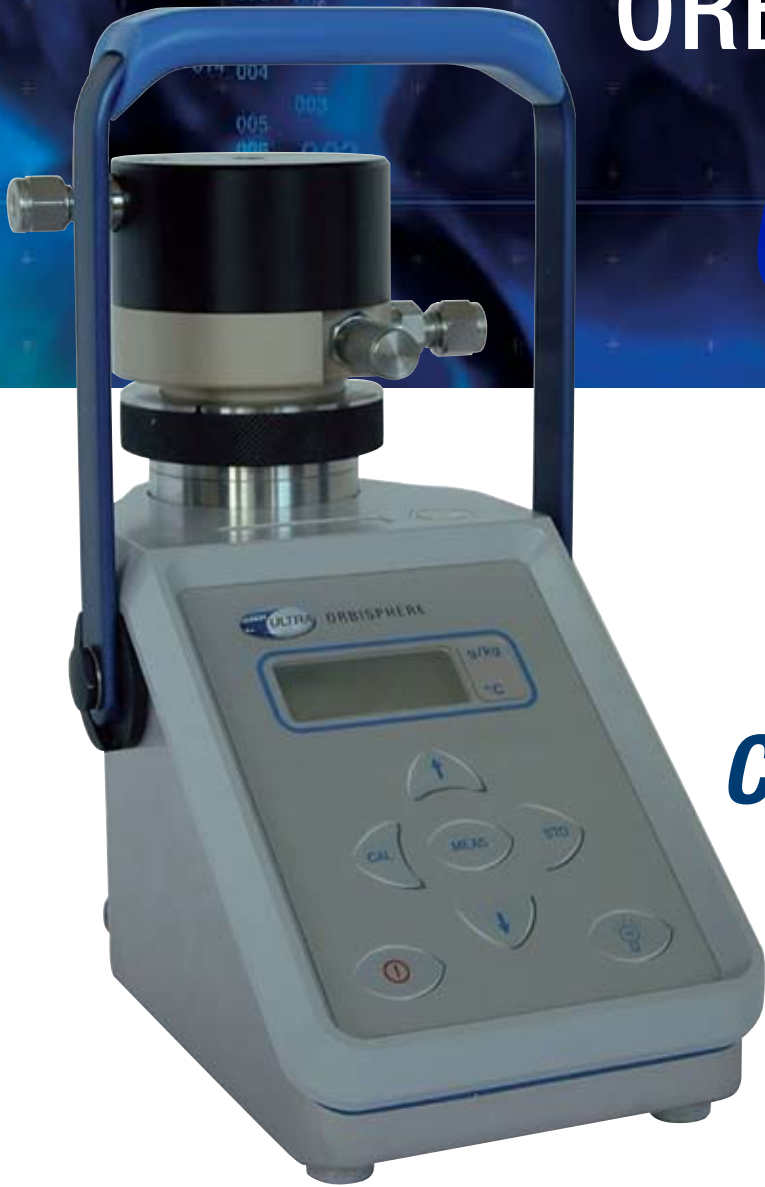


# ORBISPHERE 3658

# *CO<sub>2</sub>*



## *Selective CO<sub>2</sub> measurement*

*Portable system  
from low to high  
carbonation*



EXCELLENCE IN PROCESS ANALYTICS

# CO<sub>2</sub>

# ORBISPHERE 3658

*The ORBISPHERE 3658 provides accurate, selective CO<sub>2</sub> measurement.*

*This well balanced, robust, portable instrument is specifically designed for the beverage market and finds use in breweries, wineries, bottled water and soft drink plants.*

*Simple to use and easy to maintain, the ORBISPHERE 3658 is perfectly suitable for laboratory analysis or measurement in the more demanding environments at line.*

*Calibration and validation of the instrument can be carried out quickly and easily using the ORBISPHERE High Precision Calibration Kit. This ensures that each measurement of dissolved CO<sub>2</sub> gives a true reading which is critical to taste, foam and final product quality.*

## Operation

Before each measurement cycle the TC sensor is automatically flushed with ambient dried air supplied by the integrated pump and condenser. After each purge, the gas to be measured diffuses from the liquid sample through the membrane, changing the thermal conductivity of the gas surrounding the detector. It is the rate of change of the thermal conductivity that allows the concentration of the gas to be calculated. As each gas has its own specific thermal conductivity the measurement is not affected by the presence of other gases unlike traditional total pressure/temperature methods.

The flow chamber of the ORBISPHERE 3658 allows the sample to flow over the sensor membrane. At the same time the ambient air is dried with a condenser and used periodically to flush the TC detector both in standard measurement mode and in standby mode.

The simple layout of the instrument face and the inclined key board make the ORBISPHERE 3658 simple and easy to use, both at line and in the laboratory. Different gas and temperature units can be configured depending on the application or local standards.

The chassis is made from stainless steel making it strong and robust, critical features for an instrument used in harsh plant environments. It is waterproof and corrosion protected.

The large handle makes the instrument easy to manage even when the user wears gloves. The robust manufacturing allows the instrument to be hung from process pipes for long term diagnostic work.

The ORBISPHERE 3658 inlet tube can be connected to a sample point or to a piercing device by a simple connector, making it quick and easy to install. The outlet tube of the instrument allows the sample to be drained away. The output valve controls the flow rate of the sample through the flow chamber; an optional flow meter is available to set optimum response time with minimum flow for package analysis in lab applications.

## Benefits

- Accurate, repeatable measurements at line or in the laboratory
  - Measures low CO<sub>2</sub> concentration levels for low carbonated products and all wines
  - Measurements are not affected by the presence of other gases unlike traditional total pressure/temperature methods
- Robust and compact construction responds to the harsh plant environment
  - Materials of construction chosen to prolong product life
  - Measurement process has no moving parts to minimize maintenance frequency



- *Accurate measurements for still wines, low carbonated and very fizzy drinks*
- *Robust design for spot checks in the production plant*
- *Short analysis time; ideal for measurement in small packages*
- *No sample preparation; simple, safe measurements*
- *Low maintenance; annual membrane change and calibration*
- *Easily calibrated/validated with the High Precision Calibration Kit*



## Maintenance, calibration and validation

No moving parts in the sensor results in low maintenance, typically requiring a simple sensor membrane change annually. In a standard application it is recommended that the instrument be calibrated once a year.

To directly mimic operating conditions a liquid calibration can be performed with the patented High Precision Calibration Kit. These kits may also be used for periodic validation of the ORBISPHERE 3658.

The High Precision Calibration Kit offers:

- Traceable and accurate calibration
  - Safe, quick and easy solution preparation
- High and low level kits are available to ensure accuracy in the appropriate measurement range.

The ORBISPHERE 3658 can be easily wiped down and the sample path simply cleaned by flushing the flow chamber with warm water.

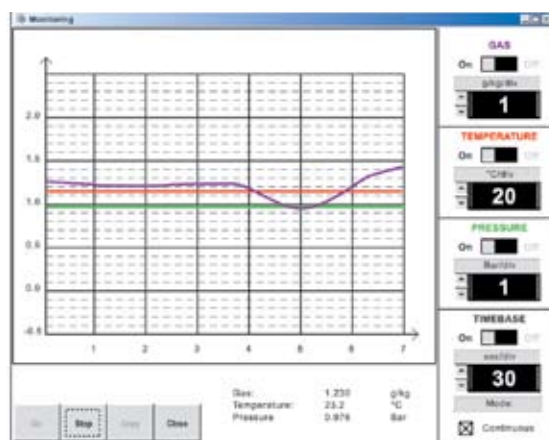
## Communication and data management

The ORBISPHERE 3658 display is large, easy to read and can be lit up by pressing the light button on the key board. No conversion tables are needed as this instrument directly indicates the gas concentration in the chosen unit. The temperature of the sample is displayed by pressing one of the keyboard buttons.

The ORBISPHERE 3658 uses two standard and rechargeable C type, NiMH or alkaline batteries. When it is time to change the batteries, a "Low Battery" message is shown on the display. The change is quick and easy to do by simply unscrewing the compartment lid; there is no down time for the instrument. Stored measurements in the instrument memory are not lost if batteries go flat or are being changed.

Each instrument comes with a Windows software package, that enables a user to analyze the stored measurements and to configure the instrument.

Using the RS-232 connection, stored measurements can be simply downloaded onto a PC for analysis. This connection can also be used to supply a DC power supply using an optional AC/DC transformer.



Real time monitoring

- Optimum total cost of ownership
  - Simple design making the maintenance quick and easy
  - Fast response time; keeping analysis time to a minimum
  - Requires small sample volume; minimizing waste
- Designed for quality
  - Simple and traceable calibration using the ORBISPHERE High Precision Calibration Kit
  - Memory stores up to 500 readings
  - Downloads data easily on a PC for analysis and quality traceability

## Performance specifications

<b>Sample</b>	Temperature	-5 °C to 35 °C (23 °F to 95 °F)	
	Maximum pressure	10 bars (145 psia)	
	Recommended sample flow rate	150 ml/minute	
<b>Measurement</b>	Range	0-10 g/kg, 0-4 V/V, 0-6 bar	
	Accuracy within ± 2 °C of calibration temperature	± 2% of reading; ± 0.05 g/kg whichever is the greater	
	Calibration	With High Precision Calibration Kit or CO <sub>2</sub> gas	
	Response time (90%)	1 min	
	Cycle time	20 s	
<b>Instrument</b>	Power requirements	Batteries: two C-type, NIMH or alkaline, each 26 x 50 mm, 2.4-3 volts total	
	Batteries life time	15 hours continuous use, 3 weeks in "standby" mode (power OFF, standby purge ON)	
	Digital interface	RS-232C: Baud rate = 4800; Parity = None; Stop bit = 1; Start bit = 0; Flow control = None	
	Data storage	500 data	
	CE certification	EN 61326-1:1997 / A1:1998 / A2:2001 / A3:2003 Directive 89 / 336 / CE	
	Mechanical connectors	Swagelock ¼ inch	
	Enclosure	IP 65, stainless steel	
	Temperature of use	0 °C to 40 °C (32 °F to 104 °F)	
	Maximum conditions of humidity	95% for temperature lower than 30 °C (86 °F) 70% for temperature between 30 °C and 40 °C (86 °F and 104 °F)	
	Dimensions (W x H x D)	130 mm x 210 mm x 220 mm / 5.11 inch x 8.27 inch x 8.66 inch	
	Weight	3.5 kg (including flow chamber and sensor)	
	<b>Accessories</b>	High Precision Calibration kits	High level range between 3 g/kg to 8 g/kg of CO <sub>2</sub> Low level range between 0 g/kg to 3 g/kg of CO <sub>2</sub>
		Flow meter	Graduation from 10% to 100%



Ask your local HACH ULTRA representative for more details on all available spare parts and accessories.

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