

# CarboQC

Lab and At-line  
Beverage Carbonation Meter

::: Unique Density & Concentration Meters



# CarboQC

## Beverage Carbonation Meter

The CO<sub>2</sub> content strongly influences the taste of alcoholic and non-alcoholic beverages. For this reason, as well as for product safety, the precise measurement of the CO<sub>2</sub> content is an important task in the production and quality control of beverages. A new measuring method that avoids the shortcomings of conventional methods of CO<sub>2</sub> measurement has been developed by Anton Paar.

This measuring method, incorporated into the novel CarboQC, is not influenced by other dissolved gases such as oxygen and nitrogen, requires no sample flow during the measurement, is rapid, drift-free and needs only minimum sample volume.



### Features and benefits

#### Accurate and traceable CO<sub>2</sub> measurement

- One instrument suitable for lab and at-line applications
- No influence of dissolved air (oxygen and nitrogen) using the Multiple Volume Expansion Method patented by Anton Paar
- Highly accurate absolute pressure sensor, no weather and sea level influence
- No adjustment with CO<sub>2</sub> standards necessary
- Suitable for pressures of up to 10 bar (145 psi)

#### High-quality features

- Simple and easy operation
- Data memory for 100 measurements
- Battery stack quickly rechargeable for flexible operation
- Two RS 232 interfaces for the transfer of measuring results to a printer or PC
- Filling, rinsing and measuring by pressing only one button
- Splash-proof, light-weight plastic housing
- Minimum bench space required

**Capable.**  
**Reliable.**  
**Portable.**



Display and keypad



Splash-proof interface connector and on/off switch



Optional printer/PC connection

# Measuring System

The measurement is started by pressing a button and is controlled by the instrument. Replacement of the sample is carried out automatically. The magnetic stirrer which is built into the measuring chamber allows bubble-free filling of the chamber with new sample.

The CarboQC is supplied factory-adjusted and can be used right from the start. Periodical checks and any necessary readjustment of the zero point are carried out with tap water.

## Fast and easy handling

- Pressing one button selects the method for the type of beverage. Customer-specific CO<sub>2</sub> calculation algorithms can be stored. All settings are password-protected.
- The LCD display is large, bright, easy to read and holds 4 lines of displayed data. Many different units such as “g/l”, “Vol.”, “bar” or “psi” can be selected. Method settings for cola beverages, beer, sparkling wine and mineral water are pre-programmed.
- CarboQC is not dependent on sample flow or sample temperature.

## Applications

- Soft drink production
- Brewing industry
- Mineral water production
- Wine and sparkling wine production



PFD Filling Device, detail



PFD accommodates different bottles/cans



At-line spot measurements

# Measuring Method

## How does the Multiple Volume Expansion Method work?

The measuring chamber is completely filled with sample and sealed.

The volume of the measuring chamber is expanded.

Equilibrium is generated and pressure and temperature are measured.

The measuring chamber volume is further expanded, equilibrium is generated and pressure and temperature are measured again.

The two pressures and temperatures are used for CO<sub>2</sub> determination and dissolved air compensation.

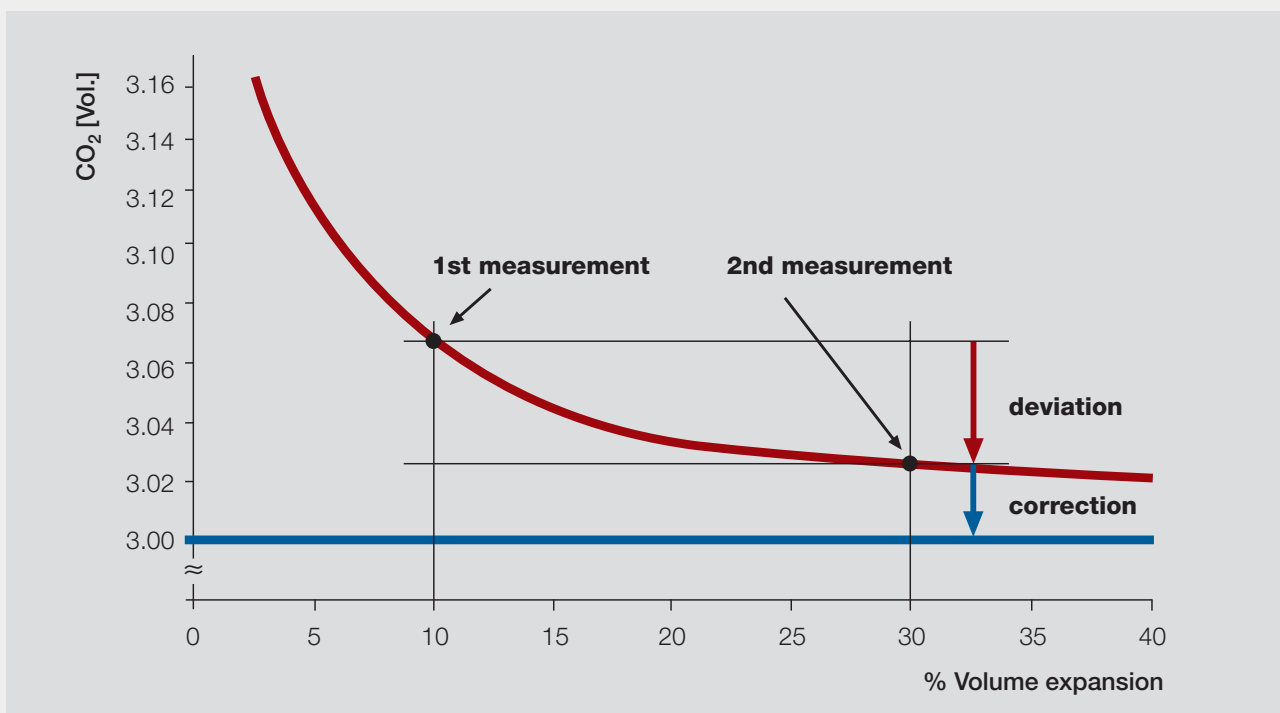


## Why does the Multiple Volume Expansion Method work?

The patented Multiple Volume Expansion Method makes use of the fact that the solubility of CO<sub>2</sub> in beverages is much higher than that of air.

Therefore, when expanding the volume of the measuring chamber, the partial pressure of air decreases much more than that of CO<sub>2</sub>.

Measuring the equilibrium pressures and temperatures at two different volume expansions of the measuring chamber allows a CO<sub>2</sub> result to be determined where the effect of dissolved air is completely compensated.



## A Close-Knit Team

For measurements of samples out of bottles or cans the CarboQC can be connected to the PFD Filling Device. The PFD Filling Device pierces the bottle closure or the base of the can and forces the beverage into the measuring chamber of the CarboQC using compressed air. The integrated safety shield protects the operator in the unlikely event of a pressurized beverage container bursting.

For measurements from tanks or from the production line, the instrument is connected to the tank or production line by a hose and filled by the given system pressure (up to max. 10 bar/145 psi).

Pressing one button fills the measuring chamber with sample and starts the measurement.



## Specifications

### CarboQC

#### Measuring range

CO<sub>2</sub>

0 to 12 g/l (0 to 6 Vol.) at 30 °C (86 °F)

0 to 20 g/l (0 to 10 Vol.) < 15 °C (59 °F)

Temperature

-3 to 30 °C (27 to 86 °F)

Pressure

0 to 10 bar absolute (0 to 145 psi)

#### Repeatability s. d.

0.01 g/l (0.005 Vol.) CO<sub>2</sub>

#### Reproducibility s. d.

0.05 g/l (0.025 Vol.) CO<sub>2</sub>

#### Resolution

0.01/0.001 g/l selectable

#### Sample volume

approx. 100 ml

#### Typical measuring duration per sample

approx. 90 seconds

#### Dimensions (L x W x H)

190 x 120 x 305 mm (7.5 x 4.7 x 12 inches)

#### Weight

2.6 kg (5.7 lbs)

#### Power

Power supply: Input 100 to 240 V, 50 to 60 Hz

Battery operation: for approx. 500 measurements

#### Interfaces

2 x RS 232 for PC and printer

### PFD Filling Device

#### Compressed air

6 bar (87 psi)

#### Dimensions (L x W x H)

220 x 220 x 650 mm (8.7 x 8.7 x 25.6 inches)

#### Weight

6.5 kg (14.3 lbs)



Fotos: Croce Fotostudio



# Anton Paar

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**Instruments for:**

Density and  
concentration measurement

Rheometry and viscometry

Sample preparation

Colloid science

Microhardness testing

X-ray structure analysis

CO<sub>2</sub> measurement

High-precision temperature  
measurement

Specifications  
subject to change  
without notice

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