean sample rooms

Applications

Ultrapure water monitoring at sub-ppb sodium levels can assure the highest quality water is being delivered. Sodium breakthrough of a polisher cation resin is immediately detected at sub-ppb levels and contaminated water can be diverted before it reaches critical areas.



Pure water treatment cation exchange monitoring detects the first breakthrough of sodium to trigger regeneration before contamination reaches subsequent treatment stages. The 2300Na Analyzer has sufficient reagent delivery capacity to handle the acidic samples from cation exchanger effluent.

Power steam quality monitoring protects turbines from sodium attack that would result in stress corrosion cracking and other failures. Sodium measurement and control help to meet turbine manufacturer warranty requirements.

Power condensate monitoring can detect very small leaks early to allow time to plan corrective action before the leaks grow and require shutdown. Condensate polishers can also be monitored for breakthrough.



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Straightforward Operation

Operation

The sample passes through an overflow assembly that assures precise pressure and flow regulation. The flowrate is set by a needle valve and rotameter at only 40 mL/min, saving pure water and reagent. Diisopropylamine vapor diffuses into the sample without contamination through gas-permeable tubing.

The reagent raises the pH of the sample to approximately 11 pH to enable the ion-selective electrode to respond only to sodium ion concentration. The sample passes through the sodium sensor flow tube and into the larger flow chamber containing a combination probe including the reference electrode, a pH electrode and temperature compensator. The pH electrode measurement provides confirmation that the correct amount of reagent has been added to the sample. The reference and temperature

compensator are shared with the sodium measurement. The sample then passes to drain.

Electrodes incorporate Intelligent Sensor Management™ capability which stores all identification, calibration and real-time predictive maintenance data within the sensor. The measuring circuit is also built into the sensor which eliminates high impedance connections and potential signal loss.

Calibration

The 2300Na offers both automatic and manual calibration options.

Automatic calibration is accomplished at concentrations close to the operating range. The 2300Na uses robust, relatively concentrated standard solution which is less vulnerable to contamination. This standard is automatically diluted to lower concentrations using the

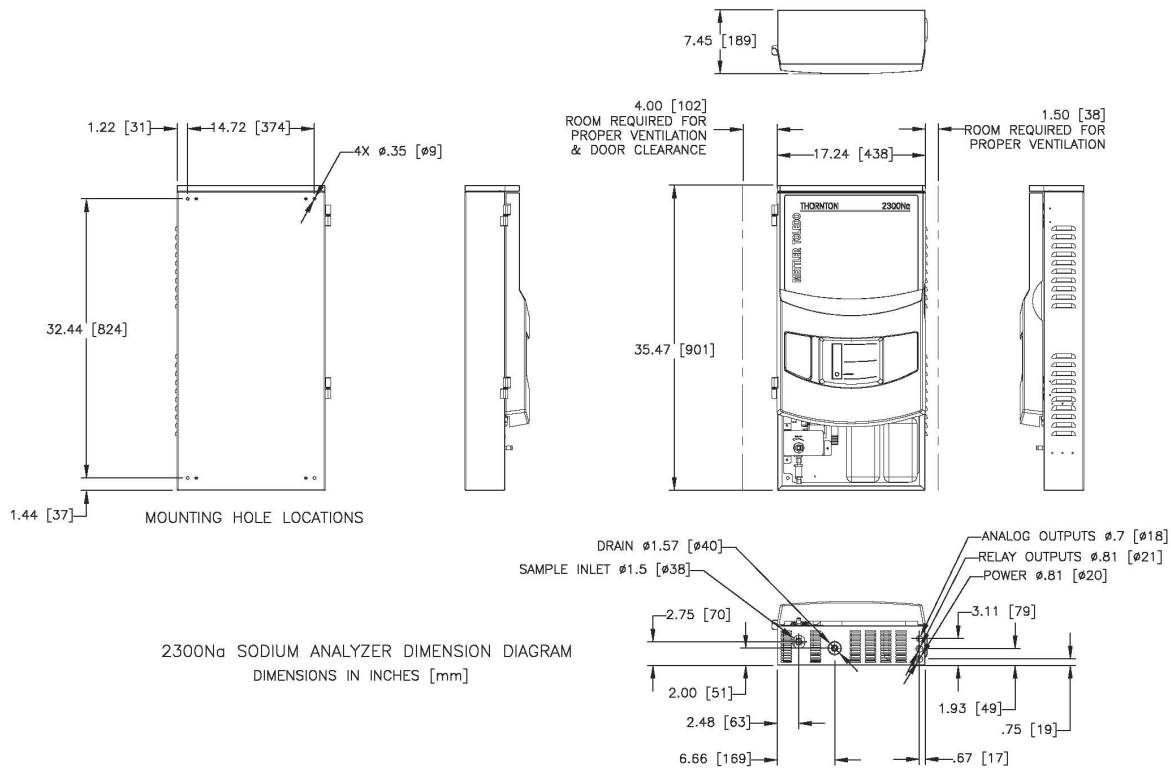
double known addition method. The automatic calibration timer schedules periodic unattended calibration or calibration can be initiated from the keypad.

The manual calibration mode uses one or two standard solutions and directly calibrates at those concentrations. The standards have high enough concentration that trace contamination is minimized.

Installation

The analyzer is provided with either a partially enclosed case for easy access to controls for use in a clean sample room, or with a full dust and water resistant lockable door for plant floor installation.

The 2300Na complies with ASTM Test Method D2791.

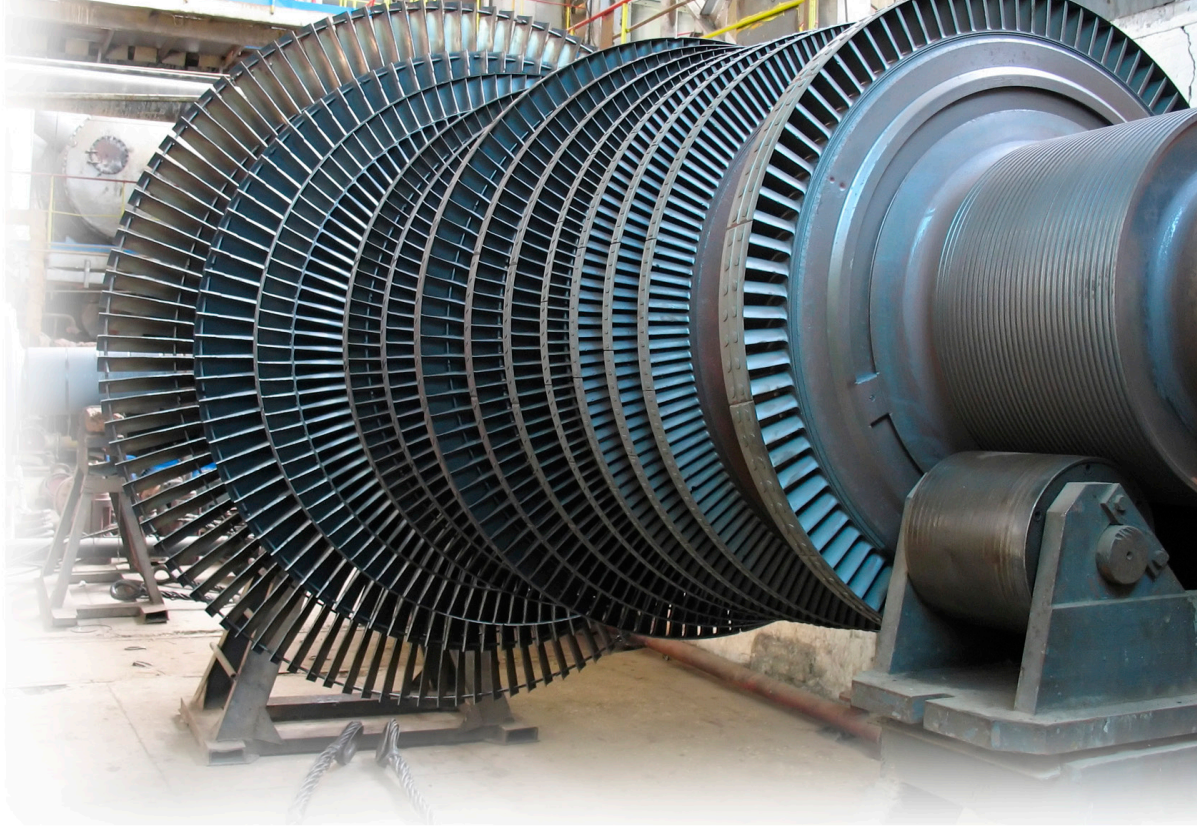


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Product Specifications

Measurement

Range, sodium	0.001-100,000 ppb or equivalent ppm, auto-ranging
Resolution, sodium	4 digits with decimal, auto-ranging; 0.001 ppb in lowest range
Accuracy, sodium	± 10% of reading ± 0.05 ppb, typical
Response time (90%)	5 min
Update rate	Once per second
Reagent consumption	Diisopropylamine, DIPA, approximately 0.7 L filling per 2 months; more at higher temperatures and for cation exchange samples
Sample pH	2.5 -12
Sample flowrate	>40 mL/min (>20 mL/min for cation exchange samples), excess to drain
Sample temperature	5-50 °C (41-122 °F)
Sample pressure	0.3-7 bar (5-100 psig)
Calibration	Automatic, unattended 3-point known addition; manual 1- or 2-point
Electrode conditioning	Part of auto-cal sequence
Grab sample measurement	Included
Range, pH	0-14 pH, reagent conditioned sample
Range, temperature	0-100 °C



Outputs

Analog outputs	For sodium, conditioned pH, temperature; four powered 0/4-20 mA, 22 mA alarm, 500 ohm max load, not for use with externally powered circuits
Analog output scaling	Linear, bi-linear, logarithmic (1,2,3 or 4 decades) or auto-ranging
Analog output accuracy	±0.05 mA
Relay contacts	Two unpowered, SPDT, 250 VAC/30VDC, 3 A resistive freely assignable to set-points for sodium, pH, temperature; other relays used for auto-cal
Range, temperature	0-100 °C
Resolution, temperature	Adjustable 0.01 to 1 °C

Installation/Power/Enclosure

Operator interface	4-line backlit LCD, 5 tactile keys; simultaneous display of sodium, conditioned pH, auto-cal status (temperature optional)
Connections	Sample inlet: 1/4" or 6 mm OD tube SS compression fitting Drain hose: 19 x 25.4 mm (3/4 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 enclosures:	900 x 450 x 190 mm (35.4 x 17.7 x 7.5")
Weight	27 kg (60 lbs)
Ambient operating temperature	10-45 °C (50-113 °F)
Humidity	10-90% non-condensing
Ratings/approvals	CE, cULus

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Ordering Information

Description	Order No.
2300Na Sodium Analyzer, with partial enclosure for clean sample room, includes sodium and pH/reference electrodes and drain tubing	58 042 001
2300Na Sodium Analyzer, with full dust & water resistant lockable enclosure, includes sodium and pH/reference electrodes and drain tubing	58 042 002
Required Startup Kit for 2300Na Includes 1 L of 100 ppm sodium calibration standard solution, 250 mL of 7 and 10 pH buffer solutions and etch solutions, for 6 months of operation. (Diisopropylamine [DIPA] reagent must be specified separately)	58 091 233
Diisopropylamine (DIPA) reagent, 2.5 L (for 6 months normal operation; less time at elevated temperature or for cation exchange application)	58 140 017*

Spare Parts and Accessories

Consumables kit 1 year - Includes sodium and pH/reference electrode, air filters, sample filter, diffusion tubing, 2L of 100 ppm calibration standard, etch solution, 250 mL of 7 and 10 pH buffer solutions	58 091 200
Replacement sodium electrode	52 003 944
Replacement pH/reference electrode	52 003 943
Solution, 1L of 100 ppm calibration standard	58 078 010

Standard solutions are 100 ppm as sodium, using sodium chloride.

* 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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CE Compliant



UL Listed
Meets Canadian Standards