

## A<sub>2</sub>O Advanced Automated Osmometer

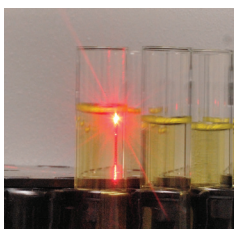
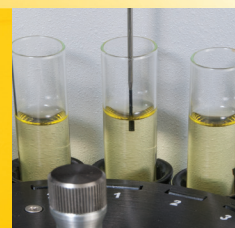
A fully automated, multi-sample osmometer that sets the new benchmark for analytical performance, ease of use, and true walkaway operation.



The A<sub>2</sub>O<sup>®</sup> 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 A<sub>2</sub>O 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 A<sub>2</sub>O 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 A<sub>2</sub>O 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 barcode scanner automatically performs an initial scan of the primary sample carousel, determining both the number of samples present and their barcode IDs. The sample barcode 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 there are no barcodes, and sample IDs can be entered manually through the keypad function of the software interface.

### Easy Sample Loading

20-position primary sample tube carousel is intelligently designed to accommodate any size of sample tube between 11 mm and 17 mm width and 75 mm and 115 mm height. The carousel can also be removed from the system for easier loading.

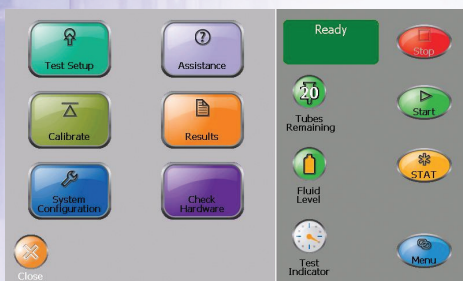
# Discover How A<sub>2</sub>O Takes Osmometry to the Next Level

## A<sub>2</sub>O Software Features

**Flexible Sample Testing** — The test setup features of the A<sub>2</sub>O 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 A<sub>2</sub>O software package comes complete with a host of enabling quality control features, including:

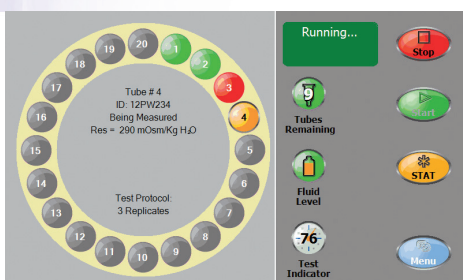
- Automated system calibration
- Statistical analysis on selected sample is available
- Ability to set method control limits for control solutions
- Ability to track quality control data over time and construct Levey-Jennings charts
- Statistical monitoring and graphing of daily controls
- Ability to abort test sequence if control limits are out of specification



**Selectable System Operation and Access Levels** — A<sub>2</sub>O 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 A<sub>2</sub>O 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 A<sub>2</sub>O 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 USB.





# 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 A<sub>2</sub>O 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

Primary tube carousel holds up to 20 samples. The carousel is removable for easy sample loading





### Optimal Performance Requires Quality Test Supplies

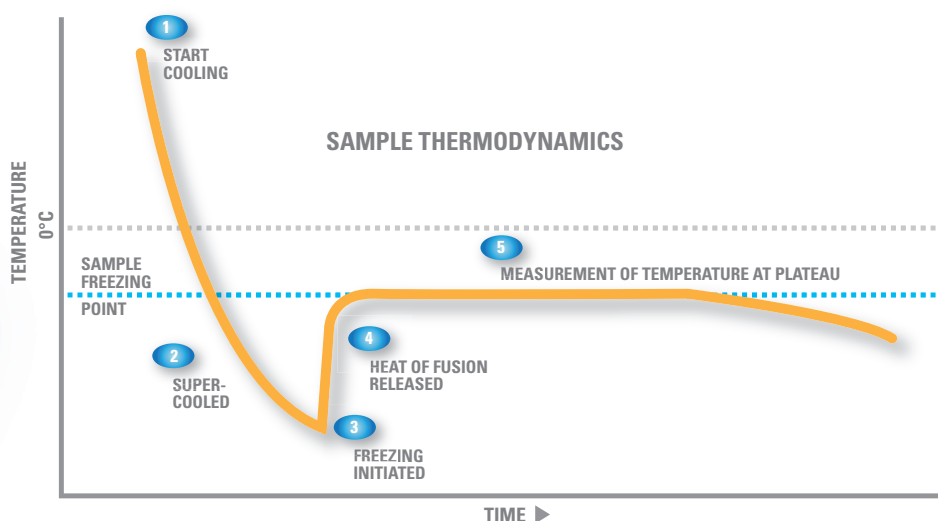
Advanced Instruments supplies a full line of calibration standards, control solutions, and test supplies to ensure optimal system performance and accurate test results.

Integrated keypad provides the ability to operate the system independently from the touchscreen user interface

Pipetting system features liquid-level sensing and crash detection circuitry that automate sample handling by precisely delivering a 100  $\mu$ L sample to a sample tube for processing

Osmometer turntable holds up to 20 sample tubes and a probe wiper ring, turntable is removable for easy loading, and the software alerts 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.



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## ABOUT ADVANCED INSTRUMENTS

Advanced Instruments is a leading supplier of instrumentation for clinical, pharmaceutical, biotechnology, microbiology and food laboratories around the world. Quality, reliability, service and support have been the company's guiding principles since our founding in 1955. Our innovative application of technology helps healthcare organizations improve the quality of care and industrial companies enhance quality and productivity.

## A<sub>2</sub>O Osmometer System Specifications\*

Sample Test Volume	100 µL	Drift	Less than 1 mOsm/kg H <sub>2</sub> O per month
Aspirated Sample Volume	150 µL	Temperature Effect <sup>1</sup>	Recalibration recommended for ambient temperature changes of 5°C (9°F) or greater
Sample Capacity	20-sample carousel	Storage Temperature	-40°C to +45°C (-40°F to +113°F)
Test Time	Less than 3 minutes	Sample Viscosity	Up to 20 mPa·s (20 cP), higher viscosities may affect pipettor accuracy
Sample Throughput	Can process 20 samples in less than 1 hour	Pipettor Accuracy	<1%
Units	mOsm/kg H <sub>2</sub> O	Electrical Voltage	100-240 V AC (50-60 Hz)
Calibrated Range	Low: 0 to 2000 mOsm/kg H <sub>2</sub> O; Full: 0 to 4000 mOsm/kg H <sub>2</sub> O	Power Consumption	375 W
Resolution	1 mOsm/kg H <sub>2</sub> O	Dimensions (D x W x H)	20.5" x 23.6" x 22.8" (52 cm x 60 cm x 58 cm)
Calibration	3-point calibration for low range, 4-point for full range	Net Weight	68 lb (31 kg)
Communications	Onboard printer, 10/100Mbps Ethernet, 4 USB 1.0/1.1/2.0, integrated bar code scanner	Shipping Weight	133 lb (60 kg)
Accuracy	0 to 400 mOsm: mean value ≤2 mOsm/kg H <sub>2</sub> O from nominal value 400 to 4000 mOsm: mean value ≤0.5% from nominal value	Warranty	One-year limited warranty on workmanship and all parts except glass, plastic, and parts warranted by their makers
Precision (within run)	Standard deviation ≤2 mOsm/kg H <sub>2</sub> O between 0 and 400 mOsm; standard deviation ≤ 0.5% of value between 400 and 4000 mOsm		

<sup>1</sup> Operating Conditions — 18°C to 35°C (64°F to 95°F); 5% to 80% relative humidity (noncondensing)

\* Specifications subject to change

## A<sub>2</sub>O Osmometer Parts and Supplies

Part #	Description	Osmometer Supplies and Accessories
<b>Osmometer Calibration Standards and Reference Solutions</b>		
3LA011	100 mOsm Calibration Standard, 10x5 mL	200223 A <sub>2</sub> O Sample Tubes, 500/box
3LA091	900 mOsm Calibration Standard, 10x5 mL	200221 A <sub>2</sub> O Probe Wiper Rings, 50/box
3LA201	2000 mOsm Calibration Standard, 10x5 mL	200222 A <sub>2</sub> O Osmometer System Fluid (bottle), 1x500 mL
3LA301	3000 mOsm Calibration Standard, 10x5 mL	200220 Disposable 12x75 Sample Test Tubes, 250/box
3MA029	Clinitrol 290 Reference Solution, 10x2 mL	FLA835 Thermal Printer Paper, 5/pkg
3LA028	Osmolality Linearity Set 100-2000 mOsm, 5x2x5 mL	200005UG User's Guide
<b>Osmometer Control Solutions</b>		200037SM Service Manual
3MA028	Protinol 3-Level Serum Control, 3x3x3 mL	
3LA085	Renol 2-Level Urine Control, 2x4x3 mL	



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