

# Microviscometer

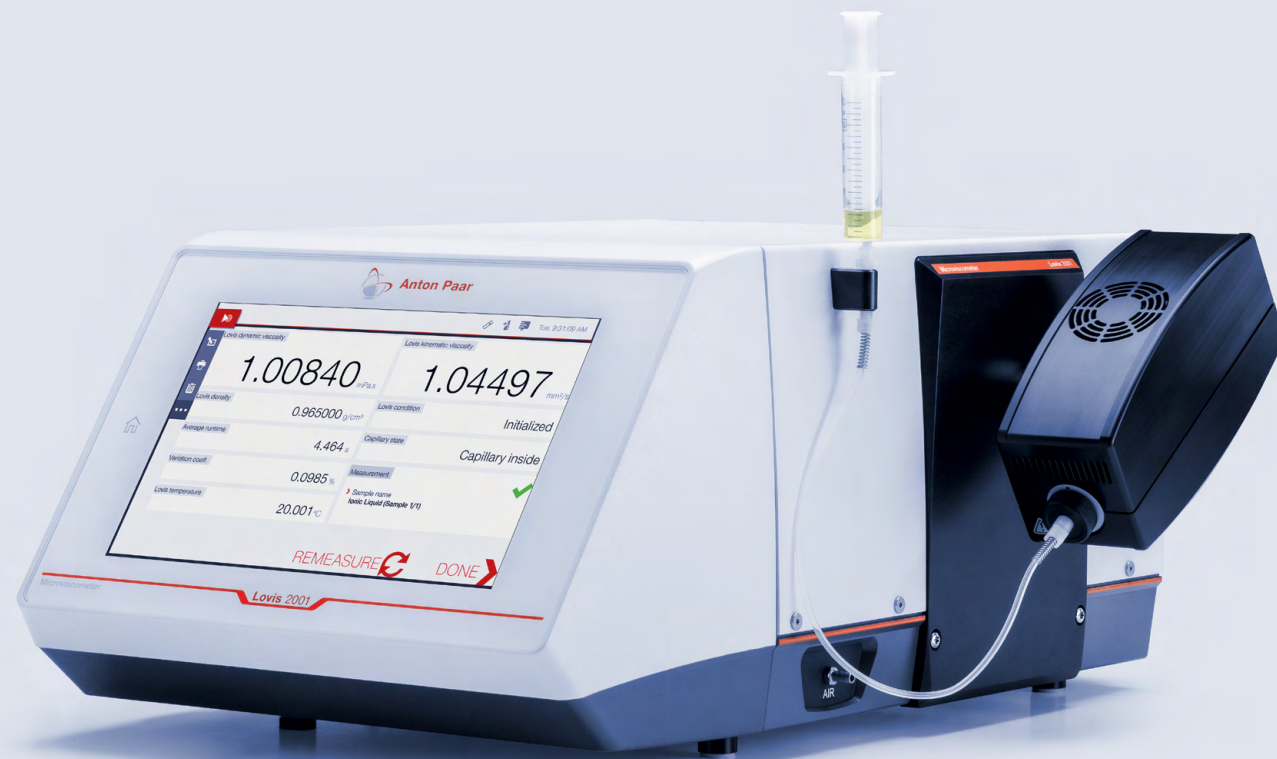
Lovis 2001



# Precise and Efficient

Discover Lovis 2001 – the rolling-ball microviscometer that elevates your lab’s capabilities! Its adaptable measurement angle ensures pinpoint precision, especially for low-viscosity or shear-sensitive liquids - taking only minimal sample volume. Plus, it delivers polymer-specific parameters, such as intrinsic viscosity, K-value and average molar mass.

- ✓ Adjust the measurement angle to your sample’s viscosity for unmatched accuracy of  $\pm 0.5\%$
- ✓ More data, one measuring cycle: Combine to measure density, refractive index, and pH
- ✓ Benefit from automation and increase sample throughput by adding a sample changer
- ✓ Leave it to the integrated polymer software to report all parameters required



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## Chemical labs

Lovis 2001 is designed to handle chemically aggressive samples, thanks to its durable capillaries and wetted parts. Ideal for dilute solution viscometry, it delivers comprehensive polymer analysis, calculating and reporting specific/reduced/inherent viscosity, K-value, and average molar mass.

Typical samples: polymer solutions (e.g. PET and PVC), printer ink, battery electrolytes, and CMP slurries.

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## Pharmaceutical and medical labs

Lovis 2001 meets 21 CFR Part 11 requirements and ensures 100 % data integrity. Measure according to US Pharmacopoeia chapter 913 and Ph. Eur. 2.2.49, and qualify your instrument in one day with our optional AISQ+ documentation for regulated industries.

Typical samples: hyaluronic acid, microcrystalline cellulose, protein and DNA solutions, nasal spray, eye drops, infusion liquids and contrast media.

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## Malt houses and breweries

Lovis 2001 conducts wort measurements that are compliant with MEBAK (R-205.10.282) and ASBC (Wort-13B) requirements. Combined with a DMA density meter, it ensures optimal and consistent quality of your wort and, consequently, your beer.

Typical sample: wort

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# Unique Rolling-Ball System: Maximum Precision

Rolling instead of falling - this concept will elevate your viscosity tests to the highest precision and transform your lab processes for lasting efficiency. While fast-falling balls create a turbulent flow in low-viscous liquids, the rolling ball with a speed adjusted to the sample type does not.

Allow Lovis 2001 to cover all your R&D and quality control tasks, by deploying its unmatched temperature and viscosity range, measuring samples from diethyl ether to polysorbate.

## Maximum precision assured

The moving capillary block covers an angle range from 15 ° to 80 ° in either direction in order to adjust the ball rolling speed to your sample type for the highest measurement accuracy (0.5 %). Lovis 2001 also displays shear rate and allows you to test shear-sensitive samples. It uses electromagnetic detection, and thus remains unaffected by sample opacity and turbidity.

## Minimum sample volume

For small sample amounts as low as 100 µL, short capillaries are available. After measurement, your valuable sample can be recovered for further tests.

## Automated flow-through measurement

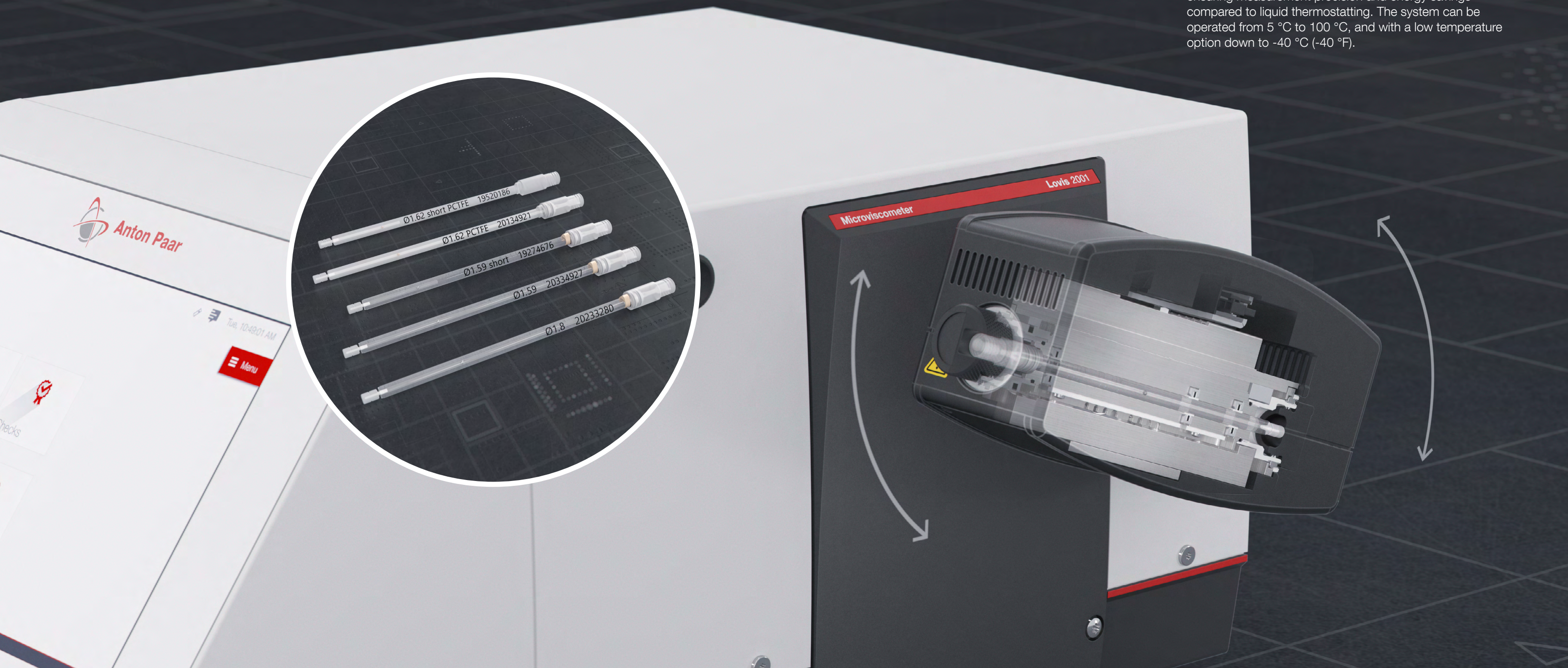
Fill, measure, and clean: do it all without removing the capillary. For operation in flow-through mode, the sample is either filled manually or by an autosampler. The auto-angle function and auto-distance function optimize the duration and stability of your measurement.

## Aggressive samples – measured without risk

The hermetically closed system helps you measure volatile or toxic samples with ease and protects sensitive samples from contamination. While our borosilicate glass capillaries are suitable for most solvents and acids, unique break-proof PCTFE capillaries with a gold-coated rolling ball enable you to even test chemicals as aggressive as hydrofluoric acid.

## Automatic, quick thermostating

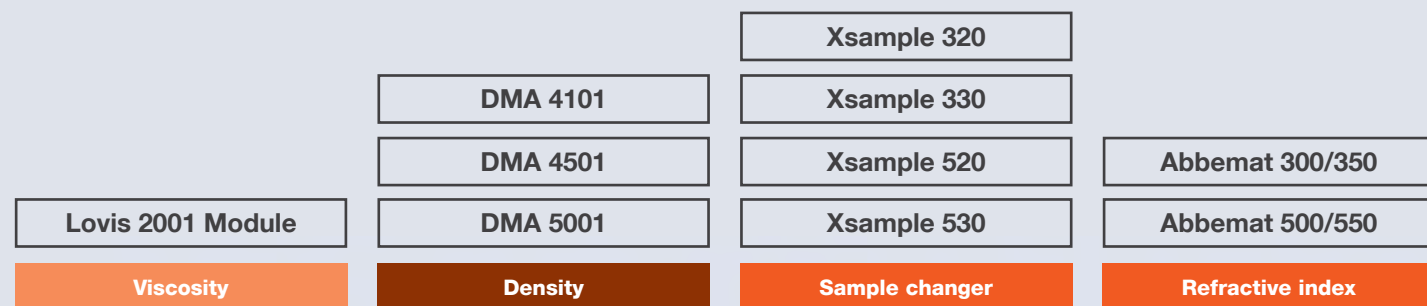
Peltier elements provide fast and stable temperature control, ensuring measurement precision and energy savings compared to liquid thermostating. The system can be operated from 5 °C to 100 °C, and with a low temperature option down to -40 °C (-40 °F).



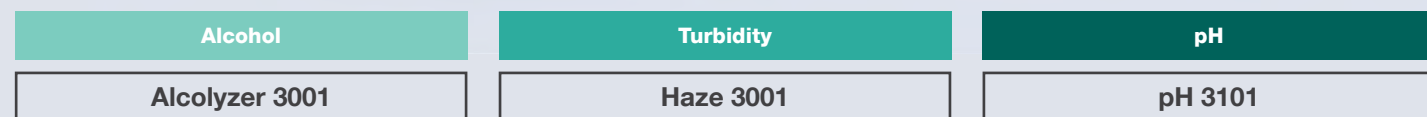


# Combine for a Superior Measurement System

Leverage the power of modularity for a seamless and efficient measurement process. Lovis 2001 measures runtime, relative viscosity, and intrinsic viscosity, and instantly calculates dynamic viscosity and kinematic viscosity using a density input. Let the autosampler handle sample filling and cleaning, while getting additional measuring parameters – all determined within a single measuring cycle at no extra effort.



AVAILABLE OPTIONS



Lovis 2001

Lovis 2001 Module + DMA density meter

	↓	↓
<b>Measuring range</b>		
Dynamic viscosity	0.2 mPa.s to 10,000 mPa.s	
Shear rate	0.5 s <sup>-1</sup> to 1,000 s <sup>-1</sup>	
Temperature	5 °C to 100 °C (41 °F to 212 °F) -40 °C to +100 °C (-40 °F to +212 °F) (with counter cooling) <sup>1)</sup>	
Density	-	0 g/cm <sup>3</sup> to 3 g/cm <sup>3</sup>
Temperature: Density meter	-	0 °C to 100 °C (32 °F to 212 °F)
<b>Precision</b>		
Viscosity: Repeatability s.d.	0.1 % <sup>2)</sup>	
Viscosity: Accuracy	0.5 % <sup>3)</sup>	
Measuring time: Resolution	0.001 s	
Measuring time: Accuracy	0.05 %	
Temperature: Repeatability s.d.	0.005 °C	
Temperature: Accuracy	0.02 °C	
Inclination: Repeatability s.d.	0.02 °	
Inclination: Accuracy	0.1 °	
<b>Further Specifications</b>		
Test duration	Minimal 30 s, typical 3 min	
Sample volume	0.1 mL to 0.8 mL	1 mL to 3 mL
Weight	19.9 kg (43.9 lb)	29.3 kg (64.6 lb)
Dimensions (L x W x H)	526 mm x 420 mm x 230 mm (20.7 in x 17.2 in x 9 in)	
Power supply	AC 100 V to 240 V; 50 Hz to 60 Hz; 190 VA	
<b>Trademarks</b>	<b>DMA (013414867), Xsample (013856059), Abbemat (1084545)</b>	

1) Specified temperatures are valid for a max. ambient temperature of 35 °C (95 °F). Lower measuring temperatures are achieved in lower ambient temperatures and/or with special equipment.  
 2) Verified with a 1.59 capillary at 70 ° angle and Ethanol 96 % at 20 °C using the same ball for all repeated measurements.  
 3) Verified with a 1.59 capillary with a single-point adjustment performed on site at 70 ° angle; adjustment and all measurements performed with distilled water at 20 °C with the same ball.

Reliable.  
Compliant.  
**Qualified.**

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Our well-trained and certified technicians are ready to keep your instrument running smoothly.

