

## Beer Analysis Overview



Solutions for your excellent beer

# Laboratory analysis, for your excellent beer

Anton Paar is proud to have spent decades refining beer analysis solutions for every step of your production process. They're intelligent, intuitive, and automatic. Tested by time, they're a taste of the future. Now let us help you make excellent beer.

## Meet the highest quality standards

Up to six parameters, 9x faster compared to conventional systems

## Cover all analysis tasks in the most efficient way

From wort to finished product – with one single lab system

## Maximize and optimize production capacity

Automated calibration, minimum cleaning – save two hours a day

FIND OUT MORE



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



### WORT ANALYSIS

Ensure premium wort quality in lauter tuns, brewing kettles, and whirlpools



### FERMENTATION CONTROL

Reduce fermentation times to a minimum and ensure premium product quality



### FILTRATION

Optimize and safeguard your filtration process



### STORAGE

Perform a final check for a fine finish



### BOTTLING

Measure your final quality parameters without the need for sample preparation and safeguard your product specifications

# Together, we're **one step ahead**

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 beer or hard seltzer, we help you save time, analyze with ease, and deliver a premium product.

## **Our finger on the pulse**

We exceed our customers' expectations by anticipating tomorrow's trends in the beer industry

## **Our eye on the future**

Expansion of measurement capabilities to cover your upcoming product needs

## **Our competitive edge**

Premium analytics for your entire product range



- ① BEER\*
- ② HARD SELTZER
- ③ WASH
- ④ CIDER
- ⑤ KOMBUCHA
- ⑥ MOLASSES

\* Incl. low and non-alcoholic beer, beer mixed drinks

# Wort analysis, refined

→ Apparent extract  
Color  
pH  
Density

## SATISFY YOUR AMBITIOUS GOALS. ALL WE'LL DO IS CONTRIBUTE

- ✓ Attain the highest possible extract yield
- ✓ Determine final product taste and visual perception at the earliest possible stage
- ✓ Achieve consistency in every brew
- ✓ Increase overall brewhouse efficiency
- ✓ Ensure ideal basic conditions for fermentation

### BEER ANALYZING SYSTEM

DMA 4501

Alcolyzer 3001 Beer

Xsample 320

pH 3101



### Preconfigured analysis

- Align with the major parameters in brewing
- Choose and configure according to your needs

Alcolyzer Analyzing Systems come with a wide range of preconfigured output quantities, fulfilling your exact needs. They cover beer-specific parameters, such as alcohol content, original extract, real extract, calories, degree of fermentation, and many more. They also cover parameters specific to regional standards.

### FillingCheck™: Correct sample filling, assured

- Receive an automatic alert in case of a filling error
- Count on real-time detection of bubbles and particles

U-View™ and FillingCheck™ are automatic, real-time bubble detection features that allow supervision of the entire measurement sequence and subsequent verification of the results.

### Full compliance with international standards

- Rely on approved methods
- Comply with national regulations

Anton Paar's measurement solutions for the brewing industry comply with a broad array of international standards, such as the EBC, MEBAK, and ASBC. This gives you peace of mind when you declare your product and ensures smooth export and import processes.

# Fermentation control, the modular way

## THE MODULAR SOLUTION, FOR PERFECT FERMENTATION

- ✓ Optimize fermentation progress
- ✓ Prevent stuck fermentation
- ✓ Maintain consistently high product quality
- ✓ Take timely action to deliver desired output
- ✓ Free up tank capacity by determining fermentation end point

→ Apparent extract  
Color  
pH  
Density  
Alcohol content

### BEER ANALYZING SYSTEM

DMA 4501

Alcolyzer 3001 Beer

Xsample 520

pH 3101



### Product-independent adjustment

- All types of beers
- Automatic adjustment with water, and one binary solution

Selective alcohol measurement with Alcolyzer 3001 enables the analysis of all types of beers, including beer mixed drinks, low and non-alcoholic beers, kombucha, hard seltzers, and cider – with only a single adjustment. Benefit from alcohol measurement results without the influence of other sample ingredients.

### The power of modularity

- Select your desired configuration according to your requirements
- Extend your system whenever needed

In its basic configuration, the Beer Analyzing System determines the three most important beer parameters: alcohol, original extract, and real extract. Extend your system with additional measuring modules for color, pH, and solutions for automatic filling.

### Intuitive usability, for maximum convenience

- Simplicity meets intuitiveness
- Adaptable user interface for maximum operator convenience

Operating analytical equipment has never been easier. The newly designed user interface permits simultaneous configuration and operation of all connected measuring modules through a single user interface, along with freely configurable result outputs.

# Filtration, for optimal visual properties

## ANALYSIS ACROSS THE ENTIRE PRODUCTION PROCESS

- ✓ Ensure proper removal of yeast during and after filtration
- ✓ Optimize refinement
- ✓ Guarantee microbiological stability
- ✓ Check your final quality parameters at the earliest possible stage

→ Turbidity  
Real extract  
Original extract  
Apparent extract  
Alcohol  
pH

### BEER ANALYZING SYSTEM

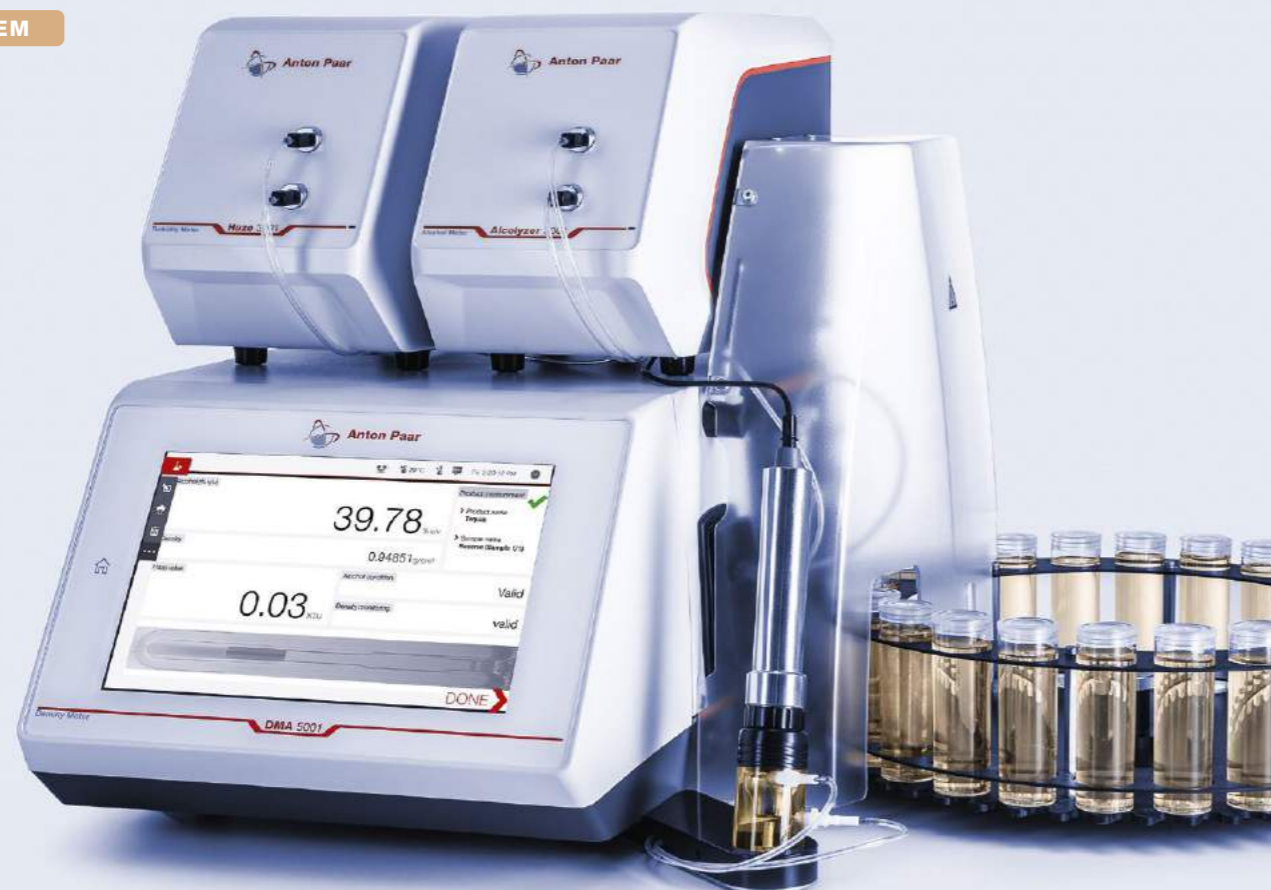
DMA 4501

Alcolyzer 3001 Beer

Haze 3001

pH 3101

Xsample 520



### Compliance with acknowledged standards

- EBC and MEBAK

Haze 3001 determines the turbidity of your beer in accordance with acknowledged, industry-specific standards. Approved by numerous customers and authorities, the ratio method used for the determination of turbidity provides compliant results and allows hassle-free comparison of results among different production sites.

### A clear view of filtration

- Highly accurate filtration monitoring for all beer styles
- Acknowledged ratio method

The approved ratio method with measurement at three angles (transmission 0°, scattered light at 25° and 90°) incorporated in Haze 3001 is used to prevent the influence of particle size on the turbidity value. Highly accurate monitoring of filtration throughout the entire production process is guaranteed.

### Automatic checks and adjustments

- Fully automatic check and adjustment routines
- Performance tracking for top-quality measurements

The built-in SOP routine lets you automatically check or adjust quantities. All reference media are filled automatically. All results are fully traceable, letting you keep track of all adjustments and calibrations and ensure the instrument's measuring performance is always top level.

# Storage, for a premium product

→ Alcohol content  
Color  
pH

## THE KEY PARAMETER AT ITS BEST

- ✓ Ensure correct alcohol labeling
- ✓ Confirm expected color readings
- ✓ Release product for bottling

### ALCOHOL METER

Alcolyzer Beer M

pH ME Beverage

Xsample 320



### Selective alcohol determination

- No influence through other sample constituents
- No major operator training required

The unique NIR-based selective alcohol determination method has none of the shortcomings of indirect alternative analytical methods. Operation is more convenient, more accurate, and faster.

### Results in less than three minutes

- Precise, automatic temperature control

Alcolyzer Beer M uses a built-in Peltier thermostat for quick, accurate temperature control. There's no need for manual temperature adjustment and correction. Results take less than three minutes.

### Optimal visual properties

- Color measurement
- Aligned with EBC and MEBAK

Equipped with an optional measuring module, Alcolyzer Beer M determines your beer's color value along with the alcohol content in exactly the same amount of time. The color determination method, at a 430 nm wavelength, aligns with acknowledged standards, such as the EBC and MEBAK.

# Storage, for full product release control

## THE FINISHING TOUCH TO YOUR GREAT BREWING PROCESS

- ✓ Verify your blending process

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- ✓ Adjust the product to achieve the desired output

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- ✓ Confirm your product specifications

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- ✓ Release your product for bottling

- Alcohol content
- Original / real / apparent extract
- Color
- pH
- Density

### BEER ANALYZING SYSTEM

DMA 4501

Alcolyzer 3001 Beer

Xsample 520

pH 3101



### One sample – all parameters

- Perform simultaneous analyses of all selected quantities and obtain all results at once

The Beer Analyzing System analyzes the key QC parameters – alcohol content, original extract, and real extract – in a single measuring cycle, from a single sample.

### Automatic, convenient adjustment and calibration

- Adjust/check with automated and easily traceable reports

Ensuring suitable measurement performance shouldn't be part of your daily work routine. Just leave it to the Beer Analyzing System's standard operating procedure. Automatic, guided wizards make checks and adjustments simple.

### Pinpoint accuracy for your entire product portfolio

- From wort to finished product and from non-alcoholic to strong beer, Beer Analyzing System can do it all

Along with standard beers, the Beer Analyzing System can analyze beer mixed drinks, alcohol-free beer, and low-alcohol kombucha. This ensures compliance with the strict requirements for non-alcoholic products and helps you easily confirm your product specifications.



# Bottling, for your satisfied customer

## THE FASTEST PATH TO PRODUCT RELEASE

- ✓ Safeguard your product specifications in only three minutes
- ✓ Fulfill all legal requirements
- ✓ Eliminate loss of alcohol due to evaporation
- ✓ Eliminate sample preparation and operator influences
- ✓ Guarantee customer satisfaction

→ Alcohol content  
Original / real / apparent extract  
CO<sub>2</sub> / O<sub>2</sub>  
Color  
Turbidity  
pH  
Density

### PBA 5001 BEER

DMA 4501

Alcolyzer 3001 Beer

pH 3201

Haze 3001

CarboQC ME + Option O<sub>2</sub> Plus

PFD Plus

Sample conditioner



More than  
9x faster than  
conventional  
systems

- Parallel analysis of all parameters in only three minutes
- No need for decarbonation of the sample

Automatic pressurized filling directly from the package and automatic CO<sub>2</sub> correction of the results enable analysis that is more than 9x faster than conventional methods. This makes PBA 5001 Beer the ideal solution to eliminate out-of-specs production.

No sample  
preparation  
required

- No need for degassing equipment
- Save up to seven minutes per sample for degassing and filtration

PBA 5001 Beer eliminates sample preparation routines that were once a staple of daily operation. Direct filling from the package and automatic CO<sub>2</sub> correction do away with time-consuming degassing and filtration.

Zero operator  
influence

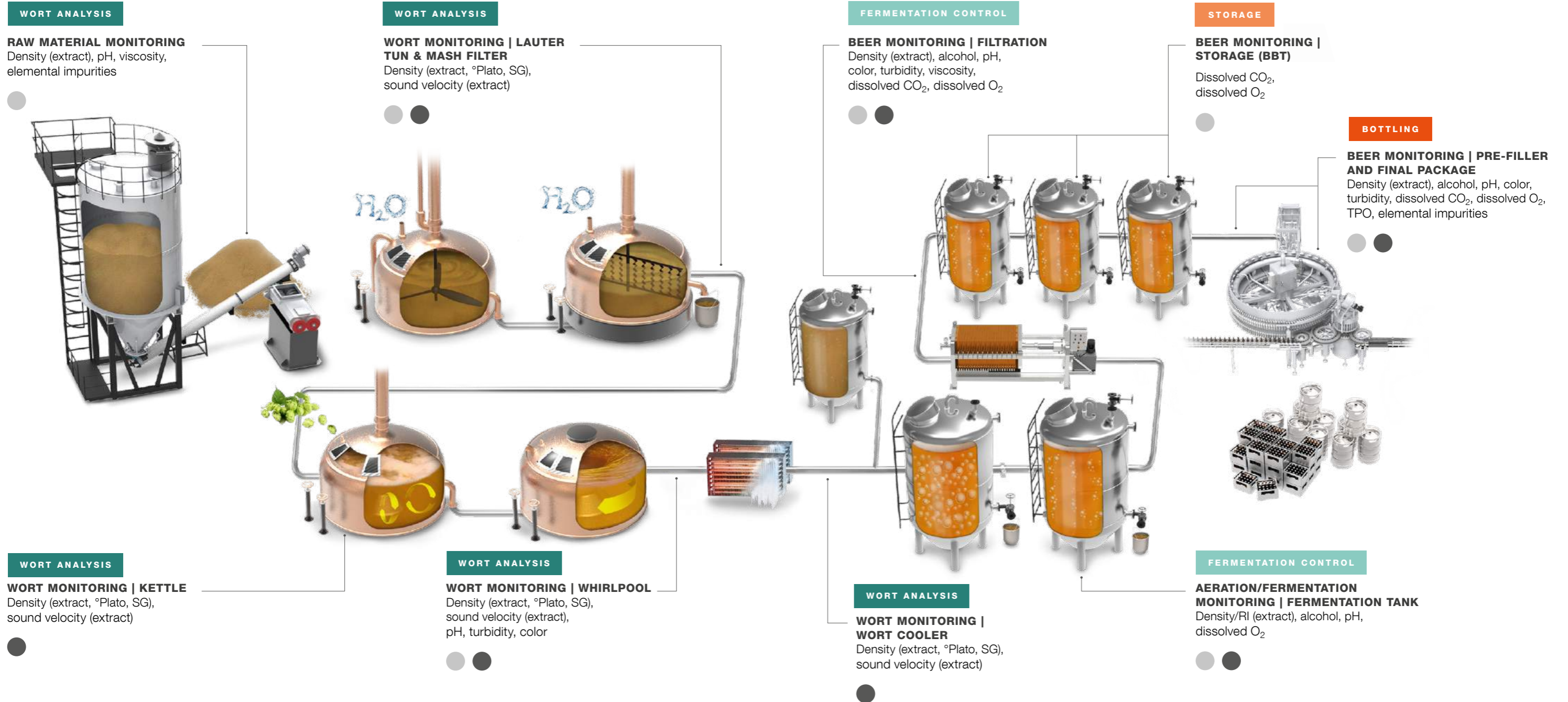
- Direct filling from glass bottles and cans
- Automatic correction for the impact of dissolved CO<sub>2</sub>

PBA 5001 Beer isn't just super-fast, it's also more reliable for routine analysis. Possible errors during sample preparation are completely avoided thanks to direct filling from the packaged beverage and automatic correction of all measured parameters for the impact of dissolved CO<sub>2</sub>.

# Complete your beer analysis

**ANTON PAAR IS THE WORLD'S FIRST FULL-RANGE SUPPLIER FOR BEER ANALYSIS**

With 25 laboratory and process instruments, you can trace 15+ parameters from any location in the plant. Streamlining your beer's quality has never been so easy. The instruments are calibrated and adjusted at the push of a button. Global support and service are offered by local specialists. Take advantage of 40 years of expertise in the beer industry.



To find more solutions for the beer production process and discover our instrument portfolio, visit:

● LABORATORY MEASUREMENT (INCL. PORTABLE INSTRUMENTS)

● PROCESS MEASUREMENT

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

# Enhancing a fine process



**1**  
DENSITY  
The DMA density meters

**1** DENSITY  
DMA 4101, DMA 4501, DMA 5001

The beating heart of the density meter – the oscillating U-tube, handmade from borosilicate glass – is now even more ingenious. Welcome to a powerful, intelligent density meter, driven by the patented Pulsed Excitation Method. It's ready to take on measuring challenges at the highest levels of accuracy and reliability for years to come.

**2** SAMPLE HANDLING UNIT  
Xsample 320 / 520

Anton Paar's Xsample series offers you more automation options than you will find anywhere else on the market. The different Xsample filling and rinsing units are combined with a wide variety of Anton Paar instruments to provide the exact automation workflow you need.

**3** pH  
pH 3101 / pH 3201

The pH measuring modules pH 3101 and pH 3201 enable the simultaneous determination of the pH value along with other quality parameters. Versatile configurations allow pH measurements under pressures of up to 6 bar in a variety of liquids and provide insight into your samples.

**4** CO<sub>2</sub>  
CarboQC ME

CarboQC ME precisely and reliably determines the dissolved CO<sub>2</sub> content in beverages. The patented multiple-volume expansion method eliminates the influence of other dissolved gases (e.g., N<sub>2</sub> and O<sub>2</sub>) on your measuring result.

**5** TURBIDITY  
Haze 3001

The approved ratio method with measurement at three angles (transmission at 0°, scattered light at 25° and 90°) is used to prevent the influence of particle size on the turbidity value. The measurement is carried out at a wavelength of 650 nm ±30 nm (MEBAK and EBC-compliant) in a cell with adjustable constant temperature – guaranteeing the highest repeatability and accuracy.

**6** ALCOHOL / COLOR  
Alcolyzer 3001 Beer,  
Alcolyzer 3001 Beer with  
Option Color 430 nm

The key to Alcolyzer 3001 is its selective alcohol measurement. The maintenance-free solution provides alcohol results with only a single adjustment. Along with the optional color measurement, Alcolyzer 3001 is your ideal partner for beer analysis.

**7** PIERCING AND FILLING DEVICE  
PFD / PFD Plus

The PFD and PFD Plus piercing and filling devices let you fill your samples directly from cans, glass bottles, or PET bottles. If the entire sample volume is needed to get reliable and repeatable measurement results out of long bottlenecks, the PFD Plus filling device is the ideal solution.

**8** CO<sub>2</sub>  
Option O<sub>2</sub> Plus for CarboQC ME

The optochemical oxygen sensor in the Option O<sub>2</sub> Plus provides a proven and reliable way of oxygen determination. Option O<sub>2</sub> Plus can also be easily retrofitted in your existing CarboQC ME and PFD/PFD Plus. Measuring the O<sub>2</sub> content of a sample is essential for estimating the shelf life of the finished product.



“

We're confident in the high quality of our instruments. That's why we provide **full warranty for three years.**

”

All new instruments\* include repair for three years.

You avoid unforeseen costs and can always rely on your instrument.

Alongside the warranty, we offer a wide range of additional services and maintenance options.

\*Due to the technology they use, some instruments require maintenance according to a maintenance schedule. Complying with the maintenance schedule is a prerequisite for the three-year warranty.

#### Service and support directly from the manufacturer

Our comprehensive service provides you with the best individual coverage for your investment so that maximum uptime is ensured.



#### SAFEGUARDING YOUR INVESTMENT

Regardless of how intensively you use your instrument, we help you keep your device in good shape and safeguard your investment – including a three-year warranty.



#### THE SHORTEST 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 real people, not from bots.



#### CERTIFIED SERVICE ENGINEERS

The seamless and thorough training of our technical experts is the foundation of our excellent service provision. Training and certification are carried out at our own facilities.



#### OUR SERVICE IS GLOBAL

Our large service network for customers spans 86 locations with a total of 350 certified service engineers. Wherever you're located, there's always an Anton Paar service engineer nearby.

### Beer Analyzing System

### PBA 5001 Beer

MEASURING RANGE	
Alcohol	0 to 12 %v/v
Original extract	0 to 30 °Plato
Density	0 to 3 g/cm <sup>3</sup>
Color (optional)	0 to 120 EBC
Turbidity (optional)	0 to 100 EBC
pH value (optional)	pH 0 to pH 14
CO <sub>2</sub>	-
O <sub>2</sub>	-
REPEATABILITY S.D.	
Alcohol	0.01 %v/v
Original extract	0.03 °Plato
Density	0.000005 g/cm <sup>3</sup> (DMA 4501) 0.000001 g/cm <sup>3</sup> (DMA 5001)
Color (optional)	0.1 EBC
Turbidity (optional)	0,02 EBC
pH value (optional)	0.02 (in the range pH 3 to pH 7)
CO <sub>2</sub>	-
O <sub>2</sub>	-
GENERAL INFORMATION	
Power features	U-View™, FillingCheck™, ThermoBalance™, full-range viscosity correction, ultra-fast measuring mode
Minimum amount of sample per measurement	30 mL
Typical measuring time per sample	3 minutes (incl. filling)
Typical sample throughput	15 samples per hour
Display	10.1" TFT WXGA (1280 px x 800 px); PCAP touchscreen
Controls	Touchscreen, optional keyboard, mouse, and bar code reader
Internal storage	More than 10,000 measuring values with camera images
Power supply	AC 100 V to 240 V, 50/60 Hz, fluctuation ±10 %, 190 VA
Communication interfaces	5x USB, Ethernet, CAN, RS232
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)
Weight	Approx. 35.7 kg (77 lbs)
Environmental conditions	(EN 61010) Indoor use only
Ambient temperature	15 °C to 35 °C (59 °F to 95 °F)
Air humidity	Non-condensing, 20 °C, <90% relative humidity, 25 °C, <60% relative humidity, 30 °C, <45% relative humidity

