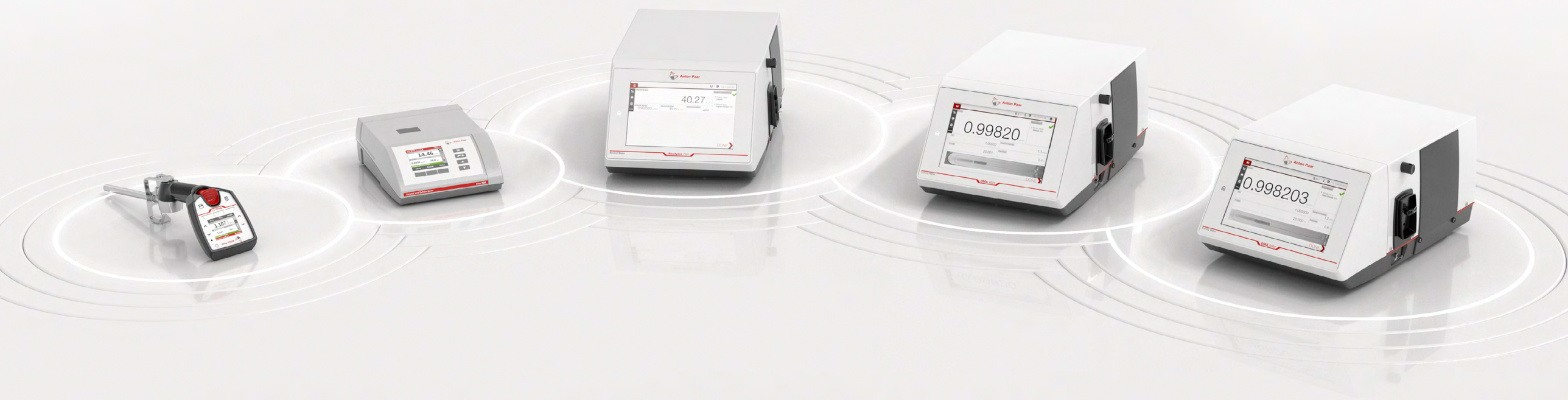
Anton Paar

Solutions for Your
Supreme Spirits

Spirits Analysis Overview

Market-Leading Laboratory Analysis for Your Supreme Spirits

We’re always a step ahead of fast-evolving beverage industry trends and applications, providing solutions that position you one step ahead, too. Whether you’re analyzing traditional spirits, gin, or liqueur, we’ll help you save time, analyze with ease, and deliver a premium product.



1

2

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1

One step ahead of beverage industry trends

- → Rely on the know-how from the market leader in offering analytical solutions for the beverage industry
- → Increase the accuracy and speed of your measurements
- → Analyze alcohol up to 10x faster than with distillation
- → Minimize waste, streamline operations, maintain consistent product quality, and drive continuous improvement

WATCH VIDEO

2

Maximum efficiency, effective QC

- → Incorporate our highly accurate density measurement solutions (alcohol accuracy for distilled spirits: <0.01 % v/v) into quality control processes
- → Facilitate product consistency, flavor optimization, and compliance with regulations and meet consumer expectations
- → Deliver high-quality products, conform with tax requirements, and maintain a competitive edge
- → Automate filling and cleaning of up to 24 samples in a row

WATCH VIDEO

3

Decades of application experience

- → Know you're working with a partner that has over 40 years of experience in the field
- → Draw on our application expertise wherever and whenever you need it
- → Rely on the same expertise that QC managers from around the world and across every industry have access to

WATCH VIDEO

4

Features that make market-leading density meters

- → Leverage usability features like 30+ guided workflows and automatic bubble detection to make your density measurements easier than ever before
- → Benefit from an automatic compensation of the U-tube's aging effects and minimized drift over the lifetime of the instrument
- → Streamline your data management with AP Connect, our lab execution software

WATCH VIDEO

5

Expert service, guaranteed

- → Benefit from Anton Paar quality when it comes to durability and service
- → Get a 3-year warranty with each product
- → Access our global service network whenever you need it
- → Enjoy support in your local language
- → Know you have access to spare parts for at least 10 years after purchase

WATCH VIDEO

Always Superior Technology

The core of our density meters?

A handmade U-tube. Powered by our patented Pulsed Excitation Method, it perfectly complements our Alcolyzer portfolio for selective, always-superior alcohol measurement.

It's the ideal partner for spirits analysis.

Enjoy market-leading accuracy

- → Select the instrument you need from a broad portfolio
- → Benefit from robust NIR technology with 0.01 % v/v repeatability
- → Get exceptional alcohol repeatability time and time again down to 0.01 % v/v

Your demands, our solutions

- → Access a broad portfolio: from handheld devices to multiparameter measurement systems
- → Perform the analysis you need: from wash to final product
- → Measure a range of spirits: from distilled spirits to liqueurs

Get a live view of the measuring cell with U-View™

- → Check the sample filling process via a high-quality image of the glass cell on the high-resolution screen (1280 x 800 px) or recall stored images of the entire filled-in sample later on
- → Verify correct sample filling and measurements with the stored images
- → Print results with or without U-View™ pictures or transfer this set of data to your LIMS system

Perform tasks quickly and easily

- → Open your favorite menu dialogs from the 10.4" screen using the quick access area
- → Assign different user levels to prevent accidental changes
- → Get system or operation alerts and see the current status of an automatic sample changer or measuring module

Ensure correct sample filling with FillingCheck™

- → Enjoy automatic monitoring of filling quality
- → Get real-time error detection and automatic documentation for later verification
- → Know you have the market's most reliable bubble and particle detection with our patented Pulsed Excitation Method

Tough Industries,
Tough Instruments

Market Leader

Snap 51: Handheld alcohol meter

- → Measure the alcohol content in all sugar-free distilled spirits at any strength along the whole production process
- → Get 0.1 % v/v alcohol accuracy at temperatures between -10 °C and +50 °C
- → Benefit from reliable QC for spirits at all strengths
- → Replace your glass hydrometers and pycnometers with just one device
- → Save time in the field with an RFID interface and Bluetooth

Alcolyzer 5001, Alcolyzer 7001: Alcohol meters

- → Comply with AOAC, BCOJ, and OIV standards, and enjoy seamless data transfer
- → Analyze 12 sample types with 0 % v/v to 65 % v/v alcohol content, using one device
- → Save time with precise results in just 2 minutes without distillation
- → Experience 0.01 % v/v alcohol repeatability, with patented NIR technology
- → Add 430 nm color measurement and a single- or 24-slot sample changer

Snap 41: Handheld alcohol meter

- → Measure the alcohol content in all sugar-free distilled spirits at any strength along the whole production process
- → Achieve an alcohol accuracy of 0.2 % v/v at between 0 °C and 35 °C
- → Benefit from reliable QC for spirits at all strengths
- → Enjoy 30-second results with only 2 mL of sample

Alex 500: Alcohol and extract meter

- → Monitor up to 40 fermentation processes simultaneously
- → Measure spirits and non-turbid liqueurs
- → Enjoy patented density and NIR technology in a single instrument
- → Get direct, real-time results
- → Rely on semi-automated sampling and a standardized sample handling SOP

DMA 4101, DMA 4501, DMA 5001: The fastest, most-accurate density meters

- → Get results with 4-digit density accuracy in 20 seconds (up to 6-digit accuracy available) for distilled spirits
- → Track and eliminate variations in your production and achieve consistency in every batch
- → Enjoy higher throughput with automated filling, measuring, and cleaning
- → Rely on technology that's been in the field for over 40 years

DMA 4501
Top Seller

Portable Quality Control: Anywhere, Anytime

Buy online
shop.anton-paar.com

Snap 41, Snap 51: Handheld alcohol meters for distilled spirits

Alcohol meters that are built to last

- → Durable measuring cell and splash-proof housing
- → Resilient hard-glass display
- → Simple maintenance: Just use deionized water for cleaning and calibration

On-site measurements just got easier

- → Gesture control: one-handed measurements
- → Quick result export to printer or PC for documentation and analysis
- → Storage for 1,000 results (Snap 51 only)
- → No need for hydrometers anymore

	Snap 41	Snap 51
Alcohol range	0 % v/v to 100 % v/v	
Alcohol accuracy	0.2 % v/v	0.1 % v/v

FIND OUT MORE

www.anton-paar.com/ apb-spirits-snap

Your Entry Ticket to In-House Lab Analysis

Alex 500: Alcohol and extract meter

Simple sample preparation, intuitive interface

- → Standardized sample preparation
- → Semi-automated filling
- → Up to 40 unique sample IDs for simple operation and data evaluation

Single-handed calibration and adjustment

- → Check Alex 500 for the correctness of your results
- → Perform an adjustment with water if results are off track
- → Measure all day after a zero adjustment with deionized water without further calibration

	Alex 500
Density range	0.95 g/cm³ to 1.20 g/cm³
Density repeatability, s.d.	0.005 g/cm³
Alcohol range (spirits and non-turbid liqueurs)	10 % v/v to 47 % v/v
Alcohol accuracy (spirits and non-turbid liqueurs below 100 g/L total extract)	±0.2 % v/v
Alcohol accuracy (non-turbid liqueurs with 100 g/L to 450 g/L total extract)	±0.4 % v/v

FIND OUT MORE

www.anton-paar.com/ apb-spirits-alex500

Determining Alcohol Content Just Got Easier

Alcolyzer 5001, Alcolyzer 7001: The most versatile alcohol meters on the market

Ready for all of your products

- → Analyze 12 sample types including whiskey, vodka, rum, tequila, and cognac with up to 20 g/L extract content
- → Be future-proof for an expanding product portfolio

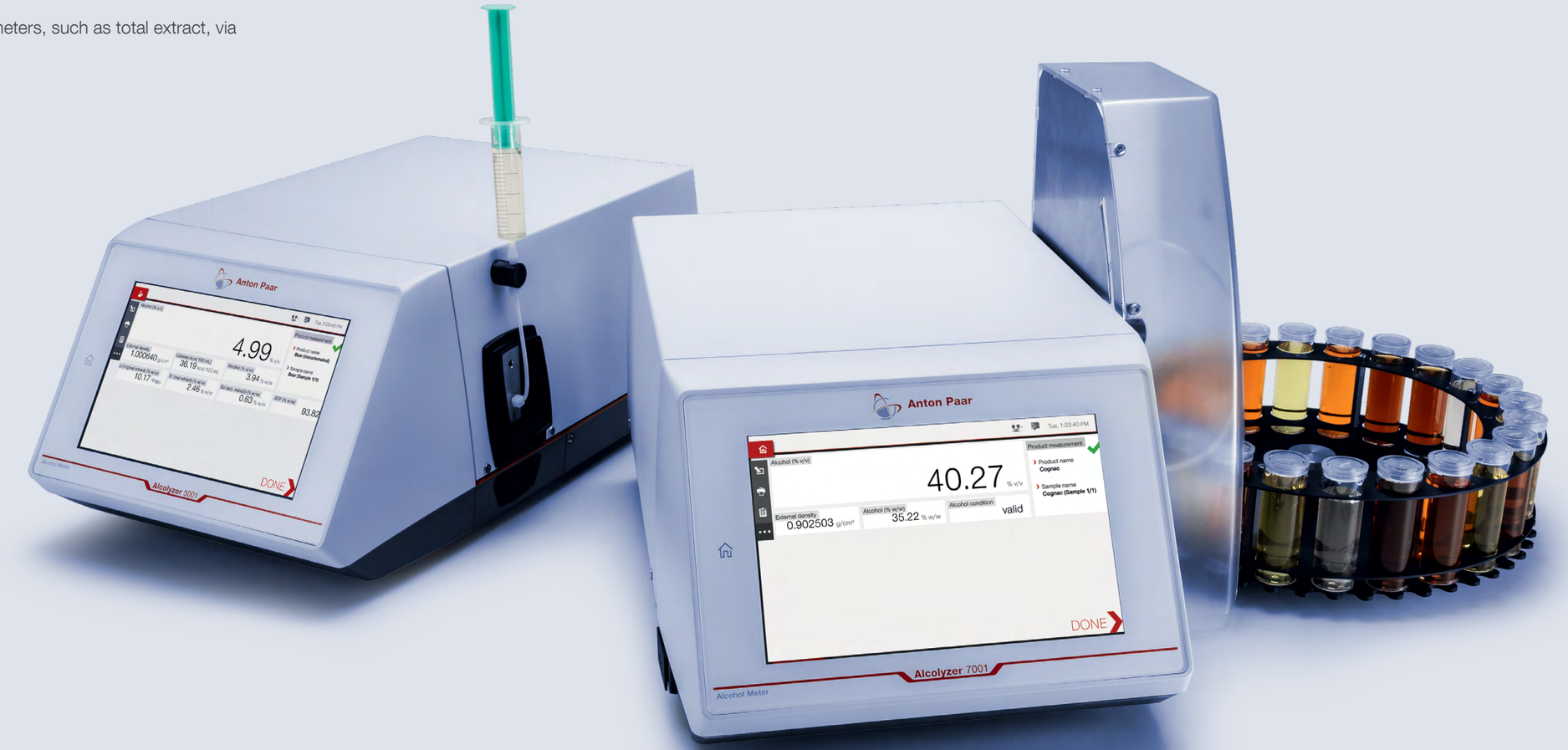
Flexible production, maximum control

- → Maintain precise control over blending and bottled products
- → Ensure consistency in flavor profiles, harmonize blends with precision, and guarantee the quality of bottled products
- → Unlock additional parameters, such as total extract, via manual density input

Ideal for distillers

- → Say goodbye to product-specific calibrations
- → Save space with your distillery with a compact design

	Alcolyzer 5001	Alcolyzer 7001
Alcohol range, whiskey products (<5 g/L extract)	35 % v/v to 65 % v/v	
Alcohol range, cognac products (5 g/L to 20 g/L extract)	0 % v/v to 65 %v/v	
Alcohol repeatability, s.d.	0.03 % v/v	0.01 % v/v



FIND OUT MORE

www.anton-paar.com/alcolyzer

Next-Level Speed, Next-Level Accuracy

DMA 4101, DMA 4501, DMA 5001: Our fastest, most intelligent benchtop density meters

Always superior: A revolutionary user experience
Accurate density measurement of distilled fractions is the internationally recognized reference method for alcohol determination. Use it as a stand-alone instrument or extend it to a variety of measuring modules.

Tech with a kick

- → 4-digit density accuracy in 20 seconds
- → Patented Pulsed Excitation Method ensures market-leading precision, repeatability, and reproducibility
- → Storage for 10,000 measurements
- → Ultra-fast measurement mode boosts productivity
- → Instant pass/fail QC decisions by defining limits for different samples
- → Compliance with a range of industry standards
- → Up to 6-digit density accuracy
- → Automated conversion to % v/v

Need multiparameter analysis? No problem

- → Connect your device to a variety of Anton Paar measuring modules for a measuring system that monitors QC parameters (specific gravity, extract, and calories)
- → Measure over 50 key parameters simultaneously
- → Increase efficiency, productivity, and safety with automated sample changers or even a fully automated QC laboratory

Features to help you make the most of your measurements

- → FillingCheck™ detects microbubbles within seconds
- → U-View™ shows a zoomable image of the measuring cell
- → Automatic compensation of temperature effects thanks to ThermoBalance™
- → Guided user workflows
- → Compatible with AP Connect, our lab execution software

	DMA 4101	DMA 4501	DMA 5001
Density range	0 g/cm³ to 3 g/cm³	0 g/cm³ to 3 g/cm³	0 g/cm³ to 3 g/cm³
Density repeatability, s.d.	0.00001 g/cm³	0.000005 g/cm³	0.000001 g/cm³
Alcohol range (distilled fractions)	0 % v/v to 100 % v/v	0 % v/v to 100 % v/v	0 % v/v to 100 % v/v
Alcohol accuracy (distilled fractions)	0.05 % v/v	0.025 % v/v	<0.01 % v/v

FIND OUT MORE

www.anton-paar.com/apb-spirits-dma

Versatile for Different Applications

1 Wort/juice analysis
Ensure accurate measurement of apparent extract, pH, and density with our measuring systems. Increase consistency, save time, energy, water, and costs, while optimizing mashing efficiency due to a reduced boil time. Extract the maximum potential from your ingredients, which leads to transformative results and keeps you ahead of the competition.

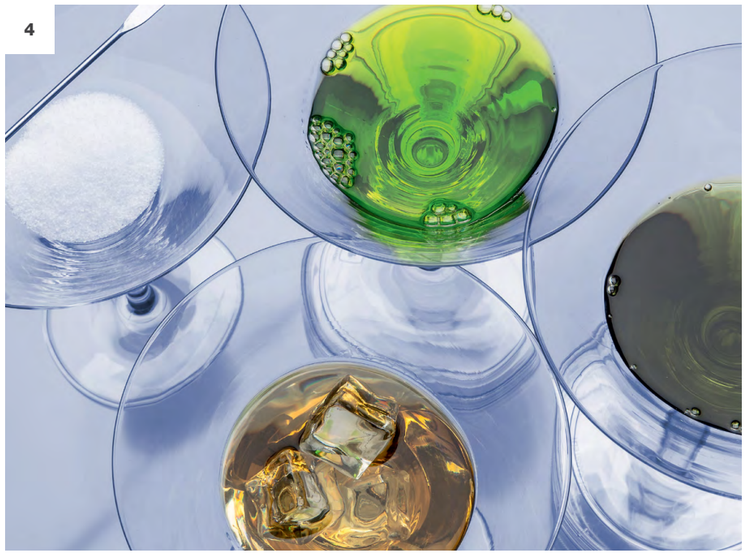
2 Fermentation control and wash analysis
Optimize fermentation with density, alcohol, and pH measurement for consistent high-quality products, timely action, precise end point determination, and reduced time and resources. Make real-time adjustments and maximize yield.

3 Distillation control
Ensure the highest quality spirits by accurately determining the alcohol content of a distillate via density measurement. It eliminates foreshots or feints for a pure product. Our density meter guarantees that only spirits meeting specifications for bottling, maturation, or blending are released. It aids in proper alcohol taxation and prevents adulteration of spirits. With its precise measurements, the density meter safeguards the integrity and reputation of the spirits you produce.

4 Storage and blending
Monitor alcohol content, total extract, color, pH, and density. By precisely verifying your blending process, you can fine-tune and adjust the product to achieve the desired output. Continuous monitoring prevents adulteration, which guarantees high-class spirits and consistent final product quality. Accurately measuring alcohol content lets you comply with taxation requirements as well.

5 Safeguarding visual properties
Enhance your production of high-class spirits with turbidity, apparent extract, and color measurement to ensure proper filtration, legal compliance, consistent quality, and guaranteed customer satisfaction. Accurate determination of apparent extract creates well-balanced flavors, while color and turbidity measurement enhances visual appeal. By eliminating sample preparation, errors and variability are minimized, resulting in reliable and reproducible outcomes.

6 Bottling
Incorporate concentration monitoring of saccharose and invert sugar into your liqueur production to maintain the ideal sweetness for your products. Our combined measuring systems ensure compliance with standards and legal requirements and let you achieve consistently high product quality.



The Dream Experience

You have a dream: of an intelligent instrument that shows you the measurement way, and if you take a wrong turn, guides you straight back to the right path. A superior instrument that tells you your measurement has bubbles in it, shows you via camera image, and asks you to repeat it. An instrument that's as intuitive as a smart phone.

Usability design
The software that powers our compact and benchtop density meters, others can only dream of. It's the reason measurements are so quick and intuitive. Together with the revolutionary operating systems, it guarantees maximum usability and a smartphone-like experience with industry-specific profiles, 30+ guided user workflows, and 200+ available conversion tables.

Smart features
An instrument this smart thinks for you: efficient sample throughput, industry profile customization, fast sample diagnostics with the new, automatic algorithm-driven FillingCheck™, and reliable single measurements. The automated setup for the industry-specific user interface delivers an out-of-the-box, out-of-this-world measuring experience.

Dream data: AP Connect lab execution software
You have a dream: of a liberating paperless lab that eliminates transcription errors and guarantees data quality. You have a dream: of a lab where the data you need to pass audits is available at a snap, right at your fingertips. Just plug the instrument into our lab execution software AP Connect for a lab without a single piece of paper. AP Connect links your instruments, communicates measurement information, and ensures compliance. Store 10,000 measurements in a single digital space, with user-defined output reports. The software is available in eight different languages.

Combine for a **Superior Measuring System**

SAMPLE CHANGER	REFRACTIVE INDEX	OPTICAL ROTATION
Xsample 520	Abbemat 500	MCP 150
Xsample 320	Abbemat 300	MCP 100

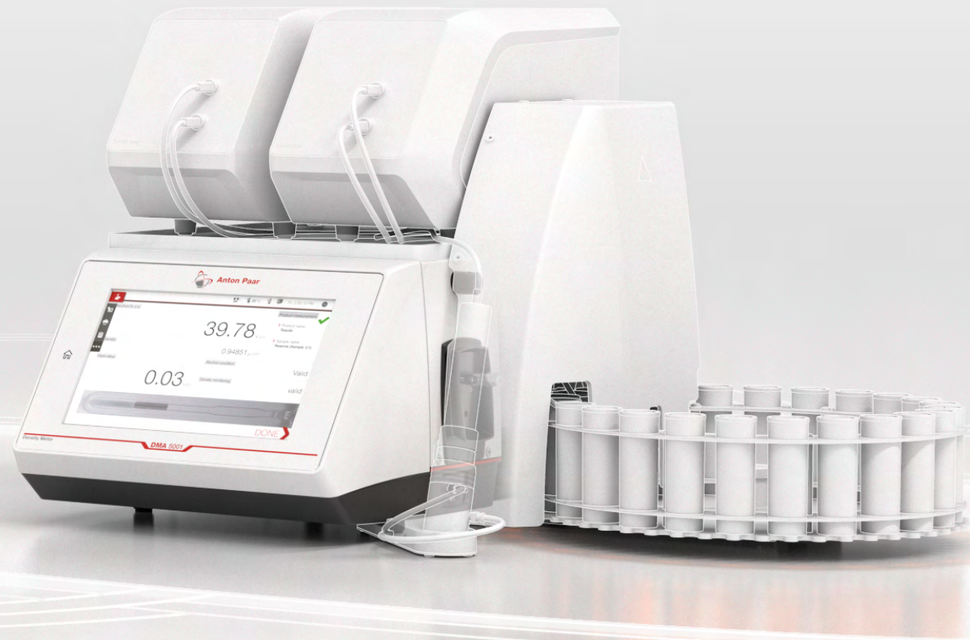
AVAILABLE OPTIONS

The core of our measuring systems? Our market-leading density meters. Choose from the following options:

PRIMARY INSTRUMENTS
DMA 4501
DMA 5001

FIND OUT MORE

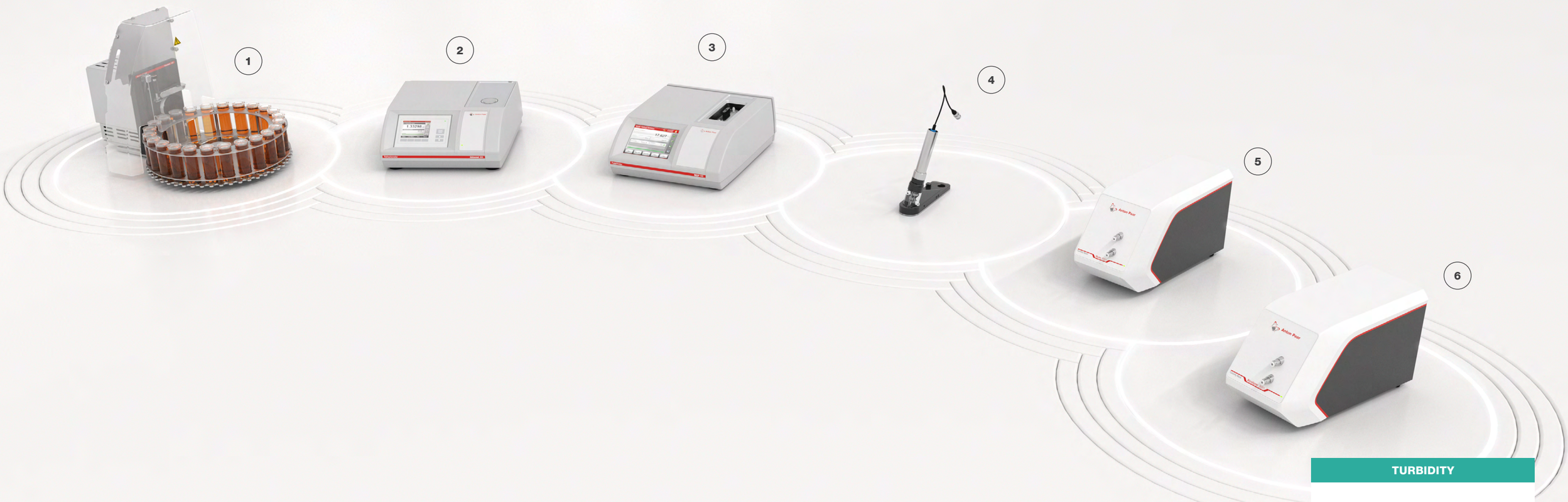
www.anton-paar.com/apb-spirits-alcolyzer



pH	TURBIDITY	ALCOHOL CONTENT
pH 3101	Haze 3001	Alcolyzer 3001 Spirits
		Alcolyzer 3001

AVAILABLE OPTIONS

Measuring System
Modular Extensions



SAMPLE CHANGER

1

- → Eliminate handling errors and save time with automation
- → Reduce costs per measurement

Benefit from a range of automation options. From single measurements to high-throughput solutions for large quantities of samples per day – we have an automated solution to fit your business.

REFRACTIVE INDEX

2

- → Accurate concentration measurements: ±0.0001 nD to ±0.00002 nD
- → Comply with method-of-analysis requirements

Choose your method for each Abbemat model for fast, nondestructive measurements of refractive index. Combine an Abbemat with a density meter to measure alcohol and extract content of your cream liqueur.

OPTICAL ROTATION

3

- → Built-in Peltier temperature control
- → Guided calibration and adjustment processes

Adding an MCP 100/150 polarimeter to the Spirits Measuring System lets you directly analyze liqueurs containing saccharose. Optical rotation is measured to correct its impact on the alcohol result and estimate saccharose and invert sugar content.

pH

4

- → Simultaneous pH measurement in a modular setup
- → Fully guided adjustment options

Determine pH alongside other quality parameters with the pH 3101 measuring module. Especially during fermentation monitoring, this is a crucial parameter.

ALCOHOL AND COLOR

5

- → Selective measurement of alcohol within two minutes
- → Independent sample adjustment with water and a binary ethanol/water solution

Our modular setup combines the Alcolyzer (including the color option) with density meters and other modules. Choose from different variants tailored for beer, wine, spirits, or an all-in-one combination.

TURBIDITY

6

- → Detects impurities of all particle sizes
- → Compliant with different industry norms, such as EBC, MEBAK, and OIV

Haze 3001 applies the approved ratio method with measurement at three angles (transmission 0°, scattered light at 25°, and 90°) to eliminate particle size influence on the turbidity value. This lets you detect impurities as well as safeguard visual properties and even chill haze if combined with a cooling unit.

Recommended Configurations

Design your Spirits Measuring System, one component at a time

1

For wort and juice analysis

- DMA 4501
- ⊕ Alcolyzer 3001 Spirits
- ⊕ pH 3101
- ⊕ Xsample 320

→ Minimize extract/sugar loss
→ Increase process consistency
→ Save time, energy, water, and costs
→ Increase mashing efficiency by reducing boil time

2

For saccharose-containing liqueurs

- DMA 4501
- ⊕ MCP 100
- ⊕ Alcolyzer 3001 Spirits
- ⊕ pH 3101
- ⊕ Xsample 520

→ No product-specific calibration necessary
→ Measurements up to 10x quicker than with classic distillation
→ No initial setup of calibration database and reference analysis needed

3

For safeguarding visual properties and product release

- DMA 5001
- ⊕ Alcolyzer 3001 Spirits with option color
- ⊕ Haze 3001
- ⊕ pH 3101
- ⊕ Xsample 520

→ No distillation required for alcohol determination
→ Measuring of all samples: from mash to spirit
→ No influence on alcohol results by other sample elements
→ Turbidity analysis to safeguard chill filtration processes
→ Fully automatic check/calibration thanks to built-in SOP

MANY MORE CONFIGURATIONS

www.anton-paar.com/apb-spirits-modulyzer

Recommended configuration	1	2	3
	↓	↓	↓
Parameters	Alcohol | Extract | Density | pH	Alcohol | Extract | Density Concentration saccharose Concentration invert sugar | pH	Color | Alcohol content | Extract Density | Turbidity | pH

MEASURING RANGE			
Alcohol	35 % v/v to 65 % v/v	15 % v/v to 40 % v/v (sucrose-based liqueur)	35 % v/v to 65 % v/v
Density	0 g/cm³ to 3 g/cm³		
Color	-	-	0 EBC to 120 EBC
pH value (optional)	pH 0 to pH 14		
Turbidity	-	-	0 EBC to 100 EBC

REPEATABILITY, S.D.			
Alcohol	0.01 % v/v		
Density	0.000005 g/cm³		0.000001 g/cm³
Color	-	-	0.1 EBC
pH value	0.02 in the range pH 3 to pH 7		
Turbidity	-	-	0.3 % of the measured value + 0.02 EBC / 1.4 ASBC according to formazine reference suspension

ADDITIONAL INFORMATION			
Temperature control	Integrated Peltier thermostat		
Minimum amount of sample	35 mL degassed sample per measurement		
Typical measurement time per sample	4 minutes (incl. filling)		
Sample throughput	15 to 20 samples per hour		
Dimensions (L x W x H)	482 mm x 730 mm x 446 mm (19.0 in x 28.7 in x 17.6 in)	482 mm x 870 mm x 410 mm (19.0 in x 34.3 in x 16.2 in)	482 mm x 730 mm x 446 mm (19.0 in x 28.7 in x 17.6 in)
Power supply	AC 100 to 240 V, 50/60 Hz, fluctuation ±10 %, 190 VA		

STANDARDS		
AOAC	-	Method 956.02 (430 nm)
TTB	Density measurement in proofing alcohol for tax purposes	

Reliable. Compliant. **Qualified.**

FIND OUT MORE

www.anton-paar.com/service

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

Maximum uptime
Regardless of how intensively you use your instrument, we help you keep your device in perfect shape and safeguard your investment. For at least 10 years after the discontinuation of a device, we'll provide you with any service and spare part that you might need.

Warranty program
We're confident in the high quality of our instruments. That's why we provide a full 3-year warranty. Just make sure to follow the relevant maintenance schedule. You can also extend your instrument's warranty beyond its expiration date.

Short response times
We know that sometimes it's urgent. That's why we provide a response to your inquiry within 24 hours. We give you straightforward help from great people, not from bots.

A global service network
Our large service network for customers spans 86 locations with more than 600 certified service technicians. Wherever you're located, there's always an Anton Paar service technician nearby.

Complete Your Spirits Analysis

FIND OUT MORE

www.anton-paar.com/apb-spirits-process

Anton Paar is the world's first full-range supplier for spirits analysis. Trace multiple parameters – from incoming raw materials to the final drop of the spirit – measured at any location in the plant with 20+ laboratory and process instruments.

- Laboratory measurement (incl. portable instruments)
- Process measurement

WORT/JUICE MONITORING

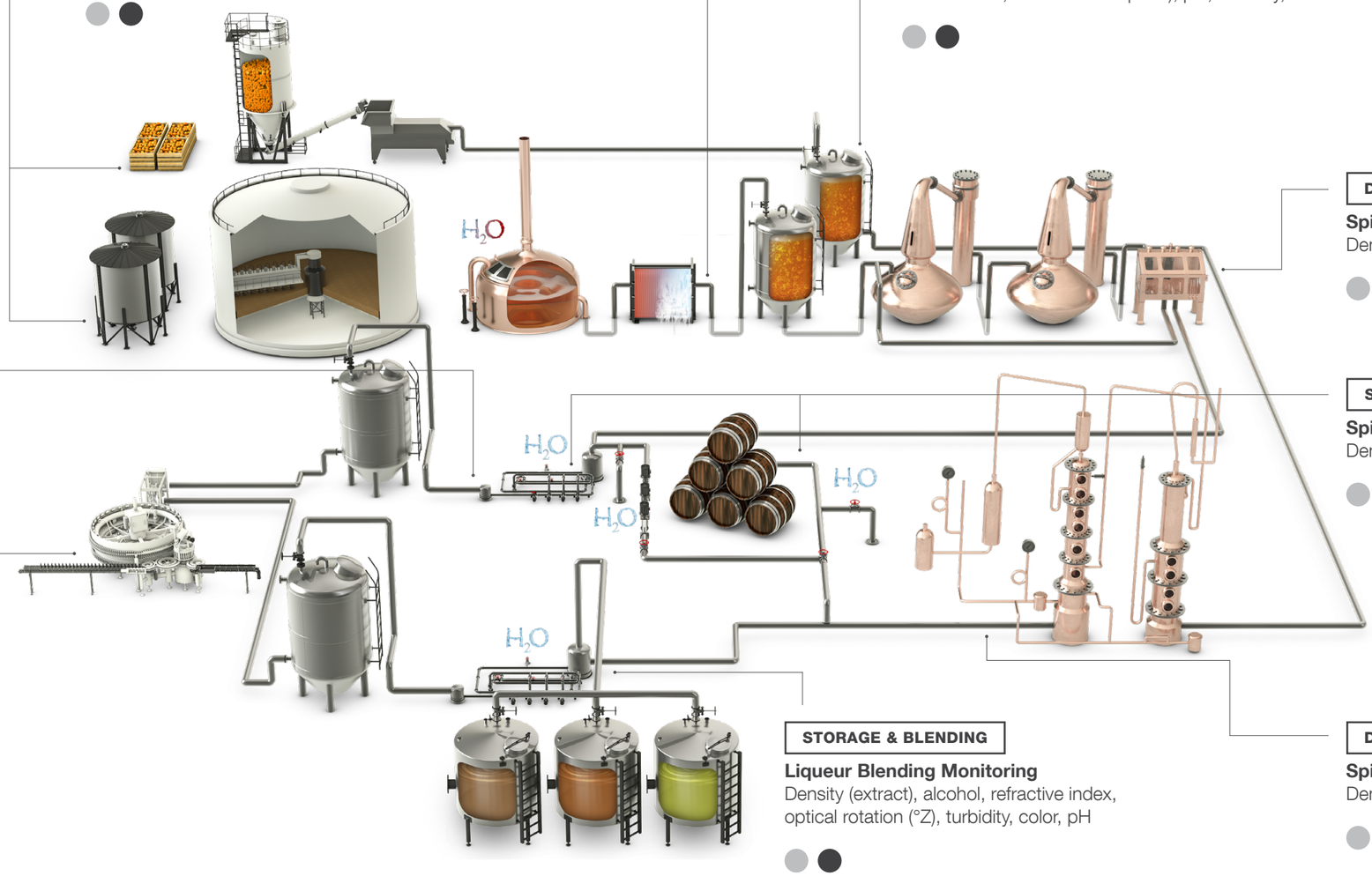
Raw Material Monitoring
Refractive index, optical rotation (°Z), elemental impurities

WORT/JUICE MONITORING

Wort/Juice Monitoring
Density (°Brix, extract, °Plato, SG), refractive index, sound velocity (extract), optical rotation (°Z), pH, turbidity

FERMENTATION & WASH ANALYSIS

Fermentation Monitoring
Density (°Brix, extract, °Plato, SG), refractive index (original extract, apparent extract density, alcohol, real extract, real degree of fermentation, fermentation speed), pH, turbidity, color



DISTILLATION

Spirits Safe Monitoring
Density (extract), alcohol, pH, color

FILTRATION

Chill Filtration
Turbidity, alcohol, density (total extract)

STORAGE & BLENDING

Spirits Blending Monitoring
Density (extract), alcohol, pH, color

BOTTLING

Bottling and Packaging
Density (extract), alcohol, refractive index, optical rotation (°Z), turbidity, color, pH

STORAGE & BLENDING

Liqueur Blending Monitoring
Density (extract), alcohol, refractive index, optical rotation (°Z), turbidity, color, pH

DISTILLATION

Spirits Safe Monitoring
Density (extract), alcohol, pH, color

Grow Your Business

Our spirits analysis solutions are designed to grow with your needs. Whether you're integrating data management, upscaling your analytical solutions, or implementing inline analysis in your production, we've got you covered.

Measure inline
The inline sensors for density, sound velocity, refractive index, and color report results directly from the line. They're automatically calibrated and adjusted.

Go paperless
Centralize your lab data and store all your measurements in a single digital space. With our lab execution software, AP Connect, your data is accessible from any network computer, whenever you need. Streamlining your data flow frees up time for analysis and ensures full traceability.

Upgrade one step at a time
Our solutions give you the freedom to upgrade your analytical capabilities step by step: for example, to a higher accuracy level, high-end turbidity measurement, or full automation.

Alcohol Monitor

L-Sonic Series
L-Rix Series
L-Dens Series

mPDS 5

Abbemat 300

MCP 100

XDLIP058EN-D

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