

# Laboratory and Portable Density and Concentration Meters

DMA: The Density Meter Series



# The DMA: Always Superior

Invented as the world's first digital density meter, the DMA has been perfected over decades to become the gold standard in the industry. With a user base spanning the globe, it's earned the trust of hundreds of thousands of satisfied customers. Whether you're out in the field, on the production floor conducting high-throughput QC, or engaged in precision-driven R&D. Always.

At Anton Paar, it's always been our ambition to be the unrivaled leader in density measurement. Every day, we're boldly innovating, carefully engineering, and precisely manufacturing. Whether it's the DMA's handcrafted glass measuring cell, the internally assembled circuit boards, or even our handmade cables, attention to detail and full control over our value chain have always been central ingredients for success. This is how we create the most advanced and progressive density meters that don't just meet our customer's expectations but surpass them. Always.

The DMA is a promise to precision. Its patented "Pulsed Excitation Method" (PEM) delivers unprecedented measuring accuracy up to the 6th digit at a measuring speed that's unmatched in the industry. For superior results you can count on. Always.

The DMA's software experience is backed by the expertise gained from thousands of customer applications and designed around our users' needs. For a superior measuring experience. Always.

The DMA is built to operate flawlessly even in challenging conditions where other instruments fail. Highly viscous samples? Low temperatures? Particles? Our answer: A superior density meter. Always.

Your DMA: Always superior.





1



2



3



4



5

1

**Measuring accuracy**

The superior accuracy of our density meters ranges from three to six digits. From the most accurate density meter in the world to the portable, intrinsically safe version. Unaffected by the surrounding environment, including altitude and temperature, or by the nature of the sample itself (e.g., viscosity), they deliver exceptional reproducibility time and time again.

WATCH VIDEO



2

**Compliance with industry standards**

Whatever your industry, our density meters comply with all the standards you need to fulfill. This way, you're always on the safe side with our results, and you're prepared for – and easily pass – audits and lab inspections. So no headaches there. And in sales, you can be sure that both parties are speaking the same language, with no room for misunderstandings.

WATCH VIDEO



3

**Experience: Application expertise**

Researchers around the world prefer our density meters. Quality control managers across every industry for big and small companies rely on them everywhere. They all know that the decades of application expertise behind the instruments' design guarantee a superior instrument and a more reliable measurement. And, as partners in their success, we've got the kind of tips and know-how that only half a century of application expertise can bring.

WATCH VIDEO



4

**Usability features: E.g., bubble detection**

We didn't start making density meters yesterday. We channel our market-leading experience into designing density meters that are easy for everyone to use. Whether it's automatic bubble detection or U-View™ camera automatic sample monitoring, the selectable industry profiles, or the guided workflows, we ensure every one of our density meters is a joy to use.

WATCH VIDEO



5

**Service availability worldwide: Able to be repaired, 10-year parts guarantee**

Ask anyone: We're known for the durability of our instruments and the quality of our service. Each instrument comes with a three-year warranty. If you need assistance, someone from our worldwide service network, speaking your language, is on location within 24 hours. And every time we move up to a new instrument generation, we guarantee the spare parts for your instruments for at least 10 years.

WATCH VIDEO



# Always Superior Technology



## The DMA always delivers

Powerful hardware, state-of-the-art software, half-a-century commitment to always-superior quality and innovation, and a time-tested revolutionary measuring principle. Together, we've designed the world's fastest, most intelligent density meter. No matter how challenging your samples, Anton Paar's density meters deliver.

## Accuracy to the 6th digit

The Pulsed Excitation Method, with a new, even-smarter algorithm, brings you the most accurate FillingCheck™ ever and 2x better viscosity correction. Detect even the smallest bubbles and measure all samples to the 6th digit – in just a few seconds.

## The exclusive club

The reason you can rely on the superior accuracy of our density meters is because we have joined the exclusive club of ISO 17034 density standard producers. We measure the density with a hydrostatic balance in-house. This lets us produce certified density standards with a measurement uncertainty of just 0.000015 g/cm³.

## Top-class calibration

To ensure always-superior traceability of your density results, we calibrate your instrument according to ISO 17025 with certified calibration tools and certified reference materials. The calibration is conducted at your facility or one of ours and comes with an ISO-compliant calibration certificate.

## The elements of superiority

Together, the revolutionary measuring principle, the in-house hydrostatic balance, the certified reference materials, and the ISO 17025 calibration ensure that our density meters are always superior.

# Tough Industries, Tough Instruments

Market  
Leader



## Portable density meter: DMA 35 Standard, DMA 35 Ex, DMA 35 Ex Petrol, DMA 35 Ampere

- Quality control during fermentation, e.g., for wine must & wine, wort & beer
- Fermentation graph for each wine/beer tank directly on the screen
- Intrinsically safe quality checks of petroleum products and concentration of chemicals directly at the tank
- One device – replacing all glass hydrometers & pycnometers in the workplace
- Leak-proof, sealed housing that can withstand the roughest conditions

## Compact density meter: DMA 501, DMA 1001

- Entry-level benchtop density meter accessible for every lab
- Replacement for all pycnometers in the lab
- Automatic conversion of density into concentration (60+ conversion tables)
- Pasty, inhomogeneous, particle-containing samples? No problem
- Splash-proof, self-diagnosing, no ventilation-related corrosion



DMA 4501  
Top Seller



## The fastest in the world: DMA 4101, DMA 4501, DMA 5001

- The fastest, most accurate benchtop density meters on the market
- Portfolio covers all industries and includes a top-notch instrument for R&D. High-tech features to simplify your lab work and streamline your data management
- Automated filling, measuring, and cleaning process options for higher sample throughput
- Connect now or in the future to a range of Anton Paar instruments for multiparameter measurements



## The high-performer: DMA 4200 M

- Perfect for heavy petroleum samples, e.g., asphalt/bitumen, tar, heavy fuel oil
- Temperatures up to 200 °C and pressures up to 500 bar
- 10x faster than manual methods, e.g., pycnometers (ASTM D70)
- Full compliance with ASTM D4052, ASTM D5002, and ASTM D8188

## The external measuring cell: DMA HPM

- Ideal for PVT analysis of crude oil and enhanced oil recovery (EOR) experiments
- Reliable density measurement under extreme conditions
- Sample pressures up to 1,400 bar and temperatures from -10 °C to +200 °C
- Combination with evaluation unit mPDS 5 for remote data reading



## The two-in-one: DSA 5000 M

- Determination of two- and three-component solution concentration, e.g., methanol, formaldehyde, phosphoric acid, and ink
- Coverage of the complete sulfuric acid and oleum concentration range
- Two parameters – density and sound velocity – in one go
- Efficient analysis in quality control and R&D: throughput of up to 30 samples per hour
- Maximum safety with minimal sample volume



# Measure Everything, Everywhere

Buy online  
shop.anton-paar.com

DMA 35 Standard, DMA 35 Ex, DMA 35 Ex Petrol, DMA 35 Ampere

Take the portable DMA 35 with you everywhere. On the tank truck, into space, up the Kilimanjaro, into the deepest wine cellar, deep down in a submarine, to the remotest brewhouse, into hazardous areas, everywhere. Fill your sample directly from the container using the built-in pump at temperatures up to 100 °C (e.g., hot wort). Use gesture control to start the measurement leaving one hand free to hold you steady (especially important when you're measuring hard-to-reach samples). Use your left or your right hand. We make measuring in the field as easy as 1-2-3. So your results are always superior.

Measure everything. Beer, wine, fruit juice, milk, acids and bases, petroleum products, pharmaceutical infusions, personal care products, cooling agents, cosmetics. And much, much more.

Measurements are incredibly fast too. First of all, there's filling, there's fast filling, and there's incredibly fast filling: DMA 35 filling (with a manual pump) is a whopping 10x faster than any comparable instrument! Results take just a few seconds. You don't need a temperature adjustment. The sample ID and measuring method to be used are simply read from the RFID tag for automatic sample identification. It's not just fast, it's reliable too: The smart oscillator placement makes sure gas bubbles move to where they can't affect your result: outside the measuring cell.

You're always in control of your data. Up to 1,200 data points are stored in the instrument's memory. The Bluetooth® interface allows automatic data export to PC or printer for super-convenient data handling and leak-proof traceability.

## Measure even in hazardous locations

Safety first! Anton Paar is the only provider of portable density meters that are intrinsically safe: ATEX & IECEx-certified – a must-have for flammable samples and measurements in explosive atmospheres. That makes the DMA 35 Ex particularly suited for measuring chemicals. And the special housing of the DMA 35 Ex Petrol – which is fully IP 559- and ASTM D7777-compliant – makes it ideal for the petroleum industry.

## Built to last a long, long time: Robust housing, replaceable cell

The DMA 35 isn't just durable, it's built to last a long, long time. It has protection class IP54 so the harsh conditions of industrial and field applications are a walk in the park. Use the capacitive keys with or without gloves and don't worry about display damage: It's protected by a robust hard-glass front. And the measuring cell has additional rubber protection, too.



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[www.anton-paar.com/apb-overview-dma35](http://www.anton-paar.com/apb-overview-dma35)

# Change for the Better

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## DMA 501, DMA 1001 Compact Density Meter

Are you ready for a new, always-superior reality? The entry-level DMA 501 and DMA 1001 digital density meters will revolutionize your work in the lab and your quality checks at the production line and storage facilities. They're so intuitive, just about anyone can use them. Guided user workflows and customizable screen layouts mean you're up-and-running in minutes. And they come with an unmatched price tag.

The DMA 501 and DMA 1001 are high performers: They're specifically designed for heavy-duty industrial workspaces. They're splash-proof and protected from sample spills. Unlike other density devices, they don't need ventilation so no contaminated air is ever sucked into the electronics. What that means for you is 100 % uptime, close-to-zero repair costs, and maximum instrument lifetime, even in harsh industrial environments. There's a neat add-on, too: An intelligent condition-monitoring system warns you and recommends action if environmental conditions are not in the ideal range.

### We've got you covered on traceability and compliance

Trust is good, compliance is key: The DMA 1001 complies with all major industry standards like ASTM D4052 and D5002 as well as all major pharmacopeia (USP <841>, Ph.Eu. 2.2.5, JP 17 2.56, ChP (Vol IV) 0601). This means you know your products comply with the standards of global markets. FillingCheck™ and U-View™ monitor the quality of filling, deliver alerts, and store a complete image for later verification. Of particular importance for the pharma industry: With DMA 1001, you can assign roles and responsibilities and implement an audit trail to log all activities and electronically sign the final results. Print out or export data after every measurement via network file share or USB. And the added cross-industry bonus: If you connect to AP Connect, our lab execution software, you can store thousands of measurements in a single digital space.

### An instrument that predicted the future

Others are still dreaming of what the compact density meters DMA 501 and DMA 1001 make reality: The intelligent, intuitive instrument stores tables for automatic calculation of % w/w and % v/v for ethanol, hydrogen peroxide, sodium hydroxide, hydrochloric acid, and much more. The DMA 501/1001 performs a purity and anti-adulteration check in just one click. Think checking the concentration of up to 400 different chemicals is complex and time-consuming? It is with other instruments but with the DMA 501/1001 just fill the sample, wait two minutes for the result, and the job is done! Need custom quantities and calculations? Just import your own tables. For each product filled, you can set the lower and upper limits for acceptable volumes and see a clear "pass" or "fail" result at a glance.

### Not just a few samples, all samples

The world is full of limitations but these instruments measure all samples: from the pasty and inhomogeneous to the sedimenting and particle-containing, and even aerosol sprays. One thing that is limited is your time: That's why the syringe holder ensures bubble-free filling so you save 25 to 30 minutes per sample compared to a pycnometer. It's also why cleaning is so fast and needs only a few milliliters of solvent. Your safety is important to us, too: Filling hazardous samples via the optional peristaltic pump means operators have only minimum contact with the sample. Only 1 mL to 2 mL of sample are needed, and the touchscreen can be operated wearing gloves.



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www.anton-paar.com/  
apb-overview-cdma

# Next-Level Speed, Next-Level Accuracy

DMA 4101, DMA 4501, and DMA 5001

## Always superior: A revolutionary user experience

- Dazzling display
- Ingenious inspection camera
- Magnificent measuring principle
- Diligent data management: AP Connect
- Magical modularity

## The need for speed: 20 seconds to 4-digit accuracy

You want to measure multiple samples across various conditions, keep throughput high without losing measurement performance, and be efficient with standard instrument checks. All new models have modes for ultra-fast measurement, multiple sample measurements, and temperature scans. Save time with fast sample throughput, effective sample characterization, and documentation. Obtain accurate results with groundbreaking speed, and push down your lab's time-to-result.

## Unique sample diagnostics features: Real information in real time

You want to detect invisible contamination or micro-bubbles in the sample. Benefit from an automatic, fast, and accurate FillingCheck™ – in real time, with both vertical and horizontal syringe filling. Sit back and enjoy operator-free, Pulsed Excitation Method-based sample-filling diagnostics within just a few seconds, including identification of invisible micro-bubbles.

## Compliance: Standards conformity, data integrity assured

Our next-level density meters are in full compliance with petroleum industry standards and legislative requirements, they adhere to rigorous pharma industry standards and data integrity regulations, and they provide total consistency during measurement procedures and documentation. They lay a meticulous audit trail, with signing of measurement results (user management) – in full GMP/GLP and 21 CFR Part 11 compliance. Satisfy data integrity and traceability standards (e.g., 21 CFR Part 11, GMP 4 Annex 11&15, ALCOA+).

## One-stop shop: In-house ISO calibration

You require a measurement certificate from an accredited measurement lab. We provide in-house ISO/IEC 17025 calibration in a one-stop-shop approach. Obtain an ISO/IEC 17025-calibrated density meter directly from the supplier and even reference materials. You can simply get standards directly from Anton Paar – needed when adjusting the instrument. It's a comprehensive solution.

## Sample throughput: Faster and better

You're looking for highly efficient sample measurement with automatic temperature control, measurement, and cleaning cycles. You want to avoid filling issues related to manual operation. The next-level density meters fully support a wide range of automation options, like the Xsample series sample changers.

## AP Connect: Your paperless lab

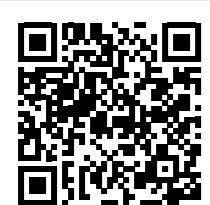
Our next-level density meters, in combination with our lab execution software, AP Connect, set the basis for your future paperless lab. Link 50+ Anton Paar instruments, trigger measurements with 10+ parameters, and store tens of thousands of measurements in a single digital space. Your data is available in a snap, accessible from any network computer. Streamlining your data flow like this frees up time for analysis.

## Customization

You need methods and scales for known standard materials available to choose from the instrument. Select from 200+ predefined quantities and scales. Avoid time-consuming manual calculations and human errors. Enjoy easier data management with customized report configuration.



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apb-overview-dma](http://www.anton-paar.com/apb-overview-dma)



# Superior Instruments for Exceptional Conditions

All of the instruments are built for challenging conditions. Each is unique on the market. DMA 4200 M is the right choice for high-pressure, high-temperature density measurement and for asphalt and bitumen. The external measuring cell DMA HPM measures density at sample pressures up to 1,400 bar and temperatures from -10 °C up to +200 °C. It's especially useful for R&D and crude oil studies. DSA 5000 is your number one density and sound velocity meter for the concentration measurement of two- and three-component solutions. And all of this with exceptional accuracy: up to 0.000007 g/cm<sup>3</sup>.

1

## DSA 5000 M

→ Measure the whole concentration range of sulfuric acid and oleum

Your number one density and sound velocity meter for the concentration measurement of two- and three-component solutions. DSA 5000 M is the only instrument in the world that combines density and sound velocity measurements in one setup, determining the concentration of two- and three-component solutions, using the most accurate density results on the market – which is why, across countless industries, R&D teams rely on it. Measurement of up to 30 samples per hour gives the instrument a real productivity driver.

2

## DMA 4200 M

→ The right choice for heavy petroleum samples

→ Measure 10x faster than with manual methods like pycnometers (ASTM D70)

DMA 4200 M is the only density meter that can measure at temperatures up to 200 °C and pressures up to 500 bar. It's the right choice for petroleum refinery labs, your eager beaver for routine quality control of end products like LPG, asphalt, bitumen, tar, fuel, diesel, crude oil and life crude oil, and multiple forms of fuel oil. And it's ASTM D4052-, ASTM D5002-, and ASTM D8188-compliant. But that's not all.

The Hastelloy U-tube is resistant to highly corrosive acids and bases, such as hydrochloric acid, sour gas, sodium hydroxide, and even hydrofluoric acid – making the DMA 4200 M well-suited to the chemical industry as well.

3

## DMA HPM

→ Your go-to instrument for density measurement at sample pressures up to 1,400 bar and temperatures from -10 °C to +200 °C

→ Ideal for pressure-volume-temperature (PVT) analysis and enhanced oil recovery (EOR) experiments

Extreme conditions? The density measuring module DMA HPM can handle them, providing reliable density measurement. In combination with the evaluation unit mPDS 5 for remote data reading, it determines the density at sample pressures up to 1,400 bar and temperatures up to 200 °C. The DMA HPM is commonly used in reservoir studies either integrated into a PVT analysis system or slim tube apparatus for EOR experiments.

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[www.anton-paar.com/apb-overview-hpm](http://www.anton-paar.com/apb-overview-hpm)



# Versatile in Different Industries

## 1 Beautiful beverages

So that your beverages are always beautiful: Measure the sugar concentration of syrups, soft drinks, and fruit juices, monitor fermentation, and determine in advance the final alcohol content of your beer or wine. Whether Plato, Brix, or volume percentage, your density monitor can handle all units.

## 2 Powerful petro

We power your petro analysis: Measure all kinds of samples, using small sample amounts, from LPG, fuel and jet fuel, diesel, and crude oil to asphalt/bitumen, and lubes (heavy to light ends). Comply with ASTM (D4052, D5002, D8188, D7777) and ISO standards (ISO 12185). Cover all necessary units (API number, API density) and execute density measurements that put all of your trading on a reliable footing. Ensure supreme quality control for crude oil, fuels, and lubricants.

## 3 Capable chemicals

Jump-start your chemical analysis capabilities: Quickly determine concentration of acids and bases, and cooling agents, with zero consumables, small sample amounts, and no titration. Just imagine the time and costs you'll save. Protect your operators with autosamplers. Secure superb quality control of raw materials and the final product.

## 4 Phenomenal pharma

Your pharma products can be phenomenal: Comply with 21 CFR Part 11, USP 841, and other key pharmacopeia (EU, Japan, China) so you can sell to all global markets. Establish watertight user management, traceability, and documentation for every measurement and change. Measure the density and specific gravity of infusion solutions and the raw materials used in drug and vaccine production. Control the filling volume of sprays. Implement top-notch quality controls for finished creams, sprays, and raw materials.

## 5 Fabulous fragrances & flavors

Bring out the fab in your fragrances and flavors: Measure the density of samples like essential oils, perfumes, and raw materials to determine the purity of your fragrances. Preserve as much as possible of your expensive oils, with samples of just 1 mL that still deliver all the results you need. Combine with other measuring parameters like RI and optical rotation.

## 6 Fantastic food

We put the fantastic in your foods. Measure the density of milk, plant-based milk, and dairy products. Never again over- or underfill product packages. Ensure your milk products contain exactly the right amount of fat content. Satisfy all regulations and requirements.



# 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 that 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 in to 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

Lovis 2000 ME	Option color for Alcolyzer	Xsample 630	Abbemat 550	AVAILABLE OPTIONS
<b>VISCOSITY</b>	Lovibond	Xsample 610	Abbemat 500	
	Minolta CM-5	Xsample 530	Abbemat 350	
		Xsample 520	Abbemat 300	
		Xsample 340	MCP 150	
		Xsample 330	MCP 100	
		Xsample 320		
		<b>SAMPLE CHANGER</b>	<b>REFRACTIVE INDEX</b>	<b>OPTICAL ROTATION</b>

Leveraging decades of experience, our density meters are the best on the market and trusted by thousands of customers. That's why they're at the very heart of our measuring systems – with which you can measure a tailor-made range of parameters.

Choose from the following options and primary instruments:

- DMA 4101
- DMA 4501
- DMA 5001
- SDA/DSA 5000 M

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[www.anton-paar.com/apb-dma-modulyzer](http://www.anton-paar.com/apb-dma-modulyzer)



<b>pH</b>	<b>TURBIDITY</b>	<b>ALCOHOL CONTENT</b>	<b>CO<sub>2</sub>, O<sub>2</sub></b>	<b>FILLING DEVICE</b>	<b>TOTAL PACKAGE OXYGEN</b>
pH 3101	Haze 3001	Alcolyzer 3001 Spirits	CarboQC ME	SFD	TPO 5000
pH 3201	Haze 3001 Heavy Duty	Alcolyzer 3001 Sake	CarboQC 1001	PFD plus	
		Alcolyzer 3001 Wine	Option O <sub>2</sub> for CarboQC ME / 1001	PFD	
		Alcolyzer 3001 Beer	Option O <sub>2</sub> plus for CarboQC ME / 1001		
		Alcolyzer 3001			
		Alcolyzer 1001 Beer			

# Modular Extension



## VISCOSITY

1

- High chemical resistance
- Temperature range of -30 °C to +100 °C

The Lovis 2000 M/ME rolling-ball microviscometer determines the dynamic, kinematic, relative, and intrinsic viscosity of liquids with high precision. With the integrated polymer software, sample molar mass can automatically be determined. Flowthrough filling enables easy handling and high sample throughput.

## COLOR

2

- Easy to integrate
- Various third-party options can be fully integrated

Color measurement ensures your product looks exactly the way you want it to at any point in production. Typical applications include beer color measurement or controlling blending procedures. Third-party devices Konica Minolta CM-5 and Lovibond can be fully integrated for easy handling.

## SAMPLE CHANGER

3

- Reduction of costs per measurement
- Elimination of handling errors

Anton Paar's Xsample series offers you more automation options than you will find anywhere else. From low to high viscosities, from corrosive samples to dissolved gases, from single measurements to high-throughput solutions for large quantities of sample per day – we know how to automate your daily business.

## REFRACTIVE INDEX

4

- Accuracy from  $\pm 0.0001$  nD to  $\pm 0.00002$  nD
- Compliant with 21 CFR Part 11 and EU GMP Annex 11

AbbeMats refractometers allow quick, non-destructive measurement of refractive index and concentration. Regardless of the sample properties, you can measure liquids, pastes, polymers, solids, cloudy, colored, or opaque samples. Numerous methods are available for each model, allowing fast and precise measurements.

## OPTICAL ROTATION

5

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

The MCP polarimeters pack proven technology into a compact polarimeter. They fit into every laboratory, are easy to operate, and comply with all relevant national and international standards such as 21 CFR Part 11. They're the right choice for the pharmaceutical, cosmetics, food, and chemical industries as well as for R&D and medical applications.

# Modular Extension



## pH

6

- Suitable with operating pressures up to 6 bar
- Fully guided adjustment and calibration procedures

The pH measuring modules enable simultaneous determination of pH value and other quality parameters. Versatile configurations allow pH measurements at pressures of up to 6 bar in a variety of liquids from beverages to chemicals. You'll have all the results you need in just three to four minutes.

## TURBIDITY

7

- Only 5 mL of sample
- MEBAK and EBC compliant

The approved ratio method with measurement at three angles is used to prevent the influence of particle size on the turbidity value. The measurement is carried out at a MEBAK and EBC-compliant wavelength in a cell with adjustable constant temperature – guaranteeing the highest repeatability and accuracy.

## ALCOHOL CONTENT

8

- Precise alcohol measurement
- Up to 30+ industry-specific parameters

The key to the AlcoLyzer is its selective alcohol measurement. The maintenance-free solution provides results with only a single adjustment. Along with the optional color measurement, it can monitor your whole production process for all types of beer, cider, hard seltzer, kombucha, sake, wine, and spirits.

## CO<sub>2</sub>, O<sub>2</sub>

9

- Fast detection: CO<sub>2</sub> in 55 seconds or CO<sub>2</sub> and O<sub>2</sub> in 90 seconds
- No influence from other dissolved gases

Precisely and reliably determine the dissolved CO<sub>2</sub> content in liquids. The multiple-volume expansion method eliminates the influence of other dissolved gases like N<sub>2</sub> and O<sub>2</sub>. Option O<sub>2</sub> Plus can also be easily retrofitted in your new or existing CarboQC ME measuring modules, providing dissolved O<sub>2</sub> results simultaneously.

## FILLING DEVICE

10

- Filling from bottles and cans with a single device
- No loss of CO<sub>2</sub> or O<sub>2</sub> due to pressurized filling

The PFD and SFD piercing and filling devices transfer your samples directly from a closed container: cans, glass bottles, PET bottles, or champagne bottles. As a result of sealed and pressure-driven filling, the samples are transferred without loss of CO<sub>2</sub>, making it the ideal filling device for your Anton Paar instruments.

## TOTAL PACKAGE OXYGEN

11

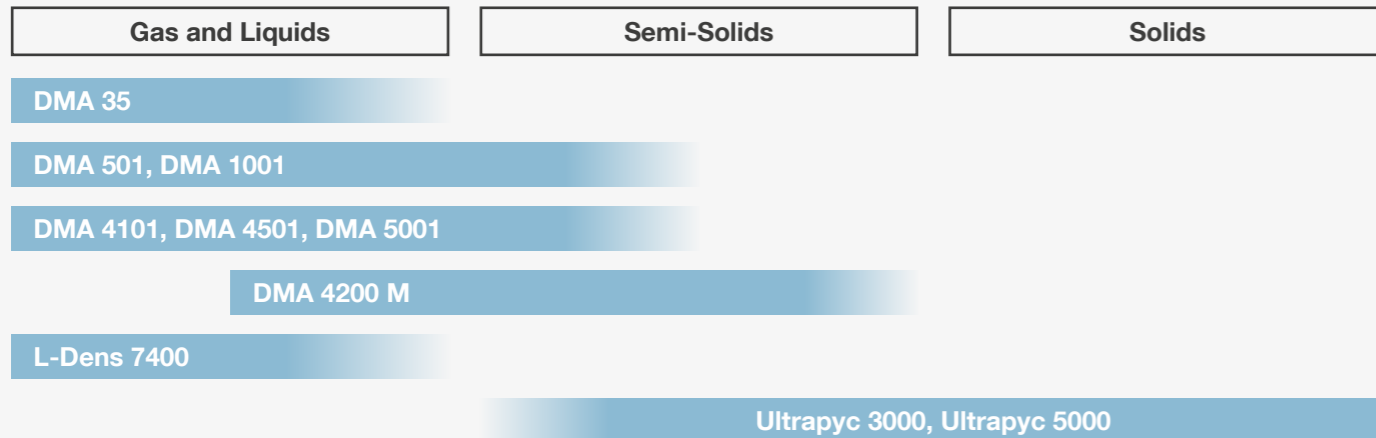
- Measure TPO, head space oxygen, and dissolved oxygen directly from the package
- Results in less than four minutes

Our straightforward TPO measurement solution saves you time and guarantees reliable QC. It's available as a standalone option or can be combined with other instruments.

# The Full Density Spectrum: Gas, Liquids, Solids

Our density meters perform across labs and process. From gas to liquid to semi-solid and solid. From portable to top-notch benchtop devices. We do this with two different techniques: oscillating U-tube or gas adsorption for solids and semi-solids. This means you can use our density meters for lab measurements to adjust your process instrumentation, and in your processes so you can measure continuously and react immediately. Automatic communication between the two instruments excludes errors and ensures traceability.

**No other brand covers all of these angles simultaneously.  
On density measurement, we lead the way.**



# Reliable. Compliant. Qualified.

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[www.anton-paar.com/service](http://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.

	DMA 35	DMA 501	DMA 1001	DMA 4101	DMA 4501	DMA 5001	DSA 5000 M	DMA 4200 M	DMA HPM
	↓	↓	↓	↓	↓	↓	↓	↓	↓
<b>MEASURING RANGE</b>									
Density	0 g/cm <sup>3</sup> to 3 g/cm <sup>3</sup>				0 g/cm <sup>3</sup> to 3 g/cm <sup>3</sup>				
Sound velocity	-	-	-	-	-	-	1,000 m/s to 2,000 m/s	-	-
Pressure	Ambient	0 bar to 10 bar (0 psi to 145 psi) absolute		Up to 50 °C (122 °F): Above 50 °C (122 °F):	0 bar to 10 bar (0 psi to 145 psi) absolute 0 bar to 5 bar (0 psi to 72.5 psi) absolute		0 bar to 8 bar (0 psi to 116 psi) absolute	0 bar to 500 bar (7,250 psi) absolute	0 bar to 1,400 bar (20,300 psi) absolute
Temperature	0 °C to 40 °C (32 °F to 104 °F)	15 °C to 40 °C (59 °F to 104 °F)	15 °C to 60 °C (59 °F to 140 °F)	0 °C to 100 °C (32 °F to 212 °F)			-10 °C to +200 °C (14 °F to 392 °F)		
<b>ACCURACY</b>									
Density	0.001 g/cm <sup>3</sup>		0.0001 g/cm <sup>3</sup>		0.00005 g/cm <sup>3</sup> (full range), 0.00001 g/cm <sup>3</sup> (0 g/cm <sup>3</sup> to 1 g/cm <sup>3</sup> , 15 °C to 20 °C)	0.000005 g/cm <sup>3</sup>	0.000007 g/cm <sup>3</sup>	0.0002 g/cm <sup>3</sup>	Up to 0.0001 g/cm <sup>3</sup>
Temperature	0.2 °C (0.4 °F)	0.3 °C (0.6 °F)	0.05 °C (0.09 °F)	0.03 °C (0.05 °F)	0.02 °C (0.04 °F) (full range), 0.01 °C (0.02 °F) (15 °C to 20 °C)	0.01 °C (0.02 °F)		0.03 °C (0.05 °F)	Depends on the accuracy of the used thermostating device
<b>REPEATABILITY, S.D</b>									
Density	0.0005 g/cm <sup>3</sup>	0.0002 g/cm <sup>3</sup>	0.00005 g/cm <sup>3</sup>	0.00001 g/cm <sup>3</sup>	0.000005 g/cm <sup>3</sup>	0.000001 g/cm <sup>3</sup>	0.000005 g/cm <sup>3</sup>	0.00005 g/cm <sup>3</sup>	Up to 0.00001 g/cm <sup>3</sup>
Temperature	0.1 °C (0.2 °F)		0.02 °C (0.04 °F)		0.01 °C (0.02 °F)	0.001 °C (0.002 °F)		0.01 °C (0.02 °F)	Depends on the accuracy of the used thermostating device
<b>REPRODUCIBILITY, S.D</b>									
Density	0.0007 g/cm <sup>3</sup>	0.0004 g/cm <sup>3</sup>	0.00007 g/cm <sup>3</sup>	0.00005 g/cm <sup>3</sup>	0.00002 g/cm <sup>3</sup>	0.000005 g/cm <sup>3</sup>	0.000005 g/cm <sup>3</sup>	0.0001 g/cm <sup>3</sup>	-
<b>DIGITAL RESOLUTION</b>									
Density	0.0001 g/cm <sup>3</sup>		0.00001 g/cm <sup>3</sup>	0.0001 g/cm <sup>3</sup>	0.00001 g/cm <sup>3</sup>	0.000001 g/cm <sup>3</sup>	0.000001 g/cm <sup>3</sup>	0.00001 g/cm <sup>3</sup>	
<b>ENVIRONMENT</b>									
Ambient temperature	Standard and Ampere version: -10 °C to +50 °C (14 °F to 122 °F) Ex and Ex Petrol version: -10 °C to +40 °C (14 °F to 104 °F)	5 °C to 35 °C (41 °F to 95 °F)		15 °C to 35 °C (59 °F to 95 °F)		15 °C to 35 °C (59 °F to 95 °F)		5 °C to 40 °C (41 °F to 104 °F)	
<b>GENERAL</b>									
Sample volume minimum	2 mL	1 mL				3.50 mL		2 mL	
U-View™	×	✓	✓	✓	✓	✓	✓	×	×
FillingCheck™	×	✓	✓	✓	✓	✓	✓	✓	×
Thermobalance™	×	×	×	✓	✓	✓	✓	×	×
Full range viscosity correction (0-30.000 mPa.s)	✓	✓	✓	✓	✓	✓	✓	✓ (at ambient pressure)	×
Dimensions (L x W x H)	245 mm x 103 mm x 126 mm	375 mm x 265 mm x 180 mm		526 mm x 347 mm x 230 mm			495 mm x 330 mm x 230 mm	510 mm x 330 mm x 230 mm	210 mm x 78 mm x 86 mm
Data memory: Internal storage results	1,200 measuring methods 30 measuring products	5,000 measuring methods 400 measuring products		10,000 measuring methods 400 measuring products			1,000 measuring methods 400 measuring products		30,000 measuring methods
Weight	660 g (23.3 oz) to 810 g (28.6 oz)	13.5 kg (29.8 lbs)		22.04 kg (48.6 lbs)			22.5 kg (49.6 lbs)	27.7 kg (61.1 lbs)	8.3 kg (18.3 lbs)
Communication interfaces	Bluetooth®, RFID (both included by default)	1 x Ethernet, 3 x USB, 1 x RS232		5 x USB, Ethernet, CAN, RS232			RS-232, 4 x USB, CAN, VGA, Ethernet	4 x USB (2.0 full speed) 1 x Ethernet (100 Mbit) CAN Bus, RS-232, VGA	Refer to documentation of mPDS 5 Evaluation Unit
<b>STANDARDS</b>									
ASTM standards	D7777	-	D4052, D5002	D4052, D5002	D4052, D5002	D4052, D5002	-	D4052, D5002, D8188	-
ISO standards	ISO 15212-1	-	ISO 12185	ISO 12185	ISO 12185	ISO 12185	-	ISO 12185	-
Pharmacopoeia EUP, US, JP, CH	-	CH 0601	Ph. Eur. 2.2.5, USP 841, JP 17 2.56, CH 0601	Ph. Eur. 2.2.5, USP 841, JP 17 2.56, CH 0601	Ph. Eur. 2.2.5, USP 841, JP 17 2.56, CH 0601	Ph. Eur. 2.2.5, USP 841, JP 17 2.56, CH 0601	-	-	-

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