

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

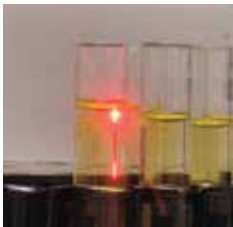
A fully automated, multi-sample osmometer that sets the new benchmark for analytical performance, ease of use, and true walkaway operation.



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 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 and 17 mm width and 75 mm and 115 mm height. The carousel can also 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 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



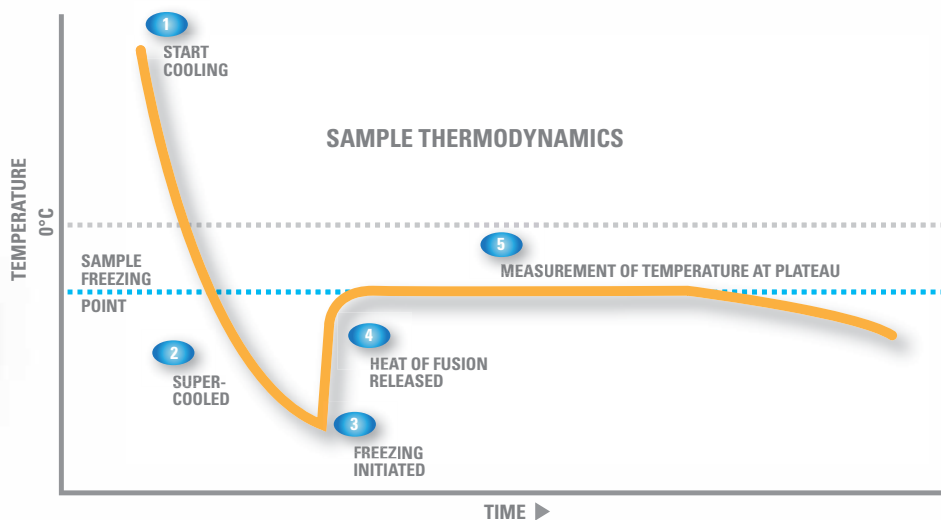


### Optimal Performance Requires Quality Test Supplies

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 both liquid-level sensing and crash detection circuitry automates sample handling by precisely delivering a 100  $\mu$ L sample to a sample tube for processing*
- *Osmometer turntable holds up to 20 clean sample tubes and a probe wiper ring; turntable 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<sup>®</sup> 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.

# 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 functionality
- Built-in system linearity check with statistical reporting capabilities
- 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 thumb drive or external memory device.

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## ABOUT ADVANCED INSTRUMENTS

Advanced Instruments, Inc. 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 <sup>1</sup>              | Less than 1 mOsm/kg H <sub>2</sub> O per month  |
| Aspirated Sample Volume             | 150 µL  | Temperature Effect <sup>2</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;<br>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"<br>(52 cm x 60 cm x 58 cm)  |
| Calibration                         | 3-point calibration for low range,<br>4-point for full range  | Net Weight                      | 68 lb (31 kg)   |
| Communications                      | Onboard printer, 10/100Mbps Ethernet,<br>4 USB 1.0/1.1/2.0, integrated bar code scanner   | Shipping Weight                 | 133 lb (60 kg)  |
| Accuracy <sup>1</sup>               | 0 to 400 mOsm: mean value ≤2 mOsm/kg H <sub>2</sub> O from nominal value<br>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 <sup>1</sup> (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> 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

<sup>2</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                                      |   |  |
|--|--|---|--|
| <b>Osmometer Calibration Standards and Reference Solutions</b> |  |   |  |
| 3LA011   | 100 mOsm Calibration Standard, 10x5 mL           | 200216                                    | Protinol 320 mOsm Serum Control, 8x2 mL                    |
| 3LA091   | 900 mOsm Calibration Standard, 10x5 mL           | 200217                                    | Renol 2-Level Urine Control, 4x2x2 mL                      |
| 3LA201   | 2000 mOsm Calibration Standard, 10x5 mL          | 200218                                    | Renol 300 mOsm Urine Control, 8x2 mL                       |
| 3LA301   | 3000 mOsm Calibration Standard, 10x5 mL          | 200219                                    | Renol 800 mOsm Urine Control, 8x2 mL                       |
| 3MA029   | Clinitrol 290 Reference Solution, 10x2 mL        | <b>Osmometer Supplies and Accessories</b> |  |
| 3LA028   | Osmolality Linearity Set 100-2000 mOsm, 5x2x5 mL | 200223                                    | A <sub>2</sub> O Sample Tubes, 500/box                     |
| <b>Osmometer Control Solutions</b>                             |  |   |  |
| 200213   | Protinol 3-Level Serum Control, 4x3x2 mL         | 200221                                    | A <sub>2</sub> O Probe Wiper Rings, 50/box                 |
| 200214   | Protinol 240 mOsm Serum Control, 8x2 mL          | 200222                                    | A <sub>2</sub> O Osmometer System Fluid (bottle), 1x500 mL |
| 200215   | Protinol 280 mOsm Serum Control, 8x2 mL          | 200220                                    | Disposable 12x75 Sample Test Tubes, 250/box                |
|  |  | FLA835                                    | Thermal Printer Paper, 5/pkg                               |
|  |  | 200005UG                                  | User's Guide   |
|  |  | 200037SM                                  | Service Manual   |



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

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