

A₂O Advanced Automated Osmometer

A fully automated, multi-sample osmometer that sets the new benchmark for analytical performance, ease of use, and true walkaway operation.



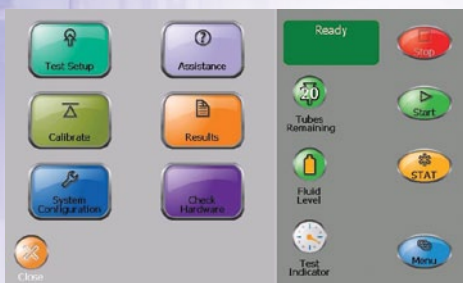
Discover How A₂O Takes Osmometry to the Next Level

A₂O Software Features

Flexible Sample Testing — The test setup features of the A₂O allow you to develop customized sample testing protocols specific to your laboratory or test method. All Advanced calibration and control solutions are bar coded so the system can automatically distinguish between control solutions and lab samples. Replicate samples can be processed from a single sample test tube, allowing the system to process samples and control solutions in a variety of different ways. Choose from a predefined list of test protocols, or develop one specifically for your test method.

Built-in Quality Control — The A₂O software package comes complete with a host of enabling quality control features, including:

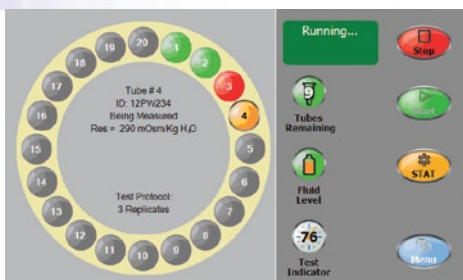
- Automated system calibration with statistical graphing and reporting features
- Built-in system linearity check with statistical reporting capabilities
- Ability to set method control limits for system controls and patient samples
- Ability to track quality control data over time and construct Levey-Jennings charts
- Statistical monitoring and graphing of daily controls
- Ability to abort test sequence if control limits are out of specification



Selectable System Operation and Access Levels — A₂O system operation and access can be configured in a variety of different ways, depending on the needs of your laboratory. Open access is allowed for any operator to run samples and edit test protocols. A supervisor mode is available that disallows certain operations. Operator login and password protection are also available, allowing the system to associate test results with operator ID.

STAT Sample Capability — When you need a test result fast, simply initiate the STAT feature and let the system do the rest. The STAT sample is seamlessly processed using the same test protocol without disrupting the current test sequence. It's that simple.

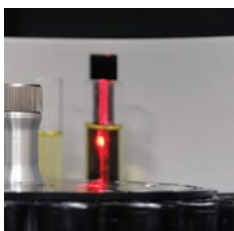
Enhanced LIS and Data Management Capability — The A₂O features bidirectional data communications, a Windows® CE operating system, and an onboard computer, plus Ethernet and multiple USB ports to enhance connectivity and data transfer. The A₂O also offers the ability to store test results over a user-defined period, along with an enhanced search capability to retrieve archived test results. Test data can easily be exported to a thumb drive or external memory device, allowing the system to associate test results with operator ID.



The A₂O™ from Advanced Instruments is a fully automated, multi-sample osmometer that incorporates over 50 years of applied technology experience in the field of freezing-point osmometry. The A₂O combines a functional design, exceptional analytical performance, and an intuitive software control package that is both powerful and elegantly simple to operate. Every aspect of the A₂O has been intelligently engineered to fully automate osmolality testing with ease and simplicity. It is ideally suited for today's busy laboratories, which are being asked to achieve more results, faster — yet with fewer resources.

Intelligent Liquid Handling

At the heart of the A₂O osmometer's liquid handling system is a pipette that features both liquid-level sensing and crash detection capabilities. The system automatically detects the level of the sample in the tube and precisely transfers a 100 µL sample for processing. This eliminates the need for manual liquid handling, which often leads to sampling errors and inaccurate test results. A fluid management system automatically cleans the pipette after each sample to prevent carryover and cross-contamination. System fluid and waste levels are managed through software control, making it easy to know when fluid replacement is required.



Positive Sample Identification

An integrated bar code scanner automatically performs an initial scan of the primary sample carousel, determining both the number of samples present and their bar code IDs. The sample bar code is confirmed again immediately before sample processing, providing positive sample identification and eliminating the possibility of transcription errors. The scanner can be turned off if no bar codes will be used, and sample IDs can be entered manually through the keypad function of the software interface.

Easy Sample Loading

Twenty-position primary sample tube carousel is intelligently designed to accommodate any size of sample tube between 11 mm to 17 mm width and 75 mm to 125 mm height. The carousel also can be removed from the system for easier loading.

The Next-Generation Osmometer From Advanced Instruments

Onboard printer allows for easy printout and archiving of test results

Touchscreen user interface has a menu-driven operating system, intuitive software control, and multi-language capability; operating the A₂O is a snap

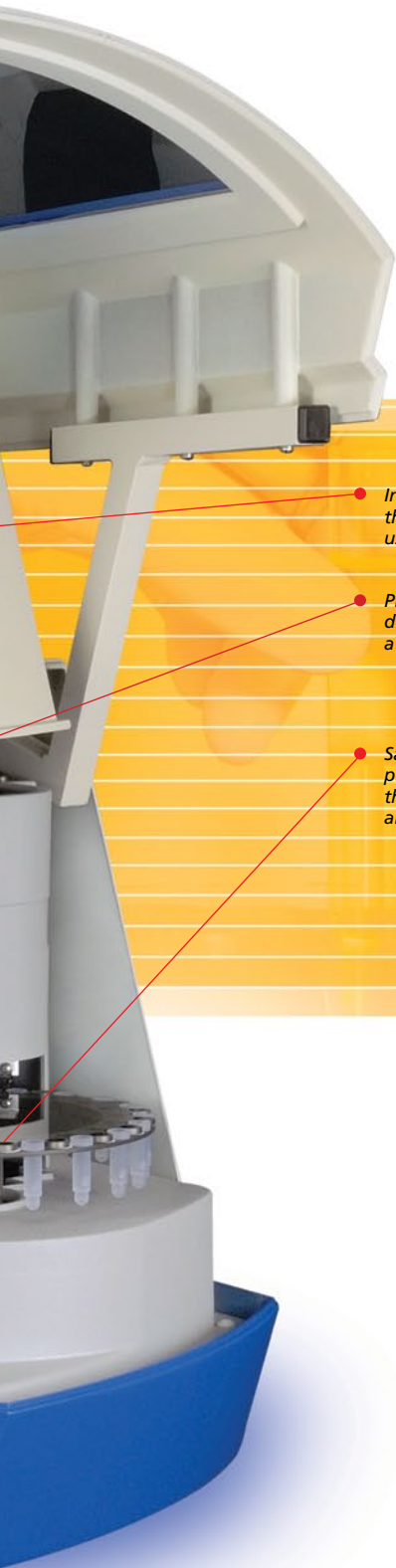
Pipette cleaning station cleans the pipette between samples and eliminates carryover and contamination

Fluid management system's cleaning fluid and waste containers are easily visible and accessible; software control tells you when the fluid needs replacement

Ethernet and multiple USB ports allow for superior connectivity and easy export of data

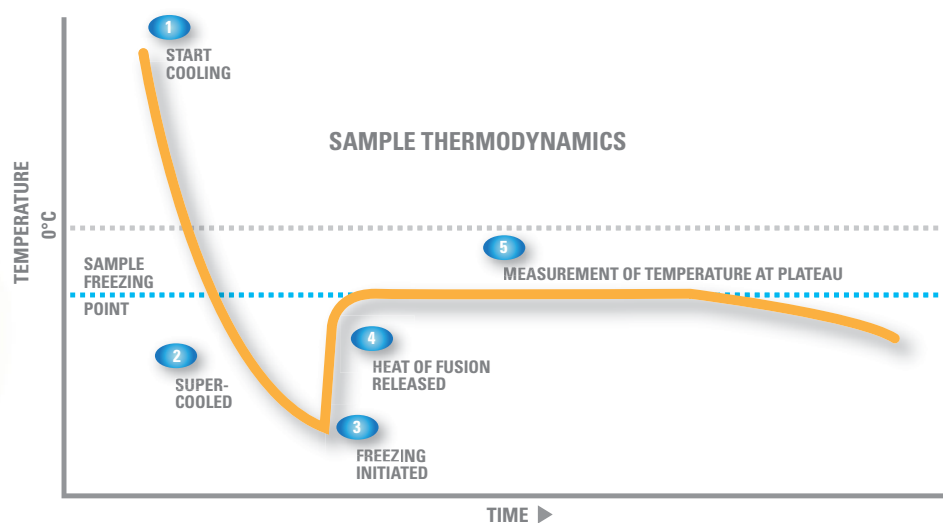
Integrated bar code scanner with software control provides positive sample identification while eliminating transcription errors





- Integrated keypad provides the ability to operate the system independently from the touchscreen user interface
- Pipetting system features liquid-level sensing, and crash detection automates sample handling by precisely delivering a 100 μL sample to a clean sample tube for processing
- Sample tube carousel holds up to 20 clean sample tubes and a probe wiper ring; carousel is removable for easy loading, and the software will alert the operator when new tubes are required

Theory of Freezing Point Depression for Osmolality Determination



Advanced® osmometers utilize the industry-preferred freezing point depression method to determine the osmolality of an aqueous-based solution. When a solute (particles) is dissolved in a solvent (water), the freezing point of that solution is lowered compared to that of the solvent alone. As more solute is added, the freezing point decreases further. Therefore, by precisely measuring the freezing point of the solution, the osmolality (i.e., concentration) can be determined.

A₂O Advanced Automated Osmometer

ABOUT ADVANCED INSTRUMENTS

Advanced Instruments, Inc., and our subsidiaries, Delta Instruments and Mart Microbiology, design and manufacture instrumentation for clinical, pharmaceutical, biotechnology, microbiology, and food laboratories. Our quality brands include Spiral Biotech, Fiske, and D & F Control Systems. The products we make help healthcare providers improve the quality of care, and industrial companies enhance quality and productivity.

A₂O Osmometer System Specifications*

Sample Test Volume	100 µL
Minimum Sample Volume	150 µL
Sample Capacity	20-sample carousel
Test Time	90 seconds
Sample Throughput	Can process 20 samples in less than 1 hour
Units	mOsm/kg H ₂ O
Range	Low: 0 to 2000 mOsm/kg H ₂ O; full: 0 to 4000 mOsm/kg H ₂ O
Resolution	1 mOsm/kg H ₂ O
Calibration	3-point calibration for low range, 4-point for full range
Communications	Onboard printer, DTE EIA-232 (RS-232) serial port, Ethernet, USB (3), integrated bar code scanner
Linearity ¹	Low range: less than ±0.5% from a straight line between 0 and 2000 mOsm/kg H ₂ O High range: less than ±1.0% from a straight line between 2000 and 4000 mOsm/kg H ₂ O
Repeatability ¹	Standard deviation ±2 mOsm/kg H ₂ O between 0 to 400 mOsm; standard deviation ± 0.5% of value between 400 to 4000 mOsm
Drift ¹	Less than 1 mOsm/kg H ₂ O per month
Temperature Effects ²	Less than 1 mOsm/kg H ₂ O per 5°C (9°F) ambient temperature change
Storage Temperature	-40°C to +45°C (-40°F to +113°F)
Electrical Voltage	90-264 V AC (50-60 Hz)
Power Consumption	350 W
Dimensions (D x W x H)	20.5" x 23.6" x 22.8" (51.3 cm x 59.0 cm x 57.0 cm)
Net Weight	68.0 lb (30.6 kg)
Shipping Weight	80.0 lb (36.0 kg)
Warranty	One-year limited warranty on workmanship and all parts except glass, plastic, and parts warranted by their makers

¹ Performance at Reference Conditions — 20°C to 25°C (68°F to 77°F); 40% to 60% relative humidity; tolerances of reference or calibration solutions excluded

² Operating Conditions — 18°C to 35°C (64°F to 95°F); 5% to 80% relative humidity (noncondensing)

* Specifications subject to change



The management system governing the manufacturing of this product is ISO 9001 and ISO 13485 registered.

A₂O Osmometer Parts and Supplies

Part #	Description
Osmometer Calibration Standards and Reference Solutions	
200200	50 mOsm Calibration Standard, 2 mL Vials 8-pack
200201	100 mOsm Calibration Standard, 2 mL Vials 8-pack
200202	200 mOsm Calibration Standard, 2 mL Vials 8-pack
200203	400 mOsm Calibration Standard, 2 mL Vials 8-pack
200204	500 mOsm Calibration Standard, 2 mL Vials 8-pack
200205	850 mOsm Calibration Standard, 2 mL Vials 8-pack
200206	900 mOsm Calibration Standard, 2 mL Vials 8-pack
200207	1000 mOsm Calibration Standard, 2 mL Vials 8-pack
200208	1500 mOsm Calibration Standard, 2 mL Vials 8-pack
200209	2000 mOsm Calibration Standard, 2 mL Vials 8-pack
200210	3000 mOsm Calibration Standard, 2 mL Vials 8-pack
200211	Clinitol 290 mOsm Reference Solution, 2 mL Vials 8-pack
200212	A ₂ O 6-Level Linearity Kit, 2 mL Vials 2x6 levels 12-pack
Osmometer Control Solutions	
200213	Protinol 3-Level Osmometer Serum Control Kit, 2 mL Vials 4x3 levels 12-pack
200214	Protinol 280 mOsm Serum Control, 2 mL Vials 8-pack
200215	2000 mOsm Calibration Standard, 2 mL Vials 8-pack
200216	Protinol 320 mOsm Serum Control, 2 mL Vials 8-pack
200217	Renol 2 Level Urine Control Kit, 2 mL Vials 2x8-pack
200218	Renol 300 mOsm Urine Control, 2 mL Vials 8-pack
200219	Renol 800 mOsm Urine Control, 2 mL Vials 8-pack
Osmometer Supplies and Accessories	
200223	A ₂ O Sample Tubes, Box 500
200221	Probe Wiper Rings, Box 50
200222	A ₂ O Osmometer System Fluid, 1 Bottle 500 mL
200220	Disposable 12 x 75 Sample Test Tubes, Box 250
FLA835	Thermal Printer Paper, 5 rolls
200005UG	Users Guide
200005SM	Service Manual

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Hot-Line® Technical Service

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