

## PRODUCT INFORMATION

LABORATORY ANALYSIS  
OXYGEN MEASUREMENT  
ORBISPHERE 3650/3655



O<sub>2</sub>

# ORBISPHERE 3650/55 Accurate oxygen measurement

- **The ORBISPHERE 3650 measures down to 1 ppb for trace level accuracy**
- **The high sensitivity ORBISPHERE 3655 version measures down to 0.1 ppb**
- **Very fast first result – less than 3 minutes from saturation to 2 ppb**
- **No sample preparation; measures gas in dissolved and gaseous phase**

### Accurate oxygen measurement anywhere

The ORBISPHERE 3650/55 portable analysers are a robust portable system solution for oxygen measurement. Designed for use with the ORBISPHERE A1100 high quality oxygen sensor, these instruments provide accurate and quick measurements in both the dissolved and gaseous phase.

### Applications

These portable instruments are designed for the harsh environment of breweries but are also perfectly adapted for laboratory or verification purposes in other beverage applications.

The ORBISPHERE 3650 can also be used across a wide range of applications in the power generation, electronics and life sciences industries. For low level applications the specially configured ORBISPHERE 3655 measures to 0.1 ppb oxygen.

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# Flexible on spot checks in production and in the laboratory

## Operation

The design of the Electro Chemical sensor allows the use of the ORBISPHERE 3650 portable oxygen analyser for spot checks in many processes as well as laboratory analysis in the liquid or gas phase. This robust and simple to use instrument is perfectly suitable to measure oxygen in any place where this parameter is important or critical.

The ORBISPHERE A1100 oxygen sensor technology reduces residual signals to negligible levels, eliminating

the need for a zero point calibration, providing fast response times essential for multiple measurements. This is particularly important for the first measurement, where the sensor may have been exposed to air before encountering ppb-level concentrations. A number of different membranes are available for use with the sensor, optimising the wide range of measurement applications.

The ORBISPHERE 3650 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 flow chamber of the ORBISPHERE 3650 allows the sample to flow over the sensor membrane, with an output valve controlling the flow rate of the sample.

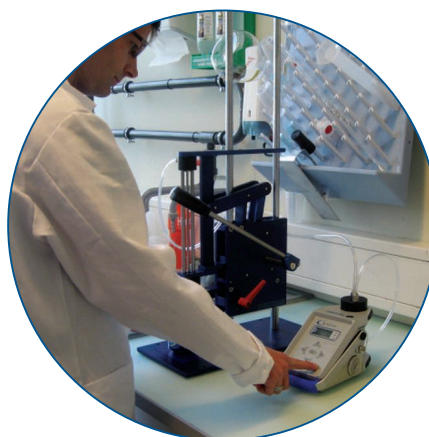
The simple layout of the instrument face and the inclined key board make the ORBISPHERE 3650 simple and easy to use. Different gas and temperature units can be configured depending on the application or local standards.

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.

## Maintenance, calibration and validation

The use of the ORBISPHERE A1100 sensor with this portable instrument allows for very quick cleaning with no chemical other than tap water and without need of any technical skills. The sensor refurbishment (typically every 6 months) takes only 3 minutes with a pre-mounted membrane cartridge and electrolyte, eliminating any risk of incorrect membrane positioning.

It is recommended that the instrument be calibrated after each sensor refurbishment. A traceable and simple calibration can be done directly in air by measuring its oxygen content with the use of the built in pressure sensor and the automatic software calculation. Alternatively, the calibration can be performed against a liquid or gaseous sample of known concentration by simply entering the gas concentration via the keyboard.



## Communication and data management

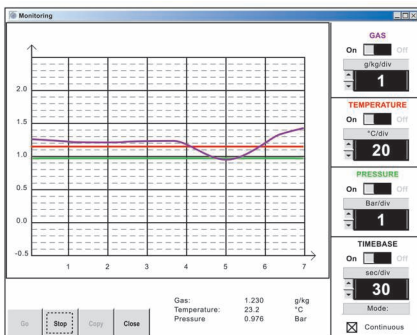
The ORBISPHERE 3650 display is large, easy to read and can be lit up by pressing the light button on the key board. No conversion tables are needed as this instrument directly indicates the gas concentration in the chosen unit. The temperature of the sample is displayed by pressing one of the key board buttons.

The ORBISPHERE 3650 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.

## Benefits

- Fast, accurate and repeatable measurements at line or in the laboratory
  - Unique sensor construction for unrivalled detection limit and signal stability
  - No polarisation time for immediate use
  - Fast response time; keeping analysis time to a minimum
- Robust and compact construction responds to the harsh plant environment
  - Materials of construction chosen to prolong product life
- Optimum total cost of ownership
  - Simple design making maintenance quick and easy
  - Measurement process has no moving parts to minimise maintenance frequency
  - Requires small sample volume; reducing waste
- Designed for quality
  - Quick and easy calibration by exposing the sensor to air
  - Memory stores up to 500 readings
  - Downloads data easily on a PC for analysis and quality traceability
- Low maintenance; sensor refurbishment in 3 minutes



Real time monitoring

Each instrument comes with a Windows® software package, that enables a user to analyse the stored measurements and to configure the instrument. Using the RS232 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.

# Technical data

<b>Sample</b>	Temperature	-5 °C to 60 °C / 23 °F to 140 °F			
	Maximum pressure	10 bars / 145 psia			
<b>Measurement</b>	Membrane	2952A-A	2956A-A	2958A-A	29552A-A
	Response time	38 sec	7.2 sec	9.5 sec	90 sec
	Range (dissolved O <sub>2</sub> )	0 ppb – 80 ppm	0 ppb – 20 ppm	0 ppb – 40 ppm	0 ppb – 80 ppm
	Range (gaseous O <sub>2</sub> )	0 Pa – 200 kPa	0 Pa – 50 kPa	0 Pa – 100 kPa	0 Pa – 200 kPa
	Min liquid flow rate	50 ml/min	180 ml/min	120 ml/min	50 ml/min
	Min gaseous flow rate	0.1–3 l/min	0.1–3 l/min	0.1–3 l/min	0.1–3 l/min
	Accuracy (greater of)	±1% of reading or ±2 ppb or ±5 Pa	±1% of reading or ±0.1 ppb (3655) or ±1 ppb (3650) or ±0.25 Pa	±1% of reading or ±1 ppb or ±2 Pa	±1% of reading or ±1 ppb or ±1 ppb
<b>Instrument</b>	Power requirements	Batteries: two C-type, NiMH or alkaline, each 26 × 50 mm, 2.4–3 volts total			
	Battery life time	40 hours continuous use			
	Digital interface	RS-232C: Baud rate=9600; Parity=None; Stop bit=1; Start bit=0			
	Data storage	500 data			
	CE certification	EN 61326-1:1997 / A1:1998 / A2:2001 / A3:2003			
	Enclosure	IP 67, stainless steel			
	Temperature of use	-5 °C to 100 °C / 23 °F to 212 °F			
	Temperature compensation range	-5 °C to 60 °C / 23 °F to 140 °F			
	Dimensions (W × H × D)	115 mm × 150 mm × 220 mm / 4.53 inch × 5.91 inch × 8.66 inch			
Weight	2.5 kg				

## Configurations

Model	Display units	Display resolution
ORBISPHERE 3650/111 Dissolved O <sub>2</sub>	ppm/ppb or ppm only	1 ppb or 0.001 ppm
ORBISPHERE 3650/112 Gas phase O <sub>2</sub>	% or ppm	1 ppm
ORBISPHERE 3650/113 Dual-use (gas/liquid) O <sub>2</sub>	% (gaseous) or ppm (liquid)	0.001 ppm or 0.001%
ORBISPHERE 3655/111 Dissolved O <sub>2</sub> high resolution	ppm/ppb or ppm only	0.1 ppb or 0.001 ppm

Note: Instruments are user-configured for a particular membrane, depending on the application.

This determines the display resolution and measurement limits. These datas are subject to change without notice.

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