

**INFORMATION**  
PROCESS ANALYSIS  
GAS ANALYSER  
ORBISPHERE 510



## ORBISPHERE 510 gas analyser

- **Multiple point monitoring with up to three sensor inputs**
- **Intuitive software using clear, full colour touch-screen**
- **Internal diagnostics and reminders for maintenance and calibration**
- **Multiple communication options including USB, Profibus, and Ethernet**

### **Powerful process monitoring**

The ORBISPHERE 510 offers precise, powerful process monitoring capability. Connect up to 3 ORBISPHERE high quality Electro Chemical sensors to measure O<sub>2</sub>, O<sub>3</sub>, or low levels of H<sub>2</sub> and Thermal Conductivity sensors for selective measurement of CO<sub>2</sub>, N<sub>2</sub> or H<sub>2</sub>. These instruments provide accurate, repeatable trace level gas analysis and an impressive level of data management.

### **Applications**

These instruments are designed for applications in the power generation, electronics, life sciences, beverage, chemical and water treatment industries.



**LANGE**

# Precise process monitoring

## Operation

ORBISPHERE 510 instruments are designed for ease of use. All functions are accessed through the colour touch screen acting as display and keyboard. With the help of intuitive software the user can set-up the process parameters and alarms in a few minutes. In standard operation the main measurement window continuously displays real time process readings, graphed sensor trends (user selectable from last 1 minute to last 1 hour), alarm limits, temperature and event occurrence. Sensor life can be extended during CIP and other high temperature procedures through automatic isolation of the EC sensor or continuous purge mode for the TC sensor above a preselectable level.

Common interference effects due to CO<sub>2</sub>, H<sub>2</sub>S, H<sub>2</sub>, N<sub>2</sub>, humidity, salinity and chlorinity can be eliminated during the configuration process.

Measurement, configuration, calibration and standard service routines are called up using the simple to follow menus on screen. Access levels are password protected supporting regulatory compliance to standards such as ISO and 21CFR Part 11, ensuring problem free audits and reducing compliance costs. Associated with a sampling device the ORBISPHERE 510 Table version is an ingenious solution for laboratory analysis ensuring traceability of quality control.

As an example, the Total Package Oxygen (TPO) and the CO<sub>2</sub> concentration in a can of beer or soft drink can be determined in one simple operation using this system.

## Benefits

- High level of measurement accuracy and rapid response time means reliable and effective process monitoring
- Easy to use, intuitive software navigation is simple to use for line operators and flexible enough for the needs of technical personnel
- The colour touch-screen in a stainless steel enclosure conforming to IP65 defines a robust unit built to handle the industrial environment
- Data storage of up to 10,000 measurements, last 1,000 operator actions and details of last 50 calibrations
- Internal diagnostics simplify trouble-shooting and issue reminders for maintenance and calibration
- Simple transfer of product list and global configuration settings between instruments using USB-client or USB-host
- Adjustable alarms and outputs provide assurance that any out of specification events are appropriately registered
- Software password protection offers 5 levels of control access, minimising the risk of errors in operation or configuration



## Calibration

The ORBISPHERE 510 software defines the step-by-step process for calibration of both measured gas and interferences. Several methods can be used: the unique ORBISPHERE Air Cal or direct value with known gas concentration in dissolved mode or in gas phase.

Traceability is ensured through a report that is generated following each calibration. A log file, containing details of the previous 50 calibrations undertaken, further supports traceability.

Barometric pressure calibration for the instrument's internal or optional external sensor may be simply carried out by comparison with a precision certified barometer.



ORBISPHERE 510 instruments are available in 3 versions

## Digital communication

Digital communication uses industry standard protocols including RS485, USB and Profibus that can drive product change from a centralised automation system.

Traditional analogue outputs and 3 alarm relays per channel may all be configured in terms of function, content and behaviour.

ORBISPHERE 510 instruments are fully compatible with all Orbisphere electro-chemical sensors including Smart sensors. Smart sensors can be calibrated in the laboratory before installing on-line and store their own calibration information, so allowing laboratory precision calibration and minimising process downtime.

## Validation and diagnostics

To ensure continuous high performance and simplify maintenance ORBISPHERE 510 instruments offer a number of diagnostic features including:

- Notification that calibration is due ensures QC procedural compliance
- Notification that a sensor service is due ensures good maintenance planning
- Sensor service diagnostics minimises downtime
- Specific system alarm relay providing real time status of the instrument and sensors.

# Technical data

<b>Measurement</b>	Resolution, accuracy and response time are determined by sensor
<b>Sensor options</b>	Up to 3 ORBISPHERE sensors (with a maximum of 2 TC sensors), ORBISPHERE Electro chemical sensor for O <sub>2</sub> , H <sub>2</sub> low level, O <sub>3</sub> measurements ORBISPHERE Thermal conductivity sensor for CO <sub>2</sub> , H <sub>2</sub> , N <sub>2</sub> measurements ORBISPHERE optical ×1200 sensor for nuclear O <sub>2</sub> measurements
<b>Units</b>	Gas concentration: Configurable for gas or liquid phase with multiple unit options Pressure: External and barometric pressure with multiple unit options Temperature: Sample temperature with unit options (K, °C, °F)
<b>Operating conditions</b>	-5 °C to 50 °C – 23 °F to 122 °F / 0 to 95% non-condensing relative humidity, for 1 channel -5 °C to 45 °C – 23 °F to 113 °F / 0 to 95% non-condensing relative humidity, for 2 channels -5 °C to 40 °C – 23 °F to 104 °F / 0 to 95% non-condensing relative humidity, for 3 channels
<b>Thermal cut-off</b>	Configurable thermal cut-off for sensor protection.
<b>Sample frequency</b>	Continuous or single sample measurement; measurement from 2 sec for optical sensors
<b>Interference correction</b>	EC sensor: Chlorinity / Salinity / CO <sub>2</sub> insensitivity / H <sub>2</sub> S insensitivity / H <sub>2</sub> for O <sub>2</sub> TC sensor: Humidity / He for H <sub>2</sub>
<b>Compensation options</b>	O <sub>2</sub> / H <sub>2</sub> compensation for nuclear applications O <sub>2</sub> / N <sub>2</sub> compensation for electronics applications
<b>Communications</b>	RS485, USB client, USB Host, Ethernet, Profibus DP (optional)
<b>Analogue output</b>	Three 4–20 mA or 0–20 mA (software configurable) per channel. R max 600 Ω or Three 0–5 V (hardware option)
<b>Relays</b>	Three measurement alarm relays (1 A – 30 VAC or 0.5 A – 50 VDC) per channel One instrument system alarm relay (1 A – 30 VAC or 0.5 A – 50 VDC)
<b>Password protection</b>	Five levels of authorised access to configuration and data management
<b>Calibration data</b>	Holds calibration records for last 50 calibrations
<b>Data storage</b>	Rolling or store once mode for up to 10,000 measurements and 1,000 last operator actions
<b>Display</b>	Full colour STN 320 × 240 pixels with CFL backlight
<b>Keypad</b>	Touch-screen panel
<b>Languages</b>	5 major European languages are available as standard and Chinese (C), Japanese (J) or Korean (K) versions can be ordered specifically
<b>CE Certifications</b>	CE: Electromagnetic compatibility standards: EN 61326-1 : A1 + A2 (Ed. 2001), A3 (Ed. 2003) Safety standard: EN 61010-1 (Ed. 2001) ETL, conforming to UL 61010-1 and CSA 22.2 No. 61010-1
<b>Wall and pipe version</b>	Mounting is facilitated by use of simple brackets that allow adjustment of the instrument for optimum screen viewing angle
<b>Power requirements</b>	Universal 100–240 VAC @50/60 Hz, 25 VA; or 10–36 VDC, 25 W
<b>Enclosure</b>	Stainless steel, IP65, NEMA 4
<b>Dimensions</b>	Height: 236.5 mm – 9.31 in / Depth: 160 mm – 6.29 in / Width: 250 mm – 9.84 in
<b>Weight</b>	3.8 kg
<b>Panel mount version</b>	Quick and easy mounting from the front of the panel using concealed screws
<b>Power requirements</b>	Universal 100–240 VAC @50/60 Hz, 25 VA; or 10–36 VDC, 25 W
<b>Enclosure</b>	Aluminium, IP65
<b>Dimensions</b>	Height: fascia: 156 mm – 6.14 in / Enclosure: 123 mm – 4.84 in / Depth: 250 mm – 9.84 in Width: fascia: 220 mm – 8.66 in / Enclosure: 214 mm – 8.42 in
<b>Weight</b>	2.9 kg
<b>Portable version</b>	All the functionality of the mains version with battery option for cart or portable use
<b>Power requirements</b>	5 V supplied through external 85–264 VAC @50/60 Hz, with optional 4 hours duration battery pack
<b>Enclosure</b>	Aluminium, IP65
<b>Dimensions</b>	Height: 225 mm – 8.85 in / Depth: 250 mm – 9.84 in / Width: 219 mm – 8.62 in
<b>Weight</b>	3.8 kg

\* Certain elements of the performance specification are only available as options to the standard unit.  
Please discuss your specific needs with a HACH LANGE representative. These datas are subject to change without notice.