Soft drink quality control

ProBrix+

CO_2 · O_2 · Brix / Diet · °C/°F

3624

Configured system

orbisphere
www.hachultra.com

ProBrix+ 3624

Total Quality Control of your Production Process

Continuous product quality control: The ProBrix+ makes in-line measurements just before the filler, ensuring ultimate product quality.

No more out-of-spec product: Audible and visual alarms allow action to be taken before the product goes out of specification.

Faster start up – Increased productivity: Confirm your product's CO_2 and Brix levels within one minute of initial startup or changeover.

Lower costs per case: Reduce product and package waste by never filling a package with out-of-spec product.

Fast return on investment: ProBrix+ customers confirm that the system paid for itself within a matter of months; and the cost savings and quality assurance continue year after year.

Why choose the Orbisphere ProBrix+ ?

It measures the actual CO_2, not the total gas pressure.
Since there is always dissolved air in the product, determining CO_2 by traditional total pressure methods will result in an over-estimation. The ProBrix+ uses a direct method for measuring dissolved CO_2 that's not influenced by the presence of air.

It measures O_2 (dissolved air).
Monitoring dissolved oxygen in your filling line helps you minimize foaming and increase filler speed. By measuring O_2, we can calculate the effect of air on carbonation.

It compares actual CO_2 to traditional CO_2 measurement methods.
The system records and graphs both CO_2 techniques, so you can report what's required today, as well as ensuring compatibility with future requirements.

It provides accurate diet analysis.
Sophisticated electronics compensate the density measurement for temperature variance, and for the presence of CO_2 and O_2.

It's backed by an experienced and innovative worldwide supplier of process analyzers.
That's why the ProBrix+ is the analyzer preferred by many large soft drink bottlers.

In the plant

Simple Installation

Flexible stainless steel lines and a choice of 115 or 230 VAC.

Movable Display

The “head” of the analyzer houses all the electronics. It can be turned 360° to give the filler operator a clear view or remotely mounted up to 30 meters away.

Cleaning In Place

Once connected the ProBrix+ becomes an integral part of the line and the internal components are sanitized automatically during normal CIP operation.

Stainless steel cabinet

The cabinet provides an additional layer of protection to robust, waterproof internal components designed to be used in the filling line environment.

Liquid detector

The pump is switched on only when liquid is present.

in the Plant

The ProBrix+

For the consumer, perceived sweetness, flavor and carbonation levels are the only criteria of taste that matter. And the only gas that contributes to the "feel" of the drink is CO_2. By accurately measuring this gas, rather than the total of all the other gases present in the product, you ensure continued customer satisfaction.

Customer "low carbonation" complaints can be attributed directly to traditional "temperature/pressure" measurement methods. The ProBrix+ is uniquely qualified to address this issue.

Brix / Diet

Orbisphere's ProBrix+uses the industry standard U-tube densitometer to measure Brix and Diet levels.
A number of unique modifications ensure that the ProBrix+ measures these key parameters more accurately than other in-line analyzers.

The density of a soft drink is influenced by three factors:

- The amount of syrup
- The product temperature
- Other dissolved gases

The product flows through the U-tube where its density is measured. At the same time temperature is measured both at the inlet and outlet of the U-tube. The product then passes through the CO_2 and O_2 sensors where these gases are measured.

Density is then compensated for the effects of CO_2, O_2, and the two temperature readings, eliminating any effect from temperature variation.

CO_2

The measurement of CO_2 has historically been made by the total pressure and temperature method. As its name implies the total pressure is measured, which is the sum of the pressures of all the gases in the product. If only CO_2 is present this assumption will provide an accurate result. In practice, however, some air (O_2 and N_2) is always present, resulting in an overestimation of CO_2 content.

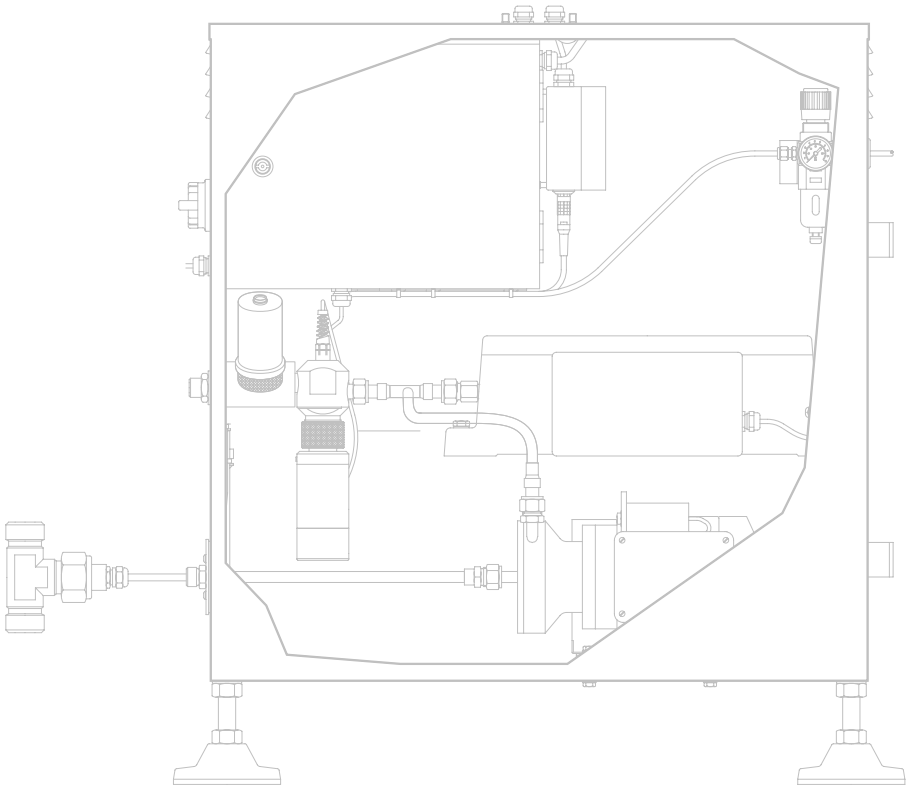
Orbisphere's patented sensor measures CO_2 selectively, and is not affected by air or any other gases. This sensor allows precise carbonation control ensuring specifications are met.

The ProBrix+ also incorporates Orbisphere's world renowned O_2 sensor which in combination with the CO_2 sensor allows the total pressure to be calculated. By using these sensors in combination, comparisons can be made with traditional methods, yet ensuring product quality with today's technology.

The ProBrix+ calculates total pressure from its component parts (CO_2 and O_2), giving you unparalleled control of your product quality.

The benefits of measuring specific gases also include:

- Monitoring the efficiency of de aeration systems
- Identifying leaks and air ingress
- More efficient filling due to reduced foaming
- More efficient CO_2 injection at the carbo-cooler
- Improved product flavor and color stability through reduced oxidation.



O2 Sensor

Providing an industry benchmark for accuracy down to 1 ppb, the sensor is integrated within the sampling unit to measure O2 and calculate the effect of air on carbonation.

CO2 Sensor

The Orbisphere patented thermal conductivity sensor measures continuously the amount of dissolved CO2 in the product, unlike traditional "total temperature/pressure" measurements that are affected by the presence of air. A "total temperature/pressure measurement" can also be displayed.

Brix and Diet Sensor

A U-Tube density meter measures the concentration of both Brix and Diet. As the product flows through the oscillating U-tube, the density is measured which allows the concentration of the Brix and Diet to be calculated. The CO2 and temperature data are utilized to increase the accuracy of this measurement.

Temperature Sensor

A solid-state sensor measures product temperature.

Simple Design

One main flow path, with the fewest moving parts in the industry, makes the ProBrix+ the most reliable in- line instrument available.

In the lab

Personal Computer (PC)

The Windows PC can be located up to 1000 meters from the ProBrix+ in the plant.

User friendly and flexible software

Simple window menus make the software easy to use.

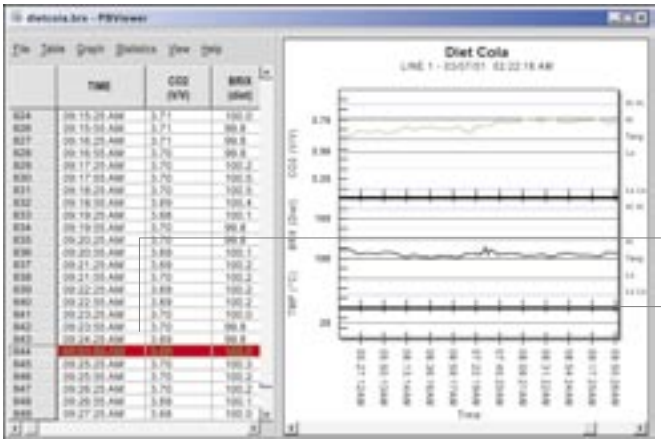
Up to 1000 products with their individual specifications can be stored in the software.

Displays both actual CO2 and total gas pressure, for comparison with historical methods.

Individual, audible alarms for upper and lower limits are specific to each product. These activate relays, which can be used to stop and start your filler line.

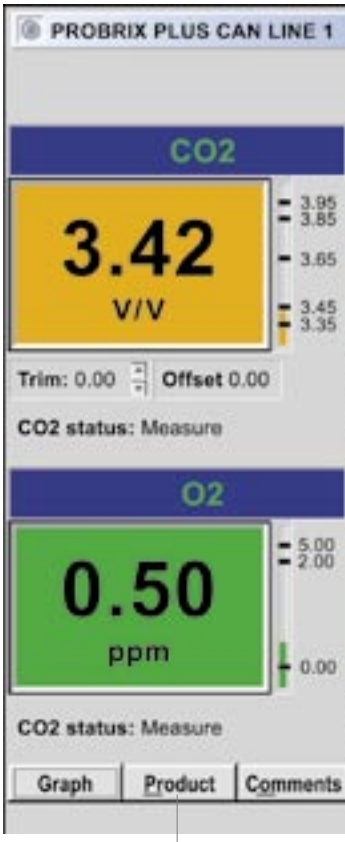
Statistical software

Data can be easily viewed by the ProBrix+ "PBViewer" program, included with the software suite. PBViewer shows every measurement for every product run in both text-based (tabular) and chart formats. Product run summaries, including averaging and time spent in and out of spec, are given in separate bar charts.



The Windows environment allows you full access to the data for use in your own reports.

Statistics window gives useful averaging information, to determine how much of a run was actually in spec.



A Windows PC, running the ProBrix program suite, provides complete control over your process line from inside the lab.

PBViewer screen shows tabular data for every measurement and alarm condition in fifteen- second intervals.

Line chart for historical perspective on the product run. Zoom in or out, and click on a particular line segment for even more details.

All product run files are clearly named and easily accessible from within Windows Explorer.

Large numeric displays for each parameter, with color-coded background to indicate alarm conditions.

A line chart provides a continuous, immediate history of your product run.

This chart displays and tracks both the “true” CO_2 (in red) and total pressure CO_2 (in black)

Individual O_2 graph tracks dissolved air in your product.

The line colors switch to white to indicate when you’re not filling. The ProBrix+ continues to measure during these intervals.

Individual bar charts quickly indicate where your products are within specified ranges.

Simply click here to start your next run.

A product modification window allows a full range of user-specified limits including upper/lower alarms and units of measurement, for up to a thousand products.

in the Lab

General Technical Data

	CO_2	O_2	Brix/Diet
Measurement range	0–15 g/kg, or 0–7 V/V, or 0–1.5%	0.001–80 ppm	0–20 °Brix, 0–200% Diet
Accuracy (CO_2 and O_2: within ±5 °C of calibration temperature)	±1% of reading, or ±0.012 g/kg, or ±0.006 V/V, whichever is greater	±1% of reading, or ±1 ppb, whichever is greater	±0.02 °Brix, or ±0.5% Diet
Signal drift	< 1% of reading between services	< 1% of reading between services	Negligible
Startup response time	45 seconds	38 seconds	1 minute (Brix) 3 minutes (Diet)

O_2 Sensor

CO_2 Sensor

Temperature range	0–50 °C / 32–120 °F
System refresh rate	Every 15 seconds
Sample flow requirement	Maintained by internal pump
Sample pressure limit	12 bar
Sensor temperature limit	-10–100 °C
Temp. compensated range	0–35 °C
Digital output	RS-422/485 — Baud rate: 9600, Stop Bit: 1, Start Bit: 0, Parity: None
Analog output	0/4–20 mA
Alarm outputs	2 dry contact relays:

Max voltage:	150 VDC or 125 VAC
Max current:	1 A
Max power:	30 W
Life time (24 V, 1 A):	2 million cycles

Electrical/Enclosure Specifications

	3624 Indicating Instrument	32109 Sampling Module	Personal Computer
Line voltage	230 VAC ±10%, or 115 VAC ±10%	230 VAC ±10% or 115 VAC ±10%	230 VAC, or 115 VAC
Fuse	125 mA for 230 VAC 250 mA for 115 VAC	5 A thermal protection	-
Frequency	50–60 Hz	50–60 Hz	50–60 Hz
Power requirements	40 VA	700 VA	300 VA
Weight	8 kg / 18 lbs	95 kg / 209 lbs	10 kg / 22 lbs
Enclosure classification	IP65/NEMA4	IP62/NEMA4	-
Physical size "mm" (W x H x D) "Inches"	380 x 300 x 182 15" x 11 3/4" x 7 1/4"	760 x 900 x 350 30" x 35 1/2" x 13 3/4"	-

swiss made

orbisphere
salesinfo@hachultra.com
Tel. ++41 22 855 91 00
Fax ++41 22 855 91 99
6, route de Compois, C.P.212
CH-1222 Vésenaz, Geneva
Switzerland

Represented By

orbisphere
www.hachultra.com