

# Multiparameter Analysis

Modulyzer

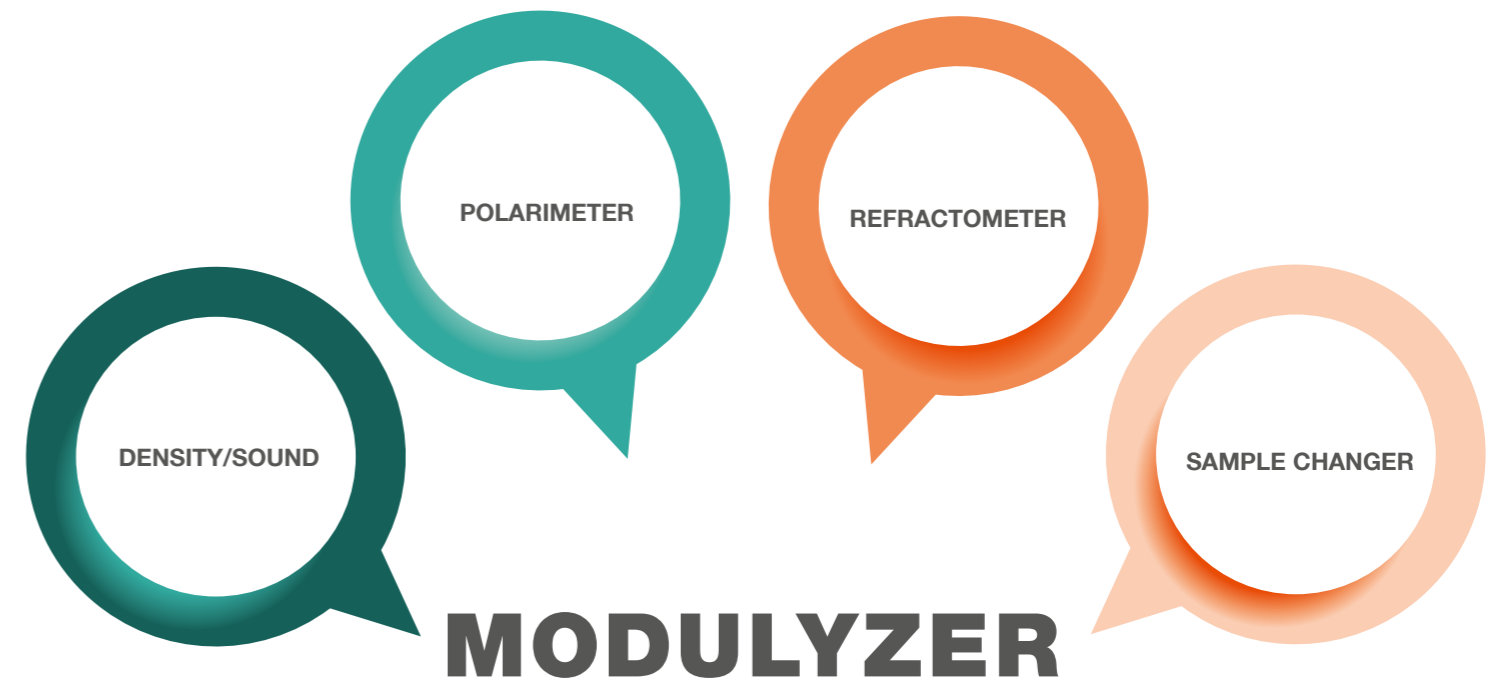


# GET THE MOST OUT OF YOUR SAMPLE

The Modulyzer multiparameter analysis system is your modular and versatile partner in the laboratory. Create a measuring system that exactly fits the needs of your application.

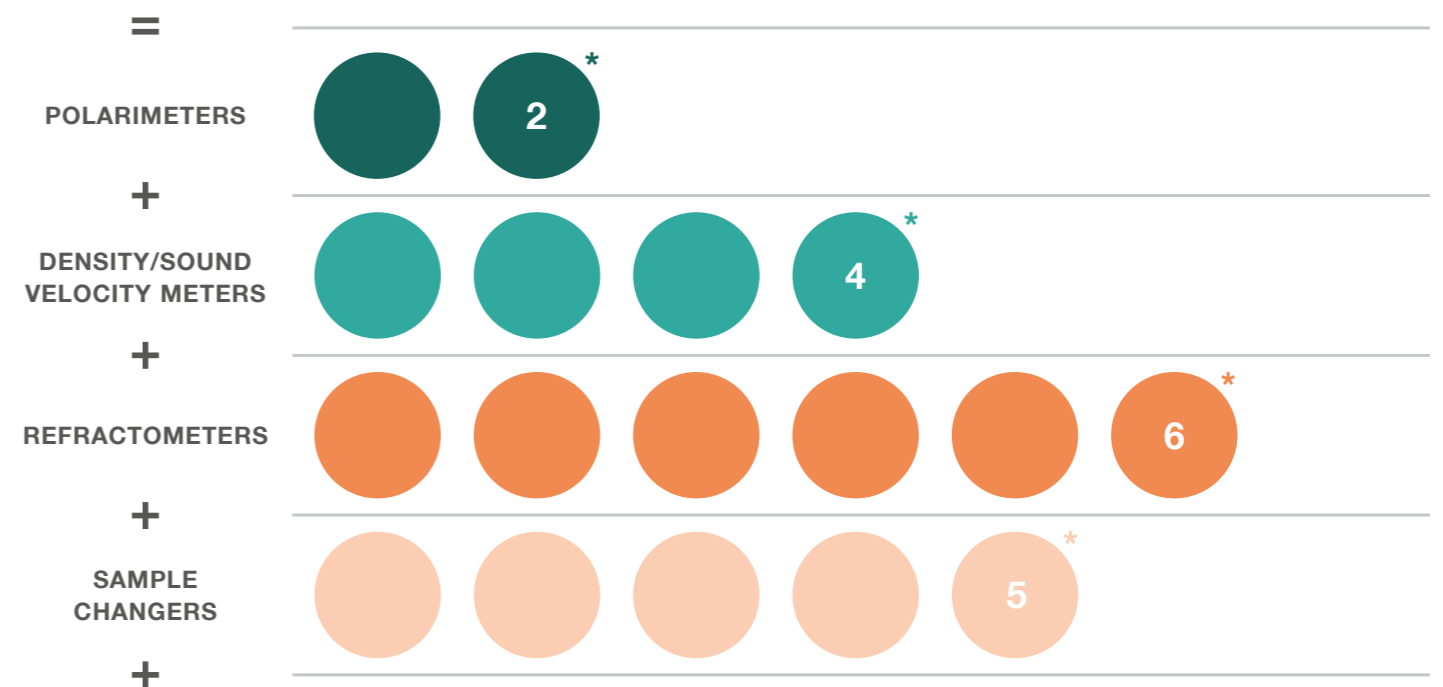
With only one push of a button you obtain up to eight physical parameters and many more derived values – all from the same sample in one go. You can rely on the compatibility of the instruments coming from one producer.

Having one and the same provider for all parts of your measuring system also yields other significant benefits: From purchase to installation to service – you always talk to the same company, making sure you don't waste your time with overflowing supplier communication.



Pick the best setup for your needs  
According to the parameters you need to measure, the accuracy you need for each parameter, and your sample throughput you can combine.

MODULYZER



\*Please select one element in each category.

Additional modules for measuring alcohol, turbidity, pH, or viscosity

YOU DEFINE YOUR PARAMETERS. MODULYZER DELIVERS THE RESULTS.



# Key features

Depending on the setup you choose, Modulyzer delivers up to eight results:

- Density
- Alcohol
- Sound velocity
- Turbidity
- Optical rotation
- Viscosity
- Refractive Index
- pH

In addition, other parameters such as a concentration reading can be derived from those results. All measuring cells in the setup are filled only once and the various measurements are conducted in parallel. Retrieving all results from one sample in one go saves you time, sample volume, and effort in your daily lab routine.

## Save space, time, and precious samples

The compact setup not only saves space on your lab bench. It also results in short distances between the different measuring cells, which means measuring times are short (less than three minutes), high viscosities (max. 36,000 mPa.s) can be processed, and only low sample volumes (1 mL to max. 20 mL, depending on the number of instruments in your setup) are required. Saving samples is especially important in the analysis of expensive chemicals or fragrances. Analysis with Modulyzer is non-destructive and the whole sample is recovered afterwards so you don't waste precious raw materials.

## Increase your sample throughput with automation

Anton Paar's sample changers are fully integrable into Modulyzer. They cover several automation degrees from automated filling of one single syringe to filling, measuring, and cleaning of up to 71 samples consecutively. The Xsample series is able to process samples with viscosities up to 36,000 mPa.s, so Modulyzer is suitable for measuring multiple parameters even from oily or creamy samples.



## FillingCheck™: Safe results thanks to bubble-free filling

Anton Paar density meters are equipped with the FillingCheck™ feature as a standard. It detects filling errors, such as bubbles or particles, fully automatically and in real-time. With FillingCheck™ you can always be sure that your results are not distorted by filling errors. The DMA M density meters integrated in the Modulyzer systems additionally feature the U-View™ camera. It displays high-resolution live images of the filled U-tube, stores the images, and prints them in the measuring reports.

## Operate all instruments via only one user interface

Even though Modulyzer unites several instruments in one setup, operation is easy. Users interact with only one simple user interface on one screen, keeping the effort for user trainings at an absolute minimum. Data is processed directly in the system and can be transferred to your LIMS or exported in the desired file format.

# Let the future come

To help you keep pace with developments in your industry, Modulyzer is true to its name: Modularity is the top priority. All integrable instruments can be used individually from the beginning and expanded to be part of a more comprehensive system at any time.

### You are on a budget?

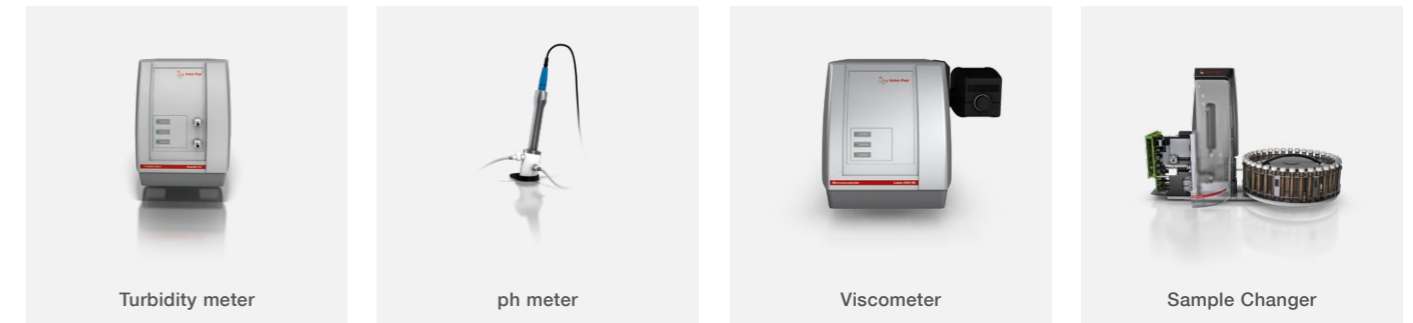
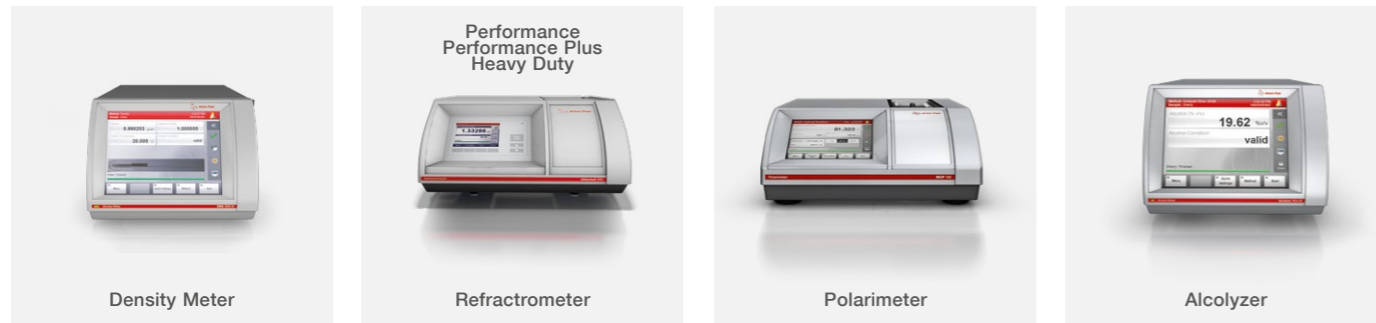
No problem: Start with one instrument to cover your most important applications and parameters and expand your system in future budget cycles.

### You need a scalable solution?

No problem: Start with research on single samples and add an Xsample sample changer to achieve higher throughput as soon as demands rise.

### You don't know your future samples?

No problem: Start with the instrument you need for your current research – Modulyzer will grow together with your future application demands.



Density	Refractive index	Optical rotation	Alcoalyzer
DMA 4100/4500/5000 M, DSA 5000 M	Abbemat 300/500/350/550	○	
DMA 4100/4500/5000 M, DSA 5000 M	Abbemat 300/500/350/550	MCP 100/150	
DMA 4100/4500/5000 M, DSA 5000 M	Abbemat 300/500/350/550	○	
DMA 4100/4500/5000 M, DSA 5000 M	Abbemat 450/650	○	
DMA 4100/4500/5000 M, DSA 5000 M	Abbemat 300/500/350/550	○	
DMA 4100/4500/5000 M, DSA 5000 M	Abbemat 300/500/350/550	○	
DMA 4100/4500/5000 M, DSA 5000 M	Abbemat 300/500/350/550	○	
DMA 4100/4500/5000 M, DSA 5000 M	Abbemat 300/500/350/550	○	
DMA 4100/4500/5000 M, DSA 5000 M	Abbemat 300/500/350/550	○	
DMA 4100/4500/5000 M, DSA	Abbemat 300/500/350/550	MCP 100/150	Alcoalyzer ME
DMA 4100/4500/5000 M, DSA	Abbemat 300/500/350/550	MCP 100/150	○
DMA 4100/4500/5000 M, DSA	Abbemat 300/500/350/550	MCP 100/150	Alcoalyzer ME

Turbidity	pH value	Viscosity	Automation
○	○	○	Xsample 320/520/330/340/530
○	○	○	Xsample 340/530
○	pH ME	○	Xsample 320/520
○	○	○	○
HazeQC ME	○	○	Xsample 320/520
HazeQC ME	pH ME	○	Xsample 320/520
○	○	Lovis 2000 ME	Xsample 320/520/330/340
○	pH ME	Lovis 2000 ME	Xsample 320/520/330
HazeQC ME	○	Lovis 2000 ME	Xsample 320/520/330
HazeQC ME	pH ME	Lovis 2000 ME	Xsample 320/520
○	pH ME	○	Xsample 320/520
HazeQC ME	pH ME	○	Xsample 320/520
HazeQC ME	pH ME	○	Xsample 320/520



# Customized to your needs

Anton Paar offers preconfigured systems, typical for the industries in which Modulyzer is most frequently used. These systems also offer the possibility to start with one or two instruments and expand at a later date.

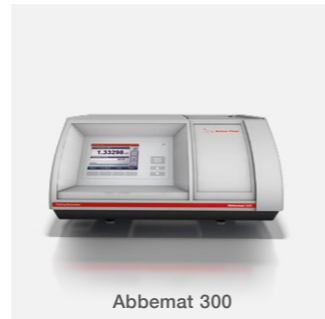
## Modulyzer for chemicals

### Withstands harsh environments and aggressive samples

Modulyzer for chemicals determines the quality parameters of dangerous and aggressive samples without the need for extensive sample preparation such as dilution or the additional handling of corrosive reagents. Chemical resistance is guaranteed, even against aggressive chemicals, and up to 96 samples are automatically processed in a row.



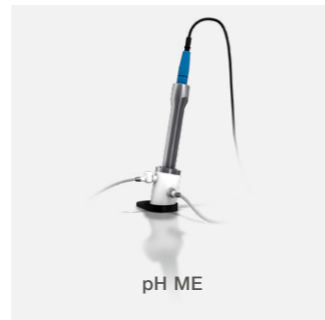
DMA 4100 M



Abbebat 300



Xsample 340



pH ME

## Modulyzer for pharma

### Ready for standards and compliance

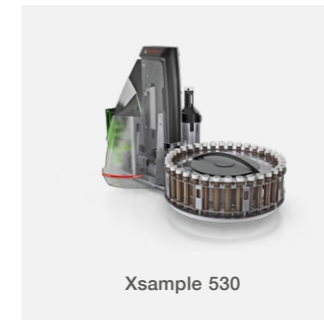
Modulyzer for pharma delivers excellent results for all quality control parameters typically required for pharmaceuticals and is fully compliant with 21 CFR Part 11, cGMP/GMP, GAMP5, and USP<1058>. Anton Paar's PQP (pharma qualification package) helps you save time and work while documenting the fulfillment of the requirements.



DMA 5000 M



Abbebat 500



Xsample 530



Lovis 2000 ME

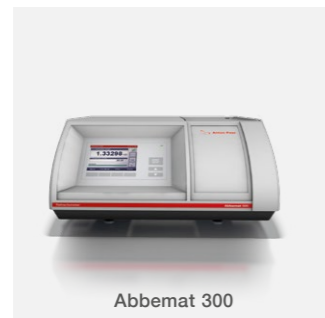
## Modulyzer for flavors and fragrances

### Quickly analyzes small volumes of precious samples

Modulyzer for flavors and fragrances automatically fills and measures up to 71 samples in a row from any vial type you are used to. Thanks to low sample volumes, non-destructive analysis and sample recovery you don't waste valuable raw materials. The bar code reader assigns each measurement to a specific method ensuring that each sample is measured in the correct routine.



DMA 4500 M



Abbebat 300



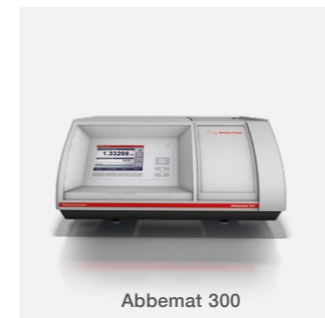
Xsample 530 + Bar code reader



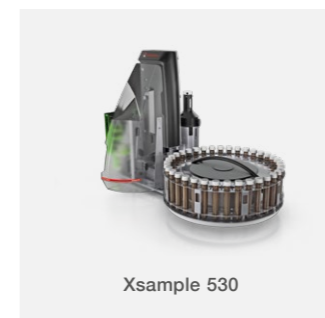
MCP 100 + MCP 150



DMA 4500 M



Abbebat 300



Xsample 530

## Modulyzer for food

### Handles up to 71 different samples in one run on its own

High numbers of all kinds of samples are a typical scenario in food labs. Modulyzer is designed to fulfill exactly these requirements. Completely automated by Xsample 530 holding up to 71 vials, the density and refractive index results are provided in only a few minutes.

# Specifications

DENSITY METERS		Measuring range	Accuracy <sup>1</sup>	Repeatability <sup>2</sup>	Resolution
DMA 4100 M	Density	0 g/cm <sup>3</sup> to 3 g/cm <sup>3</sup>	0.0001 g/cm <sup>3</sup>	0.00001 g/cm <sup>3</sup>	0.0001 g/cm <sup>3</sup>
	Temperature	0 °C to 100 °C	0.03 °C	0.02 °C	0.01 °C
DMA 4500 M	Density	0 g/cm <sup>3</sup> to 3 g/cm <sup>3</sup>	0.00005 g/cm <sup>3</sup>	0.000005 g/cm <sup>3</sup>	0.00001 g/cm <sup>3</sup>
	Temperature	0 °C to 100 °C	0.02 °C	0.01 °C	0.01 °C
DMA 5000 M	Density	0 g/cm <sup>3</sup> to 3 g/cm <sup>3</sup>	0.000007 g/cm <sup>3</sup>	0.000001 g/cm <sup>3</sup>	0.000001 g/cm <sup>3</sup>
	Temperature	0 °C to 100 °C	0.01 °C	0.001 °C	0.001 °C
DSA 5000 M	Density	0 g/cm <sup>3</sup> to 3 g/cm <sup>3</sup>	0.000007 g/cm <sup>3</sup>	0.000001 g/cm <sup>3</sup>	0.000001 g/cm <sup>3</sup>
	Sound velocity	1000 m/s to 2000 m/s	-	0.1 m/s	0.01 m/s
	Temperature	0 °C to 100 °C	0.01 °C	0.001 °C	0.001 °C

REFRACTOMERS		Measuring range	Accuracy <sup>3</sup>	Repeatability	Resolution
Abbemat 300/350	Refractive index	1.26 nD to 1.72 nD	±0.0001	-	0.00001 nD
	Temperature	4 °C to 85 °C	±0.05 °C	-	0.01 °C
Abbemat 500/550	Refractive index	1.26 nD to 1.72 nD	±0.00002	-	0.000001 nD
	Temperature	4 °C to 85 °C	±0.03 °C	-	0.01 °C
Abbemat 450	Refractive index	1.26 nD to 1.72 nD	±0.0001	-	0.00001 nD
	Temperature	4 °C to 85 °C	±0.05 °C	-	0.01 °C
Abbemat 650	Refractive index	1.26 nD to 1.72 nD	±0.00002	-	0.000001 nD
	Temperature	4 °C to 85 °C	±0.03 °C	-	0.01 °C

POLARIMETERS		Measuring range	Accuracy	Repeatability	Resolution
MCP 100	Optical rotation	±89.9°	±0.01°	±0.01°	0.001 °C
	Temperature	20 °C and 25 °C	±0.2 °C	-	0.1 °C
MCP 150	Optical rotation	±89.9°	±0.005°	±0.005°	0.001 °C
	Temperature	15 °C to 35 °C	±0.1 °C	-	0.1 °C

SAMPLE CHANGERS		Measuring range	Accuracy	Repeatability	Resolution
Xsample 320	Viscosity	up to 3,000 mPa.s	-	-	-
Xsample 330	Viscosity	up to 3,000 mPa.s	-	-	-
Xsample 340	Viscosity	up to 36,000 mPa.s	-	-	-
Xsample 520	Viscosity	up to 3,000 mPa.s	-	-	-
Xsample 530	Viscosity	up to 36,000 mPa.s	-	-	-

<sup>1</sup> under ideal conditions and for low densities/viscosities

<sup>2</sup> according to ISO 5725

<sup>3</sup> valid at refractometric standard conditions (T = 20 °C, λ = 589 nm, ambient temperature = 23 °C)





