

## Advanced 2020 Multi-Sample Osmometer

The premier multi-sample freezing point osmometer that combines simple operation, automated sample processing, and accurate results



The Advanced® Model 2020 is a multi-sample automated osmometer designed to process up to 20 samples with unattended operation while providing fast, accurate results. It combines proven freezing point technology with a functional design that is both simple to operate and easy to maintain. The Model 2020 is ideally suited for mid- to high-volume laboratories that prefer to automate osmolality batch testing while improving laboratory efficiency and throughput.





## Improve Laboratory Efficiency and Productivity

The Model 2020 is designed to improve laboratory efficiency by automating sample processing of up to 20 samples with unattended operation. This gives lab personnel the ability to focus on other activities while simultaneously achieving accurate osmolality test results. When compared to single sample osmometers, the 2020 provides a 75% increase in productivity for laboratories processing more than 15 samples per day, making it an essential tool for today's busy mid- to high-volume laboratory.

## Providing Industry-Leading Capabilities for Osmolality Testing

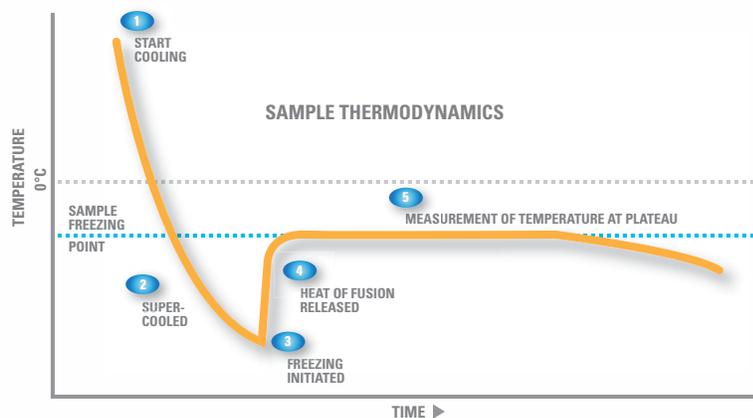
### ADVANCED 2020 OSMOMETER FEATURES AND BENEFITS

- **Freezing point technology** – The industry-preferred method for determining sample concentration because it accounts for ALL solutes in solution
- **Fast and accurate test results** – With a 90-second test time, the 2020 can quickly process samples and improve laboratory productivity with industry leading accuracy, precision, and repeatability
- **Multi-sample capability** – Provides flexibility in batch processing and substantial improvement in laboratory workflow
- **Small sample size** – Requires only a 20µL sample and is perfectly suited for sample-limited applications
- **Easy to use** – With features including automatic calibration, menu-driven display, easy carousel loading, and on-board statistical analysis, the 2020 combines world-class performance in a user-friendly package
- **Proven reliability** – The 2020 system incorporates over 50 years of applied technology and expertise in the field of osmometry and is ideal for laboratories seeking greater control, minimal downtime, and higher productivity
- **Versatile sample processing** – The 2020 is ideally suited for analyzing complex aqueous mixtures including blood, serum, plasma, urine, cell culture, drug formulations, and many other non-biological sample types

### APPLICATIONS

- Clinical diagnostics, emergency and sports medicine
- Pharmaceutical research and development
- Biopharmaceutical monitoring and process control
- Academic and medical research
- Industrial monitoring and quality control
- Environmental research and monitoring

## 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.

## Advanced 2020 Multi-Sample Osmometer

### 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.

### Advanced Model 2020 Multi-Sample Osmometer Specifications\*

Sample Volume	20 $\mu$ L
Test Time	90 seconds
Sample Capacity	Up to 20 samples
Units	mOsm/kg H <sub>2</sub> O
Resolution	1 mOsm/kg H <sub>2</sub> O
Range	0 to 2000 mOsm/kg H <sub>2</sub> O
Linearity <sup>1</sup>	$\pm 3$ mOsm/kg between 0 and 300 mOsm/kg H <sub>2</sub> O; less than $\pm 1\%$ above 300 mOsm/kg H <sub>2</sub> O
Repeatability <sup>1</sup>	Std. deviation $\leq 3$ mOsm/kg H <sub>2</sub> O between 0 and 400 mOsm/kg H <sub>2</sub> O; Std. deviation $\leq 0.75\%$ of value between 400 and 2000 mOsm/kg H <sub>2</sub> O
Drift <sup>1</sup>	Less than 1 mOsm/kg H <sub>2</sub> O per month
Temperature Effects <sup>2</sup>	Less than 1 mOsm/kg H <sub>2</sub> O per 5°C (9°F) ambient temperature change
Communications	On-board printer, DTE RS-232 serial port, and optional barcode scanner
Supported languages	English, French, German, Spanish, Italian, Portuguese, Swedish, Danish, Turkish, Czech, Slovak
Storage Temperature	-40° to +45°C (-40° to +113°F)
Electrical Voltage	100 to 240 V AC (50/60 Hz)
Power Consumption	80 W
Dimensions	11.4" H x 16.0" W x 12.2" D (29.0 cm x 40.6 cm x 31.0 cm)
Net Weight	22.0 lbs. (10.0 kg)
Shipping Weight	34.0 lbs. (15.5 kg)
Warranty	One year limited warranty on workmanship and all parts except glass, plastic, and parts warranted by their makers

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

<sup>2</sup> Operating Conditions — Temperature 18° to 35°C (64° to 95°F); 30% 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.

### Advanced Model 2020 Multi-Sample Osmometer Parts and Supplies

Part #	Description
<b>Osmometer Calibration Standards and Reference Solutions</b>	
3MA005	50 mOsm Calibration Standard, 10x2 mL
3MA085	850 mOsm Calibration Standard, 10x2 mL
3LA201	2000 mOsm Calibration Standard, 10x5 mL
3MA029	Clinitrol™ 290 Reference Solution, 10x2 mL
3LA028	Osmolality Linearity Set, 100-2000 mOsm, 5x2x5 mL
<b>Osmometer Control Solutions</b>	
3MA028	Protinol® 3- Level Osmometer Control, 3x3x3 mL
3LA085	Renol™ 2- Level Osmometer Control, 2x4x3 mL
<b>Osmometer Supplies and Accessories</b>	
202825	Sample Tubes, Box 500
202840	Probe Wiper Discs, Box 50
330016	Bar Code Scanner
FLA835	Thermal Printer Paper, 5/pkg
240820	20 Microliter Pipette
240821	Sampler Tips, 50/pkg
2025	User's Guide
2025SM	Service Manual



Advanced Instruments supplies a full line of calibration standards, ControlLine™ products, and supplies to ensure optimal system performance and accurate test results

Advanced Instruments products are available from a worldwide distributor network. For more information on our products and services or to find your nearest distributor, visit us at [www.aicompanies.com](http://www.aicompanies.com) or email us at [info@aicompanies.com](mailto:info@aicompanies.com).

### Hot-Line® Technical Service

Advanced Instruments Hot-Line Service and worldwide distributor network provide comprehensive customer service and technical support.



Two Technology Way / 781-320-9000  
Norwood, Massachusetts 02062, USA  
800-225-4034 Fax: 781-320-8181  
[www.aicompanies.com](http://www.aicompanies.com)  
[info@aicompanies.com](mailto:info@aicompanies.com)

© 2013 Advanced Instruments, Advanced, Clinitrol, ControlLine, Hot-Line, Protinol and Renol are trademarks of Advanced Instruments Inc. All other trademarks are the property of their respective companies.